University of Mumbai

No. AAMS(UG)/88 of 2021-22

CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology is invited to this office circular No. UG/18 of 2016-17, dated 27th June, 2016 relating to the revised syllabus as per the (CBSGS) of F.Y.B.Sc. (Computer Science) (Sem. I & II).

They are hereby informed that the recommendations made by the Ad-hoc Board of Studies in Computer Science at its meeting held on 21st June , 2021 and subsequently passed by the Board of Deans at its meeting held on 28th June, 2021 vide item No. 6.38 (R) have been accepted by the Academic Council at its meeting held on 29th June, 2021 vide item No.6.38 (R) and that in accordance therewith, the revised syllabus as per the (CBSGS) for the F.Y.B.Sc. Computer Science (Sem. I & II) has been brought into force with effect from the academic year 2021-22 accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. B.N.Gaikwad)
I/c REGISTRAR

MUMBAI – 400 032
30th September, 2021

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology.

A.C/6.38(R) 29/06/2021

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No. AAMS(UG)/88 -A of 2021-22 MUMBAI-400 032 30th September, 2021

Copy forwarded with Compliments for information to:-

1) The Dean, Faculty of Science & Technology,
2) The Chairman, Ad-hoc Board of Studies in Computer Science,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-ordinator, University Computerization Centre,

(Dr. B.N.Gaikwad)
I/c REGISTRAR

Copy to :-

1. **The Deputy Registrar, Academic Authorities Meetings and Services (AAMS),**
2. **The Deputy Registrar, College Affiliations & Development Department (CAD),**
3. **The Deputy Registrar, (Admissions, Enrolment, Eligibility and Migration Department (AEM),**
4. **The Deputy Registrar, Research Administration & Promotion Cell (RAPC),**
5. **The Deputy Registrar, Executive Authorities Section (EA),**
6. **The Deputy Registrar, PRO, Fort, (Publication Section),**
7. **The Deputy Registrar, (Special Cell),**
8. **The Deputy Registrar, Fort/ Vidyanagari Administration Department (FAD) (VAD), Record Section,**
9. **The Director, Institute of Distance and Open Learning (IDOL Admin), Vidyanagari,**

They are requested to treat this as action taken report on the concerned resolution adopted by the Academic Council referred to in the above circular and that on separate Action Taken Report will be sent in this connection.

1. **P.A to Hon'ble Vice-Chancellor,**
2. **P.A Pro-Vice-Chancellor,**
3. **P.A to Registrar,**
4. **All Deans of all Faculties,**
5. **P.A to Finance & Account Officers, (F.& A.O),**
6. **P.A to Director, Board of Examinations and Evaluation,**
7. **P.A to Director, Innovation, Incubation and Linkages,**
8. **P.A to Director, Board of Lifelong Learning and Extension (BLLE),**
9. **The Director, Dept. of Information and Communication Technology (DICT) (CCF & UCC), Vidyanagari,**
10. **The Director of Board of Student Development,**
11. **The Director, Department of Students Walfare (DSD),**
12. **All Deputy Registrar, Examination House,**
13. **The Deputy Registrars, Finance & Accounts Section,**
14. **The Assistant Registrar, Administrative sub-Campus Thane,**
15. **The Assistant Registrar, School of Engg. & Applied Sciences, Kalyan,**
16. **The Assistant Registrar, Ratnagiri sub-centre, Ratnagiri,**
17. **The Assistant Registrar, Constituent Colleges Unit,**
18. **BUCTU,**
19. **The Receptionist,**
20. **The Telephone Operator,**
21. **The Secretary MUASA**

for information.

AC – 29/06/2021
Item No: 6.38

UNIVERSITY OF MUMBAI

Syllabus

For the

Program: F.Y.B.Sc. Sem -I &II CBCS

Course: Computer Science

(Choice Based and Credit System with effect from the academic year 2021-22)

AC – 29/06/2021

Item No: 6.38

UNIVERSITY OF MUMBAI

Syllabus for Approval

Sr. No.	Heading	Particulars
1.	Title of the Course	**F.Y.B.Sc. Sem. I & II (Computer Science)**
2.	Eligibility for Admission	Ordinance no. O.5719 Circular no. UG/284 of 2007 dated 16th June 2007
3.	Passing Marks	40%
4.	Ordinances / Regulations (if, any)	As applicable for all B.Sc. Courses
5.	Number of years / Semesters	Three years – Six Semesters
6.	Level	~~P.G.~~/ U.G. /~~Diploma / Certificate~~ (Strike out which is not applicable)
7.	Pattern	~~Yearly /~~ Semester, Choice Based (Strike out which is not applicable)
8.	Status	~~New~~ /Revised
9.	To be implemented from Academic year	From the Academic Year **2021 – 2022**

Date: 28/06/2021

Dr. Jagdish Bakal
BoS Chairperson in Computer Science

Dr. Anuradha Majumdar
Dean, Science and Technology

Preamble

The rise of Information and Communication Technology (ICT) has profoundly affected modern society. Increasing applications of computers in almost all areas of human endeavor has led to vibrant industries with concurrent rapid change in technology.

As the computing field advances at a rapid pace, the students must possess a solid foundation that allows and encourages them to maintain relevant skills as the field evolves. Specific languages and technology platforms change over time. Thus students must continue to learn and adapt their skills throughout their careers. To develop this ability, students will be exposed to multiple programming languages, tools, paradigms and technologies as well as the fundamental underlying principles throughout this programme.

The programme offers required courses such as programming languages, data structures, computer architecture and organization, algorithms, database systems, operating systems, and software engineering; as well as specialized courses in artificial intelligence, computer-based communication networks, distributed computing, information security, graphics, human-computer interaction, multimedia, scientific computing, web technology, and other current topics in computer science.

The core philosophy of this programme is to –

- Form strong foundations of Computer Science
- Nurture programming, analytical & design skills for the real world problems.
- Introduce emerging trends to the students in gradual way.
- Groom the students for the challenges of ICT industry

The students these days not only aspire for a career in the industry but also look for research opportunities. The main aim of this programme is to deliver a modern curriculum that will equip graduates with strong theoretical and practical backgrounds to enable them to excel in the workplace and to be lifelong learners. Not only does it prepare the students for a career in Software industry, it also motivates them towards further studies and research opportunities. Graduating students, can thus take up postgraduate programmes in CS leading to research as well as R&D, can be employable at IT industries, or can adopt a business management career.

In the first year i.e. for semester I & II, basic foundation of important skills required for software development is laid. The syllabus proposes to have four core subjects of Computer science and two core courses of Mathematics-Statistics. All core subjects are proposed to have theory as well as practical tracks. While the Computer Science courses will form fundamental skills for solving computational problems, the Mathematics & Statistics course will inculcate research-oriented acumen. Ability Enhancement Courses on Soft Skill Development will ensure an overall and holistic development of the students. The syllabus design for further semesters encompasses more advanced and specialized courses of Computer Science.

We sincerely believe that any student taking this programme will get very strong foundation and exposure to basics, advanced and emerging trends of the subject. We hope that the students‟ community and teachers‟ fraternity will appreciate the treatment given to the courses in the syllabus.

We wholeheartedly thank all experts who shared their valuable feedbacks and suggestions in order to improvise the contents; we have sincerely attempted to incorporate each of them. We further thank Chairperson and members of Board of Studies for their confidence in us.

Special thanks to Department of Computer Science and colleagues from various colleges, who volunteered or have indirectly, helped designing certain specialized courses and the syllabus as a whole.

Programme Structure for B.Sc. Computer Science

Programme Duration	06 Semesters *spread across 3 years*
Total Credits required for successful completion of the Course	120
Credits required from the Core Courses	76
Credits required for the Ability Enhancement Courses	04
Credits required for Skills Enhancement Courses	32
Credits for General Elective Courses	08
Minimum Attendance per Semester	75%

Progamme Objectives

The objectives of the 3 year B.Sc. Computer Science programme are as follows:

- To develop an understanding and knowledge of the basic theory of Computer Science with good foundation on theory, systems and applications.
- To fosternecessary skills and analytical abilities for developing computer based solutions of real-life problems.
- To provide training in emergent computing technologies which lead to innovative solutions for industry and academia.
- To develop the necessary study skills and knowledge to pursue further post-graduate study in computer science or other related fields.
- To develop the professional skillset required for a career in an information technology oriented business or industry.
- To enable students to work independently and collaboratively, communicate effectively, and become responsible, competent, confident, insightful, and creative users of computing technology

Progamme Learning Outcomes

At the end of three year Bachelor of Computer Science the students will be able:

- To formulate, to model, to design solutions, procedure and to use software tools to solve real world problems.
- To design and develop computer programs/computer -based systems in the areas such as networking, web design, security, cloud computing, IoT, data science and other emerging technologies.
- To familiarize with the modern-day trends in industry and research based settings and thereby innovate novel solutions to existing problems.
- To apply concepts, principles, and theories relating to computer science to new situations.
- To use current techniques, skills, and tools necessary for computing practice
- To apply standard Software Engineering practices and strategies in real-time software project development
- To pursue higher studies of specialization and to take up technical employment.
- To work independently or collaboratively as an effective tame member on a substantial software project.
- To communicate and present their work effectively and coherently.
- To display ethical code of conduct in usage of Internet and Cyber systems.
- To engage in independent and life-long learning in the background of rapid changing IT industry.

Academic year 2021-2022

Semester – I				
Course Code	**Course Type**	**Course Title**	**Credits**	**Lectures/Week**
USCS101	Core Subject	Digital Systems & Architecture	2	3
USCSP101	Core Subject Practical	Digital Systems & Architecture – Practical	1	3
USCS102	Core Subject	Introduction to Programming with Python	2	3
USCSP102	Core Subject Practical	Introduction to Programming with Python – Practical	1	3
USCS103	Core Subject	LINUX Operating System	2	3
USCSP103	Core Subject Practical	LINUX Operating System – Practical	1	3
USCS104	Core Subject	Open Source Technologies	2	3
USCSP104	Core Subject Practical	Open Source Technologies – Practical	1	3
USCS105	Core Subject	Discrete Mathematics	2	3
USCSP105	Core Subject Practical	Discrete Mathematics – Practical	1	3
USCS106	Core Subject	Descriptive Statistics	2	3
USCSP106	Core Subject Practical	Descriptive Statistics – Practical	1	3
USCS107	Ability Enhancement Course	Soft Skills	2	3

F.Y.B.Sc. Computer Science Syllabus

Choice Based Credit System (CBCS)

with effect from

Academic year 2021-2022

Semester – II				
Course Code	**Course Type**	**Course Title**	**Credits**	**Lectures/Week**
USCS201	Core Subject	Design & Analysis of Algorithms	2	3
USCSP201	Core Subject Practical	Design & Analysis of Algorithms – Practical	1	3
USCS202	Core Subject	Advanced Python Programming	2	3
USCSP202	Core Subject Practical	Advanced Python Programming – Practical	1	3
USCS203	Core Subject	Introduction to OOPs using C++	2	3
USCSP203	Core Subject Practical	Introduction to OOPs using C++ – Practical	1	3
USCS204	Core Subject	Database Systems	2	3
USCSP204	Core Subject Practical	Database Systems – Practical	1	3
USCS205	Core Subject	Calculus	2	3
USCSP205	Core Subject Practical	Calculus – Practical	1	3
USCS206	Core Subject	Statistical Methods	2	3
USCSP206	Core Subject Practical	Statistical Methods – Practical	1	3
USCS207	Ability Enhancement Course	E-Commerce & Digital Marketing	2	3

Semester I

Course Code	Course Title	Credits	Lectures /Week
USCS101	**Digital Systems & Architecture**	**2**	**3**

About the Course:
This course introduces the principles of computer organization and the basic architecture concepts.The course emphasizes performance and cost analysis, instruction set design, pipelining, memory technology, memory hierarchy, virtual memory management, and I/O systems.

Course Objectives:

- To have an understanding of Digital systems and operation of a digital computer.
- To learn different architectures & organizations of memory systems, processor organization and control unit.
- To understand the working principles of multiprocessor and parallel organization"s as advanced computer architectures

Learning Outcomes:
After successful completion of this course, students would be able to

- To learn about how computer systems work and underlying principles
- To understand the basics of digital electronics needed for computers
- To understand the basics of instruction set architecture for reduced and complex instruction sets
- To understand the basics of processor structure and operation
- To understand how data is transferred between the processor and I/O devices

Unit	Topics	No of Lectures
I	**Fundamentals of Digital Logic:** Boolean algebra, Logic Gates, Simplification of Logic Circuits: Algebraic Simplification, Karnaugh Maps. Combinational Circuits: Adders, Mux, De-Mux, Sequential Circuits: Flip-Flops (SR, JK & D), Counters: synchronous and asynchronous Counter **Computer System:** Comparison of Computer Organization & Architecture, Computer Components and Functions, Interconnection Structures. Bus Interconnections, Input / Output: I/O Module, Programmed I/O, Interrupt Driven I/O, Direct Memory Access	**15**
II	**Memory System Organization:** Classification and design parameters, Memory Hierarchy, Internal Memory: RAM, SRAM and DRAM, Interleaved and Associative Memory. Cache Memory: Design Principles, Memory mappings, Replacement Algorithms, Cache performance, Cache Coherence. Virtual Memory, External Memory: Magnetic Discs, Optical Memory, Flash Memories, RAID Levels **Processor Organization:** Instruction Formats, Instruction Sets, Addressing Modes, Addressing Modes Examples with Assembly Language [8085/8086 CPU], Processor Organization, Structure and Function. Register	**15**

	Organization, Basic Microprocessor operations: Data Transfer (Register / Memory) Operations, Arithmetic & Logical Operations, Instruction Cycle, Instruction Pipelining. Introduction to RISC and CISC Architecture, Instruction Level Parallelism and Superscalar Processors: Design Issues	
III	**Control Unit:** Micro-Operations, Functional Requirements, Processor Control, Hardwired Implementation, Micro-programmed Control**.** **Fundamentals of Advanced Computer Architecture:** Parallel Architecture: Classification of Parallel Systems, Flynn‟s Taxonomy, Array Processors, Clusters, and NUMA Computers. Multiprocessor Systems: Structure & Interconnection Networks, Multi-Core Computers: Introduction, Organization and Performance.	**15**

Textbooks:

1. M. Mano, Computer System Architecture 3rd edition, Pearson
2. Carl Hamacher et al., Computer Organization and Embedded Systems, 6 ed., McGraw-Hill 2012
3. R P Jain, Modern Digital Electronics, Tata McGraw Hill Education Pvt. Ltd. , 4th Edition, 2010

Additional References:

1. William Stallings (2010), Computer Organization and Architecture- designing for performance,8th edition, Prentice Hall, New Jersy.
2. Anrew S. Tanenbaum (2006), Structured Computer Organization, 5th edition, PearsonEducation Inc,
3. John P. Hayes (1998), Computer Architecture and Organization, 3rd edition, Tata McGrawHill

Course Code	**Course Title**	**Credits**	**Lectures /Week**
USCSP101	**Digital Systems & Architecture – Practical**	**1**	**3**
1	Study and verify the truth table of various logic gates (NOT, AND, OR, NAND, NOR, EX-OR, and EX-NOR).		
2	Simplify given Boolean expression and realize it.		
3	Design and verify a half/full adder		
4	Design and verify half/full subtractor		
5	Design a 4 bit magnitude comparator using combinational circuits.		
6	Design and verify the operation of flip-flops using logic gates.		
7	Verify the operation of a counter.		
8	Verify the operation of a 4 bit shift register		
9	Design and implement expression using multiplexers / demultiplexers.		
10	Design and implement 3-bit binary ripple counter using JK flip flops.		
11	Simple microprocessor programs for data transfer operations		
12	Simple microprocessor programs for arithmetic & logical transfer operations		
Note	Practical 1 – 10 can be performed using any open source simulator (like Logisim) (Download it from https://sourceforge.net/projects/circuit/) Practical 11 – 12 can be performed on any simulation software like Jubin‟s 8085 simulator		

Course Code	Course Title	Credits	Lectures /Week
USCS102	**Introduction to Programming with Python**	**2**	**3**

About the Course:

This course is aims at introducing one of the fastest growing programming language of current time and enables learners to understand the fundamentals of programming with Python. Learners will be able to write programs to solve real-world problems, and produce quality code. It will help to develop strong skills of programming for implementing applications for emerging fields including data science and machine learning.

Course Objectives:

- To learn how to design and program Python applications.
- To explore the innards of Python Programming and understandcomponents of Python Program
- To define the structure and components of a Python program.
- To learn how to write loops and decision statements in Python
- To learn about inbuilt input/output operations and compound data types in Python

Learning Outcomes:

After successful completion of this course, students would be able to:

- Ability to store, manipulate and access data in Python
- Ability to implement basic Input / Output operations in Python
- Ability to define the structure and components of a Python program.
- Ability to learn how to write loops and decision statements in Python.
- Ability to learn how to write functions and pass arguments in Python.
- Ability to create and use Compound data types in Python

Unit	Topics	No of Lectures
I	**Overview of Python:** History & Versions, Features of Python, Execution of a Python Program, Flavours of Python, Innards of Python, Python Interpreter, Memory Management in Python, Garbage Collection in Python, Comparison of Python with C and Java, Installing Python, Writing and Executing First Python Program, Getting Help, IDLE **Data Types, Variables and Other Basic Elements:** Comments, Docstrings, Data types- Numeric Data type, Compound Data Type, Boolean Data type, Dictionary, Sets, Mapping, Basic Elements of Python, Variables **Input and Output Operations:** Input Function, Output Statements, The print() function, The print("string") function, The print(variables list) function, , The print(object) function, The print(formatted string) function, Command Line Arguments **Control Statements:** The if statement, The if … else Statement, The „if …	**15**

	elif … else" Statement, Loop Statement- while loop, for loop, Infinite loop, Nested loop, The else suite, break statement, continue statement, pass statement, assert statement, return statement	
II	**Operators:** Arithmetic operators, Assignment operators, Unary minus operator, Relational operators, Logical operators, Bitwise operators, Membership operators, Identity operators, Precedence of Operators, Associativity of Operators **Arrays:** Creating Arrays, Indexing and Slicing of Arrays, Basic Array Operations, Arrays Processing, Mathematical Operations on Array, Aliasing Arrays, Slicing and Indexing in NumPy Arrays, Basic slicing, Advanced Indexing, Dimensions of Arrays, Attributes of an Array, The ndim Attribute, The shape Attribute, The size Attribute, The itemsize Attribute **Functions:** Function definition and call, Returning Results, Returning Multiple Values from a Function, Built-in Functions, Difference between a Function and a Method, Pass Value by Object Reference, Parameters and Arguments, Formal and Actual Arguments, Positional Arguments, Keyword Arguments, Default Arguments, Arbitrary Arguments, Recursive Functions, Anonymous or Lambda Functions, Using Lambda with the filter() Function, Using Lambda with the map() Function, Using Lambda with the reduce() Function **Modules**:Introduction to Modules in Python	**15**
III	**Strings:** Creating Strings, Functions of Strings, Working with Strings, Length of a String, Indexing and Slicing, Repeating and Concatenating Strings, Checking Membership, Comparing Strings, Removing Spaces, Finding Substrings, Counting Substrings, Immutability, Splitting and Joining Strings, Changing Case, Checking Starting and Ending of a String, Sorting Strings, Searching in the Strings, Testing Methods, Formatting Strings, Finding the Number of Characters and Words, Inserting Substrings into a String **List and Tuples:** Lists, List Functions and Methods, List Operations, List Slices, Nested Lists, Tuples, Functions in Tuple **Dictionaries:** Creating a Dictionary, Operators in Dictionary, Dictionary Methods, Using for Loop with Dictionaries, Operations on Dictionaries, Converting Lists into Dictionary, Converting Strings into Dictionary, Passing Dictionaries to Functions, Sorting the Elements of a Dictionary using Lambda, Ordered Dictionaries	**15**

Textbooks:

1. Practical Programming: An Introduction to Computer Science Using Python 3, Paul Gries , Jennifer Campbell, Jason Montojo, Pragmatic Bookshelf, 2nd Edition, 2014
2. Programming through Python, M. T Savaliya, R. K. Maurya& G M Magar, Sybgen Learning India, 2020

Additional References:

1. Python: The Complete Reference, Martin C. Brown, McGraw Hill, 2018
2. Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress, 2017
3. Programming in Python 3, Mark Summerfield, Pearson Education, 2nd Ed, 2018
4. Python Programming: Using Problem Solving Approach, ReemaThareja, Oxford Univeristy Press, 2017
5. Let Us Python, Yashwant. B. Kanetkar, BPB Publication, 2019

Course Code	**Course Title**	**Credits**	**Lectures /Week**
USCSP102	**Introduction to Programming with Python – Practical**	**1**	**3**
1	Write a program to design and develop python program to implement various control statement using suitable examples		
2	Write program in Python to define and call functions for suitable problem.		
3	Write Python program to demonstrate different types of function arguments.		
4	Write a Python program to demonstrate the precedence and associativity of operators.		
5	Write suitable Python program to implement recursion for problems such as Fibonacci series, Factorial, Tower of Hanoi etc.		
6	Write Python program to implement and use lambda function in python		
7	Write a python program to create and manipulate arrays in Python. Also demonstrate use of slicing and indexing for accessing elements from the array.		
8	Write a program to implement list in Python for suitable problem. Demonstrate various operations on it.		
9	Write a program to implement tuple in Python for suitable problem. Demonstrate various operations on it.		
10	Write a program to implement dictionary in Python for suitable problem. Demonstrate various operations on it.		

Course Code	Course Title	Credits	Lectures /Week
USCS103	**LINUX Operating System**	**2**	**3**

About the Course:

This syllabus will help to train students in fundamental skills and build-up sustainable interest in Linux Operating System. It will improve necessary knowledge base to understand Linux Operating System and its practical implementation, it will also help to develop Linux based solutions for real life problems.

Course Objectives:

- To learn basic concepts of Linux in terms of operating system
- To learn use of various shell commands with regular expressions
- To set Linux Environment variables and learn setting file permissions to maintain Linux security implementation
- To learn various editors available in Linux OS
- To learn shell scripting.
- To learn installation of compilers and programming using C and Python languages on Linux platform

Learning Outcomes:

After successful completion of this course, students would be able to

- Work with Linux file system structure, Linux Environment
- Handle shell commands for scripting, with features of regular expressions, redirections
- Implement file security permissions
- Work with vi, sed and awk editors for shell scripting using various control structures
- Install softwares like compilers and develop programs in C and Python programming languages on Linux Platform

Unit	Topics	No of Lectures
I	**Linux operating system and Basics :** History, GNU Info and Utilities, Various Linux Distributions, The Unix/Linux architecture, Features of Unix/Linux, Starting the shell, Shell prompt, Command structure, File Systems and Directory Structure, man pages, more documentation pages **Basic Bash shell commands:** General purpose utility Commands, basic commands, Various file types, attributes and File handling Commands, Handling Ordinary Files. More file attributes **Advanced Bash shell commands:** Simple Filters, Filters using regular expressions. **The Linux environment variable:** Setting, Locating and removing environment variables like PATH etc, Default shell environment variables, Using command aliases.	**15**

II	**Understanding Linux file permission:** Linux security, Using Linux groups, Decoding file permissions, Changing security setting, Sharing files. **Linux Security:** Understanding Linux Security, uses of root, sudo command, working with passwords, Understanding ssh. **Networking:** TCP/IP Basics, TCP/IP Model, Resolving IP addresses, Applications, ping, telnet, ftp, DNS **Working withEditors:** awk, sed and Introduction to vi	**15**
III	**Basic script building:** Using multiple commands, Creating script files, Displaying messages, Using variables, Redirecting Input and Output, Pipes performing math, Exiting the script. **Using structured commands:** Working with if-then, if-then-else and nested if statements, test command, Compound condition testing, while command, until command, case command. **Script and Process control :** Handling signals, Running scripts in background mode, Running scripts without a console, Job control, Job scheduling commands: ps, nice, renice, at, batch, cron table, Running the script at boot	**15**

Textbooks:

1. "Linux Command line and Shell Scripting Bible", Richard Blum, Wiley India.
2. "Unix: Concepts and Applications", Sumitabha Das, 4th Edition, McGraw Hill.
3. "Official Ubuntu Book", Matthew Helmke& Elizabeth K. Joseph with Jose Antonio Rey and Philips Ballew, 8th Ed.

Additional References:

1. "Linux Administration: A Beginner's Guide", Fifth Edition, Wale Soyinka, Tata McGraw-Hill, 2008.
2. "Linux: Complete Reference", Richard Petersen, 6th Edition, Tata McGraw-Hill
3. "Beginning Linux Programming", Neil Mathew, 4th Edition, Wiley Publishing, 2008.

Course Code	Course Title	Credits	Lectures /Week
USCSP103	**LINUX Operating System – Practical**	**1**	**3**
1	**Installation of Ubuntu Linux operating system.** a) Booting and Installing from (USB/DVD) b) Using Ubuntu Software center / Using Synaptic c) Explore useful software packages.		
2	**Becoming an Ubuntu power user** a) Administering system and User setting b) Learning Unity keyboard c) Using the Terminal d) Working with windows programs		

3	**File System Commands:** touch, help, man, more, less, pwd, cd, mkdir, rmdir, ls, find, ls, etc **File handling Commands:** cat, cp, rm, mv, more, file, wc, od, cmp, diff, comm, chmod, chown, chgrp, gzip and gunzip, zip and unzip, tar, ln, umask,, chmod, chgrp, chown, etc
4	**General purpose utility Commands:**cal, date, echo, man, printf, passwd, script, who, uname, tty, stty, etc **Simple Filters and I/O redirection:** head, tail, cut paste, sort, grep family, tee, uniq, tr, etc. **Networking Commands:** who, whoami, ping, telnet, ftp, ssh, etc
5	**Editors:** vi, sed, awk
6	**Working and Managing with processes-** sh, ps, kill, nice, at and batch etc.
7	**Shell scripting I:** Defining variables, reading user input, exit and exit status commands, , expr, test, [], if conditional, logical operators
8	**Shell scripting II:** Conditions (for loop, until loop and while loop) arithmetic operations, examples
9	**Shell scripting III:** Redirecting Input / Output in scripts, creating your own Redirection
10	Installation of C/C++/Java/Python Compiler and creating an environment for app development. Basic programming using C and Python Languages.

Course Code	Course Title	Credits	Lectures /Week
USCS104	**Open Source Technologies**	**2**	**3**

About the Course:

Open Source Software is becoming an important resource for development, especially in developing countries. A working understanding of the economic and technical background of the Free / Open Source Software movement (FOSS) is essential for its effective use. The course takes students through the history and current status of the FOSS world, and starts them exploring it, by connecting their personal experiences with corresponding FOSS projects. Students will experience finding and using Open Source Software projects.

Course Objectives:

- Understand the difference between open-source software and commercial software.
- Understand the policies, licensing procedures and ethics of FOSS.
- Understand open-source philosophy, methodology and ecosystem.
- Awareness with Open-Source Technologies.

Learning Outcomes:

- Differentiate between Open Source and Proprietary software and Licensing.
- Recognize the applications, benefits and features of Open-Source Technologies
- Gain knowledge to start, manage open-source projects.

Unit	Topics	No of Lectures
I	**Introduction to Open-Source:** Open Source, Need and Principles of OSS, Open-Source Standards, Requirements for Software, OSS success, Free Software, Examples, Licensing, Free Vs. Proprietary Software, Free Software Vs. Open-Source Software, Public Domain. History of free software, Proprietary Vs Open-Source Licensing Model, use of Open-Source Software, FOSS does not mean no cost. History: BSD, The Free Software Foundation and the GNU Project. **Open-Source Principles and Methodology:** Open-Source History, Open-Source Initiatives, Open Standards Principles, Methodologies, Philosophy, Software freedom, Open-Source Software Development, Licenses, Copyright vs. Copy left, Patents, Zero marginal cost, Income-generation Opportunities, Internationalization. **Licensing:** What Is A License, How to create your own Licenses, Important FOSS Licenses (Apache, BSD, PL, LGPL), copyrights and copy lefts, Patent.	**15**
II	**Open-Source projects:** Starting and maintaining own Open-Source Project, Open-Source Hardware, Open-Source Design, Open-source Teaching, Open-source media. **Collaboration:** Community and Communication, Contributing to Open-Source Projects Introduction to GitHub, interacting with the community on GitHub, Communication and etiquette, testing open-source code, reporting	**15**

	issues, contributing code. Introduction to Wikipedia, contributing to Wikipedia or contributing to any prominent open-source project of student's choice. **Open-Source Ethics and Social Impact:** Open source vs. closed source, Open-source Government, Ethics of Open-source, Social and Financial impacts of open-source technology, Shared software, Shared source, Open Source as a Business Strategy	
III	**Understanding Open-Source Ecosystem**: Open-Source Operating Systems: GNU/Linux, Android, Free BSD, Open Solaris. Open-Source Hardware, Virtualization Technologies, Containerization Technologies: Docker, Development tools, IDEs, Debuggers, Programming languages, LAMP, Open-Source Database technologies **Case Studies:** Example Projects: Apache Web server, BSD, GNU/Linux, Android, Mozilla (Firefox), Wikipedia, Drupal, WordPress, Git, GCC, GDB, GitHub, Open Office, LibreOffice Study: Understanding the developmental models, licensing, mode of funding, commercial/non-commercial use.	**15**

Textbooks:

1. "Open-Source Technology", Kailash Vadera&Bhavyesh Gandhi, University Science Press, Laxmi Publications, 2009
2. "Open-Source Technology and Policy", Fadi P. Deek and James A. M. McHugh, Cambridge University Press, 2008.

Additional References:

1. "Perspectives on Free and Open-Source Software", Clay Shirky and Michael Cusumano, MIT press.
2. "Understanding Open Source and Free Software Licensing", Andrew M. St. Laurent, O"Reilly Media.
3. "Open Source for the Enterprise", Dan Woods, GautamGuliani, O"Reilly Media
4. Linux kernel Home: http://kernel.org4
5. Open-Source Initiative: https://opensource.org/5
6. The Linux Foundation: http://www.linuxfoundation.org/
7. The Linux Documentation Project: http://www.tldp.org/2
8. Docker Project Home: http://www.docker.com3.
9. Linux Documentation Project: http://www.tldp.org/6
10. Wikipedia: https://en.wikipedia.org/7.https://en.wikipedia.org/wiki/Wikipedia:Contributing_to_Wikipedia8
11. GitHub: https://help.github.com/9.
12. The Linux Foundation: http://www.linuxfoundation.org/

Course Code	Course Title	Credits	Lectures /Week
USCSP104	**Open Source Technologies– Practical**	**1**	**3**
1	**Open Source Operating Systems** • Learn the following open source operating system of your choice: Linux, Android, FreeBSD, Open Solaris etc. • Learn the installation. • Identify the unique features of these OS.		
2	Hands on with **LibreOffice** • Learn it from practical view-point • Give a brief presentation about it to the class		
3	Hands on with **GIMP** Photo Editing Tool • Learn it from practical view-point • Give a brief presentation about it to the class		
4	Hands on with **Shotcut** Video Editing Tool • Learn it from practical view-point • Give a brief presentation about it to the class		
5	Hands on with **Blender** Graphics and Animation Tool • Learn it from practical view-point • Give a brief presentation about it to the class		
6	Hands on with **Apache** Web Server • Learn it from practical view-point • Give a brief presentation about it to the class		
7	Hands on with **WordPress** CMS • Learn it from practical view-point • Give a brief presentation about it to the class		
8	Contributing to **Wikipedia**: • Introduction to wikipedia: operating model, license, how to contribute? • Create your user account on wikipedia • c. Identify any topic of your choice and contribute the missing information		
9	**Github** • Create and publish your own open source project: Write any simple program using your choice of programming language. • Create a repository on github and save versions of your project. You"ll learn about the staging area, committing your code, branching, and merging, • Using GitHub to Collaborate: Get practice using GitHub or other remote repositories to share your changes with others and collaborate on multi-developer projects. You'll learn how to make and review a pull request on GitHub. • d. Contribute to a Live Project: Students will publish a repository containing their reflections from the course and submit a pull request.		

10	**Virtualization:** Open Source virtualization technologies: • Install and configure the following: VirtualBox, Zen, KVM • Create and use virtual machines
11	**Containerization:** • Install and configure the following containerization technologies: docker, rocket, LXD • Create and use containers using it

Course Code	Course Title	Credits	Lectures /Week
USCS105	**Discrete Mathematics**	**2**	**3**

About the Course:
Discrete Mathematics provides an essential foundation for virtually every area of Computer Science. The problem-solving techniques honed in Discrete Mathematics are necessary for writing complicated software. Discrete mathematics also builds the gateway to advanced courses in Mathematical Sciences, Data Science, Machine Learning, Software Engineering, etc.

Course Objectives:

- The purpose of the course is to familiarize the prospective learners with mathematical structures that are fundamentally discrete.
- This course will enhance prospective learners to reason and ability to articulate mathematical problems.
- This course will introduce functions, forming and solving recurrence relations and different counting principles. These concepts will be useful to study or describe objects or problems in computer algorithms and programming languages and these concepts can be used effectively in other courses.

Learning Outcomes:
After successful completion of this course, learners would be able to:

- Define mathematical structures (relations, functions, graphs) and use them to model real life situations.
- Understand, construct and solve simple mathematical problems.
- Solve puzzles based on counting principles.
- Provide basic knowledge about models of automata theory and the corresponding formal languages.
- Develop an attitude to solve problems based on graphs and trees, which are widely used in software.

Unit	Topics	No of Lectures
I	**Functions:** Definition of function; Domain, co-domain, range of a function; Examples of standard functions such as identity and constant functions, absolute value function, logarithmic and exponential functions, flooring and ceiling functions; Injective, surjective and bijective functions; Composite and inverse functions. **Relations:** Definition and examples of relation; Properties of relations, Representation of relations using diagraphs and matrices; Equivalence relation; Partial Order relation, Hasse Diagrams, maximal, minimal, greatest, least element, Lattices.	**15**

	Recurrence Relations: Definition and Formulation of recurrence relations; Solution of a recurrence relation; Solving recurrence relations- Back tracking method, Linear homogeneous recurrence relations with constant coefficients; Homogeneous solution of linear homogeneous recurrence relation with constant coefficients; Particular solution of non-linear homogeneous recurrence relation with constant coefficients; General solution of non-linear homogeneous recurrence relation with constant coefficients; Applications- Formulate and solve recurrence relation for Fibonacci numbers, Tower of Hanoi, Intersection of lines in a plane, Sorting Algorithms.	
II	**Counting Principles:** Basic Counting Principles (Sum and Product Rule); Pigeonhole Principle (without proof) - Simple examples; Inclusion Exclusion Principle (Sieve formula) (without proof); Counting using Tree diagrams. **Permutations and Combinations:** Permutation without and with repetition; Combination without and with repetition; Binomial numbers and identities: Pascal Identity, Vandermonde‟s Identity, Pascal triangle, Binomial theorem (without proof) and applications; Multionomial numbers, Multinomial theorem (without proof) and applications. **Languages, Grammars and Machines:** Languages and Grammars – Introduction, Phase structure grammar, Types of grammar, derivation trees; Finite-State Machines with Output; Finite-State Machines with No Output; Regular Expression and Regular Language.	**15**
III	**Graphs:** Graphs and Graph Models; Graph terminologies and Special types of graphs; Definition and elementary results; Representing graphs, Linked representation of a graph; Graph Isomorphism; Connectivity in graphs – path, trail, walk; Euler and Hamilton paths; Planar graphs, Graph coloring and chromatic number. **Trees:** Definition, Tree terminologies and elementary results; Linked representation of binary trees; Ordered rooted tree, Binary trees, Complete and extended binary trees, Expression trees, Binary Search tree, Algorithms for searching and inserting in binary search trees, Algorithms for deleting in a binary search tree; Traversing binary trees	**15**

Textbooks:

1. Discrete Mathematics and Its Applications, Seventh Edition by Kenneth H. Rosen, McGraw Hill Education (India) Private Limited. (2011)
2. Discrete Mathematics: SemyourLipschutz, Marc Lipson, Schaum‟s out lines, McGraw- Hill Inc.

3rd Edition
3. Data Structures Seymour Lipschutz, Schaum's out lines, McGraw- Hill Inc. 2017
4. Norman L. Biggs, Discrete Mathematics, Revised Edition, Clarendon Press, Oxford 1989.

Additional References:

1. Elements of Discrete Mathematics: C.L. Liu, Tata McGraw- Hill Edition.
2. Concrete Mathematics (Foundation for Computer Science): Graham, Knuth, Patashnik Second Edition, Pearson Education.
3. Discrete Mathematics: SemyourLipschutz, Marc Lipson, Schaum's out lines, McGraw- Hill Inc.
4. Foundations in Discrete Mathematics: K.D. Joshi, New Age Publication, New Delhi.

Course Code	Course Title	Credits	Lectures /Week
USCSP105	**Discrete Mathematics – Practical**	**1**	**3**
1	**Functions –** a. Identify if the given mapping is a function b. Finding domain and range of a given function c. Check if the given function is injective/surjective/bijective d. Find the inverse of a given function e. Operations on functions f. Graphs of functions using any online tool		
2	**Relations –** a. Representation of relations b. Determine if the given relation satisfies equivalence relation/partial order relation c. Draw Hasse diagrams d. Find maximal, minimal, greatest, least element in a poset e. Determine if a given poset is a lattice		
3	**Recurrence Relation –** a. Solve recurrence relation using backtracking method b. Solve linear homogeneous recurrence relations with constant coefficients c. Find homogeneous, particular, general solution of a recurrence relation d. Formulate and solving recurrence relation		
4	**Counting Principles –** a. Sum and product rule b. Pigeonhole Principle c. Inclusion Exclusion Principle d. Counting using Tree diagrams		
5	**Permutations and Combinations –** a. Permutations b. Permutations with repetitions c. Combinations d. Combinations with repetitions e. Binomial numbers and Identities		

	f. Applications on Binomial theorem g. Applications on Multinomial theorem
6	**Languages and Grammars –** a. Find the language generated by given grammar b. Check if a given string belongs or not to a given language/grammar c. Operations on languages d. Identify the type of grammar
7	**Finite State Machines –** a. Check if a given string is accepted or rejected by FSM without output b. Find the output for a FSM with output c. Describe a machine (diagram/table)
8	**Regular Expression and Regular Language –** a. Describe the regular expressions represented by given language b. Describe the language represented by given regular expression
9	**Graphs –** a. Types of graph b. Properties of graph c. Representation of graph d. Graph Isomorphism e. Connectivity in graphs – path, trail, walk f. Euler and Hamilton graphs g. Planar graphs h. Graph coloring and chromatic number
10	**Trees –** a. Tree terminologies b. Types of tree c. Properties of tree d. Representation of tree e. Expression tree f. Binary Search tree g. Tree traversal

Course Code	Course Title	Credits	Lectures /Week
USCS106	**Descriptive Statistics**	**2**	**3**

About the Course:

This course is designed to provide learners with an understanding of the data and to develop an understanding of the quantitative techniques from Statistics. It also provides the knowledge of different statistical tools used for primary statistical analysis of data.

Course Objectives:

1. To develop the learners ability to deal with different types of data.
2. To enable the use of different measures of central tendency and dispersion wherever relevant.
3. To make learner aware about the techniques to check the Skewness and Kurtosis of data.
4. To make learner enable to find the correlation between different variables and further apply the regression analysis to find the exact relation between them.
5. To develop ability to analyze statistical data through R software.

Learning Outcomes:

After successful completion of this course, learners would be able to

1. Organize, manage and present data.
2. Analyze Statistical data using measures of central tendency and dispersion.
3. Analyze Statistical data using basics techniques of R.
4. Study the relationship between variables using techniques of correlation and regression.

Unit	Topics	No of Lectures
I	**Data Types and Data Presentation: Data types:** Attribute, Variable, Discrete and Continuous variable, Univariate and Bivariate distribution. Types of Characteristics, Different types of scales: nominal, ordinal, interval and ratio. **Data presentation:** Frequency distribution, Histogram, Ogive curves. **Introduction to R:** Data input, Arithmetic Operators, Vector Operations, Matrix Operations, Data Frames, Built-in Functions. Frequency Distribution, Grouped Frequency Distribution, Diagrams and Graphs, Summary statistics for raw data and grouped frequency distribution. **Measures of Central tendency:** Concept of average/central tendency, characteristics of good measure of central tendency. Arithmetic Mean (A.M.), Median, Mode - Definition, examples for ungrouped and grouped data, effect of shift of origin and change of scale, merits and demerits. Combined arithmetic mean. Partition Values: Quartiles, Deciles and Percentiles - examples for ungrouped and grouped data	**15**

II	**Measures dispersion:** Concept of dispersion, Absolute and Relative measure of dispersion, characteristics of good measure of dispersion. Range, Semi-interquartile range, Quartile deviation, Standard deviation - Definition, examples for ungrouped and grouped data, effect of shift of origin and change of scale, merits and demerits. Combined standard deviation, Variance. Coefficient of range, Coefficient of quartile deviation and Coefficient of variation (C.V.) **Moments:** Concept of Moments, Raw moments, Central moments, Relation between raw and central moments. **Measures of Skewness and Kurtosis:** Concept of Skewness and Kurtosis, measures based on moments, quartiles.	**15**
III	**Correlation:** Concept of correlation, Types and interpretation, Measure of Correlation: Scatter diagram and interpretation; Karl Pearson‟s coefficient of correlation (r): Definition, examples for ungrouped and grouped data, effect of shift of origin and change of scale, properties; Spearman‟s rank correlation coefficient: Definition, examples of with and without repetition. Concept of Multiple correlation. **Regression:** Concept of dependent (response) and independent (predictor) variables, concept of regression, Types and prediction, difference between correlation and regression, Relation between correlation and regression. Linear Regression - Definition, examples using least square method and regression coefficient, coefficient of determination, properties. Concept of Multiple regression and Logistic regression.	**15**

Textbooks:

1. Goon, A. M., Gupta, M. K. and Dasgupta, B. (1983). Fundamentals of Statistics, Vol. 1, Sixth Revised Edition, The World Press Pvt. Ltd., Calcutta.
2. Gupta, S.C. and Kapoor, V.K. (1987): Fundamentals of Mathematical Statistics, S. Chand and Sons, New Delhi

Additional References:

1. Sarma, K. V. S. (2001). Statistics Made it Simple: Do it yourself on PC. Prentce Hall of India, NewDelhi.
2. Agarwal, B. L. (2003). Programmed Statistics, Second Edition, New Age International Publishers, NewDelhi.
3. Purohit, S. G., Gore S. D., Deshmukh S. R. (2008). Statistics Using R, Narosa Publishing House, NewDelhi.
4. Schaum‟s Outline Of Theory And Problems Of Beginning Statistics, Larry J. Stephens, Schaum‟s Outline Series Mcgraw-Hill

Course Code	Course Title	Credits	Lectures /Week
USCSP106	**Descriptive Statistics – Practical**	**1**	**3**
Problem solving and implementation using R programming			
1	**Basics of R-** a. Data input, Arithmetic Operators b. Vector Operations, Matrix Operations c. Data Frames, Built-in Functions d. Frequency Distribution, Grouped Frequency Distribution e. Diagrams and Graphs		
2	**Frequency distribution and data presentation-** a. Frequency Distribution (Univariate data/ Bivariate data) b. Diagrams c. Graphs		
3	**Measures of Central Tendency-** a. Arithmetic Mean b. Median c. Mode d. Partition Values		
4	**Measures dispersion-** a. Range and Coefficient of range b. Quartile deviation and Coefficient of quartile deviation c. Standard deviation, Variance and Coefficient of variation (C.V.)		
5	**Moments-** a. Raw moments b. Central moments		
6	**Measures of Skewness -** a. Karl Pearson‟s measure of Skewness b. Bowley‟s measure of Skewness c. Moment coefficient of Skewness		
7	**Measures of Kurtosis-** a. Moment coefficient of Kurtosis (Absolute measure) b. Moment coefficient of Kurtosis (Relative measure)		
8	**Correlation-** a. Karl Pearson‟s correlation coefficient b. Spearman‟s Rank correlation		
9	**Regression-** a. Method of least squares b. Using regression coefficients c. Properties of regression lines & regression coefficients		
10	**Summary Statistics using R-** a. Summary statistics for raw data b. Summary statistics for grouped frequency distribution c. Simple Correlation & Regression using R		

Course Code	Course Title	Credits	Lectures /Week
USCS107	**Soft Skills**	**2**	**3**

About the Course:
To help learners develop their soft skills and develop their personality along with technical skills. Focus on various communication enhancement along with academic and professional ethics.

Course Objectives:

- Understand the significance and essence of a wide range of soft skills.
- Learn how to apply soft skills in a wide range of routine social and professional settings
- Learn how to employ soft skills to improve interpersonal relationships
- Learn how to employ soft skills to enhance employability and ensure workplace and career success

Learning Outcomes:

- Learners will be able to understand the importance and types soft skills
- Learners will develop skills for Academic and Professional Presentations.
- Learners will able to understand Leadership Qualities and Ethics.
- Ability to understand the importance of stress management in their academic & professional life.

Unit	Topics	No of Lectures
I	**Introduction to Soft Skills** **Soft Skills: An Introduction –** Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development. **Personality Development:** Knowing Yourself, Positive Thinking, Johari's Window, Physical Fitness **Emotional Intelligence:** Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence, Competencies of Emotional Intelligence, Skills to Develop Emotional Intelligence **Positivity and Motivation:** Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels **Etiquette and Mannerism:** Introduction, Professional Etiquette, Technology Etiquette **Ethical Values:** Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics	**15**

II	**Basic Skills in Communication:** **Components of effective communication:** Communication process and handling them, Composing effective messages, Non – Verbal Communication: its importance and nuances: Facial Expression, Posture, Gesture, Eye contact, appearance (dress code). **Communication Skills:** Spoken English, Phonetics, Accent, Intonation **Employment Communication:** Introduction, Resume, Curriculum Vitae, Scannable Resume, Developing an Impressive Resume, Formats of Resume, Job Application or Cover Letter **Job Interviews:** Introduction, Importance of Resume, Definition of Interview, Background Information, Types of Interviews, Preparatory Steps for Job Interviews, Interview Skill Tips, Changes in the Interview Process, FAQ During Interviews **Group Discussion:** Introduction, Ambience/Seating Arrangement for Group Discussion, Importance of Group Discussions, Difference between Group Discussion, Panel Discussion and Debate, Traits, Types of Group Discussions, topic based and Case based Group Discussion, Individual Traits	**15**
III	**Academic and Professional Skills:** **Professional Presentation:** Nature of Oral Presentation, planning a Presentation, Preparing the Presentation, Delivering the Presentation **Creativity at Workplace:** Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method. **Capacity Building: Learn, Unlearn and Relearn**: Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building **Leadership and Team Building:** Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams. **Decision Making and Negotiation:** Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts **Stress and Time Management:** Stress, Sources of Stress, Ways to Cope with Stress	**15**

Textbooks:

1. Managing Soft Skills for Personality Development – edited by B.N.Ghosh, McGraw Hill India, 2017.
2. Soft Skills: An Integrated Approach to Maximize Personality, Gajendra S. Chauhan, Sangeeta Sharma, Wiley India

Additional References:

1. Personality Development and Soft Skills, Barun K. Mitra, Oxford Press
2. Business Communication, ShaliniKalia, Shailja Agrawal, Wiley India
3. Cornerstone: Developing Soft Skills, Sherfield, Pearson India

Semester II

Course Code	Course Title	Credits	Lectures /Week
USCS201	**Design & Analysis of Algorithms**	**2**	**3**

About the Course:
The course covers the concepts of - (i) calculating complexity of algorithms, (ii) the essential operations like searching, sorting, selection, pattern matching & recursion, and (iii) various algorithmic strategies like greedy, divide-n-conquer, dynamic programming, backtracking and implementations of all these on basic data structures like array, list and stack.

Course Objectives:
The objectives of this course are:

- To make students understand the basic principles of algorithm design
- To give idea to students about the theoretical background of the basic data structures
- To familiarize the students with fundamental problem-solving strategies like searching, sorting, selection, recursion and help them to evaluate efficiencies of various algorithms.
- To teach students the important algorithm design paradigms and how they can be used to solve various real world problems.

Learning Outcomes:
After successful completion of this course, students would be able to

- Students should be able to understand and evaluate efficiency of the programs that they write based on performance of the algorithms used.
- Students should be able to appreciate the use of various data structures as per need
- To select, decide and apply appropriate design principle by understanding the requirements of any real life problems

Unit	Topics	No of Lectures
I	**Introduction to algorithms** - What is algorithm, analysis of algorithm, Types of complexity, Running time analysis, How to Compare Algorithms, Rate of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation, Theta-Θ Notation, Asymptotic Analysis, Performance characteristics of algorithms, Estimating running time / number of steps of executions on paper, Idea of Computability **Introduction to Data Structures** - What is data structure, types, Introduction to Array(1-d & 2-d), Stack and List data structures, operations on these data structures, advantages disadvantages and applications of these data structures like solving linear equations, Polynomial Representation, Infix-to-Postfix conversion	**15**
II	**Recursion** - What is recursion, Recursion vs Iteration, recursion applications like Factorial of a number, Fibonacci series & their	**15**

	comparative analysis with respect to iterative version, Tower of hanoi problem **Basic Sorting Techniques -** Bubble, Selection and Insertion Sort & their comparative analysis **Searching Techniques -** Linear Search and its types, Binary Search and their comparative analysis **Selection Techniques** - Selection by Sorting, Partition-based Selection Algorithm, Finding the Kth Smallest Elements in Sorted Order & their comparative analysis **String Algorithms** - Pattern matching in strings, Brute Force Method & their comparative analysis	
III	**Algorithm Design Techniques -** Introduction to various types of classifications/design criteria and design techniques **Greedy Technique -** Concept, Advantages & Disadvantages, Applications, Implementation using problems like - file merging problem **Divide-n-Conquer -** Concept, Advantages & Disadvantages, Applications, Implementation using problems like - merge sort, Strassen's Matrix Multiplication **Dynamic Programming** - Concept, Advantages & Disadvantages, Applications, Implementation using problems like - Fibonacci series, Factorial of a number, Longest Common subsequence **Backtracking Programming -** Concept, Advantages & Disadvantages, Applications, Implementation using problems like N-Queen Problem	**15**

Textbooks:

1. "Data Structure and AlgorithmUsing Python", Rance D. Necaise, Wiley India Edition, 2016.
2. "Data Structures and Algorithms Made Easy", NarasimhaKarumanchi, CareerMonk Publications, 2016.
3. "Introduction to Algorithms", Thomas H. Cormen, 3rd Edition, PHI.

Additional References:

1. "Introduction to the Design and Analysis of Algorithms", Anany Levitin, Pearson, 3rd Edition, 2011.
2. "Design and Analysis of Algorithms", S. Sridhar, Oxford University Press, 2014.

Course Code	Course Title	Credits	Lectures /Week
USCSP201	**Design & Analysis of Algorithms – Practical**	**1**	**3**
1	Programs on 1-d arrays like - sum of elements of array, searching an element in array, finding minimum and maximum element in array, count the number of even and odd numbers in array. For all such programs, also find the time complexity, compare if there are multiple methods		
2	Programs on 2-d arrays like row-sum, column-sum, sum of diagonal elements, addition of two matrices , multiplication of two matrices. For all such programs, also find the time complexity, compare if there are multiple methods		
3	Program to create a list-based stack and perform various stack operations.		
4	Program to perform linear search and binary search on list of elements. Compare the algorithms by calculating time required in milliseconds using readymade libraries.		
5	Programs to sort elements of list by using various algorithms like bubble, selection sort, and insertion sort. Compare the efficiency of algorithms.		
6	Programs to select the N^{th} Max/Min element in a list by using various algorithms. Compare the efficiency of algorithms.		
7	Programs to find a pattern in a given string - general way and brute force technique. Compare the efficiency of algorithms.		
8	Programs on recursion like factorial, fibonacci, tower of hanoi. Compare algorithms to find factorial/fibonacci using iterative and recursive approaches.		
9	Program to implement file merging, coin change problems using Greedy Algorithm and to understand time complexity.		
10	Program to implement merge sort, Straseen‟s Matrix Multiplication using D-n-C Algorithm and to understand time complexity.		
11	Program to implement fibonacci series, Longest Common Subsequence using dynamic programming and to understand time complexity. Compare it with the general recursive algorithm.		
12	Program to implement N-Queen Problem, Binary String generation using Backtracking Strategy and to understand time complexity.		

Course Code	Course Title	Credits	Lectures /Week
USCS202	**Advanced Python Programming**	**2**	**3**

About the Course:

This course aims to explore and enable learners to master the skills of advanced topics in Python Programming. It helps learners develops advanced skills such as working with databases, matching patterns, implementing threads and exception handling and GUI in Python. It also highlights and why Python is a useful scripting language for all developers.

Course Objectives:

- To learn how to design object-oriented programs with Python classes.
- To learn about reading, writing and implementing other operation on files in Python.
- To implement threading concept and multithreading on Python
- To design GUI Programs and implement database interaction using Python.
- To know about use of regular expression and handling exceptions for writing robust python programs.

Learning Outcomes:

After successful completion of this course, students would be able to

- Ability to implement OOP concepts in Python including Inheritance and Polymorphism
- Ability to work with files and perform operations on it using Python.
- Ability to implement regular expression and concept of threads for developing efficient program
- Ability to implement exception handling in Python applications for error handling.
- Knowledge of working with databases, designing GUI in Python and implement networking in Python

Unit	Topics	No of Lectures
I	**Working with files:** Files, opening and closing a file, working with text files containing strings, knowing whether a file exists or not, working with binary files, the „with" statement, the seek() and tell() methods, random accessing of binary files, zipping and unzipping files, working with directories, running other programs from python program **Regular expressions:** What is a regular expression?, sequence characters in regular expressions, quantifiers in regular expressions, special characters in regular expressions, using regular expression on files, retrieving information from an html file, **Threads in python:** Difference between process and thread, types of threads, benefits of threads, creating threads, single tasking and multitasking, thread synchronization, deadlock in threads, daemon threads **Date and time in python:** Date and time now, combining date and time,	**15**

	formatting dates and times, finding durations using “time delta”, comparing two dates, sorting dates, stopping execution temporarily, knowing the time taken by a program, calendar module	
II	**Database in python:** Using SQL with python, retrieving rows from a table, inserting rows into a table, deleting rows from a table, updating rows in a table, creating database tables through python, Exception handling in databases. **Exceptions in python:** Errors in a python program, compile & run-time errors, logical error, exceptions-exception handling, types of exceptions, the except block, the assert statement, user-defined exceptions, logging the exceptions **Networking:** Protocols,server-client architecture, tcp/ip and udp communication **Graphical user interface:** Creating a GUI in python, Widget classes, Working with Fonts and Colours, working with Frames, Layout manager, Event handling	**15**
III	**OOPs in python:** Features of Object Oriented Programming system (oops)-classes and objects, encapsulation, abstraction, inheritance, polymorphism, constructors and destructors **Classes and objects:** Creating a class, the self-variable, types of variables, namespaces, types of methods, instance methods, class methods, static methods, passing members of one class to another class, inner classes **Inheritance and polymorphism:** Inheritance in python, types of inheritance- single inheritance, multilevel inheritance, hierarchical inheritance, multiple inheritance, constructors in inheritance, overriding super class constructors and methods, the super() method, method resolution order (mro), polymorphism, duck typing, operator overloading, method overloading, method overriding**,** **Abstract classes and interfaces:** Abstract class, abstract method,interfaces in python, abstract classes vs. Interfaces	**15**

Textbooks:

1. Paul Gries , Jennifer Campbell, Jason Montojo, Practical Programming: An Introduction to Computer Science Using Python 3, Pragmatic Bookshelf, 3rd Edition, 2018
2. Programming through Python, M. T Savaliya, R. K. Maurya, G M Magar, Revised Edition, Sybgen Learning India, 2020

Additional References:

1. Advanced Python Programming, Dr. Gabriele Lanaro, Quan Nguyen, SakisKasampalis, Packt Publishing, 2019
2. Programming in Python 3, Mark Summerfield, Pearson Education, 2nd Ed, 2018
3. Python: The Complete Reference, Martin C. Brown, McGraw Hill, 2018
4. Beginning Python: From Novice to Professional, Magnus Lie Hetland, Apress, 2017
5. Programming in Python 3, Mark Summerfield, Pearson Education, 2nd Ed, 2018

Course Code	Course Title	Credits	Lectures /Week
USCSP202	**Advanced Python Programming – Practical**	**1**	**3**
1	Write a program to Python program to implement various file operations.		
2	Write a program to Python program to demonstrate use of regular expression for suitable application.		
3	Write a Program to demonstrate concept of threading and multitasking in Python.		
4	Write a Python Program to work with databases in Python to perform operations such as a. Connecting to database b. Creating and dropping tables c. Inserting and updating into tables.		
5	Write a Python Program to demonstrate different types of exception handing.		
6	Write a GUI Program in Python to design application that demonstrates a. Different fonts and colors b. Different Layout Managers c. Event Handling		
7	Write Python Program to create application which uses date and time in Python.		
8	Write a Python program to create server-client and exchange basic information		
9	Write a program to Python program to implement concepts of OOP such as a. Types of Methods b. Inheritance c. Polymorphism		
10	Write a program to Python program to implement concepts of OOP such as a. Abstract methods and classes b. Interfaces		

Course Code	Course Title	Credits	Lectures /Week
USCS203	**Introduction to OOPs using C++**	**2**	**3**

About the Course:

The course aims to introduce a new programming paradigm called Object Oriented Programming. This will be covered using C++ programming language. C++ is a versatile programming language, which supports a variety of programming styles, including procedural, object-oriented, and functional programming. This makes C++ powerful as well as flexible. It can be used to develop software such as operating systems, databases, and compilers.

Course Objectives:

Learning Outcomes:

After successful completion of this course, students would be able to

- Work with numeric, character and textual data and arrays.
- Understand the importance of OOP approach over procedural language.
- Understand how to model classes and relationships using UML.
- Apply the concepts of OOPS like encapsulation, inheritance and polymorphism.
- Handle basic file operations.

Unit	Topics	No of Lectures
I	**Introduction to Programming Concepts:** Object oriented programming paradigm, basic concepts of object oriented programming, benefits of object oriented programming, object oriented languages, applications of object oriented programming. Tokens-keywords, identifiers, constants-integer, real, character and string constants, backslash constants, features of C++ and its basic structure, simple C++ program without class, compiling and running C++ program. **Data Types, Data Input Output and Operators:** Basic data types, variables, rules for naming variables, programming constants, the type cast operator, implicit and explicit type casting, cout and cin statements, operators, precedence of operators. **Decision Making, Loops, Arrays and Strings:** Conditional statements-if, if...else, switch loops- while, do...while, for, types of arrays and string and string manipulations **Unified Modeling Language (UML):** Introduction to UML & class diagrams. **Classes, Abstraction & Encapsulation:** Classes and objects, Dot Operator, data members, member functions, passing data to functions, scope and visibility of variables in function.	**15**

II	**Constructors and Destructors:** Default constructor, parameterized constructor, copy constructor, private constructor, destructors. **Working with objects:**Accessor - mutator methods, static data and static function, access specifiers, array of objects. **Polymorphism -** Binding-static binding & overloading, constructor overloading function overloading, operator overloading, overloading unary and binary operators. **Modelling Relationships in Class Diagrams:** Association, Aggregation-Composition and examples covering these principles	**15**
III	**Inheritance:** Defining base class and its derived class, access specifiers, types of inheritance-single, multiple, hierarchical, multilevel, hybrid inheritance, friend function and friend class, constructors in derived classes. **Modelling Relationships**: Generalization-Specialization and examples covering these principles **Run time Polymorphism -** Dynamic Binding, Function overriding, virtual function, pure virtual function, virtual base class, abstract class. **Pointers:** Introduction to pointers, * and & operators, assigning addresses to pointer variables, accessing values using pointers, pointers to objects & this pointer, pointers to derived classes **File Handling:** File Stream classes, opening and closing file-file opening modes, text file handling, binary file handling. **Applying OOP to solve real life applications:** To cover case studies like library management, order management etc. to design classes covering all relationships	**15**

Textbooks:

1. Object Oriented Programming with C++, Balagurusamy E., 8th Edition, McGraw Hill Education India.
2. UML & C++: A Practical Guide to Object Oriented Development, Lee/Tepfenhart, Pearson Education, 2nd Edition2015

Additional References:

1. Mastering C++ by Venugopal, Publisher: McGraw-Hill Education, 2017
2. Let Us C++ by KanetkarYashwant, Publisher: BPB Publications, 2020
3. Object Oriented Analysis and Design by Timothy Budd TMH, 2001

Course Code	Course Title	Credits	Lectures /Week
USCSP203	**Introduction to OOPs using C++ - Practical**	**1**	**3**
1	Program todemonstrate use of data members & member functions.		
2	Programs based on branching and looping statements using classes.		
3	Program to demonstrate one and two dimensional arrays using classes		
4	Program to use scope resolution operator. Display the various values of the same variables declared at different scope levels.		
5	Programs to demonstrate various types of constructors and destructors.		
6	Programs to demonstrate use of public, protected & private scope specifiers.		
7	Programs to demonstrate single and multilevel inheritance		
8	Programs to demonstrate multiple inheritance and hierarchical inheritance		
9	Programs to demonstrate inheritance and derived class constructors		
10	Programs to demonstrate friend function, inline function, this pointer		
11	Programs to demonstrate function overloading and overriding.		
12	Programs to demonstrate use of pointers		
13	Programs to demonstrate text and binary file handling		

Course Code	Course Title	Credits	Lectures /Week
USCS204	**Database Systems**	**2**	**3**

About the Course:

The course introduces the core principles and techniques required in the design and implementation of database systems. It includes ER Model, Normalization, Relational Model, and Relational Algebra. It also provides students with theoretical knowledge and practical skills of creating and manipulating data with an interactive query language (MySQL). It also provide student knowledge and importance of data protection.

Course Objectives:

- To make students aware fundamentals of database system.
- To give idea how ERD components helpful in database design and implementation.
- To experience the students working with database using MySQL.
- To familiarize the student with normalization, database protection and different DCL Statements.
- To make students aware about importance of protecting data from unauthorized users.
- To make students aware of granting and revoking rights of data manipulation.

Learning Outcomes:

After successful completion of this course, students would be able to

- To appreciate the importance of database design.
- Analyze database requirements and determine the entities involved in the system and their relationship to one another.
- Write simple queries to MySQL related to String, Maths and Date Functions.
- Create tables and insert/update/delete data, and query data in a relational DBMS using MySQL commands.
- Understand the normalization and its role in the database design process.
- Handle data permissions.
- Create indexes and understands the role of Indexes in optimization search.

Unit	Topics	No of Lectures
I	**Introduction to DBMS –** Database, DBMS – Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data independence, DBMS Architecture **Data models** - Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network) **Entity Relationship Model -** Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER)	**15**

	ER to Table- Entity to Table, Relationship to tables with and without key constraints. **DDL Statements** - Creating Databases, Using Databases, datatypes, Creating Tables (with integrity constraints – primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables **DML Statements** – Viewing the structure of a table insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause	
II	**Relational data model**– Domains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint **Relational Algebra** operations (selection, projection, set operations union, intersection, difference, cross product, Joins –conditional, equi join and natural joins, division) **Functions** – String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse) **Joining Tables** – inner join, outer join (left outer, right outer, full outer) **Subqueries** – subqueries with IN, EXISTS, subqueries restrictions, Nested subqueries, ANY/ALL clause, correlated subqueries	**15**
III	**Schema refinement and Normal forms:** Functional dependencies, first, second, third, and BCNF normal forms based on primary keys, lossless join decomposition. **Database Protection:** Security Issues, Threats to Databases, Security Mechanisms, Role of DBA, Discretionary Access Control, Backing Up and Restoring databases **Views** (creating, altering dropping, renaming and manipulating views) **DCL Statements** (creating/dropping users, privileges introduction, granting/revoking privileges, viewing privileges), Transaction control commands – Commit, Rollback **Index Structures of Files:** Introduction, Primary index, Clustering Index, Multilevel indexes	**15**

Textbooks:

1. "Fundamentals of Database System", ElmasriRamez, NavatheShamkant, Pearson Education, Seventh edition, 2017
2. "Database Management Systems", Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition, 2014
3. "Murach's MySQL", Joel Murach, 3rd Edition, 3rd Edition, 2019

Additional References:

1. "Database System Concepts", Abraham Silberschatz,HenryF.Korth,S.Sudarshan, McGraw Hill, 2017
2. "MySQL: The Complete Reference", VikramVaswani , McGraw Hill, 2017
3. "Learn SQL with MySQL: Retrieve and Manipulate Data Using SQL Commands with Ease", AshwinPajankar, BPB Publications, 2020

Course Code	Course Title	Credits	Lectures /Week
USCSP204	**Database Systems – Practical**	**1**	**3**
1.	Conceptual Designing using ER Diagrams (Identifying entities, attributes, keys and relationships between entities, cardinalities, generalization, specialization etc.)		
2.	Perform the following: ☐ Viewing all databases ☐ Creating a Database ☐ Viewing all Tables in a Database ☐ Creating Tables (With and Without Constraints) ☐ Inserting/Updating/Deleting Records in a Table		
3.	Perform the following: ☐ Altering a Table ☐ Dropping/Truncating/Renaming Tables ☐ Backing up / Restoring a Database		
4.	Perform the following: ☐ Simple Queries ☐ Simple Queries with Aggregate functions		
5.	Queries involving ☐ Date Functions ☐ String Functions ☐ Math Functions		
6.	Join Queries ☐ Inner Join ☐ Outer Join		

7.	Subqueries ☐ With IN clause ☐ With EXISTS clause
8.	Converting ER Model to Relational Model and apply Normalization on database. (Represent entities and relationships in Tabular form, Represent attributes as columns, identifying keys and normalization up to 3rd Normal Form).
9.	Views ☐ Creating Views (with and without check option) ☐ Dropping views ☐ Selecting from a view
10.	DCL statements ☐ Granting and revoking permissions ☐ Saving (Commit) and Undoing (rollback)
11.	Creating Indexes on data tables.

Course Code	Course Title	Credits	Lectures /Week
USCS205	**Calculus**	**2**	**3**

About the Course:
Calculus is a branch of mathematics that involves the study of rates of change. In Computer Science, Calculus is used in Machine Learning, Data Mining, Scientific Computing, Image Processing, and creating the graphics and physics engines for video games, including the 3D visuals for simulations.

Course Objectives:

- The primary objective of this course is to introduce the basic tools of Calculus which are helpful in understanding their applications to the real world problems.
- The course is designed to have a grasp of important concepts of Calculus in a scientific way.
- It covers topics from as basic as definition of functions to partial derivatives of functions in a gradual and logical way.
- The learner is expected to solve as many examples as possible to a get compete clarity and understanding of the topics covered.

Learning Outcomes:
After successful completion of this course, learners would be able to:

- Develop mathematical skills and enhance thinking power of learners.
- Understand mathematical concepts like limit, continuity, derivative, integration of functions, partial derivatives.
- Appreciate real world applications which use the learned concepts.
- Skill to formulate a problem through Mathematical modelling and simulation.

Unit	Topics	No of Lectures
I	**DERIVATIVES AND ITS APPLICATIONS:** **Review of Basic Concepts:** Functions, limit of a function, continuity of a function, derivative function. **Derivative In Graphing And Applications:** Increase, Decrease, Concavity, Relative Extreme; Graphing Polynomials, Rational Functions, Cusps and Vertical Tangents. Absolute Maxima and Minima, Applied Maximum and Minimum Problems, Newton‟s Method.	**15**
II	**INTEGRATION AND ITS APPLICATIONS:** **Integration:** An Overview of the Area Problem, Indefinite Integral, Definition of Area as a Limit; Sigma Notation, Definite Integral, Evaluating Definite Integrals by Substitution, Numerical Integration: Simpson‟s Rule. **Applications of Integration:** Area between two curves, Length of a plane curve. **Mathematical Modeling with Differential Equations**: Modeling with	**15**

	Differential Equations, Separation of Variables, Slope Fields, Euler‟s Method, First-Order Differential Equations and Applications.	
III	**PARTIAL DERIVATIVES AND ITS APPLICATIONS:** **Functions of Several Variables**: Functions of two or more variables, Limits and Continuity of functions of two or three variables. **Partial Derivatives:** Partial Derivatives, Differentiability, Differentials, and Local Linearity, Chain Rule, Implicit Differentiation, Directional Derivatives and Gradients, **Applications ofPartial Derivatives:** Tangent Planes and Normal Vectors, Maxima and Minima of Functions of Two Variables.	**15**

Textbooks:

1. Calculus: Early transcendental (10th Edition): Howard Anton, IrlBivens, Stephen Davis, John Wiley & sons, 2012.

Additional References:

1. Calculus and analytic geometry (9th edition): George B Thomas, Ross L Finney, Addison Wesley, 1995
2. Calculus: Early Transcendentals (8th Edition): James Stewart, Brooks Cole, 2015.
3. Calculus (10th Edition): Ron Larson, Bruce H. Edwards, Cengage Learning, 2013.
4. Thomas' Calculus (13th Edition): George B. Thomas, Maurice D. Weir, Joel R. Hass, Pearson, 2014.

Course Code	**Course Title**	**Credits**	**Lectures /Week**
USCSP205	**Calculus – Practical**	**1**	**3**
1	**Review of Basic Concepts –** a. Functions of one variable, its domain and range, Operations on functions b. Limits of functions of one variable c. Continuity of functions of one variable d. Derivatives of functions of one variable		
2	**Applications of Derivatives I –** a. Increasing and Decreasing functions b. Concavity and inflection points c. Relative Extrema d. Absolute Extrema		
3	**Applications of Derivatives II –** a. Analysis of polynomials b. Graphing rational functions c. Graphs With Vertical Tangents And Cusps d. Newton‟s method to find approximate solution of an equation		

4	**Integration –** a. Finding area using rectangle method and antiderivative method b. Indefinite and definite integrals c. Properties of integrals d. Numerical integration using Simpson‟s rule.
5	**Applications of Integration –** a. Area between two curves b. Length of a plane curve
6	**Differential Equations –** a. Solution of a first order first degree differential equation using variable separable method b. Solution of a first order linear differential equation using integrating factor c. Numerical solution of first-order equations using Euler‟s method d. Modeling using differential equation
7	**Functions of Several Variables –** a. Functions of two or more variables, its domain and range, Operations on functions, level curves b. Limits of functions of two or three variables c. Continuity of functions of two or three variables
8	**Partial Derivatives I –** a. Partial derivatives of functions, First and Second order partial derivatives, Mixed derivative theorem, Higher order partial derivatives b. Differential for functions of two or three variables c. Local linear approximation for functions of two or three variables
9	**Partial Derivatives II –** a. Chain rule for functions of two or three variables b. Implicit differentiation c. Directional derivatives and gradient
10	**Applications of Partial Derivatives–** a. Tangent Planes and Normal Vectors for functions of two or three variables b. Maxima and Minima of Functions of Two Variables
NOTE	**Above Practical's can also to be implemented using Sage Math/ Geogebra.**

Course Code	Course Title	Credits	Lectures /Week
USCS206	**Statistical Methods**	**2**	**3**

About the Course:
This course introduces the key concepts in probability, conditional probabilities and distribution theory, including probability laws, random variables, expectation and variance, functions of random variables and its probability distributions. Emphasis is placed on theoretical understanding combined with problem solving using various statistical inferential techniques.

Course Objectives:

- To make learner aware about basic probability axioms and rules and its application.
- To understand the concept of conditional probability and Independence of events.
- To make learner familiar with discrete and continuous random variables as well as standard discrete and continuous distributions.
- To learn computational skills to implement various statistical inferential approaches.

Learning Outcomes:
After successful completion of this course, learners would be able to

- Calculate probability, conditional probability and independence.
- Apply the given discrete and continuous distributions whenever necessary.
- Define null hypothesis, alternative hypothesis, level of significance, test statistic and p value.
- Perform Test of Hypothesis as well as calculate confidence interval for a population parameter for single sample and two sample cases.
- Apply non-parametric test whenever necessary.
- Conduct and interpret one-way and two-way ANOVA.

Unit	Topics	No of Lectures
I	**Probability:** Random experiment, sample space, events types and operations of events, Probability definition: classical, axiomatic, Elementary Theorems of probability (without proof). Conditional probability, „Bayes" theorem, independence, Examples on Probability. **Random Variables:** Concept and definition of a discrete random variable and continuous random variable. Probability mass function, Probability density function and cumulative distribution function of discrete and continuous random variable, Properties of cumulative distribution function.	**15**
II	**Mathematical Expectation and Variance:** Expectation of a function, Variance and S.D of a random variable, properties. **Standard Probability distributions:** Introduction, properties, examples and applications of each of the following distributions: Binomial distribution, Normal distribution, Chi-square distribution, t distribution, F distribution	**15**

III	**Hypothesis testing:** One sided, Two sided hypothesis, critical region, p-value, tests based on t, Normal and F, confidence intervals. **Analysis of Variance:** One-way, two-way analysis of variance. **Non-parametric tests:** Need of non-parametric tests, Sign test, Wilicoxon"s signed rank test, run test, Kruskal-Walis tests, Chi square test.	**15**

Textbooks:

1. Gupta, S.C. and Kapoor, V.K. (1987): Fundamentals of Mathematical Statistics, S. Chand and Sons, New Delhi
2. Goon, A. M., Gupta, M. K. and Dasgupta, B. (1983). Fundamentals of Statistics, Vol. 1, Sixth Revised Edition, The World Press Pvt. Ltd., Calcutta.

Additional References:

1. Mood, A. M. and Graybill, F. A. and Boes D.C. (1974). Introduction to the Theory of Statistics, Ed. 3, McGraw Hill Book Company.
2. Hoel P. G. (1971). Introduction to Mathematical Statistics, John Wiley and Sons, New York.
3. Hogg, R.V. and Craig R.G. (1989). Introduction to Mathematical Statistics, Ed. MacMillan Publishing Co., New York.
4. Walpole R. E., Myers R. H. and Myers S. L. (1985), Probability and Statistics for Engineers and Scientists
5. Agarwal, B. L. (2003). Programmed Statistics, Second Edition, New Age International Publishers, New Delhi.

Course Code	**Course Title**	**Credits**	**Lectures /Week**
USCSP206	**Statistical Methods – Practical**	**1**	**3**
1	**Probability-** a. Examples based on Probability definition: classical, axiomatic b. Examples based on elementary Theorems of probability		
2	**Conditional probability and independence-** a. Examples based on Conditional probability b. Examples based on „Bayes" theorem c. Examples based on independence		
3	**Discrete random variable-** a. Probability distribution of discrete random variable b. Probability mass function		
4	**Continuous random variable-** a. Probability distribution of continuous random variable b. Probability density function		

5	**Mathematical Expectation and Variance-** a. Mean of discrete and continuous Probability distribution b. S.D. and variance of discrete and continuous Probability distribution
6	**Standard probability distributions-** a. Calculation of probability, mean and variance based on Binomial distribution b. Calculation of probability based on Normal distribution
7	**Large Sample tests based on Normal (Z) -** a. Test of significance for proportion (Single proportion Ho: P = Po) b. Test of significance for difference between two proportions (Double proportion Ho: P1 = P2) c. Test of significance for mean (Single mean Ho: $\mu = \mu 0$) d. Test of significance for difference between two means. (Double mean Ho: $\mu 1 = \mu 2$)
8	**Small sample tests based on t and F-** a. t-test for significance of single mean, population variance being unknown (Single mean Ho : $\mu = \mu 0$) b. t-test for significance of the difference between two sample means (Independent samples) c. t-test for significance of the difference between two sample means (Related samples) d. F-Test to Compare Two Variances
9	**Analysis of variance -** a. Perform One-way ANOVA b. Perform Two-way ANOVA
10	**Non-parametric tests-** a. Sign test and Wilcoxon Sign rank test b. Run test c. Kruskal-Wallis (H) test d. Chi-square test
Note: Practical no. 6, 7, 8, 9 can also to be implemented using R programming.	

Course Code	Course Title	Credits	Lectures /Week
USCS207	**E-Commerce & Digital Marketing**	**2**	**3**

About the Course:

This course introduces the fundamental concepts of e-commerce, its types, the various legal and ethical issues of e-commerce and different e-commerce applications. The course also aims to introduce basic principles and types of digital marketing and web and Google analytics

Course Objectives:

- To understand increasing significance of E-Commerce and its applications in Business and Various Sectors
- To provide an insight on Digital Marketing activities on various Social Media platforms and its emerging significance in Business
- To understand Latest Trends and Practices in E-Commerce and Digital Marketing, along with its Challenges and Opportunities for an Organization

Learning Outcomes:

After successful completion of this course, students would be able to

- Understand the core concepts of E-Commerce.
- Understand the various online payment techniques
- Understand the core concepts of digital marketing and the role of digital marketing in business.
- Apply digital marketing strategies to increase sales and growth of business
- Apply digital marketing through different channels and platforms
- Understand the significance of Web Analytics and Google Analytics and apply the same.

Unit	Topics	No of Lectures
I	**Introduction to E-Commerce and E- Business:** Definition and competing in the digital economy, Impact of E-Commerce on Business Models, Factors Driving e-commerce and e-Business Models, Economics and social impact of e-Business, opportunities and Challenges, e-Commerce vs m- Commerce, Different e-Commerce Models (B2B, B2C, C2B, C2C, B2E), e-Commerce Applications: e-Trading, e-Learning, e-Shopping, Virtual Reality & Consumer Experience, Legal and Ethical issues in e-Commerce. **Overview of Electronic Payment system**s: Types of Electronic payment schemes (Credit cards, Debit cards, Smartcards, Internet banking), E-checks, E-Cash Concepts and applications of EDI and Limitation **Introduction & origin of Digital Marketing**: Traditional v/s Digital Marketing. Digital Marketing Strategy, The P-O-E-M Framework, Segmenting & Customizing Messages, The Digital landscape, Digital Advertising Market in India. Skills required in Digital Marketing. Digital Marketing Plan.	**15**
II	**Social Media Marketing:** Meaning, Purpose, types of social media websites, Social Media Engagement, Target audience, Facebook Marketing: Business through Facebook Marketing, Creating Advertising Campaigns,	**15**

	Adverts, Facebook Marketing Tools, LinkedIn Marketing: Importance of LinkedIn Marketing, Framing LinkedIn Strategy, Lead Generation through LinkedIn, Content Strategy, Analytics and Targeting, Twitter Marketing: Framing content strategy, Twitter Advertising Campaigns, YouTube Marketing: Video optimization, Promoting on YouTube, Monetization, YouTube Analytics **Email Marketing:** Types of Emails, Mailing List, Email Marketing tools, Email Deliverability & Email Marketing automation **Mobile Marketing**: Introduction, Mobile Usage, Mobile Advertising, Mobile Marketing Types, Mobile Marketing Features, Mobile Campaign Development, Mobile Advertising Analytics **Content Marketing:** Introduction, Content marketing statistics, Types of Content, Types of Blog posts, Content Creation, Content optimization, Content Management & Distribution, Content Marketing Strategy, Content creation tools and apps, Challenges of Content Marketing.	
III	**Search Engine Optimization:** Meaning, Common SEO techniques, Understanding Search Engines, basics of Keyword search, Google rankings, Link Building, Steps to optimize website, On-page and off-page optimization **Search Engine Marketing:** Introduction to SEM, Introduction to Ad Words - Google Ad Words, Ad Words fundamentals, Ad Placement, Ad Ranks, Creating Ad Campaigns, Campaign Report Generation, Display marketing, Buying Models: Cost per Click (CPC), Cost per Milli (CPM), Cost per Lead (CPL), Cost per Acquisition (CPA). **Web Analytics:** Purpose, History, Goals & objectives, Web Analytic tools & Methods. Web Analytics Mistakes and Pitfalls. **Google Analytics:** Basics of Google Analytics, Installing Google Analytics in website, Parameters of Google Analytics, Reporting and Analysis	**15**

Textbooks:

1. "E-Commerce Strategy, Technologies and Applications", Whitley, David, Tata McGraw Hill, 2017
2. Digital Marketing, Seema Gupta, McGraw Hill Education, 2nd Edition

Additional References:

1. E-Commerce by S. Pankaj, A.P.H. Publication, New Delhi
2. Fundamentals of Digital Marketing, Punit Singh Bhatia, Pearson, 2nd Edition
3. "Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation", Damian Ryan, Calvin Jone. Kogan Page, 4th Edition

Evaluation Scheme

I. Internal Evaluation for Theory Courses – 25 Marks

(i) Mid-Term Class Test– 15Marks

- It should be conducted using any **learning management system** such as **Moodle** (Modular object-oriented dynamic learning environment)
- The test should have **15 MCQ's** which should be solved in a time duration of **30 minutes.**

(ii) Assignment/ Case study/ Presentations– 10 Marks

- Assignment / Case Study Report / Presentation can be uploaded on any **learning management system**.

II. External Examination for Theory Courses – 75 Marks

- Duration: **2.5 Hours**
- Theory question paper pattern:

	All questions are compulsory.		
Question	**Based on**	**Options**	**Marks**
Q.1	Unit I	*Any 4 out of 6*	20
Q.2	Unit II	*Any 4 out of 6*	20
Q.3	Unit III	*Any 4 out of 6*	20
Q.4	Unit I,II and III	*Any 5 out of 6*	15

- All questions shall be compulsory with internal choice within the questions.
- Each Question maybe sub-divided into subquestions as a, b, c, d, etc. & the allocation of Marks depends on the weightage of the topic.

III. Practical Examination

- Each core subjectcarries50 Marks

  40 marks + 05 marks (journal) + 05 marks (viva)
- Duration: **2 Hours** for each practical course.
- Minimum **80% practical** from each core subjects are required to be completed.
- **Certified Journal is compulsory for appearing at the time of Practical Exam**
- The final submission and evaluation of **journal in electronic form** using a Learning Management System / Platform can be promoted by college.

UNIVERSITY OF MUMBAI
No. UG/166 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the B.Sc. degree course , **vide** this office Circular No. UG/128 of 2011, dated 13th June, 2011 and the Principals of affiliated Colleges in Science are hereby informed that the recommendation made by the Ad-hoc Board of Studies in Chemistry at its meeting held on 7th July, 2016 has been accepted by the Academic Council meeting held on 14th July, 2016 **vide** item No. 4.12 and that in accordance therewith, the revised syllabus as per the Choice Based Credit System for F.Y. B.Sc. programme in Chemistry (Sem. I & II), which are available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

(Dr.M.A.Khan)
REGISTRAR

MUMBAI – 400 032
19 November, 2016

To,

The Principals of the affiliated Colleges in Science.

A.C/4.12/14.07.2016

****

No. UG/166 -A of 2016 MUMBAI-400 032 19 November, 2016

Copy forwarded with Compliments for information to:-

1) The Co-ordinator, Faculties of Science,
2) The Chairman, Board of Studies in Chemistry,
3) The Professor-cum-Director, Institute of Distance & Open Learning (IDOL)
4) The Director, Board of College and University Development,
5) The Co-Ordinator, University Computerization Centre,
6) The Controller of Examinations.

(Dr.M.A.Khan)
REGISTRAR

PTO..

AC_____

Item No._____

UNIVERSITY OF MUMBAI

Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of Course	Chemistry
2	Eligibility for Admission	12th of all recognised Board
3	Passing marks	
4	Ordinances/Regulations (if any)	
5	No. of Semesters	Two
6	Level	U.G.
7	Pattern	Semester
8	Status	New
9	To be implemented from Academic year	2016-2017

Date: **Signature:**

Name of BOS Chairperson: **Professor A.V.Karnik**

Draft of the proposed syllabus for CBCS

F. Y. B. Sc. Chemistry

For the subject of chemistry there shall be two papers for 45 lectures each comprising of three units of 15 L each.

Semester-I

1. Paper-I / II (General Chemistry) Unit-I will be for Physical Chemistry
2. Paper-I / II Unit-II will be for Inorganic Chemistry and
3. Paper- I / II Unit-III will be for Organic Chemistry.

Semester-II

1. Paper-I /II (General Chemistry) Unit-I will be for Physical Chemistry
2. Paper-I / II Unit-II will be for Inorganic Chemistry and
3. Paper-I / II Unit-III will be for Organic Chemistry.

Choice Based Credit System F.Y.B.Sc. Chemistry Syllabus

To be implemented from the Academic year 2016-2017

SEMESTER I

Course Code	Unit	Topics	Credits	L / Week
USCH101	I	Chemical Thermodynamics Chemical calculations	2	1
	II	Atomic structure, Periodic Table and periodicity		1
	III	Basics of Organic Chemistry: Classification and Nomenclature of Organic Compounds Bonding and Structure of organic compounds Fundamentals of organic reaction mechanism		1
USCH102	I	Chemical Kinetics Liquid state	2	1
	II	Comparative chemistry of Main Group Elements		1
	III	Stereochemistry I		1
USCHP1		Chemistry Practicals	2	6

SEMESTER II

Course Code	UNIT	Topics	Credits	L /Week
USCH201	I	Gaseous state Chemical Equilibrium and thermodynamic parameters	2	1
	II	Concept of Qualitative Analysis Acid Base Theories		1
	III	Chemistry of Aliphatic Hydrocarbons		1
USCH202	I	Ionic equilibria, Molecular Spectroscopy Solid State Chemistry	2	1
	II	Chemical bond and Reactivity Oxidation Reduction Chemistry		1
	III	Stereochemistry II: Cycloalkanes and Conformational Analysis Aromatic hydrocarbons		1
USCHP2		Chemistry Practicals	2	6

Semester I
Paper I
Unit-I

1.1 Chemical Thermodynamics: (10L)

Thermodynamic terms: System, surrounding, boundaries, open, closed and isolated system, intensive and extensive properties, state functions and path functions, zeroth law of thermodynamics

First law of thermodynamics: concept of heat (q), work (w), internal energy (U), statement of first law, enthalpy, relation between heat capacities, sign conventions, calculations of heat (q), work (w), internal energy (U), and enthalpy (H) (Numericals expected)

Thermochemistry: Heats of reactions, standard states, enthalpy of formation of molecules, enthalpy of combustion and its applications, calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data, Kirchhoff's equation (Numericals expected)

1.2 Chemical Calculations: (5L)

Expressing concentration of solutions: Normality, molality, molarity, formality, mole fractions, weight ratio, volume ratio, weight to volume ratio, ppm, ppb, millimoles, milliequivalents (Numericals expected)

Unit II

2.1 Atomic structure: (10L)

(Qualitative treatment only; it is expected that the learner knows the mathematical statements and understands their physical significance after completing this topic. No derivations of the mathematical equations required)

a) Historical perspectives of the atomic structure; Rutherford's Atomic Model, Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Structure of hydrogen atom.
b) Hydrogenic atoms:
    1. Simple principles of quantum mechanics;
    2. Atomic orbitals
        i) Hydrogenic energy levels
        ii) Shells, subshells and orbitals
        iii) Electron spin
        iv) Radial shapes of orbitals
        v) Radial distribution function
        vi) Angular shapes of orbitals.

3. Many Electron Atoms
    i) Penetration and shielding
    ii) Effective nuclear charge
4. Aufbau principle

2.2: Periodic Table and periodicity : (5L)

Long form of Periodic Table; Classification for elements as main group, transition and inner transition elements; Periodicity in the following properties : Atomic and ionic size; electron gain enthalpy; ionization enthalpy, effective nuclear charge (Slater's rule); electronegativity ; Pauling, Mulliken and Alred Rochow electronegativities (Numerical problems expected, wherever applicable.)

Unit III

3. Basics of Organic Chemistry

3.1 Classification and Nomenclature of Organic Compounds: (5L)

Review of basic rules of IUPAC nomenclature. Nomenclature of mono and bi-functional aliphatic compounds on the basis of priority order of the following classes of compounds: alkanes, alkenes, alkynes, haloalkanes, alcohols, ethers, aldehydes, ketones, carboxylic acids, carboxylic acid derivatives (acid halides, esters, anhydrides, amides), nitro compounds, nitriles and amines; including their cyclic analogues.

3.2 Bonding and Structure of organic compounds: (4L)

Hybridization: $sp^{3,}$ $sp^{2,}$ sp hybridization of carbon and nitrogen; sp^3 and sp^2 hybridizations of oxygen in Organic compounds (alcohol, ether, aldehyde, ketone, carboxylic acid, ester, cyanide, amine and amide)
Overlap of atomic orbitals: Overlaps of atomic orbitals to form sigma and pi bonds, shapes of organic molecules.
Shapes of molecules; Influence of hybridization on bond properties (as applicable to ethane, ethene, ethyne)
.

3.3 Fundamentals of organic reaction mechanism: (6L)

Electronic Effects: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment; Organic acids and bases; their relative strengths.
Bond fission: Homolytic and Heterolytic fission with suitable examples. Electrophiles and Nucleophiles; Nucleophilicity and basicity;
Types (primary, secondary, tertiary, allyl, benzyl), shape and their relative stability of reactive intermediates: Carbocations, Carbanions and Free radicals.

Introduction to types of organic reactions: Addition, Elimination and Substitution reaction. (With one example of each)

Semester I

Paper II

Unit I

1.1 Chemical Kinetics: (8L)

Rate of reaction, rate constant, measurement of reaction rates, order and molecularity of reaction, integrated rate equation of first and second order reactions (with equal initial concentration of reactants) (Numericals expected)

Determination of order of reaction by (a) Integration method (b) Graphical method (c) Ostwald's isolation method (d) Half time method (Numericals expected)

1.2 Liquid State: (7L)

Surface tension: Introduction, methods of determination of surface tension by drop number method (Numericals expected)

Viscosity: Introduction, coefficient of viscosity, relative viscosity, specific viscosity, reduced viscosity, determination of viscosity by Ostwald viscometer (Numericals expected)

Refractive index: Introduction, molar refraction and polarizability, determination of refractive index by Abbe's refractometer (Numericals expected)

Liquid crystals: Introduction, classification and structure of thermotropic phases (Nematic, smectic and cholesteric phases), applications of liquid crystals

Unit-II

2.0 Comparative chemistry of Main Group Elements: (15L)

Metallic and non-metallic nature, oxidation states, electronegativity, anomalous behaviour of second period elements, allotropy, catenation, diagonal relationship. Comparative chemistry of carbides, nitrides, oxides and hydroxides of group I and group II elements. Some important compounds- $NaHCO_3$, Na_2CO_3, NaCl, NaOH, CaO, $CaCO_3$; oxides of carbon, oxides and oxyacids of sulphur and nitrogen with respect to environmental aspects.

Unit III

3. Stereochemistry I: (15L)

Fischer Projection, Newman and Sawhorse Projection formulae (of erythro, threo isomers of tartaric acid and 2,3 dichlorobutane) and their interconversions ;
Geometrical isomerism in alkene and cycloalkanes: cis–trans and syn-anti isomerism E/Z notations with C.I.P rules.
Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with two similar and dissimilar chiral-centres, Distereoisomers, meso structures, racemic mixture and resolution (methods of resolution not expected). Relative and absolute configuration: D/L and R/S designations.
Conformation analysis of alkanes (ethane, propane and n-butane); Relative stability with energy diagrams.

Semester II

Paper I

Unit-I

1.1 Gaseous State: (8L)

Ideal gas laws, kinetic theory of gases, Maxwell-Boltzmann's distribution of velocities (qualitative discussion), ideal gases, real gases, compressibility factor, Boyle's temperature (Numericals expected)

Deviation from ideal gas laws, reasons for deviation from ideal gas laws, Van der Waals equation of state, Joule-Thomson effect: qualitative discussion and experimentation, inversion temperature. (Numericals expected)

1.2 Chemical Equilibria and Thermodynamic Parameters: (7L)

Reversible and irreversible reactions, law of mass action, dynamic equilibria, equilibrium constant, (K_c and K_p), relationship between K_c and K_p, Le Chatelier's principle, factors affecting chemical equilibrium (Numericals expected)

Statement of second law of thermodynamics, concepts of entropy and free energy, spontaneity and physical significance of free energy, thermodynamic derivation of equilibrium constant (Numericals expected)

Unit II

2.1 Concept of Qualitative Analysis: (7L)

a) Testing of Gaseous Evolutes, Role of Papers impregnated with Reagents in qualitative analysis (with reference to papers impregnated with starch iodide, potassium dichromate, lead acetate, dimethylglyoxime and oxine reagents).

b) Precipitation equilibria, effect of common ions, uncommon ions, oxidation states, buffer action, complexing agents on precipitation of ionic compounds. (Balanced chemical equations and numerical problems expected.)

2.2 Acid Base Theories: (8L)

Arrhenius, Lowry- Bronsted, Lewis, Solvent – Solute concept of acids and bases, Hard and Soft acids and bases. Applications of HSAB
Applications of acid base chemistry in:

i) Understanding organic reactions like Friedel Craft's (acylation/alkylation) reaction
ii) Volumetric analysis with special reference to calculation of titration curve involving strong acid and strong base.

Unit III

3. Chemistry of Aliphatic Hydrocarbons

3.1 Carbon-Carbon sigma bonds: (3L)

Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig Reactions, Free radical substitutions: Halogenation -relative reactivity and selectivity.

3.2 Carbon-Carbon pi bonds: (12L)

Formation of alkenes and alkynes by elimination reactions: Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations.

Reactions of alkenes: Electrophilic additions their mechanisms (Markownikoff/ Anti Markownikoff addition),
Mechanism of oxymercuration-demercuration, hydroboration-oxidation, ozonolysis, reduction(catalytic and chemical), syn and anti-hydroxylation (oxidation). 1, 2-and 1, 4-addition reactions in conjugated dienes and, Diels-Alder reaction; Allylic and benzylic bromination using N-bromosuccinimide and mechanism, e.g. propene, 1-butene, toluene, ethylbenzene.
Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions. Hydration to form carbonyl compounds, Alkylation of terminal alkynes.

Semester II

Paper II

Unit I

1.1 Ionic Equilibria: (7L)

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water, ionization of weak acids and bases, pH scale, common ion effect, dissociation constants of mono-, di- and triprotic acid (exact treatment for monoprotic acid)

Buffers: Introduction, types of buffers, derivation of Henderson equation for acidic and basic buffers, buffer action, buffer capacity (Numericals expected)

1.2 Molecular Spectroscopy: (4L)

Electromagnetic radiation, electromagnetic spectrum, Planck's equation, interaction of electromagnetic radiation with matter: Absorption, emission, scattering, flourescence, electronic, vibrational and rotational transitions, Beer-Lambert's law (Numericals expected)

1.3 Solid State Chemistry (4L)

Types of solids, crystal lattice, lattice points, unit cell, space lattice and lattice plane, laws of crystallography: Law of constancy of interfacial angle, law of symmetry and law of rational indices (Numericals expected)

Unit II

2.1: Chemical Bond and Reactivity: (7L)

Types of chemical bond, comparison between ionic and covalent bonds, polarizability (Fajan's Rule), shapes of molecules, Lewis dot structure, Sidgwick Powell Theory, basic VSEPR theory for AB_n type molecules with and without lone pair of electrons, isoelectronic principles, applications and limitations of VSEPR theory.

2.2: Oxidation Reduction Chemistry: (8L)

a) Reduction potentials
b) Redox potentials: half reactions; balancing redox equations.
c) Redox stability in water
    i) Latimer and Frost Diagrams
    ii) pH dependence of redox potentials.
d) Applications of redox chemistry
    i) Extraction of elements: (example: isolation of copper by auto reduction)
    ii) Redox reagents in Volumetric analysis: a) I_2; b) $KMnO_4$
    iii) Titration curves:i) single electron systems (example Ce(IV) against Fe(II)); and ii) Multi electron systems as in KMnO4 against Fe(II))

Unit III

3.1 Stereochemistry-II: Cycloalkanes and Conformational Analysis: (5L)

Types of cycloalkanes and their relative stability, Baeyer strain theory, Conformation analysis of cyclohexane: Chair, Boat and Twist boat forms; Relative stability with energy.

3.2Aromatic Hydrocarbons: (10L)

Aromaticity: Hückel's ruleanti-aromaticity, aromatic character of arenes, cyclic carbocations/carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft alkylation/acylation with their mechanism. , Hammond's postulate, Directing effects of the groups.

Reference Books:

Unit I:

1. Atkins P.W. and Paula J.de, Atkin's Physical Chemistry, 10th Ed., Oxford University 12 Press (2014).
2. Ball D.W., Physical Chemistry, Thomson Press, India (2007).
3. Castellan G.W., Physical Chemistry, 4th Ed., Narosa (2004).
4. Mortimer R.G., Physical Chemistry, 3rd Ed., Elsevier: NOIDA, UP (2009).
5. Engel T. and Reid P., Physical Chemistry, 3rd Ed., Pearson (2013).
6. Peter A. and Paula J. de., Physical Chemistry, 10th Ed., Oxford University Press (2014).
7. McQuarrie D.A. and Simon J.D., Molecular Thermodynamics, Viva Books Pvt. Ltd.,New Delhi (2004).
8. Levine I.N., Physical Chemistry, 6th Ed., Tata Mc Graw Hill (2010).
9. Metz C.R., 2000 Solved Problems in Chemistry, Schaum Series (2006).
10. Mortimer R.G., Physical Chemistry, 3rd Ed., Elsevier: NOIDA, UP (2009).
11. Banwell C.N., Fundamentals of Molecular Spectroscopy, 4th Ed., Tata McGraw Hill (1994).
12. K.L. Kapoor, A Textbook of Physical Chemistry, Macmillan (2000).

Unit II:

1. Lee, J.D. Concise Inorganic Chemistry ELBS, 1991.
2. Douglas, B.E. and McDaniel, D.H. Concepts & Models of Inorganic Chemistry Oxford, 1970
3. Atkins, P.W. & Paula, J. Physical Chemistry, 10^{th} Ed., Oxford University Press, 2014.
4. Day, M.C. and Selbin, J. Theoretical Inorganic Chemistry, ACS Publications, 1962.
5. Rodger, G.E. Inorganic and Solid State Chemistry, Cengage Learning India Edition, 2002.

Unit III:

1. Morrison, R. T. and Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt Ltd. (Pearson Education).2012
2. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt Ltd. (Pearson Education).
3. Finar, I. L. Organic Chemistry (Volume 2: Stereochemistry and the Chemistry of Natural Products), Dorling Kindersley (India) Pvt Ltd. (Pearson Education).
4. Eliel, E. L. and Wilen, S. H. Stereochemistry of Organic Compounds, Wiley: London, 1994.
5. Kalsi, P. S. Stereochemistry Conformation and Mechanism, New Age International, 2005.
6. Mc Murry, J.E. Fundamentals of Organic Chemistry, 7^{th} Ed. Cengage Learning India Edition, 2013.

CHEMISTRY LAB:

Semester I

Unit I: Physical Chemistry

1. To prepare 0.1 N succinic acid and standardize the NaOH of two different concentrations
2. To determine the rate constant for the hydrolysis of ester using HCl as catalyst
3. To determine enthalpy of dissolution of salt (like KNO_3)

Unit II: Inorganic Chemistry

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1. Commercial analysis of (any two)
   a) Mineral acid
   b) Organic acid
   c) Salt of weak acid and strong base.

2. Titration using double indicator: analysis of solution of Na_2CO_3 and $NaHCO_3$.
3. Gravimetric analysis
   a) To determine the percent purity of sample of $BaSO_4$ containing NH_4Cl
   b) To determine the percent purity of ZnO containing $ZnCO_3$.

Unit III: Organic Chemistry

1. Purification of any two organic compounds by recrystallization selecting suitable solvent. (Provide 1g.).
   Learners are expected to report
   a) Solvent for recrystallization.
   b) Mass and the melting points of purified compound.

   Learners should calibrate thermometer before determining melting point.

2. Chromatography (Any one)
   a) Separation of a mixture of two sugars by ascending paper chromatography
   b) Separation of a mixture of o-and p-nitrophenols by thin layer chromatography (TLC)

Semester II
Chemistry Lab

Unit I: Physical Chemistry

1. To determine the rate constant for the saponification reaction between ethyl acetate and NaOH
2. To determine dissociation constant of weak acid (Ka) using Henderson's equation and the method of incomplete titration pHmetrically.
3. To verify Beer-Lambert's law, using $KMnO_4$ solution by colorimetric method.
4. To standardize commercial sample of HCl using borax and to write material safety data of the chemicals involved.

Unit II: Inorganic Chemistry

1. **Qualitative analysis: (at least 4 mixtures to be analyzed)**
   Semi-micro inorganic qualitative analysis of a sample containing two cations and two anions.
   Cations (from amongst):
   Pb^{2+}, Ba^{2+}, Ca^{2+}, Sr^{2+}, Cu^{2+}, Cd^{2+}, Fe^{2+}, Ni^{2+}, Mn^{2+}, Mg^{2+}, Al^{3+}, Cr^{3+}, K^{+},NH^{4+}
   Anions (From amongst):
   CO_3^{2-}, S^{2-}, SO_3^{2-}, NO_2^{-}, NO_3^{-}, Cl^{-}, Br^{-}, I^{-}, SO_4^{2-}, PO_4^{3-}
   (Scheme of analysis should avoid use of sulphide ion in any form for precipitation / separation of cations.)
2. **Redox Titration:** To determine the percentage of copper(II) present in a given sample by titration against a standard aqueous solution of sodium thiosulfate (iodometry titration)

Unit III: Organic Chemistry

Characterization of organic compound containing C, H, (O), N, S, X elements.
(minimum 6 compounds)

Reference Books

Unit I: Physical Chemistry

1. Khosla B.D., Garg V.C. and Gulati A., Senior Practical Physical Chemistry, R. Chand and Co., New Delhi (2011).
2. Garland C. W., Nibler J.W. and Shoemaker D.P., Experiments in Physical Chemistry, 8th Ed., McGraw-Hill, New York (2003).
3. Halpern A.M. and McBane G.C., Experimental Physical Chemistry, 3rd Ed., W.H. Freeman and Co., New York (2003).
4. Athawale V.D. and Mathur P., Experimental Physical Chemistry, New Age International, New Delhi (2001).

Unit II: Inorganic Chemistry

Mendham, J., A. I. Vogel's *Quantitative Chemical Analysis 6th Ed.*, Pearson, 2009.

Unit III: Organic Chemistry

1. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
2. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
3. Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., Textbook of Practical Organic Chemistry, Prentice-Hall, 5th edition, 1996

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UNIVERSITY OF MUMBAI
No. UG/63 of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular Nos. UG/108 of 2017-18, dated 27th July, 2017 relating to syllabus of the Bachelor of Science (B.Sc.) degree course.

They are hereby informed that the recommendations made by the Ad-hoc Board of Studies in Computer Science at its meeting held on 10th May, 2018 have been accepted by the Academic Council at its meeting held on 14th June, 2018 **vide** item No. 4.40 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.Sc. in Computer Science (Sem - V & VI), has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Dinesh Kamble)
I/c REGISTRAR

MUMBAI – 400 032
6th July, 2018

To

The Principals of the affiliated Colleges & Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.40/14/06/2018

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No. UG/ 63 -A of 2018 MUMBAI-400 032 6th July, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Science & Technology,
2) The Chairman, Ad-hoc Board of Studies in Computer Science,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

Academic Council
Item No: _____

UNIVERSITY OF MUMBAI

Syllabus for SemV&VI
Program: Bachelor of Science
Course: Computer Science

Credit Based Semester and Grading System with effect from
Academic Year 2018-2019

Preamble

This is the third year curriculum in the subject of Computer Science. The revised structure is designed to transform students into technically competent, socially responsible and ethical Computer Science professionals. In these Semesters we have made the advancements in the subject based on the previous Semesters Knowledge.

In the first year basic foundation of important skills required for software development is laid. Second year of this course is about studying core computer science subjects. The third year is the further advancement which covers developing capabilities to design formulations of computing models and its applications in diverse areas.

The proposed curriculum contains two semesters, each Semester contains two Electives: Elective-I and II. Every Elective contains three papers based on specific areas of Computer Science. It also includes one Skill Enhancement paper per semester, helps the student to evaluate his/her computer science domain specific skills and also to meet industry expectations. This revised curriculum has not only taken the specific areas of computer science into consideration but will also give the opportunity to the student to prove his/her ability in the subject practically through the Project Implementation. In Semester V and Semester VI student has to undertake a Project. It can boost his/her confidence and also can encourage the student to perform innovations in the subject as the choice of the Project topic is kept open covering most of the areas of Computer Science subject as per the students interest and the subject they have learned during the Course.

Proposed Curriculum contains challenging and varied subjects aligned with the current trend with the introduction of Machine Intelligence specific subject such as Artificial Intelligence, Information Retrieval. Data Management related subjects such as Cloud Computing and Data Science. Image processing topics such as Game Programming, Digital Image Processing. Introduction of physical world through Architecting of IoT and Wireless Sensor Networks and Mobile Communication. Security domain is also evolved by the introduction of Ethical Hacking, Cyber Forensic and Information and Network Security. To get the hands on experience Linux Server Administration and Web Services topics are included.

In essence, the objective of this syllabus is to create a pool of technologically savvy, theoretically strong, innovatively skilled and ethically responsible generation of computer science professionals. Hope that the teacher and student community of University of Mumbai will accept and appreciate the efforts.

T.Y.B.Sc. (Semester V and VI)
Computer Science Syllabus
Credit Based Semester and Grading System
To be implemented from the Academic year 2018-2019

SEMESTER V			
Course	**TOPICS**	**Credits**	**L / Week**
	Elective-I (Select Any Two)		
USCS501	Artificial Intelligence	3	3
USCS502	Linux Server Administration	3	3
USCS503	Software Testing and Quality Assurance	3	3
	Elective-II (Select Any Two)		
USCS504	Information and Network Security	3	3
USCS505	Architecting of IoT	3	3
USCS506	Web Services	3	3
	Skill Enhancement		
USCS507	Game Programming	2	3
	Practical		
USCSP501	Practical of Elective-I	2	6
USCSP502	Practical of Elective-II	2	6
USCSP503	Project Implementation	1	3
USCSP504	Practical of Skill Enhancement : USCS507	1	3

SEMESTER VI			
Course	**TOPICS**	**Credits**	**L / Week**
	Elective-I (Select Any Two)		
USCS601	Wireless Sensor Networks and Mobile Communication	3	3
USCS602	Cloud Computing	3	3
USCS603	Cyber Forensics	3	3
	Elective-II (Select Any Two)		

USCS604	Information Retrieval	3	3
USCS605	Digital Image Processing	3	3
USCS606	Data Science	3	3
	Skill Enhancement		
USCS607	Ethical Hacking	2	3
	Practical		
USCSP601	Practical of Elective-I	2	6
USCSP602	Practical of Elective-II	2	6
USCSP603	Project Implementation	1	3
USCSP604	Practical of Skill Enhancement : USCS607	1	3

SEMESTER V

THEORY

Course: USCS501	TOPICS (Credits : 03 Lectures/Week:03) Artificial Intelligence	
Objectives: Artificial Intelligence (AI) and accompanying tools and techniques bring transformational changes in the world. Machines capability to match, and sometimes even surpass human capability, make AI a hot topic in Computer Science. This course aims to introduce the learner to this interesting area. **Expected Learning Outcomes:** After completion of this course, learner should get a clear understanding of AI and different search algorithms used for solving problems. The learner should also get acquainted with different learning algorithms and models used in machine learning.		
Unit I	**What Is AI:** Foundations, History and State of the Art of AI. **Intelligent Agents:** Agents and Environments, Nature of Environments, Structure of Agents. **Problem Solving by searching:** Problem-Solving Agents, Example Problems, Searching for Solutions, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Heuristic Functions.	**15L**
Unit II	**Learning from Examples:** Forms of Learning, Supervised Learning, Learning Decision Trees, Evaluating and Choosing the Best Hypothesis, Theory of Learning, Regression and Classification with Linear Models, Artificial Neural Networks, Nonparametric Models, Support Vector Machines, Ensemble Learning, Practical Machine Learning	**15L**

Unit III	**Learning probabilistic models:** Statistical Learning, Learning with Complete Data, Learning with Hidden Variables: The EM Algorithm. Reinforcement learning: Passive Reinforcement Learning, Active Reinforcement Learning, Generalization in Reinforcement Learning, Policy Search, Applications of Reinforcement Learning.	**15L**

Textbook(s):

1) Artificial Intelligence: A Modern Approach, Stuart Russell and Peter Norvig,3rd Edition, Pearson, 2010.

Additional Reference(s):

1) Artificial Intelligence: Foundations of Computational Agents, David L Poole,Alan K. Mackworth, 2nd Edition, Cambridge University Press ,2017.
2) Artificial Intelligence, Kevin Knight and Elaine Rich, 3rd Edition, 2017
3) The Elements of Statistical Learning, Trevor Hastie, Robert Tibshirani and Jerome Friedman, Springer, 2013

Course:	**TOPICS (Credits : 03 Lectures/Week:03)**
USCS502	**Linux Server Administration**

Objectives:

Demonstrate proficiency with the Linux command line interface, directory & file management techniques, file system organization, and tools commonly found on most Linux distributions. Effectively operate a Linux system inside of a network environment to integrate with existing service solutions. Demonstrate the ability to troubleshoot challenging technical problems typically encountered when operating and administering Linux systems.

Expected Learning Outcomes:

Learner will be able to develop Linux based systems and maintain. Learner will be able to install appropriate service on Linux server as per requirement. Learner will have proficiency in Linux server administration.

Unit I	**Introduction:** Technical Summary of Linux Distributions, Managing Software **Single-Host Administration:** Managing Users and Groups, Booting and shutting down processes, File Systems, Core System Services, Process of configuring, compiling, Linux Kernel **Networking and Security:** TCP/IP for System Administrators, basic network Configuration, Linux Firewall (Netfilter), System and network security	**15L**
Unit II	**Internet Services:** Domain Name System (DNS), File Transfer Protocol (FTP), Apache web server, Simple Mail Transfer Protocol (SMTP), Post Office Protocol and Internet Mail Access Protocol (POP and IMAP), Secure Shell (SSH), Network Authentication, OpenLDAP Server, Samba and LDAP, Network authentication system (Kerberos), Domain Name Service (DNS), Security	**15L**
Unit III	**Intranet Services:** Network File System (NFS), Samba, Distributed File Systems (DFS), Network Information Service (NIS), Lightweight Directory Access Protocol (LDAP), Dynamic Host Configuration Protocol (DHCP), MySQL, LAMP Applications File Servers, Email Services, Chat Applications, Virtual Private Networking.	**15L**

Textbook(s):

1) Linux Administration: A Beginner's Guide, Wale Soyinka, Seventh Edition, McGraw-Hill Education, 2016
2) Ubuntu Server Guide, Ubuntu Documentation Team, 2016

Additional Reference(s):

1) Mastering Ubuntu Server, Jay LaCroix, PACKT Publisher, 2016

Course: USCS503	TOPICS (Credits : 03 Lectures/Week:03) Software Testing and Quality Assurance	
Objectives: To provide learner with knowledge in Software Testing techniques. To understand how testing methods can be used as an effective tools in providing quality assurance concerning for software. To provide skills to design test case plan for testing software **Expected Learning Outcomes:** Understand various software testing methods and strategies. Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.		
Unit I	**Software Testing and Introduction to quality :** Introduction, Nature of errors, an example for Testing, Definition of Quality , QA, QC, QM and SQA , Software Development Life Cycle, Software Quality Factors **Verification and Validation :** Definition of V &V , Different types of V & V Mechanisms, Concepts of Software Reviews, Inspection and Walkthrough **Software Testing Techniques :** Testing Fundamentals, Test Case Design, White Box Testing and its types, Black Box Testing and its types	**15L**
Unit II	**Software Testing Strategies :** Strategic Approach to Software Testing, Unit Testing, Integration Testing, Validation Testing, System Testing **Software Metrics :** Concept and Developing Metrics, Different types of Metrics, Complexity metrics **Defect Management:** Definition of Defects, Defect Management Process, Defect Reporting, Metrics Related to Defects, Using Defects for Process Improvement.	**15L**
Unit III	**Software Quality Assurance :** Quality Concepts, Quality Movement, Background Issues, SQA activities, Software Reviews, Formal Technical Reviews, Formal approaches to SQA, Statistical Quality Assurance, Software Reliability, The ISO 9000 Quality Standards, , SQA Plan , Six sigma, Informal Reviews	**15L**

	Quality Improvement : Introduction, Pareto Diagrams, Cause-effect Diagrams, Scatter Diagrams, Run charts **Quality Costs :** Defining Quality Costs, Types of Quality Costs, Quality Cost Measurement, Utilizing Quality Costs for Decision-Making	

Textbook(s):

1. Software Engineering for Students, A Programming Approach, Douglas Bell, 4th Edition,, Pearson Education, 2005
2. Software Engineering – A Practitioners Approach, Roger S. Pressman, 5th Edition, Tata McGraw Hill, 2001
3. Quality Management, Donna C. S. Summers, 5th Edition, Prentice-Hall, 2010.
4. Total Quality Management, Dale H. Besterfield, 3rd Edition, Prentice Hall, 2003.

Additional Reference(s):

1. Software engineering: An Engineering approach, J.F. Peters, W. Pedrycz , John Wiley,2004
2. Software Testing and Quality Assurance Theory and Practice, Kshirsagar Naik, Priyadarshi Tripathy , John Wiley & Sons, Inc. , Publication, 2008
3. Software Engineering and Testing, B. B. Agarwal, S. P. Tayal, M. Gupta, Jones and Bartlett Publishers, 2010

Course:	**TOPICS (Credits : 03 Lectures/Week:03)**
USCS504	**Information and Network Security**

Objectives:

To provide students with knowledge of basic concepts of computer security including network security and cryptography.

Expected Learning Outcomes:

Understand the principles and practices of cryptographic techniques. Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application. Understand various protocols for network security to protect against the threats in a network

Unit I	**Introduction:** Security Trends, The OSI Security Architecture, Security Attacks, Security Services, Security Mechanisms **Classical Encryption Techniques:** Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Steganography, Block Cipher Principles, The Data Encryption Standard, The Strength of DES, AES (round details not expected), Multiple Encryption and Triple DES, Block Cipher Modes of Operation, Stream Ciphers **Public-Key Cryptography and RSA:** Principles of Public-Key Cryptosystems, The RSA Algorithm	**15L**
Unit II	**Key Management:** Public-Key Cryptosystems, Key Management, Diffie-Hellman Key Exchange **Message Authentication and Hash Functions**: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs, Secure Hash Algorithm, HMAC **Digital Signatures and Authentication:** Digital Signatures, Authentication Protocols, Digital Signature Standard **Authentication Applications:** Kerberos, X.509 Authentication, Public-Key Infrastructure	**15L**
Unit III	**Electronic Mail Security:** Pretty Good Privacy, S/MIME **IP Security:** Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations, Key Management **Web Security:** Web Security Considerations, Secure Socket Layer and Transport Layer Security, Secure Electronic Transaction **Intrusion:** Intruders, Intrusion Techniques, Intrusion Detection **Malicious Software:** Viruses and Related Threats, Virus Countermeasures, DDOS **Firewalls:** Firewall Design Principles, Types of Firewalls	**15L**

Textbook(s):

1) Cryptography and Network Security: Principles and Practice 5th Edition, William

Stallings, Pearson,2010

Additional Reference(s):

1) Cryptography and Network Security, Atul Kahate, Tata McGraw-Hill, 2013.
2) Cryptography and Network, Behrouz A Fourouzan, Debdeep Mukhopadhyay, 2nd Edition,TMH,2011

Course: **USCS505**	**TOPICS (Credits : 03 Lectures/Week:03)** **Architecting of IoT**	
Objectives: Discovering the interconnection and integration of the physical world. Learner should get knowledge of the architecture of IoT. **Expected Learning Outcomes:** Learners are able to design & develop IoT Devices. They should also be aware of the evolving world of M2M Communications and IoT analytics.		
Unit I	**IoT-An Architectural Overview**: Building architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations. **IoT Architecture-State of the Art** : Introduction, State of the art, Reference Model and architecture, IoT reference Model - IoT Reference Architecture Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views	**15L**
Unit II	**IoT Data Link Layer and Network Layer Protocols:** PHY/MAC Layer(3GPP MTC, IEEE 802.11, IEEE 802.15), Wireless HART,Z-Wave, Bluetooth Low Energy, Zigbee Smart Energy DASH7 **Network Layer**:IPv4, IPv6, 6LoWPAN, 6TiSCH,ND, DHCP, ICMP, RPL, CORPL, CARP	**15L**

Unit III	**Transport layer protocols :** Transport Layer (TCP, MPTCP, UDP, DCCP, SCTP)-(TLS, DTLS) **Session layer:** Session Layer-HTTP, CoAP, XMPP, AMQP, MQTT **Service layer protocols:** Service Layer -oneM2M, ETSI M2M, OMA, BBF	**15L**

Textbook(s):

1. From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence, Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle,1st Edition, Academic Press, 2014.
2. Learning Internet of Things, Peter Waher, PACKT publishing, BIRMINGHAM – MUMBAI,2015

Additional References(s):

1. Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications, Daniel Minoli, Wiley Publications,2013
2. Internet of Things (A Hands-onApproach), Vijay Madisetti and ArshdeepBahga,1st Edition, VPT, 2014.
3. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html

Course: **USCS506**	**TOPICS (Credits : 03 Lectures/Week:03)** **Web Services**

Objectives:

To understand the details of web services technologies like SOAP, WSDL, and UDDI. To learn how to implement and deploy web service client and server. To understand the design principles and application of SOAP and REST based web services (JAX-Ws and JAX-RS).To understand WCF service. To design secure web services and QoS of Web Services

Expected Learning Outcomes:

Emphasis on SOAP based web services and associated standards such as WSDL. Design SOAP based / RESTful / WCF services Deal with Security and QoS issues of Web Services

Unit I	**Web services basics :** What Are Web Services? Types of Web Services Distributed computing infrastructure, overview of XML, SOAP, Building Web Services with JAX-WS, Registering and Discovering Web Services, Service Oriented Architecture, Web Services Development Life Cycle, Developing and consuming simple Web Services across platform	**15L**
Unit II	**The REST Architectural style :** Introducing HTTP, The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message format and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, The Description and Discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services	**15L**
Unit III	**Developing Service-Oriented Applications with WCF :** What Is Windows Communication Foundation, Fundamental Windows Communication Foundation Concepts, Windows Communication Foundation Architecture, WCF and .NET Framework Client Profile, Basic WCF Programming, WCF Feature Details. Web Service QoS	**15L**

Textbook(s):

1) Web Services: Principles and Technology, Michael P. Papazoglou, Pearson Education Limited, 2008
2) RESTful Java Web Services, Jobinesh Purushothaman, PACKT Publishing,2nd Edition, 2015
3) Developing Service-Oriented Applications with WCF, Microsoft, 2017 https://docs.microsoft.com/en-us/dotnet/framework/wcf/index

Additional Reference(s):

1) Leonard Richardson and Sam Ruby, RESTful Web Services, O'Reilly, 2007
2) The Java EE 6Tutorial, Oracle, 2013

Course: USCS507	TOPICS (Credits : 03 Lectures/Week: 03) Game Programming	
Objectives: Learner should get the understanding computer Graphics programming using Directx or Opengl. Along with the VR and AR they should also aware of GPU, newer technologies and programming using most important API for windows. **Expected Learning Outcomes:** Learner should study Graphics and gamming concepts with present working style of developers where everything remains on internet and they need to review it, understand it, be a part of community and learn.		
Unit I	**Mathematics for Computer Graphics, DirectX Kickstart:** **Cartesian Coordinate system:** The Cartesian XY-plane, Function Graphs, Geometric Shapes, Polygonal Shapes, Areas of Shapes, Theorem of Pythagoras in 2D, Coordinates, Theorem of Pythagoras in 3D, 3D Polygons, Euler's Rule **Vectors:** Vector Manipulation, multiplying a Vector by a Scalar, Vector Addition and Subtraction, Position Vectors, Unit Vectors, Cartesian Vectors, Vector Multiplication, Scalar Product, Example of the Dot Product, The Dot Product in Lighting Calculations, The Dot Product in Back-Face Detection, The Vector Product, The Right-Hand Rule, deriving a Unit Normal Vector for a Triangle Areas, Calculating 2D Areas **Transformations:** 2D Transformations, Matrices, Homogeneous Coordinates, 3D Transformations, Change of Axes, Direction Cosines, rotating a Point about an Arbitrary Axis, Transforming Vectors, Determinants, Perspective Projection, Interpolation **DirectX:** Understanding GPU and GPU architectures. How they are different from CPU Architectures? Understanding how to solve by GPU?	**15L**

Unit II	**DirectX Pipeline and Programming:** **Introduction To DirectX 11:** COM, Textures and Resources Formats, The swap chain and Page flipping, Depth Buffering, Texture Resource Views, Multisampling Theory and MS in Direct3D, Feature Levels **Direct3D 11 Rendering Pipeline:** Overview, Input Assembler Stage (IA), Vertex Shader Stage (VS), The Tessellation Stage (TS), Geometry Shader Stage (GS), Pixel Shader Stage (PS), Output merger Stage (OM) Understanding Meshes or Objects, Texturing, Lighting, Blending. **Interpolation and Character Animation:** **Trigonometry:** The Trigonometric Ratios, Inverse Trigonometric Ratios, Trigonometric Relationships, The Sine Rule, The Cosine Rule, Compound Angles, Perimeter Relationships **Interpolation**: Linear Interpolant, Non-Linear Interpolation, Trigonometric Interpolation, Cubic Interpolation, Interpolating Vectors, Interpolating Quaternions **Curves:** Circle, Bezier, B-Splines **Analytic Geometry:** Review of Geometry, 2D Analytic Geometry, Intersection Points, Point in Triangle, and Intersection of circle with straight line.	**15L**
Unit III	**Introduction to Rendering Engines:** Understanding the current market Rendering Engines. Understanding AR, VR and MR.Depth Mappers, Mobile Phones, Smart Glasses, HMD's **Unity Engine: Multi-platform publishing, VR + AR:** Introduction and working in Unity, 2D, Graphics, Physics, Scripting, Animation, Timeline, Multiplayer and Networking, UI, Navigation and Pathfinding, XR, Publishing. **Scripting:** Scripting Overview, Scripting Tools and Event Overview **XR:** VR, AR, MR, Conceptual Differences. SDK, Devices	**15L**

Text Book(s):

1) Mathematics for Computer Graphics, John Vince, Springer-Verlag London, 5th Edition,2017
2) Mathematics for 3D Game Programming and Computer Graphic, Eric Lengyel, Delmar

Cengage Learning, Delmar Cengage Learning,2011

3) Introduction To 3D Game Programming With Directx® 11,Frank D Luna, Mercury Learning And Information,2012.
4) https://docs.unity3d.com/Manual/index.html - Free

Additional Reference(s):

1) Computer Graphics, C Version, Donald Hern and Pauline Baker, Pearson Education, 2nd Edition, 1997
2) HLSL Development Cookbook, Doron Feinstein, PACKT Publishing,2013

Suggested List of Practical- SEMESTER V

Course: **USCSP501**	**(Credits : 02 Lectures/Week: 06)** **Practical of Elective-I**	

USCS501: Artificial Intelligence

Practical shall be implemented in LISP

1. Implement Breadth first search algorithm for Romanian map problem.
2. Implement Iterative deep depth first search for Romanian map problem.
3. Implement A* search algorithm for Romanian map problem.
4. Implement recursive best-first search algorithm for Romanian map problem.
5. Implement decision tree learning algorithm for the restaurant waiting problem.
6. Implement feed forward back propagation neural network learning algorithm for the restaurant waiting problem.
7. Implement Adaboost ensemble learning algorithm for the restaurant waiting problem.
8. Implement Naive Bayes' learning algorithm for the restaurant waiting problem.
9. Implement passive reinforcement learning algorithm based on adaptive dynamic programming (ADP) for the 3 by 4 world problem
10. Implement passive reinforcement learning algorithm based on temporal differences (TD) for 3 by 4 world problem.

USCS502: Linux Server Administration

- Practical shall be performed using any Linux Server (with 8GB RAM).

- Internet connection will be required so that Linux server (command line mode) can be connected to Internet.

1. Install DHCP Server in Ubuntu 16.04
2. Initial settings: Add a User, Network Settings, Change to static IP address, Disable IPv6 if not needed, Configure Services, display the list of services which are running, Stop and turn OFF auto-start setting for a service if you don't need it, Sudo Settings
3. Configure NTP Server (NTPd), Install and Configure NTPd, Configure NTP Client (Ubuntu and Windows)
4. SSH Server : Password Authentication

Configure SSH Server to manage a server from the remote computer, SSH Client : (Ubuntu and Windows)

5. Install DNS Server BIND, Configure DNS server which resolves domain name or IP address, Install BIND 9, Configure BIND, Limit ranges you allow to access if needed.
6. Configure DHCP Server, Configure DHCP (Dynamic Host Configuration Protocol) Server, Configure NFS Server to share directories on your Network, Configure NFS Client. (Ubuntu and Windows Client OS)
7. Configure LDAP Server, Configure LDAP Server in order to share users' accounts in your local networks, Add LDAP User Accounts in the OpenLDAP Server, Configure LDAP Client in order to share users' accounts in your local networks. Install phpLDAPadmin to operate LDAP server via Web browser.
8. Configure NIS Server in order to share users' accounts in your local networks, Configure NIS Client to bind NIS Server.
9. Install MySQL to configure database server, Install phpMyAdmin to operate MySQL on web browser from Clients.
10. Install Samba to share folders or files between Windows and Linux.

USCS503: Software Testing and Quality Assurance

1. Install Selenium IDE; Write a test suite containing minimum 4 test cases for different formats.
2. Conduct a test suite for any two web sites.
3. Install Selenium server (Selenium RC) and demonstrate it using a script in Java/PHP.
4. Write and test a program to login a specific web page.
5. Write and test a program to update 10 student records into table into Excel file
6. Write and test a program to select the number of students who have scored more than 60 in any one subject (or all subjects).
7. Write and test a program to provide total number of objects present / available on the page.
8. Write and test a program to get the number of items in a list / combo box.
9. Write and test a program to count the number of check boxes on the page checked and unchecked count.
10. Load Testing using JMeter, Android Application testing using Appium Tools, Bugzilla Bug tracking tools.

Course: USCSP502	(Credits : 02 Lectures/Week: 06) Practical of Elective-II	

USCS504: Information and Network security

1.Write programs to implement the following Substitution Cipher Techniques:

- Caesar Cipher
- Monoalphabetic Cipher

2 Write programs to implement the following Substitution Cipher Techniques:

- Vernam Cipher
- Playfair Cipher

3 Write programs to implement the following Transposition Cipher Techniques:

- Rail Fence Cipher
- Simple Columnar Technique

4 Write program to encrypt and decrypt strings using

- DES Algorithm
- AES Algorithm

5 Write a program to implement RSA algorithm to perform encryption / decryption of a given string.

6 Write a program to implement the Diffie-Hellman Key Agreement algorithm to generate symmetric keys.

7 Write a program to implement the MD5 algorithm compute the message digest.

8 Write a program to calculate HMAC-SHA1 Signature

9 Write a program to implement SSL.

10 Configure Windows Firewall to block:

- A port
- An Program
- A website

USCS505: Architecting of IoT

1. a) Edit text files with nano and cat editor, Learn sudo privileges and Unix shell commands such as cd , ls , cat, etc

b) Learn to set dynamic and static IP. Connect to and Ethernet and WiFi network. Learn to vnc and ssh into a raspberry pi using vnc and putty from a different computer on the network.

c) Write a basic bash script to open programs in kiosk mode. Learn how to autostart programs on boot.

2. Run the node red editor and run simple programs and trigger gpios. Use basic nodes such as inject, debug, gpio
3. Open the python idle editor and run simple Python scripts such as to print Fibonacci numbers, string functions. Learn how to install modules using Pip and write functions
4. Setup a physical button switch and trigger an led in node red and python w debounce
5. Write simple JavaScript functions in Node-Red simple HTTP server page using node red
6. Setup a TCP server and client on a raspberry pi using Python modules to send messages and execute shell commands from within python such as starting another application
7. Trigger a set of led Gpios on the pi via a Python Flask web server
8. Interface the raspberry pi with a 16x2 LCD display and print values.
9. Setup a Mosquitto MQTT server and client and write a Python script to communicate data between Pi's.
10. Interface with an Accelerometer Gyro Mpu6050 on the i2c bus and send sensor values over the internet via mqtt.

USCS506: Web Services

1. Write a program to implement to create a simple web service that converts the temperature from Fahrenheit to Celsius and vice a versa.
2. Write a program to implement the operation can receive request and will return a response in two ways. a) One - Way operation b) Request –Response
3. Write a program to implement business UDDI Registry entry.
4. Develop client which consumes web services developed in different platform.
5. Write a JAX-WS web service to perform the following operations. Define a Servlet / JSP that consumes the web service.
6. Define a web service method that returns the contents of a database in a JSON string. The contents should be displayed in a tabular format.
7. Define a RESTful web service that accepts the details to be stored in a database and performs

CRUD operation.

8. Implement a typical service and a typical client using WCF.
9. Use WCF to create a basic ASP.NET Asynchronous JavaScript and XML (AJAX) service.
10. Demonstrates using the binding attribute of an endpoint element in WCF.

Course: **USCSP503**	**(Credits : 01 Lectures/Week: 03)** **Project Implementation**	

Please Refer to Project Implementation Guidelines

Course: **USCSP504**	**(Credits : 01 Lectures/Week: 03)** **Practical of Skill Enhancement**	

USCS507 : Game Programming

1. Setup DirectX 11, Window Framework and Initialize Direct3D Device
2. Buffers, Shaders and HLSL (Draw a triangle using Direct3D 11)
3. Texturing (Texture the Triangle using Direct 3D 11)
4. Lightning (Programmable Diffuse Lightning using Direct3D 11)
5. Specular Lightning (Programmable Spot Lightning using Direct3D 11)
6. Loading models into DirectX 11 and rendering.

Perform following Practical using online content from the Unity Tutorials Web--sites: https://unity3d.com/learn/tutorials/s/interactive-tutorials

7. https://unity3d.com/learn/tutorials/s/2d-ufo-tutorial
8. https://unity3d.com/learn/tutorials/s/space-shooter-tutorial
9. https://unity3d.com/learn/tutorials/s/roll-ball-tutorial
10. https://unity3d.com/learn/tutorials/topics/vr/introduction?playlist=22946

SEMESTER VI

THEORY

Course: USCS601	TOPICS (Credits : 03 Lectures/Week: 03) Wireless Sensor Networks and Mobile Communication	
Objectives: In this era of wireless and adhoc network, connecting different wireless devices and understanding their compatibility is very important. Information is gathered in many different ways from these devices. Learner should be able to conceptualize and understand the framework. On completion, will be able to have a firm grip over this very important segment of wireless network. **Expected Learning Outcomes:** After completion of this course, learner should be able to list various applications of wireless sensor networks, describe the concepts, protocols, design, implementation and use of wireless sensor networks. Also implement and evaluate new ideas for solving wireless sensor network design issues.		
Unit I	**Introduction:** Introduction to Sensor Networks, unique constraints and challenges. Advantage of Sensor Networks, Applications of Sensor Networks, Mobile Adhoc NETworks (MANETs) and Wireless Sensor Networks, Enabling technologies for Wireless Sensor Networks. **Sensor Node Hardware and Network Architecture:** Single-node architecture, Hardware components & design constraints, Operating systems and execution environments, introduction to TinyOS and nesC. Network architecture, Optimization goals and figures of merit, Design principles for WSNs, Service interfaces of WSNs, Gateway concepts.	**15L**
Unit II	**Medium Access Control Protocols:** Fundamentals of MAC Protocols, MAC Protocols for WSNs, Sensor-MAC Case Study. **Routing Protocols** : Data Dissemination and Gathering, Routing Challenges and Design Issues in Wireless Sensor Networks, Routing Strategies in Wireless Sensor Networks. **Transport Control Protocols :** Traditional Transport Control Protocols,	**15L**

	Transport Protocol Design Issues, Examples of Existing Transport Control Protocols, Performance of Transport Control Protocols.	
Unit III	**Introduction, Wireless Transmission and Medium Access Control:** Applications, A short history of wireless communication. **Wireless Transmission:** Frequency for radio transmission, Signals, Antennas, Signal propagation, Multiplexing, Modulation, Spread spectrum, Cellular systems. **Telecommunication, Satellite and Broadcast Systems: GSM:** Mobile services, System architecture, Radio interface, Protocols, Localization And Calling, Handover, security, New data services; DECT: System architecture, Protocol architecture; ETRA, UMTS and IMT- 2000. Satellite Systems: History, Applications, Basics: GEO, LEO, MEO; Routing, Localization, Handover.	**15L**

Textbook(s):

1) Protocols and Architectures for Wireless Sensor Network, Holger Kerl, Andreas Willig, John Wiley and Sons, 2005
2) Wireless Sensor Networks Technology, Protocols, and Applications ,Kazem Sohraby, Daniel Minoli and TaiebZnati, John Wiley & Sons, 2007
3) Mobile communications, Jochen Schiller,2nd Edition, Addison wisely , Pearson Education,2012

Additional Reference(s):

1) Fundamentals of Wireless Sensor Networks, Theory and Practice, Waltenegus Dargie, Christian Poellabauer , Wiley Series on wireless Communication and Mobile Computing, 2011
2) Networking Wireless Sensors, Bhaskar Krishnamachari , Cambridge University Press, 2005

Course: USCS602	TOPICS (Credits : 03 Lectures/Week: 03) Cloud Computing	

Objectives:

To provide learners with the comprehensive and in-depth knowledge of Cloud Computing concepts, technologies, architecture, implantations and applications. To expose the learners to frontier areas of Cloud Computing, while providing sufficient foundations to enable further study and research.

Expected Learning Outcomes:

After successfully completion of this course, learner should be able to articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing using open source technology. Learner should be able to identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc. They should explain the core issues of cloud computing such as security, privacy, and interoperability.

Unit I	Introduction to Cloud Computing, Characteristics and benefits of Cloud Computing, Basic concepts of Distributed Systems, Web 2.0, Service-Oriented Computing, Utility-Oriented Computing. Elements of Parallel Computing. Elements of Distributed Computing. Technologies for Distributed Computing. Cloud Computing Architecture. The cloud reference model. Infrastructure as a service. Platform as a service. Software as a service. Types of clouds.	**15L**
Unit II	Characteristics of Virtualized Environments. Taxonomy of Virtualization Techniques. Virtualization and Cloud Computing. Pros and Cons of Virtualization. Virtualization using KVM, Creating virtual machines, oVirt - management tool for virtualization environment. Open challenges of Cloud Computing	**15L**
Unit III	Introduction to OpenStack, OpenStack test-drive, Basic OpenStack operations, OpenStack CLI and APIs, Tenant model operations, Quotas, Private cloud building blocks, Controller deployment, Networking deployment, Block Storage deployment, Compute deployment, deploying and utilizing OpenStack in production environments, Building a production environment, Application orchestration using OpenStack Heat	**15L**

Textbook(s):

1) Mastering Cloud Computing, Rajkumar Buyya, Christian Vecchiola, S Thamarai Selvi, Tata McGraw Hill Education Private Limited, 2013
2) OpenStack in Action, V. K. CODY BUMGARDNER, Manning Publications Co, 2016

Additional Reference(s)*:*

1) OpenStack Essentials, Dan Radez, PACKT Publishing, 2015
2) OpenStack Operations Guide, Tom Fifield, Diane Fleming, Anne Gentle, Lorin Hochstein, Jonathan Proulx, Everett Toews, and Joe Topjian, O'Reilly Media, Inc., 2014
3) https://www.openstack.org

Course: **USCS603**	**TOPICS (Credits :03 Lectures/Week:03)** **Cyber Forensics**	

Objectives:

To understand the procedures for identification, preservation, and extraction of electronic evidence, auditing and investigation of network and host system intrusions, analysis and documentation of information gathered

Expected Learning Outcomes :

The student will be able to plan and prepare for all stages of an investigation - detection, initial response and management interaction, investigate various media to collect evidence, report them in a way that would be acceptable in the court of law.

Unit I	**Computer Forensics :** Introduction to Computer Forensics and standard procedure, Incident Verification and System Identification ,Recovery of Erased and damaged data, Disk Imaging and Preservation, Data Encryption and Compression, Automated Search Techniques, Forensics Software **Network Forensic :** Introduction to Network Forensics and tracking network traffic, Reviewing Network Logs, Network Forensics Tools, Performing Live Acquisitions, Order of Volatility, Standard Procedure **Cell Phone and Mobile Device Forensics:** Overview, Acquisition Procedures for Cell Phones and Mobile Devices	**15L**

Unit II	**Internet Forensic :** **Introduction** to Internet Forensics, World Wide Web Threats, Hacking and Illegal access, Obscene and Incident transmission, Domain Name Ownership Investigation, Reconstructing past internet activities and events **E-mail Forensics :** e-mail analysis, e-mail headers and spoofing, Laws against e-mail Crime, **Messenger Forensics:** Yahoo Messenger **Social Media Forensics:** Social Media Investigations **Browser Forensics:** Cookie Storage and Analysis, Analyzing Cache and temporary internet files, Web browsing activity reconstruction	**15L**
Unit III	**Investigation, Evidence presentation and Legal aspects of Digital Forensics:** Authorization to collect the evidence , Acquisition of Evidence, Authentication of the evidence, Analysis of the evidence, Reporting on the findings, Testimony **Introduction to Legal aspects of Digital Forensics:** Laws & regulations, Information Technology Act, Giving Evidence in court, Case Study – Cyber Crime cases, Case Study – Cyber Crime cases	**15L**

Textbook(s):

1. Guide to computer forensics and investigations, Bill Nelson, Amelia Philips and Christopher Steuart, course technology,5th Edition,2015

Additional Reference(s)*:*

2. Incident Response and computer forensics, Kevin Mandia, Chris Prosise, Tata McGrawHill,2nd Edition,2003

Course:	**TOPICS (Credits : 03 Lectures/Week: 03)**	
USCS604	**Information Retrieval**	

Objectives:

To provide an overview of the important issues in classical and web information retrieval. The focus is to give an up-to- date treatment of all aspects of the design and implementation of systems for gathering, indexing, and searching documents and of methods for evaluating systems.

Expected Learning Outcomes:

After completion of this course, learner should get an understanding of the field of information retrieval and its relationship to search engines. It will give the learner an understanding to apply information retrieval models.		
Unit I	**Introduction to Information Retrieval:** Introduction, History of IR, Components of IR, and Issues related to IR, Boolean retrieval, Dictionaries and tolerant retrieval.	**15L**
Unit II	**Link Analysis and Specialized Search:** Link Analysis, hubs and authorities, Page Rank and HITS algorithms, Similarity, Hadoop & Map Reduce, Evaluation, Personalized search, Collaborative filtering and content-based recommendation of documents and products, handling "invisible" Web, Snippet generation, Summarization, Question Answering, Cross- Lingual Retrieval.	**15L**
Unit III	**Web Search Engine:** Web search overview, web structure, the user, paid placement, search engine optimization/spam, Web size measurement, search engine optimization/spam, Web Search Architectures. **XML retrieval:** Basic XML concepts, Challenges in XML retrieval, A vector space model for XML retrieval, Evaluation of XML retrieval, Text-centric versus data-centric XML retrieval.	**15L**

Text book(s):

1) Introduction to Information Retrieval, C. Manning, P. Raghavan, and H. Schütze, Cambridge University Press, 2008
2) Modern Information Retrieval: The Concepts and Technology behind Search, Ricardo Baeza -Yates and Berthier Ribeiro – Neto, 2nd Edition, ACM Press Books 2011.
3) Search Engines: Information Retrieval in Practice, Bruce Croft, Donald Metzler and Trevor Strohman, 1st Edition, Pearson, 2009.

Additional Reference(s):

1) Information Retrieval Implementing and Evaluating Search Engines, Stefan Büttcher, Charles L. A. Clarke and Gordon V. Cormack, The MIT Press; Reprint edition (February 12, 2016)

Course: USCS605	TOPICS (Credits : 03 Lectures/Week: 03) Digital Image Processing	
Objectives: To study two-dimensional Signals and Systems. To understand image fundamentals and transforms necessary for image processing. To study the image enhancement techniques in spatial and frequency domain. To study image segmentation and image compression techniques. **Expected Learning Outcomes**: Learner should review the fundamental concepts of a digital image processing system. Analyze the images in the frequency domain using various transforms. Evaluate the techniques for image enhancement and image segmentation. Apply various compression techniques. They will be familiar with basic image processing techniques for solving real problems.		
Unit I	**Introduction to Image-processing System :** Introduction, Image Sampling, Quantization, Resolution, Human Visual Systems, Elements of an Image-processing System, Applications of Digital Image Processing **2D Signals and Systems :** 2D signals, separable sequence, periodic sequence, 2D systems, classification of 2D systems, 2D Digital filter **Convolution and Correlation :** 2D Convolution through graphical method, Convolution through 2D Z—transform, 2D Convolution through matrix analysis, Circular Convolution, Applications of Circular Convolution, 2D Correlation **Image Transforms:** Need for transform, image transforms, Fourier transform, 2D Discrete Fourier Transform, Properties of 2D DFT, Importance of Phase, Walsh transform, Hadamard transform, Haar transform, Slant transform, Discrete Cosine transform, KL transform	**15L**
Unit II	**Image Enhancement :**Image Enhancement in spatial domain, Enhancement trough Point operations, Histogram manipulation, Linear and nonlinear Gray Level Transformation, local or neighborhood operation, Median Filter, Spatial domain High pass filtering, Bit-plane slicing, Image Enhancement in frequency domain, Homomorphic filter, Zooming operation, Image Arithmetic	**15L**

	Binary Image processing : Mathematical morphology, Structuring elements, Morphological image processing, Logical operations, Morphological operations, Dilation and Erosion, Distance Transform **Colour Image processing :**Colour images, Colour Model, Colour image quantization, Histogram of a colour image	
Unit III	**Image Segmentation:** Image segmentation techniques, Region approach, Clustering techniques, Thresholding, Edge-based segmentation, Edge detection, Edge Linking, Hough Transform **Image Compression:** Need for image compression, Redundancy in images, Image-compression scheme, Fundamentals of Information Theory, Run-length coding, Shannon-Fano coding, Huffman Coding, Arithmetic Coding, Transform-based compression, Image-compression standard	**15L**

Textbook(s):

1) Digital Image Processing, S Jayaraman, S Esakkirajan, T Veerakumar,Tata McGraw-Hill Education Pvt. Ltd., 2009

Additional Reference(s)*:*

1) Digital Image Processing 3rd Edition, Rafael C Gonzalez, Richard E Woods, Pearson, 2008
2) Scilab Textbook Companion for Digital Image Processing, S. Jayaraman, S. Esakkirajan And T. Veerakumar, 2016 (https://scilab.in/textbook_companion/generate_book/125)

Course: **USCS606**	**TOPICS (Credits : 03 Lectures/Week: 03)** **Data Science**	

Objectives:

Understanding basic data science concepts. Learning to detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization. Making aware of how to address advanced statistical situations, Modeling and Machine Learning.

Expected Learning Outcomes:

After completion of this course, the students should be able to understand & comprehend the problem; and should be able to define suitable statistical method to be adopted.

Unit I	**Introduction to Data Science:** What is Data? Different kinds of data,	**15L**

	Introduction to high level programming language + Integrated Development Environment (IDE), Exploratory Data Analysis (EDA) + Data Visualization, Different types of data sources, **Data Management**: Data Collection, Data cleaning/extraction, Data analysis & Modeling	
Unit II	**Data Curation:** Query languages and Operations to specify and transform data, Structured/schema based systems as users and acquirers of data Semi-structured systems as users and acquirers of data, Unstructured systems in the acquisition and structuring of data, Security and ethical considerations in relation to authenticating and authorizing access to data on remote systems, Software development tools, Large scale data systems, Amazon Web Services (AWS)	**15L**
Unit III	**Statistical Modelling and Machine Learning:** Introduction to model selection: Regularization, bias/variance tradeoff e.g. parsimony, AIC, BIC, Cross validation, Ridge regressions and penalized regression e.g. LASSO **Data transformations**: Dimension reduction, Feature extraction, Smoothing and aggregating **Supervised Learning**: Regression, linear models, Regression trees, Time-series Analysis, Forecasting, Classification: classification trees, Logistic regression, separating hyperplanes, k-NN **Unsupervised Learning**: Principal Components Analysis (PCA), k-means clustering, Hierarchical clustering, Ensemble methods	**15L**

Textbook(s):

1) Doing Data Science, Rachel Schutt and Cathy O'Neil, O'Reilly,2013
2) Mastering Machine Learning with R, Cory Lesmeister, PACKT Publication,2015

Additional Reference(s):

1) Hands-On Programming with R, Garrett Grolemund,1st Edition, 2014
2) An Introduction to Statistical Learning, James, G., Witten, D., Hastie, T., Tibshirani, R.,Springer,2015

Course: USCS607	TOPICS (Credits : 02 Lectures/Week: 03) Ethical Hacking	
Objectives: To understand the ethics, legality, methodologies and techniques of hacking. **Expected Learning Outcomes:** Learner will know to identify security vulnerabilities and weaknesses in the target applications. They will also know to test and exploit systems using various tools and understand the impact of hacking in real time machines.		
Unit I	**Information Security : Attacks and Vulnerabilities** **Introduction to information security** : Asset, Access Control, CIA, Authentication, Authorization, Risk, Threat, Vulnerability, Attack, Attack Surface, Malware, Security-Functionality-Ease of Use Triangle **Types of malware** :Worms, viruses, Trojans, Spyware, Rootkits **Types of vulnerabilities** : OWASP Top 10 : cross-site scripting (XSS), cross site request forgery (CSRF/XSRF), SQL injection, input parameter manipulation, broken authentication, sensitive information disclosure, XML External Entities, Broken access control, Security Misconfiguration, Using components with known vulnerabilities, Insufficient Logging and monitoring, OWASP Mobile Top 10, CVE Database **Types of attacks and their common prevention mechanisms** : Keystroke Logging, Denial of Service (DoS /DDoS), Waterhole attack, brute force, phishing and fake WAP, Eavesdropping, Man-in-the-middle, Session Hijacking, Clickjacking, Cookie Theft, URL Obfuscation, buffer overflow, DNS poisoning, ARP poisoning, Identity Theft, IoT Attacks, BOTs and BOTNETs **Case-studies** : Recent attacks – Yahoo, Adult Friend Finder, eBay, Equifax, WannaCry, Target Stores, Uber, JP Morgan Chase, Bad Rabbit	**15L**
Unit II	**Ethical Hacking – I (Introduction and pre-attack)** **Introduction**: Black Hat vs. Gray Hat vs. White Hat (Ethical) hacking, Why is Ethical hacking needed?, How is Ethical hacking different from security auditing and digital forensics?, Signing NDA, Compliance and Regulatory	**15L**

	concerns, Black box vs. White box vs. Black box, Vulnerability assessment and Penetration Testing. **Approach : Planning -** Threat Modeling, set up security verification standards, Set up security testing plan – When, which systems/apps, understanding functionality, black/gray/white, authenticated vs. unauthenticated, internal vs. external PT, Information gathering, Perform Manual and automated (Tools: WebInspect/Qualys, Nessus, Proxies, Metasploit) VA and PT, How WebInspect/Qualys tools work: Crawling/Spidering, requests forging, pattern matching to known vulnerability database and Analyzing results, Preparing report, Fixing security gaps following the report **Enterprise strategy** : Repeated PT, approval by security testing team, Continuous Application Security Testing, **Phases:** Reconnaissance/foot-printing/Enumeration, **Phases**: Scanning, Sniffing	
Unit III	**Ethical Hacking :Enterprise Security** **Phases : Gaining and Maintaining Access** : **Systems hacking** – Windows and Linux – Metasploit and Kali Linux, Keylogging, Buffer Overflows, Privilege Escalation, Network hacking - ARP Poisoning, Password Cracking, WEP Vulnerabilities, MAC Spoofing, MAC Flooding, IPSpoofing, SYN Flooding, Smurf attack, **Applications hacking** : SMTP/Email-based attacks, VOIP vulnerabilities, Directory traversal, Input Manipulation, Brute force attack, Unsecured login mechanisms, SQL injection, XSS, Mobile apps security, **Malware analysis** : Netcat Trojan, wrapping definition, reverse engineering **Phases :** Covering your tracks : Steganography, Event Logs alteration **Additional Security Mechanisms** : IDS/IPS, Honeypots and evasion techniques, Secure Code Reviews (Fortify tool, OWASP Secure Coding Guidelines)	**15L**

Textbook(s):

1) Certified Ethical Hacker Study Guide v9, Sean-Philip Oriyano, Sybex; Study Guide Edition,2016
2) CEH official Certified Ethical Hacking Review Guide, Wiley India Edition, 2007

Additional Reference(s):

1) Certified Ethical Hacker: Michael Gregg, Pearson Education,1st Edition, 2013
2) Certified Ethical Hacker: Matt Walker, TMH,2011
3) http://www.pentest-standard.org/index.php/PTES_Technical_Guidelines
4) https://www.owasp.org/index.php/Category:OWASP_Top_Ten_2017_Project
5) https://www.owasp.org/index.php/Mobile_Top_10_2016-Top_10
6) https://www.owasp.org/index.php/OWASP_Testing_Guide_v4_Table_of_Contents
7) https://www.owasp.org/index.php/OWASP_Secure_Coding_Practices_-_Quick_Reference_Guide
8) https://cve.mitre.org/
9) https://access.redhat.com/blogs/766093/posts/2914051
10) http://resources.infosecinstitute.com/applications-threat-modeling/#gref
11) http://www.vulnerabilityassessment.co.uk/Penetration%20Test.html

Suggested List of Practical – SEMESTER VI

Course: **USCSP601**	**(Credits : 02 Lectures/Week:06)** **Practical of Elective-I**	

USCS601: Wireless Sensor Networks and Mobile Communication

Practical experiments require software tools like INET Framework for OMNeT++, NetSim , TOSSIM, Cisco packet tracer 6.0 and higher version.

1. Understanding the Sensor Node Hardware. (For Eg. Sensors, Nodes(Sensor mote), Base Station, Graphical User Interface.)
2. Exploring and understanding TinyOS computational concepts:- Events, Commands and Task.
   - nesC model
   - nesC Components
3. Understanding TOSSIM for
   - Mote-mote radio communication
   - Mote-PC serial communication
4. Create and simulate a simple adhoc network
5. Understanding, Reading and Analyzing Routing Table of a network.
6. Create a basic MANET implementation simulation for Packet animation and Packet Trace.
7. Implement a Wireless sensor network simulation.
8. Create MAC protocol simulation implementation for wireless sensor Network.
9. Simulate Mobile Adhoc Network with Directional Antenna
10. Create a mobile network using Cell Tower, Central Office Server, Web browser and Web Server. Simulate connection between them.

USCS602: Cloud Computing

1. Study and implementation of Infrastructure as a Service.
2. Installation and Configuration of virtualization using KVM.
3. Study and implementation of Infrastructure as a Service
4. Study and implementation of Storage as a Service
5. Study and implementation of identity management
6. Study Cloud Security management

7. Write a program for web feed.
8. Study and implementation of Single-Sing-On.
9. User Management in Cloud.
10. Case study on Amazon EC2/Microsoft Azure/Google Cloud Platform

USCS603: Cyber Forensics

1. Creating a Forensic Image using FTK Imager/Encase Imager :

- Creating Forensic Image
- Check Integrity of Data
- Analyze Forensic Image

2. Data Acquisition:

- Perform data acquisition using:
- USB Write Blocker + Encase Imager
- SATA Write Blocker + Encase Imager
- Falcon Imaging Device

3. Forensics Case Study:

- Solve the Case study (image file) provide in lab using Encase Investigator or Autopsy

4. Capturing and analyzing network packets using Wireshark (Fundamentals) :

- Identification the live network
- Capture Packets
- Analyze the captured packets

5. Analyze the packets provided in lab and solve the questions using Wireshark :

- What web server software is used by www.snopes.com?
- About what cell phone problem is the client concerned?
- According to Zillow, what instrument will Ryan learn to play?
- How many web servers are running Apache?
- What hosts (IP addresses) think that jokes are more entertaining when they are explained?

6. Using Sysinternals tools for Network Tracking and Process Monitoring :

- Check Sysinternals tools

- Monitor Live Processes
- Capture RAM
- Capture TCP/UDP packets
- Monitor Hard Disk
- Monitor Virtual Memory
- Monitor Cache Memory

7. Recovering and Inspecting deleted files

- Check for Deleted Files
- Recover the Deleted Files
- Analyzing and Inspecting the recovered files

  Perform this using recovery option in ENCASE and also Perform manually through command line

8. Acquisition of Cell phones and Mobile devices
9. Email Forensics

- Mail Service Providers
- Email protocols
- Recovering emails
- Analyzing email header

10. Web Browser Forensics

- Web Browser working
- Forensics activities on browser
- Cache / Cookies analysis
- Last Internet activity

Course: **USCSP602**	**(Credits : 02 Lectures/Week:06)** **Practical of Elective-II**	

USCS604: Information Retrieval

Practical may be done using software/tools like Python / Java / Hadoop

1. Write a program to demonstrate bitwise operation.
2. Implement Page Rank Algorithm.
3. Implement Dynamic programming algorithm for computing the edit distance between

strings s1 and s2. (Hint. Levenshtein Distance)

4. Write a program to Compute Similarity between two text documents.
5. Write a map-reduce program to count the number of occurrences of each alphabetic character in the given dataset. The count for each letter should be case-insensitive (i.e., include both upper-case and lower-case versions of the letter; Ignore non-alphabetic characters).
6. Implement a basic IR system using Lucene.
7. Write a program for Pre-processing of a Text Document: stop word removal.
8. Write a program for mining Twitter to identify tweets for a specific period and identify trends and named entities.
9. Write a program to implement simple web crawler.
10. Write a program to parse XML text, generate Web graph and compute topic specific page rank.

USCS605: Digital Image Processing

Practical need to be performed using Scilab under Linux or Windows

1. 2D Linear Convolution, Circular Convolution between two 2D matrices
2. Circular Convolution expressed as linear convolution plus alias
3. Linear Cross correlation of a 2D matrix, Circular correlation between two signals and Linear auto correlation of a 2D matrix, Linear Cross correlation of a 2D matrix
4. DFT of 4x4 gray scale image
5. Compute discrete cosine transform, Program to perform KL transform for the given 2D matrix
6. Brightness enhancement of an image, Contrast Manipulation, image negative
7. Perform threshold operation, perform gray level slicing without background
8. Image Segmentation
9. Image Compression
10. Binary Image Processing and Colour Image processing

USCS606:Data Science

Practical shall be performed using R

1. Practical of Data collection, Data curation and management for Unstructured data (NoSQL)

2. Practical of Data collection, Data curation and management for Large-scale Data system (such as MongoDB)
3. Practical of Principal Component Analysis
4. Practical of Clustering
5. Practical of Time-series forecasting
6. Practical of Simple/Multiple Linear Regression
7. Practical of Logistics Regression
8. Practical of Hypothesis testing
9. Practical of Analysis of Variance
10. Practical of Decision Tree

Course: **USCSP603**	**(Credits : 01 Lectures/Week: 03) Project Implementation**	

Please Refer to Project Implementation Guidelines

Course: **USCSP604**	**(Credits : 01 Lectures/Week: 03) Practical of Skill Enhancement**	

USCS607 : Ethical Hacking

1. Use Google and Whois for Reconnaissance
2. a) Use CrypTool to encrypt and decrypt passwords using RC4 algorithm
   b) Use Cain and Abel for cracking Windows account password using Dictionary attack and to decode wireless network passwords
3. a) Run and analyze the output of following commands in Linux – ifconfig, ping, netstat, traceroute
   b) Perform ARP Poisoning in Windows
4. Use NMap scanner to perform port scanning of various forms – ACK, SYN, FIN, NULL, XMAS
5. a) Use Wireshark (Sniffer) to capture network traffic and analyze
   b) Use Nemesy to launch DoS attack
6. Simulate persistent cross-site scripting attack
7. Session impersonation using Firefox and Tamper Data add-on

8. Perform SQL injection attack
9. Create a simple keylogger using python
10. Using Metasploit to exploit (Kali Linux)

Project Implementation Guidelines

1. A learner is expected to carry out two different projects: one in Semester V and another in Semester VI.
2. A learner can choose any topic which is covered in Semester I- semester VI or any other topic with the prior approval from head of the department/ project in charge.
3. The Project has to be performed individually.
4. A learner is expected to devote around three months of efforts in the project.
5. The project can be application oriented/web-based/database/research based.
6. It has to be an implemented work; just theoretical study will not be acceptable.
7. A learner can choose any programming language, computational techniques and tools which have been covered during BSc course or any other with the prior permission of head of the department/ project guide.
8. A project guide should be assigned to a learner. He/she will assign a schedule for the project and hand it over to a learner. The guide should oversee the project progress on a weekly basis by considering the workload of 3 lectures as assigned.
9. The quality of the project will be evaluated based on the novelty of the topic, scope of the work, relevance to the computer science, adoption of emerging techniques/technologies and its real-world application.
10. A learner has to maintain a project report with the following subsections

    a) Title Page

    b) Certificate

    A certificate should contain the following information –

    - The fact that the student has successfully completed the project as per the syllabus and that it forms a part of the requirements for completing the BSc degree in computer science of University of Mumbai.
    - The name of the student and the project guide
    - The academic year in which the project is done
    - Date of submission,
    - Signature of the project guide and the head of the department with date along with the department stamp,

- Space for signature of the university examiner and date on which the project is evaluated.

c) Self-attested copy of Plagiarism Report from any open source tool.

d) Index Page detailing description of the following with their subsections:

- Title: A suitable title giving the idea about what work is proposed.
- Introduction: An introduction to the topic giving proper back ground of the topic.
- Requirement Specification: Specify Software/hardware/data requirements.
- System Design details : Methodology/Architecture/UML/DFD/Algorithms/protocols etc. used(whichever is applicable)
- System Implementation: Code implementation
- Results: Test Cases/Tables/Figures/Graphs/Screen shots/Reports etc.
- Conclusion and Future Scope: Specify the Final conclusion and future scope
- References: Books, web links, research articles, etc.

11. The size of the project report shall be around twenty to twenty five pages, excluding the code.
12. The Project report should be submitted in a spiral bound form
13. The Project should be certified by the concerned Project guide and Head of the department.
14. A learner has to make a presentation of working project and will be evaluated as per the Project evaluation scheme

Scheme of Examination

1. Theory:

I. Internal 25 Marks :

a) Test – 20 Marks

20 marks Test – Duration 40 mins
It will be conducted either using any open source learning management system like Moodle (Modular object-oriented dynamic learning environment)

OR

A test based on an equivalent online course on the contents of the concerned course (subject) offered by or build using MOOC (Massive Open Online Course) platform.

b) 5 Marks – Active participation in routine class instructional deliveries
Overall conduct as a responsible student, manners, skill in articulation, leadership qualities demonstrated through organizing co-curricular activities, etc.

II. External 75 Marks as per University Guidelines

11. Practical and Project Examination:

There will be separate Practical examination for Elective-I, II, Skill enhansement and project of these Elective-I 100, Elective-II: 100 and Skill Enhansement: 50 and Project Implementation: 50.

In the Practical Examination of Elective-I and II, the student has to perform practical on each of the subjects chosen. The Marking Scheme for each of the Elective is given below:

	Subject Code	**Experiment-I**	**Experiment-II**	**Total Marks**
Elective-I	**USCSP501/ USCSP601**	Experiment-40+Journal-5 +viva-5 Total:50M	Experiment-40+Journal-5+viva-5 Total:50M	100 M
Elective-II	**USCSP502/ USCSP602**	Experiment-40+Journal-5 +viva-5 Total:50M	Experiment-40+Journal-5+viva-5 Total:50M	100 M

Project Implementation	**USCSP503/ USCSP603**	****Project Evaluation Scheme**	**50M**
Skill Enhancement	**USCSP504/ USCSP604**	Experiment-40+Journal:5+viva-5 Total-50M	**50M**
Total Marks			**300M**

(Certified Journal is compulsory for appearing at the time of Practical Examination)

****Project Evaluation Scheme:**

Presentation	**Working of the Project**	**Quality of the Project**	**Viva**	**Documentation**
10Marks	10 Marks	10 Marks	10 Marks	10Marks

(Certified Project Document is compulsory for appearing at the time of Project Presentation)

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T.Y.B.Sc. CHEMISTRY (6 UNITS)
Choice Based Credit System
To be implemented from the Academic year 2018-2019

SEMESTER V

PHYSICAL CHEMISTRY

COURSE CODE: USCH502 CREDITS: 02 LECTURES: 60

UNIT	TOPIC	NO. OF Lectures
UNIT I	1.0 MOLECULAR SPECTROSCOPY	15L
	1.1 **Rotational Spectrum**: Introduction to dipole moment, polarization of a bond, bond moment, molecular structure, .Rotational spectrum of a diatomic molecule, rigid rotor, moment of inertia, energy levels, conditions for obtaining pure rotational spectrum, selection rule, nature of spectrum, determination of internuclear distance and isotopic shift. 1.2 **Vibrational spectrum**: Vibrational motion, degrees of freedom, modes of vibration, vibrational spectrum of a diatomic molecule, simple harmonic oscillator, energy levels, zero point energy, conditions for obtaining vibrational spectrum, selection rule, nature of spectrum. 1.3 **Vibrational-Rotational spectrum of diatomic molecule**: energy levels, selection rule, nature of spectrum, P and R branch lines. Anharmonic oscillator - energy levels, selection rule, fundamental band, overtones. Application of vibrational-rotational spectrum in determination of force constant and its significance. Infrared spectra of simple molecules like H_2O and CO_2. 1.4 **Raman Spectroscopy :** Scattering of electromagnetic radiation, Rayleigh scattering, Raman scattering, nature of Raman spectrum, Stoke's lines, anti-Stoke's lines, Raman shift, quantum theory of Raman spectrum, comparative study of IR and Raman spectra, rule of mutual exclusion- CO_2 molecule.	
UNIT II	2.0 CHEMICAL THERMODYNAMICS	10 L
	2.1.1**Colligative properties:** Vapour pressure and relative lowering of vapour pressure. Measurement of lowering of vapour pressure - Static and Dynamic method.	
	2.1.2 **Solutions of Solid in Liquid:** 2.1.2.1 Elevation in boiling point of a solution, thermodynamic derivation relating elevation in boiling point of the solution and molar mass of non-volatile solute.	

	2.1.2.2 Depression in freezing point of a solution, thermodynamic derivation relating the depression in the freezing point of a solution and the molar mass of the non-volatile solute. Beckmann Method and Rast Method.	
	2.1.3 **Osmotic Pressure :** Introduction, thermodynamic derivation of Van't Hoff equation, Van't Hoff Factor. Measurement of Osmotic Pressure - Berkeley and Hartley's Method, Reverse Osmosis.	
	2.2 CHEMICAL KINETICS	5 L
	2.2.1 **Collision theory of reaction rates** : Application of collision theory to 1. Unimolecular reaction Lindemann theory and 2. Bimolecular reaction. (derivation expected for both) 2.2.2 Classification of reactions as slow, fast and ultra -fast. Study of kinetics of fast reactions by Stop flow method and Flash photolysis (No derivation expected).	
UNIT III	3.0 NUCLEAR CHEMISTRY	15L
	3.1. **Introduction**: **B**asic terms-radioactive constants (decay constant, half life and average life) and units of radioactivity	
	3.2 **Detection and Measurement of Radioactivity:** Types and characteristics of nuclear radiations, behaviour of ion pairs in electric field, detection and measurement of nuclear radiations using G. M. Counter and Scintillation Counter.	
	3.3 **Application of use of radioisotopes as Tracers :** chemical reaction mechanism, age determination - dating by C^{14}.	
	3.4 **Nuclear reactions**: nuclear transmutation (one example for each projectile), artificial radioactivity, Q - value of nuclear reaction, threshold energy.	
	3.5 **Fission Process :** Fissile and fertile material, nuclear fission, chain reaction, factor controlling fission process. multiplication factor and critical size or mass of fissionable material, nuclear power reactor and breeder reactor.	
	3.6 **Fusion Process :** Thermonuclear reactions occurring on stellar bodies and earth.	
UNIT IV	4.1 SURFACE CHEMISTRY	6L
	4.1.1 **Adsorption:** Physical and Chemical Adsorption, types of adsorption isotherms . Langmuir's adsorption isotherm (Postulates and derivation expected). B.E.T. equation for multilayer adsorption, (derivation not expected). Determination of surface area of an adsorbent using B.E.T. equation.	
	4.2 COLLOIDAL STATE	9L
	4.2.1 **Introduction to colloids** - Emulsions, Gels and Sols	
	4.2.2 **Electrical Properties** : Origin of charges on colloidal particles, Concept of electrical double layer, zeta potential, Helmholtz and Stern model. Electro-kinetic phenomena - Electrophoresis, Electro-osmosis,	

	Streaming potential, Sedimentation potential; Donnan Membrane Equilibrium.	
	4.2.3 **Colloidal electrolytes :** Introduction, micelle formation,	
	4.2.4 **Surfactants:** Classification and applications of surfactants in detergents and food industry.	

Reference Books :

1. Physical Chemistry, Ira Levine, 5th Edition, 2002 Tata McGraw Hill Publishing Co.Ltd.

2. Physical Chemistry, P.C. Rakshit, 6th Edition, 2001, Sarat Book Distributors, Kolkota.

3. Physical Chemistry, R.J. Silbey, & R.A. Alberty, 3rd edition , John Wiley & Sons, Inc [part 1]

4. Physical Chemistry, G. Castellan, 3rd edition, 5th Reprint, 1995 Narosa Publishing House.

5. Modern Electrochemistry, J.O.M Bockris & A.K.N. Reddy, Maria Gamboa – Aldeco 2nd Edition, 1st Indian reprint,2006 Springer

6. Fundamental of Molecular Spectroscopy, 4th Edn., Colin N Banwell and Elaine M McCash Tata McGraw Hill Publishing Co. Ltd. New Delhi, 2008.

7. Physical Chemistry, G.M. Barrow, 6th Edition, Tata McGraw Hill Publishing Co. Ltd. New Delhi.

8. The Elements of Physical Chemistry, P.W. Atkins, 2nd Edition, Oxford Universtity Press Oxford.

9. Physical Chemistry, G.K. Vemullapallie, 1997, Prentice Hall of India, Pvt.Ltd. New Delhi.

10. Principles of Physical Chemistry B.R. Puri, L.R. Sharma, M.S. Pathania, VISHAL PUBLISHING Company, 2008.

11. Textbook of Polymer Science, Fred W Bilmeyer, John Wiley & Sons (Asia) Ple. Ltd., Singapore, 2007.

12. Polymer Science, V.R. Gowariker, N.V. Viswanathan, Jayadev Sreedhar, New Age International (P) Ltd., Publishers, 2005.

13. Essentials of Nuclear Chemistry, Arnikar, Hari Jeevan , New Age International (P) Ltd., Publishers, 2011..

14. Chemical Kinetics,K. Laidler, Pearson Education India, 1987.

T.Y.B.Sc Physical Chemistry Practical

SEMESTER V

PHYSICAL CHEMISTRY

COURSE CODE: USCHP01

CREDITS: 02

Non-Instrumental

Colligative properties

To determine the molecular weight of compound by Rast Method

Chemical Kinetics

To determine the order between $K_2S_2O_8$ and KI by fractional change method. **(six units and three units)**

Surface phenomena

To investigate the adsorption of acetic acid on activated charcoal and test the validity of Freundlich adsorption isotherm.

Instrumental

Potentiometry

To determine the solubility product and solubility of AgCl potentiometrically using chemical cell.

Conductometry

To determine the velocity constant of alkaline hydrolysis of ethyl acetate by conductometric method.

pH-metry

To determine acidic and basic dissociation constants of amino acid and hence to calculate isoelectric point.

Reference books

1. Practical Physical Chemistry 3rd edition A.M.James and F.E. Prichard , Longman publication

2. Experiments in Physical Chemistry R.C. Das and B. Behra, Tata Mc Graw Hill

3. Advanced Practical Physical Chemistry J.B.Yadav, Goel Publishing House

4. Advanced Experimental Chemistry. Vol-I J.N.Gurtu and R Kapoor, S.Chand and Co.

5. Experimental Physical Chemistry By V.D.Athawale.

6. Senior Practical Physical Chemistry By: B. D. Khosla, V. C. Garg and A. Gulati, R Chand and Co.. 2011

SEMESTER VI

PHYSICAL CHEMISTRY

COURSE CODE: USCH601 CREDITS: 02

LECTURES: 60

UNIT I	1.1 ELECTROCHEMISTRY	7L
	1.1.1 **Activity and Activity Coefficient:** Lewis concept, ionic strength, Mean ionic activity and mean ionic activity coefficient of an electrolyte, expression for activities of electrolytes. Debye-Huckel limiting law (No derivation).	
	1.1.2 **Classification of cells:** Chemical cells and Concentration cells. Chemical cells with and without transference, Electrode Concentration cells, Electrolyte concentration cells with and without transference (derivations are expected),	
	1.2 APPLIED ELECTROCHEMISTRY	8L
	1.2.1 **Polarization**: concentration polarization and it's elimination	
	1.2.2 **Decomposition Potential and Overvoltage** : Introduction, experimental determination of decomposition potential, factors affecting decomposition potential. Tafel's equation for hydrogen overvoltage, experimental determination of over –voltage	
UNIT II	2.0 POLYMERS	15L
	2.1 **Basic terms :** macromolecule, monomer, repeat unit, degree of polymerization.	
	2.2. **Classification of polymers:** Classification based on source, structure, thermal response and physical properties.	
	2.3. **Molar masses of polymers:** Number average, Weight average, Viscosity average molar mass, Monodispersity and Polydispersity	
	2.4. **Method of determining molar masses of polymers :** Viscosity method using Ostwald Viscometer. (derivation expected)	
	2.5. **Light Emitting Polymers :** Introduction, Characteristics, Method of preparation and applications.	
	2.6. **Antioxidants and Stabilizers :** Antioxidants , Ultraviolet stabilizers, Colourants, Antistatic agents and Curing agents.	
UNIT III	3.1 BASICS OF QUANTUM CHEMISTRY	10 L
	3.1.1 **Classical mechanics**: Introduction, limitations of classical mechanics, Black body radiation, photoelectric effect, Compton effect.	

	3.1.2 **Quantum mechanics :** Introduction, Planck's theory of quantization, wave particle duality, de –Broglie's equation, Heisenberg's uncertainty principle.	
	3.1.3 **Progressive and standing waves-** Introduction, boundary conditions, Schrodinger's time independent wave equation (No derivation expected), interpretation and properties of wave function.	
	3.1.4 **Quantum mechanics** : State function and its significance, Concept of operators - definition, addition, subtraction and multiplication of operators, commutative and non - commutative operators, linear operator, Hamiltonian operator, Eigen function and Eigen value.	
	3.2 RENEWABLE ENERGY RESOURCES	5L
	3.2.1. **Renewable energy resources** : Introduction.	
	3.2.2 **Solar energy**: Solar cells, Photovoltaic effect, Differences between conductors,semiconductors ,insulators and its band gap, Semiconductors as solar energy converters, Silicon solar cell	
	3.2.3. **Hydrogen :** Fuel of the future, production of hydrogen by direct electrolysis of water, advantages of hydrogen as a universal energy medium.	
UNIT IV	4.1 NMR -NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY	7L
	4.1.1. Principle : Nuclear spin, magnetic moment, nuclear 'g' factor, energy levels, Larmor precession, Relaxation processes in NMR (spin -spin relaxation and spin - lattice relaxation). **4.1.2. Instrumentation**: NMR Spectrometer	
	4.2 ELECTRON SPIN RESONANCE SPECTROSCOPY	
	4.2.1. Principle: fundamental equation, g-value -dimensionless constant or electron g-factor, hyperfine splitting. **4.2.2. Instrumentation**: ESR spectrometer, ESR spectrum of hydrogen and deuterium.	8L

Note : Numericals and Word Problems are Expected from All Units

Reference Books :

1. Physical Chemistry, Ira Levine, 5th Edition, 2002 Tata McGraw Hill Publishing Co.Ltd.

2. Physical Chemistry, P.C. Rakshit, 6th Edition, 2001, Sarat Book Distributors, Kolkota.

3. Physical Chemistry, R.J. Silbey, & R.A. Alberty, 3rd edition , John Wiley & Sons, Inc [part 1]

4. Physical Chemistry, G. Castellan, 3rd edition, 5th Reprint, 1995 Narosa Publishing House.

5. Modern Electrochemistry, J.O.M Bockris & A.K.N. Reddy, Maria Gamboa – Aldeco 2nd Edition, 1st Indian reprint,2006 Springer

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12. Polymer Science, V.R. Gowariker, N.V. Viswanathan, Jayadev Sreedhar, New Age International (P) Ltd., Publishers, 2005.

13. Essentials of Nuclear Chemistry, Arnikar, Hari Jeevan , New Age International (P) Ltd., Publishers, 2011..

14. Chemical Kinetics,K. Laidler, Pearson Education India, 1987.

T.Y.B.Sc Physical Chemistry Practical

SEMESTER VI

PHYSICAL CHEMISTRY

COURSE CODE: USCHP02 **CREDITS: 02**

Non-Instrumental

Chemical Kinetics

To interpret the order of reaction graphically from the given experimental data and calculate the specific rate constant.

(No fractional order)

Viscosity

To determine the molecular weight of high polymer polyvinyl alcohol (PVA) by viscosity measurement.

Instrumental

Potentiometry

To determine the amount of iodide, bromide and chloride in the mixture by potentiometric titration with silver nitrate.

To determine the number of electrons in the redox reaction between ferrous ammonium sulphate and cerric sulphate potentiometrically.

Conductometry

To titrate a mixture of weak acid and strong acid against strong base and estimate the amount of each acid in the mixture conductometrically.

Colorimetry

To estimate the amount of Fe(III) in the complex formation with salicylic acid by Static Method.

Reference books

1. Practical Physical Chemistry 3rd edition A.M.James and F.E. Prichard , Longman publication

2. Experiments in Physical Chemistry R.C. Das and B. Behra, Tata Mc Graw Hill

3. Advanced Practical Physical Chemistry J.B.Yadav, Goel Publishing House

4. Advanced Experimental Chemistry. Vol-I J.N.Gurtu and R Kapoor, S.Chand and Co.

5. Experimental Physical Chemistry By V.D.Athawale.

6. Senior Practical Physical Chemistry By: B. D. Khosla, V. C. Garg and A. Gulati, R Chand and Co.. 2011

UNIVERSITY OF MUMBAI
No. UG/ 89 of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Commerce & Management Faculty is invited to this office Circular No. UG/21 of 2016-17, dated 30th June, 2016 relating to syllabus of Bachelor of Management Studies (B.M.S.) degree course.

Their attention is also invited to University Circular No. UG/109 of 2016-17 dated 25th October, 2016 for F.Y.B.M.S. (Sem. I & II) and University Circular No. UG/261 of 2017-18 dated 23rd October, 2017 for S.Y. B.M.S. (Sem. III & IV) respectively.

They are hereby informed that the recommendations made by the Board of Studies in Business Management at its meeting held on 28th February, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 **vide** item No. 4.44 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.M.S. (Sem. V & VI), has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Dinesh Kamble)
I/c REGISTRAR

MUMBAI – 400 032
27th July, 2018

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Commerce & Management Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.44/05/05/2018

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No. UG/ 89 -A of 2018 MUMBAI-400 032 27th July, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Commerce & Management,
2) The Director, Board of Examinations and Evaluation,
3) The Director, Board of Students Development,
4) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
5) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

University of Mumbai

Revised Syllabus
and
Question Paper Pattern
of Courses
of
Bachelor of Management Studies (BMS) Programme at Third Year
Semester V and VI

Under Choice Based Credit, Grading and Semester System

(To be implemented from Academic Year- 2018-2019)

Board of Studies-in-Business Management, University of Mumbai

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

TYBMS

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1,2,3 & 4	*Any four courses from the following list of the courses	**12**	1,2,3 & 4	**Any four courses from the following list of the courses	**12**
2	***Core Course (CC)***		***2***	***Core Course (CC)***	
5	Logistics & Supply Chain Management	**04**	5	Operation Research	**04**
3	**Ability Enhancement Course (AEC)**		**3**	**Ability Enhancement Course (AEC)**	
6	Corporate Communication & Public Relations	**04**	6	Project Work	**04**
	Total Credits	**20**		**Total Credits**	**20**

✓ ***Note:*** *Project work is considered as a special course involving application of knowledge in solving/analysing/exploring a real life situation/ difficult problem. Project work would be of 04 credits. A project work may be undertaken in any area of Elective Courses/ study area selected*

****List of group of Elective Courses(EC) for Semester V (Any Four)***		***** List of group of Elective Courses(EC) for Semester VI (Any Four)***	
Group A: Finance Electives			
1	Investment Analysis& Portfolio Management	1	International Finance
2	Commodity & Derivatives Market	2	Innovative Financial Services
3	Wealth Management	3	Project Management
4	Financial Accounting	4	Strategic Financial Management
5	Risk Management	5	Financing Rural Development
6	Direct Taxes	6	Indirect Taxes
Group B:Marketing Electives			
1	Services Marketing	1	Brand Management
2	E-Commerce & Digital Marketing	2	Retail Management
3	Sales & Distribution Management	3	International Marketing
4	Customer Relationship Management	4	Media Planning & Management
5	Industrial Marketing	5	Sports Marketing
6	Strategic Marketing Management	6	Marketing of Non Profit Organisation
Group C: Human Resource Electives			
1	Finance for HR Professionals & Compensation Management	1	HRM in Global Perspective
2	Strategic Human Resource Management & HR Policies	2	Organisational Development
3	Performance Management & Career Planning	3	HRM in Service Sector Management
4	Industrial Relations	4	Workforce Diversity
5	Talent & Competency Management	5	Human Resource Accounting & Audit
6	Stress Management	6	Indian Ethos in Management
Note: Group selected in Semester III will continue in Semester V &Semester VI			

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2018-2019)

Semester V

No. of Courses	Semester V	Credits
1	***Elective Courses (EC)***	
1,2,3 & 4	*Any four courses from the following list of the courses	**12**
2	***Core Course (CC)***	
5	Logistics & Supply Chain Management	**04**
3	**Ability Enhancement Course (AEC)**	
6	Corporate Communication & Public Relations	**04**
	Total Credits	**20**

****List of group of Elective Courses(EC)for Semester V (Any Four)***	
Group A: Finance Electives	
1	Investment Analysis & Portfolio Management
2	Commodity & Derivatives Market
3	Wealth Management
4	Financial Accounting
5	Risk Management
6	Direct Taxes
Group B:Marketing Electives	
1	Services Marketing
2	E-Commerce & Digital Marketing
3	Sales & Distribution Management
4	Customer Relationship Management
5	Industrial Marketing
6	Strategic Marketing Management
Group C: Human Resource Electives	
1	Finance for HR Professionals & Compensation Management
2	Strategic Human Resource Management & HR Policies
3	Performance Management & Career Planning
4	Industrial Relations
5	Talent & Competency Management
6	Stress Management

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

1. Investment Analysis and Portfolio Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Investment Environment	15
2	Risk - Return Relationship	15
3	Portfolio Management and Security Analysis	15
4	Theories, Capital Asset Pricing Model and Portfolio Performance Measurement	15
	Total	**60**

Objectives

SN	Objectives
1	To acquaint the learners with various concepts of finance
2	To understand the terms which are often confronted while reading newspaper, magazines etc for better correlation with the practical world
3	To understand various models and techniques of security and portfolio analysis

SN	Modules/ Units
1	**Introduction to Investment Environment**
	a) Introduction to Investment Environment • Introduction, Investment Process, Criteria for Investment, Types of Investors, Investment V/s Speculation V/s Gambling, Investment Avenues, Factors Influencing Selection of Investment Alternatives **b) Capital Market in India** • Introduction, Concepts of Investment Banks its Role and Functions, Stock Market Index, The NASDAQ, SDL, NSDL, Benefits of Depository Settlement, Online Share Trading and its Advantages, Concepts of Small cap, Large cap, Midcap and Penny stocks
2	**Risk - Return Relationship**
	a) Meaning, Types of Risk- Systematic and Unsystematic risk, Measurement of Beta, Standard Deviation, Variance, Reduction of Risk through Diversification. Practical Problems on Calculation of Standard Deviation, Variance and Beta.
3	**Portfolio Management and Security Analysis**
	a) Portfolio Management: • Meaning and Concept, Portfolio Management Process, Objectives, Basic Principles, Factors affecting Investment Decisions in Portfolio Management, Portfolio Strategy Mix. **b) Security Analysis:** • Fundamental Analysis, Economic Analysis, Industry Analysis, Company Analysis, Technical Analysis - Basic Principles of Technical Analysis., Uses of Charts: Line Chart, Bar Chart, Candlestick Chart, Mathematical Indicators: Moving Averages, Oscillators.
4	**Theories, Capital Asset Pricing Model and Portfolio Performance Measurement**
	a) Theories: • Dow Jones Theory, Elloit Wave Theory, Efficient Market Theory **b) Capital Asset Pricing Model:** • Assumptions of CAPM, CAPM Equation, Capital Market Line, Security Market Line **c) Portfolio Performance Measurement:** • Meaning of Portfolio Evaluation, Sharpe's Ratio (Basic Problems), Treynor's Ratio (Basic Problems), Jensen's Differential Returns (Basic Problems)

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

2. Commodity and Derivatives Market

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Commodities Market and Derivatives Market	15
2	Futures and Hedging	15
3	Options and Option Pricing Models	15
4	Trading, Clearing & Settlement In Derivatives Market and Types of Risk	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concepts related to Commodities and Derivatives market
2	To study the various aspects related to options and futures
3	To acquaint learners with the trading, clearing and settlement mechanism in derivates market.

SN	Modules/ Units
1	**Introduction to Commodities Market and Derivatives Market**
	a) Introduction to Commodities Market : • Meaning, History & Origin, Types of Commodities Traded, Structure of Commodities Market in India, Participants in Commodities Market, Trading in Commodities in India(Cash & Derivative Segment), Commodity Exchanges in India & Abroad, Reasons for Investing in Commodities **b) Introduction to Derivatives Market:** • Meaning, History & Origin, Elements of a Derivative Contract, Factors Driving Growth of Derivatives Market, Types of Derivatives, Types of Underlying Assets, Participants in Derivatives Market, Advantages & Disadvantages of Trading in Derivatives Market, Current Volumes of Derivative Trade in India, Difference between Forwards & Futures.
2	**Futures and Hedging**
	a) Futures: • Futures Contract Specification, Terminologies, Concept of Convergence, Relationship between Futures Price & Expected Spot Price, Basis & Basis Risk, Pricing of Futures Contract, Cost of Carry Model **b) Hedging:** • Speculation & Arbitrage using Futures, Long Hedge – Short Hedge, Cash & Carry Arbitrage, Reverse Cash & Carry Arbitrage, Payoff Charts & Diagrams for Futures Contract, Perfect & Imperfect Hedge
3	**Options and Option Pricing Models**
	a) Options: • Options Contract Specifications, Terminologies, Call Option, Put Option, Difference between Futures & Options, Trading of Options, Valuation of Options Contract, Factors affecting Option Premium, Payoff Charts & Diagrams for Options Contract, Basic Understanding of Option Strategies **b) Options Pricing Models:** • Binomial Option Pricing Model, Black - Scholes Option Pricing Model
4	**Trading, Clearing & Settlement In Derivatives Market and Types of Risk**
	a) Trading, Clearing & Settlement In Derivatives Market: • Meaning and Concept, SEBI Guidelines, Trading Mechanism – Types of Orders, Clearing Mechanism – NSCCL – its Objectives & Functions, Settlement Mechanism – Types of Settlement **b) Types of Risk:** • Value at Risk, Methods of calculating VaR, Risk Management Measures , Types of Margins, SPAN Margin

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

3. Wealth Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Insurance Planning and Investment Planning	15
3	Financial Mathematics/ Tax and Estate Planning	15
4	Retirement Planning/ Income Streams & Tax Savings Schemes	15
	Total	**60**

Objectives

SN	Objectives
1	To provide an overview of various aspects related to wealth management
2	To study the relevance and importance of Insurance in wealth management
3	To acquaint the learners with issues related to taxation in wealth management
4	To understand various components of retirement planning

SN	Modules/ Units
1	**Introduction**
	a) Introduction To Wealth Management: • Meaning of WM, Scope of WM, Components of WM, Process of WM, WM Needs & Expectation of Clients,Code of Ethics for Wealth Manager **b) Personal Financial Statement Analysis:** • Financial Literacy, Financial Goals and Planning, Cash Flow Analysis, Building Financial Plans, Life Cycle Management. **c) Economic Environment Analysis:** • Interest Rate, Yield Curves, Real Return, Key Indicators-Leading, Lagging, Concurrent
2	**Insurance Planning and Investment Planning**
	a) Insurance Planning: • Meaning, Basic Principles of Insurance, Functions and Characteristics of Insurance, Rights and Responsibilities of Insurer and Insured, Types of life Insurance Policies, Types of General Insurance Policies, Health Insurance – Mediclaim – Calculation of Human Life Value - Belth Method/CPT **b) Investment Planning:** • Types of Investment Risk, Risk Profiling of Investors & Asset Allocation (Life Cycle Model), Asset Allocation Strategies(Strategic, Tactical, Life-Cycle based), Goal-based Financial Planning, Active & Passive Investment Strategies
3	**Financial Mathematics/ Tax and Estate Planning**
	a) Financial Mathematics: • Calculation of Returns (CAGR ,Post-tax Returns etc.), Total Assets, Net Worth Calculations, Financial Ratios **b) Tax and Estate Planning:** • Tax Planning Concepts, Assessment Year, Financial Year, Income Tax Slabs, TDS, Advance Tax, LTCG, STCG, Carry Forward & Set-off, Estate Planning Concepts –Types of Will – Requirements of a Valid Will– Trust – Deductions - Exemptions
4	**Retirement Planning/ Income Streams & Tax Savings Schemes**
	a) Retirement Planning: • Understanding of different Salary Components, Introduction to Retirement Planning, Purpose & Need, Life Cycle Planning, Financial Objectives in Retirement Planning, Wealth Creation (Factors and Principles), Retirement (Evaluation & Planning), Pre & Post-Retirement Strategies - Tax Treatment **b) Income Streams & Tax Savings Schemes:** • Pension Schemes, Annuities- Types of Annuities, Various Income Tax Savings Schemes

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

4. Financial Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Preparation of Final Accounts of Companies	15
2	Underwriting of Shares & Debentures	12
3	Accounting of Transactions of Foreign Currency	15
4	Investment Accounting (w.r.t. Accounting Standard- 13)	10
5	Ethical Behaviour and Implications for Accountants	08
Total		**60**

Objectives

SN	Objectives
01	To acquaint the learners in preparation of final accounts of companies
02	To study provisions relating to underwriting of shares and debentures
03	To study accounting of foreign currency and investment
04	To understand the need of ethical behaviour in accountancy

Sr. No.	Modules / Units
1	**Preparation of Final Accounts of Companies**
	Relevant provisions of Companies Act related to preparation of Final Accounts (excluding cash flow statement) Preparation of financial statements as per Companies Act (excluding cash flow statement) AS 1 in relation to final accounts of companies (disclosure of accounting policies)
2	**Underwriting of Shares & Debentures**
	Introduction, Underwriting, Underwriting Commission Provision of Companies Act with respect to Payment of underwriting commission Underwriters, Sub-Underwriters, Brokers and Manager to Issues Types of underwriting, Abatement Clause Marked, Unmarked and Firm-underwriting applications, Liability of the underwriters in respect of underwriting contract- Practical problems
3	**Accounting of Transactions of Foreign Currency**
	In relation to purchase and sale of goods, services, assets, loan and credit transactions. Computation and treatment of exchange rate differences.
4	**Investment Accounting (w.r.t. Accounting Standard- 13)**
	For shares (variable income bearing securities) For Debentures/Preference shares (fixed income bearing securities) Accounting for transactions of purchase and sale of investments with ex and cum interest prices and finding cost of investment sold and carrying cost as per weighted average method (Excl. brokerage). Columnar format for investment account.
5	**Ethical Behaviour and Implications for Accountants**
	Introduction, Meaning of ethical behavior Financial Reports – link between law, corporate governance, corporate social responsibility and ethics. Need of ethical behavior in accounting profession . Implications of ethical values for the principles versus rule based approaches to accounting standards The principal based approach and ethics The accounting standard setting process and ethics The IFAC Code of Ethics for Professional Accountants Contents of Research Report in Ethical Practices Implications of unethical behavior for financial reports Company Codes of Ethics The increasing role of Whistle – Blowing

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

5. Risk Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction, Risk Measurement and Control	15
2	Risk Avoidance and ERM	15
3	Risk Governance and Assurance	15
4	Risk Management in Insurance	15
	Total	**60**

Objectives

SN	Objectives
1	To familiarize the student with the fundamental aspects of risk management and control
2	To give a comprehensive overview of risk governance and assurance with special reference to insurance sector
3	To introduce the basic concepts, functions, process, techniques of risk management

SN	Modules/ Units
1	**Introduction, Risk Measurement and Control**
	a) Introduction, Risk Measurement and Control • Definition, Risk Process, Risk Organization, Key Risks –Interest, Market, Credit, Currency, Liquidity, Legal, Operational • Risk Management V/s Risk Measurement – Managing Risk, Diversification, Investment Strategies and Introduction to Quantitative Risk Measurement and its Limitations • Principals of Risk - Alpha, Beta, R squared, Standard Deviation, Risk Exposure Analysis, Risk Immunization, Risk and Summary Measures –Simulation Method, Duration Analysis, Linear and other Statistical Techniques for Internal Control
2	**Risk Avoidance and ERM**
	a) Risk Hedging Instruments and Mechanism: • Forwards, Futures, Options, Swaps and Arbitrage Techniques, Risk Return Trade off, Markowitz Risk Return Model, Arbitrage Theory, System Audit Significance in Risk Mitigation **b) Enterprise Risk Management:** • Risk Management V/s Enterprise Risk Management, Integrated Enterprise Risk Management, ERM Framework, ERM Process, ERM Matrix, SWOT Analysis, Sample Risk Register
3	**Risk Governance and Assurance**
	a) Risk Governance: • Importance and Scope of Risk Governance, Risk and Three Lines of Defense, Risk Management and Corporate Governance **b) Risk Assurance:** • Purpose and Sources of Risk Assurance, Nature of Risk Assurance, Reports and Challenges of Risk **c) Risk and Stakeholders Expectations:** • Identifying the Range of Stakeholders and Responding to Stakeholders Expectations
4	**Risk Management in Insurance**
	a) Insurance Industry: • Global Perspective, Regulatory Framework in India, IRDA - Reforms, Powers, Functions and Duties. Role and Importance of Actuary **b) Players of Insurance Business:** • Life and Non- Life Insurance, Reinsurance, Bancassurance, Alternative Risk Trance, Insurance Securitization, Pricing of Insurance products, Expected Claim Costs, Risk Classification **c) Claim Management:** • General Guidelines, Life Insurance, Maturity, Death, Fire, Marine, Motor Insurance and Calculation of Discounted Expected Claim Cost and Fair Premium

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

6. Direct Taxes

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Definitions and Residential Status	10
2	Heads of Income – I	15
3	Heads of Income - II	15
4	Deductions under Chapter VI A	10
5	Computation of Taxable Income of Individuals	10
Total		**60**

Objectives

SN	Objectives
01	To understand the provisions of determining residential status of individual
02	To study various heads of income
03	To study deductions from total income
04	To compute taxable income of Individuals

Sr. No.	Modules / Units
1	**Definitions and Residential Status**
	Basic Terms (S. 2,3,4) Assessee, Assessment, Assessment Year, Annual Value, Business, Capital Assets, Income, Previous Year, Person, Transfer. Determination of Residential Status of Individual, Scope of Total Income (S.5)
2	**Heads of Income – I**
	Salary (S.15-17) Income from House Property (S. 22-27) Profit & Gain from Business and Profession(S. 28, 30,31,32, 35, 35D,36,37, 40, 40A and 43B)
3	**Heads of Income – II**
	Capital Gain (S. 45, 48, 49, 50 and 54) Income from other sources (S.56- 59) Exclusions from Total Income (S.10) (Exclusions related to specified heads to be covered with relevant heads of income)
4	**Deductions under Chapter VI A**
	Deductions from Total Income S. 80C, 80CCC, 80D, 80DD, 80E, 80U, 80TTA
5	**Computation of Taxable Income of Individuals.**
	Computation of Total Income and Taxable Income of Individuals

Note: The Syllabus is restricted to study of particular sections, specifically mentioned rules and notifications only.

1. All modules / units include Computational problems / Case Study**.**

2. The Law In force on 1st April immediately preceding the commencement of Academic year will be applicable for ensuing Examinations.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group B: Marketing Electives

1. Service Marketing

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction of Services Marketing	15
2	Key Elements of Services Marketing Mix	15
3	Managing Quality Aspects of Services Marketing	15
4	Marketing of Services	15
	Total	**60**

Objectives

SN	Objectives
1	To understand distinctive features of services and key elements in services marketing
2	To provide insight into ways to improve service quality and productivity
3	To understand marketing of different services in Indian context

SN	Modules/ Units
1	**Introduction of Services Marketing**
	• Services Marketing Concept, Distinctive Characteristics of Services, Services Marketing Triangle, Purchase Process for Services, Marketing Challenges of Services • Role of Services in Modern Economy, Services Marketing Environment • Goods vs Services Marketing, Goods Services Continuum • Consumer Behaviour, Positioning a Service in the Market Place • Variations in Customer Involvement, Impact of Service Recovery Efforts on Consumer Loyalty • Type of Contact: High Contact Services and Low Contact Services • Sensitivity to Customers' Reluctance to Change
2	**Key Elements of Services Marketing Mix**
	• The Service Product, Pricing Mix, Promotion & Communication Mix, Place/Distribution of Service, People, Physical Evidence, Process-Service Mapping-Flowcharting • Branding of Services – Problems and Solutions • Options for Service Delivery
3	**Managing Quality Aspects of Services Marketing**
	• Improving Service Quality and Productivity • Service Quality – GAP Model, Benchmarking, Measuring Service Quality -Zone of Tolerance and Improving Service Quality • The SERVQUAL Model • Defining Productivity – Improving Productivity • Demand and Capacity Alignment
4	**Marketing of Services**
	• International and Global Strategies in Services Marketing: Services in the Global Economy- Moving from Domestic to Transnational Marketing • Factors Favouring Transnational Strategy • Elements of Transnational Strategy • Recent Trends in Marketing Of Services in: Tourism, Hospitality, Healthcare, Banking, Insurance, Education, IT and Entertainment Industry • Ethics in Services Marketing: Meaning, Importance, Unethical Practices in Service Sector

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group B: Marketing Electives

2. E-Commerce and Digital Marketing

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to E-commerce	15
2	E-Business & Applications	15
3	Payment, Security, Privacy &Legal Issues in E-Commerce	15
4	Digital Marketing	15
	Total	**60**

Objectives

SN	Objectives
1	To understand increasing significance of E-Commerce and its applications in Business and Various Sectors
2	To provide an insight on Digital Marketing activities on various Social Media platforms and its emerging significance in Business
3	To understand Latest Trends and Practices in E-Commerce and Digital Marketing, along with its Challenges and Opportunities for an Organisation

SN	Modules/ Units
1	**Introduction to E-commerce**
	• Ecommerce- Meaning, Features of E-commerce, Categories of E-commerce, Advantages &Limitations of E-Commerce, Traditional Commerce &E-Commerce • Ecommerce Environmental Factors: Economic, Technological, Legal , Cultural & Social • Factors Responsible for Growth of E-Commerce, Issues in Implementing E-Commerce, Myths of E-Commerce • Impact of E-Commerce on Business, Ecommerce in India • Trends in E-Commerce in Various Sectors: Retail, Banking, Tourism, Government, Education • Meaning of M-Commerce, Benefits of M-Commerce, Trends in M-Commerce
2	**E-Business & Applications**
	• E-Business: Meaning, Launching an E-Business, Different phases of Launching an E-Business • Important Concepts in E-Business: Data Warehouse, Customer Relationship Management , Supply Chain Management, Enterprise Resource Planning • Bricks and Clicks business models in E-Business: Brick and Mortar, Pure Online, Bricks and Clicks, Advantages of Bricks & Clicks Business Model, Superiority of Bricks and Clicks E-Business Applications: E-Procurement, E-Communication, E-Delivery, E-Auction, E-Trading. • Electronic Data Interchange (EDI) in E-Business: Meaning of EDI, Benefits of EDI, Drawbacks of EDI, Applications of EDI. • Website : Design and Development of Website, Advantages of Website, Principles of Web Design, Life Cycle Approach for Building a Website, Different Ways of Building a Website
3	**Payment, Security, Privacy &Legal Issues in E-Commerce**
	• Issues Relating to Privacy and Security in E-Business • Electronic Payment Systems: Features, Different Payment Systems :Debit Card, Credit Card ,Smart Card, E-cash, E-Cheque, E-wallet, Electronic Fund Transfer. • Payment Gateway: Introduction, Payment Gateway Process, Payment Gateway Types, Advantages and Disadvantages of Payment Gateway. • Types of Transaction Security • E-Commerce Laws: Need for E-Commerce laws, E-Commerce laws in India, Legal Issues in E-commerce in India, IT Act 2000

SN	Modules/ Units
4	**Digital Marketing**
	• Introduction to Digital Marketing, Advantages and Limitations of Digital Marketing. • Various Activities of Digital Marketing: Search Engine Optimization, Search Engine Marketing, Content Marketing & Content Influencer Marketing, Campaign Marketing, Email Marketing, Display Advertising, Blog Marketing, Viral Marketing, Podcasts & Vodcasts. • Digital Marketing on various Social Media platforms. • Online Advertisement, Online Marketing Research, Online PR • Web Analytics • Promoting Web Traffic • Latest developments and Strategies in Digital Marketing.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group B: Marketing Electives

3. Sales and Distribution Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction	15
2	Market Analysis and Selling	15
3	Distribution Channel Management	15
4	Performance Evaluation, Ethics and Trends	15
	Total	**60**

Objectives

SN	Objectives
1	To develop understanding of the sales & distribution processes in organizations
2	To get familiarized with concepts, approaches and the practical aspects of the key decision making variables in sales management and distribution channel management

SN	Modules/ Units
1	**Introduction**
	a) Sales Management: • Meaning, Role of Sales Department, Evolution of Sales Management • Interface of Sales with Other Management Functions • Qualities of a Sales Manager • Sales Management: Meaning, Developments in Sales Management- Effectiveness to Efficiency, Multidisciplinary Approach, Internal Marketing, Increased Use of Internet, CRM, Professionalism in Selling. • Structure of Sales Organization – Functional, Product Based, Market Based, Territory Based, Combination or Hybrid Structure **b) Distribution Management:** • Meaning, Importance, Role of Distribution, Role of Intermediaries, Evolution of Distribution Channels. **c) Integration of Marketing, Sales and Distribution**
2	**Market Analysis and Selling**
	a) Market Analysis: • Market Analysis and Sales Forecasting, Methods of Sales Forecasting • Types of Sales Quotas – Value Quota, Volume Quota, Activity Quota, Combination Quota • Factors Determining Fixation of Sales Quota • Assigning Territories to Salespeople **b) Selling:** • Process of Selling, Methods of Closing a Sale, Reasons for Unsuccessful Closing • Theories of Selling – Stimulus Response Theory, Product Orientation Theory, Need Satisfaction Theory • Selling Skills – Communication Skill, Listening Skill, Trust Building Skill, Negotiation Skill, Problem Solving Skill, Conflict Management Skill • Selling Strategies – Softsell Vs. Hardsell Strategy, Client Centered Strategy, Product-Price Strategy, Win-Win Strategy, Negotiation Strategy • Difference Between Consumer Selling and Organizational Selling • Difference Between National Selling and International Selling

SN	Modules/ Units
3	**Distribution Channel Management**
	• Management of Distribution Channel – Meaning & Need • Channel Partners- Wholesalers, Distributors and Retailers & their Functions in Distribution Channel, Difference Between a Distributor and a Wholesaler • Choice of Distribution System – Intensive, Selective, Exclusive • Factors Affecting Distribution Strategy – Locational Demand, Product Characteristics, Pricing Policy, Speed or Efficiency, Distribution Cost • Factors Affecting Effective Management Of Distribution Channels ▪ Channel Design ▪ Channel Policy ▪ Channel Conflicts: Meaning, Types – Vertical, Horizontal, Multichannel, Reasons for Channel Conflict ▪ Resolution of Conflicts: Methods – Kenneth Thomas's Five Styles of Conflict Resolution ▪ Motivating Channel Members ▪ Selecting Channel Partners ▪ Evaluating Channels ▪ Channel Control
4	**Performance Evaluation, Ethics and Trends**
	a) Evaluation & Control of Sales Performance: • Sales Performance – Meaning • Methods of Supervision and Control of Sales Force • Sales Performance Evaluation Criteria- Key Result Areas (KRAs) • Sales Performance Review • Sales Management Audit **b) Measuring Distribution Channel Performance:** • Evaluating Channels- Effectiveness, Efficiency and Equity • Control of Channel – Instruments of Control – Contract or Agreement, Budgets and Reports, Distribution Audit **c) Ethics in Sales Management** **d) New Trends in Sales and Distribution Management**

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group B: Marketing Electives

4. Customer Relationship Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Customer Relationship Management	15
2	CRM Marketing Initiatives, Customer Service and Data Management	15
3	CRM Strategy, Planning, Implementation and Evaluation	15
4	CRM New Horizons	15
	Total	**60**

Objectives

SN	Objectives
1	To understand concept of Customer Relationship Management (CRM) and implementation of Customer Relationship Management
2	To provide insight into CRM marketing initiatives, customer service and designing CRM strategy
3	To understand new trends in CRM, challenges and opportunities for organizations

SN	Modules/ Units
1	**Introduction to Customer Relationship Management**
	• Concept, Evolution of Customer Relationships: Customers as strangers, acquaintances, friends and partners • Objectives, Benefits of CRM to Customers and Organisations, Customer Profitability Segments, Components of CRM: Information, Process, Technology and People, Barriers to CRM • Relationship Marketing and CRM: Relationship Development Strategies: Organizational Pervasive Approach, Managing Customer Emotions, Brand Building through Relationship Marketing, Service Level Agreements, Relationship Challenges
2	**CRM Marketing Initiatives, Customer Service and Data Management**
	• CRM Marketing Initiatives: Cross-Selling and Up-Selling, Customer Retention, Behaviour Prediction, Customer Profitability and Value Modeling, Channel Optimization, Personalization and Event-Based Marketing • CRM and Customer Service: Call Center and Customer Care: Call Routing, Contact Center Sales-Support, Web Based Self Service, Customer Satisfaction Measurement, Call-Scripting, Cyber Agents and Workforce Management • CRM and Data Management: Types of Data: Reference Data, Transactional Data, Warehouse Data and Business View Data, Identifying Data Quality Issues, Planning and Getting Information Quality, Using Tools to Manage Data, Types of Data Analysis: Online Analytical Processing (OLAP), Clickstream Analysis, Personalisation and Collaborative Filtering, Data Reporting
3	**CRM Strategy, Planning, Implementation and Evaluation**
	• Understanding Customers: Customer Value, Customer Care, Company Profit Chain: Satisfaction, Loyalty, Retention and Profits • Objectives of CRM Strategy, The CRM Strategy Cycle: Acquisition, Retention and Win Back, Complexities of CRM Strategy • Planning and Implementation of CRM: Business to Business CRM, Sales and CRM, Sales Force Automation, Sales Process/ Activity Management, Sales Territory Management, Contact Management, Lead Management, Configuration Support, Knowledge Management CRM Implementation: Steps- Business Planning, Architecture and Design, Technology Selection, Development, Delivery and Measurement • CRM Evaluation: Basic Measures: Service Quality, Customer Satisfaction and Loyalty, Company 3E Measures: Efficiency, Effectiveness and Employee Change

4	**CRM New Horizons**
	• e-CRM: Concept, Different Levels of E- CRM, Privacy in E-CRM: • Software App for Customer Service: ▪ Activity Management, Agent Management, Case Assignment, Contract Management, Customer Self Service, Email Response Management, Escalation, Inbound Communication Management, Invoicing, Outbound Communication Management, Queuing and Routing, Scheduling • Social Networking and CRM • Mobile-CRM • CRM Trends, Challenges and Opportunities • Ethical Issues in CRM

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group B: Marketing Electives

5. Industrial Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Industrial Marketing -An Introduction, Marketing Environment and Buying Behaviour	15
2	Industrial Marketing Research and Segmentation, Targeting and Positioning in Industrial Market	15
3	Industrial Marketing Mix	15
4	Emerging Trends in Industrial Marketing	15
Total		**60**

Objectives

SN	Objectives
01	To understand basics of industrial marketing, Marketing Environment, Segmenting Targeting Positioning, channel strategy, marketing communication and pricing
02	To provide knowledge of industrial market structure and how they function
03	To provide understanding of the various attributes and models applicable in Industrial Marketing
04	To acquaint the students with trends in Industrial Marketing

Sr. No.	Modules / Units
1	**Industrial Marketing -An Introduction, Marketing Environment and Buying Behaviour**
	• **Introduction to Industrial Marketing**: Introduction, Definition, Features, Industrial versus Consumer marketing, Classification of Industrial products and Services • **Industrial Marketing Environment**: Technological; Customer; Competitive, Legal and Economic Environment; Responsibility of industrial Marketing Manager in planning, Coordination, Execution and control • **Industrial Buying and Buying Behaviour**: Procurement function; Purchase policy; Organization buying processes, Profile of Business buyers: Buying Centres; Buying Centres Roles; Buying Centre Members, Vender Analysis: Criteria for evaluating potential vendor; Vendor Rating, Models of industrial buying Behaviour
2	**Industrial Marketing Research and Segmentation, Targeting and Positioning in Industrial Market**
	• **Industrial Marketing Research**: Introduction, Classification of Industrial Marketing Research, Industrial Marketing Research Process, Role and Scope of Industrial Marketing Research, Advantages and limitations of Industrial Marketing Research, Role of Industrial Marketing Research in Marketing Information System and Decision Support System. • **Segmentation, Targeting and Positioning in Industrial Market**: Introduction to segmentation; Criteria for market segmentation; Basis of Market segmentation, choosing the market segmentation, Target Market: Concept, Approaches to Target Market, Positioning: Concept, Objectives of positioning, Positioning of Products and services; Effective Positioning; positioning process.
3	**Industrial Marketing Mix**
	• **Industrial Products and New Product Development**: Introduction to Industrial Products; Product Policy; Product Classification; Introduction to new product development; New industrial products; stages in New product development. • **Industrial Pricing**: Introduction to industrial Pricing; Factors influencing industrial pricing decision; Types of pricing; Leasing; Bidding; Negotiation • **Industrial Marketing Communication**: Advertising, Personal selling and Sales promotion: Role of advertising in B2B Market; various media options; Advertising on the internet; Using Advertising Agencies for industrial Marketers; Personal Selling in industrial Marketing; Different steps in Personal Selling; Sales promotion in industrial marketing. • **Marketing Channels and Physical Distribution of Industrial Products**: Industrial marketing channels; Indirect and direct marketing channels; Importance of marketing channels; Factors affecting selection of Marketing Channels; Process of designing the channel structure: Analyzing the channel objectives, constraints, channel tasks, channel alternatives and selecting the channel
4	**Emerging Trends in Industrial Marketing**
	• **Business Networks** : Business Networks in Industrial marketing, Relationship in Business networks , Technology and Business networks • **E-Procurement in Industrial Market**: Meaning , Importance of E-procurement , Implementation of E-procurement • **E-Commerce**: Definition of E-Commerce, Advantages and disadvantages of B2B E-Commerce, Role of E-Commerce in the context B2B marketer, Forms of B2B E-Commerce, Electronic Data Interchange; E-payments; E-security

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group B: Marketing Electives

6. Strategic Marketing Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Strategic Marketing Management	15
2	Segmenting, Targeting, Positioning and Creation of Value in the context of Strategic Marketing	15
3	Strategic Decisions in Product, Services and Branding	15
4	Strategic Decisions in Pricing, Promotion and Distribution and strategic growth management	15
Total		**60**

Objectives

SN	Objectives
01	To understand marketing strategies and their impact on business models
02	To learn strategic marketing tactics related to product, price, service, brand, positioning, incentives and communication for business growth.
03	To learn the various marketing strategies adopted by Companies to create a competitive advantage

Sr. No.	Modules / Units
1	**Introduction to Strategic Marketing Management**
	• **Marketing**: Nature of Marketing, marketing as an art, science and business discipline, marketing as a value creation process • **Strategic decisions**: Nature of strategy, the marketing strategy interface, difference between marketing planning and strategic planning • **Identifying the market**: The five C framework-customer, company, collaborator, competitor, context • **The 7 tactics of Marketing mix**: Product, service, brand, price ,incentives, communication and distribution • **Business Model and Strategic Marketing Planning**: Meaning, Role of Business models in marketing management, Strategies for developing a business models: top-down business model generation, bottom up business model generation, The G-STIC frame work for marketing planning: Goal-Strategy-Tactics-Implementation-control
2	**Segmenting, Targeting, Positioning and Creation of Value in the context of Strategic Marketing:**
	• **Segmentation:** Essence of segmentation, Factors to be considered while segmenting, key segmenting principles- relevance, similarity, exclusivity • **Identifying Target Customers**: Factors to be considered while targeting, targeting strategies-One for all strategy, one for each strategy, Strategic Targeting criteria: target attractiveness, target compatibility Essential strategic assets for target compatibility: business infrastructure, collaborator networks, human capital, intellectual property, strong brands, established customer base, synergistic offerings, access to scarce resources and capital. • **Creating Customer Value through Positioning:** Role of strategic positioning, strategic positioning options: The quality option, value option, the pioneer, a narrow product focus, target segment focus; strategies for creating superior customer value. **Creating Company Value:** Understanding Company Value: Monetary, functional and psychological value; strategically managing profits--increasing sales revenue-through volume, optimizing price, lowering costs **Creating Collaborator Value**: Meaning of collaborators, collaboration as business process, advantages and drawbacks of collaboration, levels of strategic collaboration: explicit, implicit; alternatives to collaboration: horizontal and vertical integration, managing collaborator relations; gaining collaborator power: offering differentiation; collaborator size, strategic importance, switching costs

3	**Strategic Decisions in Product, Services and Branding**
	• **Managing Product and Services**: factors affecting product and service decisions- performance, consistency, reliability, durability, compatibility, ease of use, technological design, degree of customization, physical aspects, style, packaging. **Managing New Products**: Forecasting new product demand using Primary Data and secondary data: offering specific forecasting, forecasting by analogy, category based forecasting. **New product adoption:** Understanding new product adoption, factors influencing diffusion of new offering, new product development process, managing risk in new products- market risk and technological risk, Moore's Model of adoption of new technologies, managing product life cycle at various stages, extending Product lifecycle. • **Managing Product Lines**: Managing vertical, upscale, downscale, horizontal product-Line Extensions, Managing Product Line Cannibalization, Managing Product lines to gain and defend market position-The Fighting Brand Strategy, The sandwich strategy, The Good-better-best strategy • **Brand Tactics**: Brand: Meaning, brand identity, brand as value creation process brand hierarchy-Individual and umbrella branding, brand extension: vertical and horizontal, brand equity and brand power, measuring brand equity-cost based approach, market based approach and financial based approach.
4	**Strategic Decisions in Pricing, Promotion and Distribution and strategic growth management**
	A) Managing Price: Major approaches to strategic pricing-cost based pricing, competitive pricing, demand pricing; Price sensitivity: meaning, psychological pricing, Five psychological pricing effects: reference price effects, price quantity effects, price tier effects, price ending effects, product line effects; Understanding competitive pricing and price wars: factors affecting price wars, Approach for developing a strategic response to competitors price cut, Other pricing strategies-captive pricing, cross price elasticity, deceptive pricing, everyday low pricing, experience curve pricing, loss leader pricing, horizontal price fixing, price signalling. **B) Managing Promotions and incentives**: Promotion mix strategy, Factors affecting strategic decisions in promotion mix, Promotion expenditure strategy, Methods to determine promotion expenditure-Breakdown Method, Buildup Method, Push and Pull promotions. Managing incentives as a value creation process, Goals of using customer incentives, Monetary incentives for customers, Non monetary incentives for customers. Collaborator incentives meaning, monetary incentives-slotting allowance, stocking allowance, cooperative advertising allowance, market development allowance, display allowance, spiffs **C) Managing distribution**: Distribution as value creation process, distribution channel design process- Channel structure: Direct, indirect and hybrid channel; channel coordination- common ownership, contractual relationship, implicit channel coordination; channel type, channel coverage, channel exclusivity **D) Strategic Growth Management**: Gaining market position: strategies to gain market position: steal share strategy, market growth strategy, market innovation strategy; Pioneering new markets: Meaning, Types of Pioneers: technology, product, business model, markets; benefits and drawbacks of being a Pioneer. **Defending market position**: Strategies to defend market position- ignoring competitors' action, repositioning the existing offer- repositioning to increase value for current customers, repositioning to attract new customers.

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Elective Courses (EC)

Group C: Human Resource Electives

1. Finance for HR Professionals and Compensation Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Compensation Plans and HR Professionals	15
2	Incentives and Wages	15
3	Compensation to Special Groups and Recent Trends	15
4	Legal and Ethical issues in Compensation	15
	Total	**60**

Objectives

SN	Objectives
1	To orient HR professionals with financial concepts to enable them to make prudent HR decisions
2	To understand the various compensation plans
3	To study the issues related to compensation management and understand the legal framework of compensation management

SN	Modules/ Units
1	**Compensation Plans and HR Professionals**
	• Meaning, Objectives of Compensation Plans, Role of HR Professionals in Compensation Plans, Types of Compensation: Financial and non-financial, Factors Influencing Compensation • Compensation Tools: Job based and Skill based, Models: Distributive Justice Model and Labour Market Model, Dimensions of Compensation • 3 Ps Compensation Concept, Benefits of Compensation: Personal, Health and Safety, Welfare, Social Security • Pay Structure: Meaning, Features, Factors, Designing the Compensation System, Compensation Scenario in India.
2	**Incentives and Wages**
	• Incentive Plans – Meaning and Types: Piecework, Team, Incentives for Managers and Executives, Salespeople, Merit pay, Scanlon Pay, Profit Sharing Plan, ESOP, Gain Sharing, Earning at Risk plan, Technology and Incentives. Prerequisites of an Effective Incentive System • Wage Differentials: Concepts, Factors contributing to Wage Differentials, Types of Wage Differentials, Importance of Wage Differentials, Elements of a Good Wage Plan. • Theories of Wages: Subsistence Theory, Wage Fund Theory, Marginal Productivity Theory, Residual Claimant Theory, Bargaining Theory.
3	**Compensation to Special Groups and Recent Trends**
	• Compensation for Special Groups: Team Based pay, Remunerating Professionals, Contract Employees, Corporate Directors, CEOs, Expatriates and Executives. • Human Resource Accounting – Meaning, Features, Objectives and Methods • Recent Trends: Golden Parachutes, e-Compensation, Salary Progression Curve, Competency and Skill based, Broad banding and New Pay, Cafeteria approach – Features, Advantages and Disadvantages.
4	**Legal and Ethical issues in Compensation**
	• Legal Framework of Compensation in India: Wage Policy in India, Payment of Bonus Act 1965, Equal Remuneration Act 1976, Payment of Wages Act 1936, Payment of Gratuity Act 1972, Employee Compensation Act 1923, Employees Provident Funds and Miscellaneous Provision Act 1952. • Pay Commissions, Wage Boards, Adjudication, Legal considerations, COBRA requirement, Pay Restructuring in Mergers and Acquisitions, Current Issues and Challenges in Compensation Management, Ethics in Compensation Management.

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Elective Courses (EC)

Group C: Human Resource Electives

2. Strategic Human Resource Management and HR Policies

Modules at a Glance

SN	Modules	No. of Lectures
1	SHRM - An Overview	15
2	HR Strategies	15
3	HR Policies	15
4	Recent Trends in SHRM	15
	Total	**60**

Objectives

SN	Objectives
1	To understand human resource management from a strategic perspective
2	To link the HRM functions to corporate strategies in order to understand HR as a strategic resource
3	To understand the relationship between strategic human resource management and organizational performance
4	To apply the theories and concepts relevant to strategic human resource management in contemporary organizations
5	To understand the purpose and process of developing Human Resource Policies

SN	Modules/ Units
1	**SHRM - An Overview**
	• Strategic Human Resource Management (SHRM) – Meaning, Features, Evolution, Objectives, Advantages, Barriers to SHRM, SHRM v/s Traditional HRM, Steps in SHRM, Roles in SHRM - Top Management, Front-line Management, HR, Changing Role of HR Professionals, Models of SHRM – High Performance Working Model, High Commitment Management Model, High Involvement Management Model • HR Environment –Environmental trends and HR Challenges • Linking SHRM and Business Performance
2	**HR Strategies**
	• Developing HR Strategies to Support Organisational Strategies, Resourcing Strategy – Meaning and Objectives, Strategic HR Planning – Meaning, Advantages, Interaction between Strategic Planning and HRP, Managing HR Surplus and Shortages, Strategic Recruitment and Selection – Meaning and Need, Strategic Human Resource Development – Meaning, Advantages and Process, Strategic Compensation as a Competitive Advantage, Rewards Strategies – Meaning, Importance, Employee Relations Strategy, Retention Strategies, Strategies for Enhancing Employee Work Performance
3	**HR Policies**
	• Human Resource Policies – Meaning, Features, Purpose of HR Policies, Process of Developing HR Policies, Factors affecting HR Policies, Areas of HR Policies in Organisation, Requisites of a Sound HR Policies – Recruitment, Selection, Training and Development, Performance Appraisal, Compensation, Promotion, Outsourcing, Retrenchment, Barriers to Effective Implementation of HR Policies and Ways to Overcome These Barriers, Need for Reviewing and Updating HR Policies, Importance of Strategic HR Policies to Maintain Workplace Harmony
4	**Recent Trends in SHRM**
	• i.e. Mentoring • Employee Engagement – Meaning, Factors Influencing Employee Engagement, Strategies for Enhancing Employee Engagement • Contemporary Approaches to HR Evaluation – Balance Score Card, HR Score Card, Benchmarking and Business Excellence Model • Competency based HRM – Meaning, Types of Competencies, Benefits of Competencies for Effective Execution of HRM Functions. • Human Capital Management –Meaning and Role • New Approaches to Recruitment – Employer Branding, Special Event Recruiting, Contest Recruitment, e - Recruitment • Strategic International Human Resource Management – Meaning and Features, International SHRM Strategic Issues, Approaches to Strategic International HRM.

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Elective Courses (EC)

Group C: Human Resource Electives

3. Performance Management and Career Planning

Modules at a Glance

SN	Modules	No. of Lectures
1	Performance Management – An Overview	15
2	Performance Management Process	15
3	Ethics, Under Performance and Key Issues in Performance Management	15
4	Career Planning and Development	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept of performance management in organizations
2	To review performance appraisal systems
3	To understand the significance of career planning and practices

SN	Modules/ Units
1	**Performance Management – An Overview**
	• Performance Management– Meaning, Features, Components of Performance Management, Evolution, Objectives, Need and Importance, Scope, Performance Management Process, Pre-Requisites of Performance Management, Linkage of Performance Management with other HR functions, Performance Management and Performance Appraisal, Performance Management Cycle • Best Practices in Performance Management, Future of Performance Management. • Role of Technology in Performance Management
2	**Performance Management Process**
	• Performance Planning – Meaning, Objectives, Steps for Setting Performance Criteria, Performance Benchmarking • Performance Managing – Meaning, Objectives, Process • Performance Appraisal – Meaning, Approaches of Performance Appraisal – Trait Approach, Behaviour Approach, Result Approach • Performance Monitoring–Meaning, Objectives and Process • Performance Management Implementation – Strategies for Effective Implementation of Performance Management • Linking Performance Management to Compensation • Concept of High Performance Teams
3	**Ethics, Under Performance and Key Issues in Performance Management**
	• Ethical Performance Management - Meaning, Principles, Significance of Ethics in Performance Management, Ethical Issues in Performance Management, Code of Ethics in Performance Management, Building Ethical Performance Culture, Future Implications of Ethics in Performance Management • Under Performers and Approaches to Manage Under Performers, Retraining • Key Issues and Challenges in Performance Management • Potential Appraisal: Steps, Advantages and Limitations. • Pay Criteria -Performance related pay, Competence related pay, Team based pay, Contribution related pay.
4	**Career Planning and Development**
	• Career Planning - Meaning, Objectives, Benefits and Limitations, Steps in Career Planning, Factors affecting Individual Career Planning, Role of Mentor in Career Planning, Requisites of Effective Career Planning • Career Development – Meaning, Role of employer and employee in Career Development, Career Development Initiatives • Role of Technology in Career Planning and Development • Career Models – Pyramidal Model, Obsolescence Model, Japanese Career Model • New Organizational Structures and Changing Career Patterns

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Elective Courses (EC)

Group C: Human Resource Electives

4. Industrial Relations

Modules at a Glance

SN	Modules	No. of Lectures
1	Industrial Relations- An overview	15
2	Industrial Disputes	15
3	Trade Unions and Collective Bargaining	15
4	Industrial Relations Related Laws in India	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept of performance management in organizations
2	To review performance appraisal systems
3	To understand the significance of career planning and practices

SN	Modules/ Units
1	**Industrial Relations- An overview**
	• Meaning, Objectives, Characteristics of a good Industrial Relations System/Principles of a good IR/Essentials of good IR, Scope, Significance/Need and Importance of IR, Major Stakeholders of IR, Evolution of IR in India, Factors affecting IR, Role of State, Employers and Unions in IR, Changing Dimensions of IR in India, Impact of Liberalisation, Privatisation and Globalisation on Industrial Relations, Issues and Challenges of industrial relations in India
2	**Industrial Disputes**
	a) Industrial Disputes: • Meaning of Industrial Dispute, Causes, Forms/Types, Consequences/Effects, Methods of Settling Industrial Disputes (Arbitration, Joint Consultations, Works Committee, Conciliation, Adjudication etc) • Concepts Related to Industrial Disputes (Relevant Examples): Strike, Layoff, Lockout, Retrenchment **b) Employee Discipline:** • Meaning, Determinants, Causes of Indiscipline, Code of Discipline and its Enforcement. **c) Grievance Handling:** • Meaning of Grievances, Causes of Grievances, Guidelines for Grievance Handling, Grievance Redressal Procedure in India. **d) Workers' Participation in Management:** • Meaning and Types with Respect to India
3	**Trade Unions and Collective Bargaining**
	a) Trade Unions: • Meaning, Features, Objectives, Role of Trade Unions, Functions/Activities, Types, Evolution of Trade Unions across Globe, Evolution of Trade Unions in India, Structure of Trade Unions in India, Recognition of Trade Unions, Rights and Privileges of Registered Trade Unions, Impact of Globalisation on Trade Unions in India, Central Organisations of Indian Trade Unions : INTUC, AITUC, HMS,UTUC, Problems of Trade Unions in India. **b) Collective Bargaining:** • Meaning, Features, Importance, Scope, Collective Bargaining Process, Prerequisites of Collective Bargaining, Types of Collective Bargaining Contracts, Levels of Collective Bargaining, Growth of Collective Bargaining in India, Obstacles to Collective Bargaining in India.

SN	Modules/ Units
4	**Industrial Relations Related Laws in India**
	• Role of Judiciary in Industrial Relations: Labour Court, Industrial Tribunal, National Tribunal • The Trade Unions Act, 1926; • The Industrial Employment (Standing Orders) Act, 1946; • The Industrial Disputes Act, 1947; • The Factories' Act, 1948 • The Minimum Wages Act, 1948

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Elective Courses (EC)

Group C:Human Resource Electives

5. Talent & Competency Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Talent Management	15
2	Talent Management System	15
3	Contemporary Issues and Current Trends in Talent Management	15
4	Competency Management and Competency Mapping	15
Total		**60**

Objectives

SN	Objectives
01	To understand key talent management & competency management concepts
02	To understand the concept and importance of competency mapping
03	To understand the role of talent management and competency management in building sustainable competitive advantage to an organization
04	To know the ethical and legal obligations associated with talent management

Sr. No.	Modules / Units
1	**Introduction to Talent Management**
	• Talent Management – Meaning, History, Scope of Talent Management, Need of Talent Management • Benefits and Limitations of Talent Management • Principles of Talent Management • Source of Talent Management • Talent Gap – Meaning, Strategies to Fill Gaps • The Talent Value Chain • Role of HR in Talent Management • Role of Talent Management in building Sustainable Competitive Advantage to an Organization
2	**Talent Management System**
	• Talent Management System – Meaning, Key Elements of Talent Management System • Critical Success Factors to Create Talent Management System • Building Blocks for Talent Management - Introduction, Effective Talent Management System, Building Blocks of Effective Talent Management System • Life Cycle of Talent Management - Meaning, Steps in Talent Management Process, Importance of Talent Management Process, Essentials of Talent Management Process • Approaches to Talent Management • Talent Management Strategy – Meaning, Developing a Talent Management Strategy, Mapping Business Strategies and Talent Management Strategies • Talent Management and Succession Planning
3	**Contemporary Issues and Current Trends in Talent Management**
	• Role of Information Technology in Effective Talent Management Systems, Talent Management Information System, Creating Business Value through Information Technology, Five Steps to a Talent Management Information Strategy • Contemporary Talent Management Issues, Talent Management Challenges • Current Trends in Talent Management • Best Practices of Talent Management • Ethical and Legal Obligations Associated with Talent Management • Talent Management in India
4	**Competency Management and Competency Mapping**
	• Concept of Competency and Competence, Competence v/s Competency • Types of Competencies, Benefits and Limitations of implementing competencies • Iceberg Model of Competency • Competency Management – Meaning, Features and Objectives • Benefits and Challenges of Competency Management • Competency Development – Meaning, Process • Competency Mapping - Meaning, Features, Need and importance of competency mapping • Methods of Competency Mapping, Steps in Competency Mapping

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Elective Courses (EC)

Group C:Human Resource Electives

6. Stress Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Understanding Stress	15
2	Managing Stress – I	15
3	Managing Stress – II	15
4	Stress Management Leading to Success	15
Total		**60**

Objectives

SN	Objectives
01	To understand the nature and causes of stress in organizations
02	To familiarize the learners with the stress prevention mechanism
03	To understand the strategies that help cope with stress
04	To be able to apply stress management principles in order to achieve high levels of performance
05	To enable to learners to adopt effective strategies, plans and techniques to deal with stress

Sr. No.	Modules / Units
1	**Understanding Stress**
	• Stress – concept, features, types of stress • Relation between Stressors and Stress • Potential Sources of Stress – Environmental, Organizational and Individual • Consequences of Stress – Physiological, Psychological and Behavioural Symptoms • Stress at work place – Meaning, Reasons • Impact of Stress on Performance • Work Stress Model • Burnout – Concept • Stress v/s Burnout
2	**Managing Stress – I**
	• Pre-requisites of Stress-free Life • Anxiety - Meaning, Mechanisms to cope up with anxiety • Relaxation - Concept and Techniques • Time Management - Meaning, Importance of Time Management • Approaches to Time Management • Stress Management - Concept, Benefits • Managing Stress at Individual level • Role of Organization in Managing Stress/ Stress Management Techniques • Approaches to Manage Stress - Action oriented, Emotion oriented, Acceptance oriented.
3	**Managing Stress – II**
	• Models of Stress Management - Transactional Model, Health Realization/ Innate Health Model • General Adaption Syndrome (GAS) - Concept, Stages • Measurement of Stress Reaction - The Physiological Response, The Cognitive Response, The Behavioural Response. • Stress prevention mechanism - Stress management through mind control and purification theory and practice of yoga education. • Stress management interventions: primary, secondary, tertiary. • Meditation – Meaning, Importance • Role of Pranayama, Mantras, Nutrition, Music, Non-violence in stress control
4	**Stress Management Leading to Success**
	• Eustress – Concept, Factors affecting Eustress • Stress Management Therapy - Concept, Benefits • Stress Counselling - Concept • Value education for stress management • Stress and New Technology • Stress Audit Process • Assessment of Stress - Tools and Methods • Future of Stress Management

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Core Course (CC)

5. Logistics and Supply Chain Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Overview of Logistics and Supply Chain Management	15
2	Elements of Logistics Mix	15
3	Inventory Management, Logistics Costing, Performance Management and Logistical Network Analysis	15
4	Recent Trends in Logistics and Supply Chain Management	15
	Total	**60**

Objectives

SN	Objectives
1	To provide students with basic understanding of concepts of logistics and supply chain management
2	To introduce students to the key activities performed by the logistics function
3	To provide an insight in to the nature of supply chain, its functions and supply chain systems
4	To understand global trends in logistics and supply chain management

SN	Modules/ Units
1	**Overview of Logistics and Supply Chain Management**
	a) Introduction to Logistics Management • Meaning, Basic Concepts of Logistics- Logistical Performance Cycle, Inbound Logistics, Inprocess Logistics, Outbound Logistics, Logistical Competency, Integrated Logistics , Reverse Logistics and Green Logistics • Objectives of Logistics, Importance of Logistics, Scope of Logistics, Logistical Functions/Logistic Mix, Changing Logistics Environment **b) Introduction to Supply Chain Management** • Meaning, Objectives, Functions, Participants of Supply Chain, Role of Logistics in Supply Chain, Comparison between Logistics and Supply Chain Management, Channel Management and Channel Integration **c) Customer Service: Key Element of Logistics** • Meaning of Customer Service, Objectives, Elements, Levels of customer service, Rights of Customers **d) Demand Forecasting** • Meaning, Objectives ,Approaches to Forecasting, Forecasting Methods, Forecasting Techniques, (Numerical on Simple Moving Average, Weighted Moving Average)
2	**Elements of Logistics Mix**
	a) Transportation • Introduction, Principles and Participants in Transportation, Transport Functionality, Factors Influencing Transportation Decisions, Modes of Transportation- Railways, Roadways, Airways, Waterways, Ropeways, Pipeline, Transportation Infrastructure, Intermodal Transportation **b) Warehousing** • Introduction, Warehouse Functionality, Benefits of Warehousing, Warehouse Operating Principles, Types of Warehouses, Warehousing Strategies, Factors affecting Warehousing **c) Materials Handling** • Meaning, Objectives, Principles of Materials Handling, Systems of Materials Handling, Equipments used for Materials Handling, Factors affecting Materials Handling Equipments **d) Packaging** • Introduction, Objectives of Packaging, Functions/Benefits of Packaging, Design Considerations in Packaging, Types of Packaging Material, Packaging Costs

SN	Modules/ Units
3	**Inventory Management, Logistics Costing, Performance Management and Logistical Network Analysis**
	a) Inventory Management • Meaning, Objectives, Functions, Importance, Techniques of Inventory Management (Numericals - EOQ and Reorder levels) **b) Logistics Costing** • Meaning, Total Cost Approach, Activity Based Costing, Mission Based Costing **c) Performance Measurement in Supply Chain** • Meaning, Objectives of Performance Measurement, Types of Performance Measurement, Dimensions of Performance Measurement, Characteristics of Ideal Measurement System **d) Logistical Network Analysis** • Meaning, Objectives, Importance, Scope, RORO/LASH
4	**Recent Trends in Logistics and Supply Chain Management**
	a) Information Technology in Logistics • Introduction, Objectives, Role of Information Technology in Logistics and Supply Chain Management, Logistical Information System, Principles of Logistical Information System, Types of Logistical Information System, Logistical Information Functionality, Information Technology Infrastructure **b) Modern Logistics Infrastructure** • Golden Quadrilateral, Logistics Parks, Deep Water Ports, Dedicated Freight Corridor, Inland Container Depots/Container Freight Stations, Maritime Logistics, Double Stack Containers/Unit Trains **c) Logistics Outsourcing** • Meaning, Objectives, Benefits/Advantages of Outsourcing, Third Party Logistics Provider, Fourth Party Logistics Provider, Drawbacks of Outsourcing, Selection of Logistics Service Provider, Outsourcing-Value Proposition **d) Logistics in the Global Environment** • Managing the Global Supply Chain, Impact of Globalization on Logistics and Supply Chain Management, Global Logistics Trends, Global Issues and Challenges in Logistics and Supply Chain Management

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Ability Enhancement Courses (AEC)

6. Corporate Communication & Public Relations

Modules at a Glance

SN	Modules	No. of Lectures
1	Foundation of Corporate Communication	15
2	Understanding Public Relations	15
3	Functions of Corporate Communication and Public Relations	15
4	Emerging Technology in Corporate Communication and Public Relations	15
	Total	**60**

Objectives

SN	Objectives
1	To provide the students with basic understanding of the concepts of corporate communication and public relations
2	To introduce the various elements of corporate communication and consider their roles in managing organizations
3	To examine how various elements of corporate communication must be coordinated to communicate effectively
4	To develop critical understanding of the different practices associated with corporate communication

SN	Modules/ Units
1	**Foundation of Corporate Communication**
	a) Corporate Communication: Scope and Relevance • Introduction, Meaning, Scope, Corporate Communication in India, Need/ Relevance of Corporate Communication in Contemporary Scenario **b) Keys concept in Corporate Communication** • Corporate Identity: Meaning and Features, Corporate Image: Meaning, Factors Influencing Corporate Image, Corporate Reputation: Meaning, Advantages of Good Corporate Reputation **c) Ethics and Law in Corporate Communication** • Importance of Ethics in Corporate Communication, Corporate Communication and Professional Code of Ethics, Mass Media Laws: Defamation, Invasion of Privacy, Copyright Act, Digital Piracy, RTI
2	**Understanding Public Relations**
	a) Fundamental of Public Relations: • Introduction, Meaning, Essentials of Public Relations, Objectives of Public Relations, Scope of Public Relations, Significance of Public Relations in Business **b) Emergence of Public Relations:** • Tracing Growth of Public Relations, Public Relations in India, Reasons for Emerging International Public Relations **c) Public Relations Environment:** • Introduction, Social and Cultural Issues, Economic Issues, Political Issues, Legal Issues **d) Theories used in Public Relations:** • Systems Theory, Situational Theory, Social Exchange Theory, Diffusion Theory
3	**Functions of Corporate Communication and Public Relations**
	a) Media Relations: • Introduction, Importance of Media Relations, Sources of Media Information, Building Effective Media Relations, Principles of Good Media Relations **b) Employee Communication:** • Introduction, Sources of Employee Communications, Organizing Employee Communications, Benefits of Good Employee Communications, Steps in Implementing An Effective Employee Communications Programme, Role of Management in Employee Communications **c) Crisis Communication:** • Introduction, Impact of Crisis, Role of Communication in Crisis, Guidelines for Handling Crisis, Trust Building **d) Financial Communication:** • Introduction, Tracing the Growth of Financial Communication in India, Audiences for Financial Communication, Financial Advertising

SN	Modules/ Units
4	**Emerging Technology in Corporate Communication and Public Relations**
	a) Contribution of Technology to Corporate Communication • Introduction, Today's Communication Technology, Importance of Technology to Corporate Communication, Functions of Communication Technology in Corporate Communication, Types of Communication Technology, New Media: Web Conferencing, Really Simple Syndication (RSS) **b) Information Technology in Corporate Communication** • Introduction, E-media Relations, E-internal Communication, E-brand Identity and Company Reputation **c) Corporate Blogging** • Introduction, Defining Corporate Blogging, Characteristics of a Blog, Types of Corporate Blogs, Role of Corporate Blogs, Making a Business Blog

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Investment Analysis & Portfolio Management
• *Kevin. S, Security Analysis and Portfolio Management* • *Donald Fischer & Ronald Jordon, Security Analysis & Portfolio Management* • *Prasanna Chandra, Security Analysis & Portfolio Management* • *Sudhindhra Bhatt, Security Analysis and Portfolio Management.*
Commodity & Derivatives Market
• *John C. Hull & Basu -Futures, options & other derivatives* • *Robert McDonald, Derivatives market, Pearson education* • *John Hull, Fundamentals of futures & options* • *Ankit Gala & Jitendra Gala, Guide to Indian Commodity market, Buzzingstock publishing house* • *K.Sasidharan & Alex K. Mathews, Option trading – bull market strategies, McGraw Hill publication* • *Niti Chatnani, Commodity markets, McGraw Hill Publication* • *S.Kevin, Commodities & financial derivatives, PHI learning Pvt ltd* • *Suni K Parmeswaran, Futures & options, McGraw Hill*
Wealth Management
• *Harold Evensky, Wealth Management, McGraw Hill Publication* • *NCFM, CFP, IIBF, etc, Wealth Management modules* • *Harold Evensky, The new wealth Management, CFA Institute Investment Series Publication*
Financial Accounting
• *Ashish K. Bhattacharyya – "Financial Accounting for Business Managers", Prentice Hall of India Pvt. Ltd.* • *Shashi K. Gupta – "Contemporary Issues in Accounting", Kalyani Publishers.* • *R. Narayanaswamy – "Financial Accounting", Prentice Hall of India, New Delhi* • *Ashok Sehgal – "Fundamentals of Financial Accounting", Taxmann's Publishers* • *Financial Accounting Reporting – Barry Elliot and Jamie Elliot – Prentice Hall (14th Edition)*
Risk Management
• *Thomas S. Coleman, Quantitative Risk Management : A Practical Guide to Financial Risk* • *Steve Peterson, Investment Theory and Risk Management* • *Risk Management , M/s Macmillan India Limited* • *Theory & Practice of Treasury Risk Management: M/s Taxman Publications Ltd.* • *Sim Segal, Corporate Value of ERM* • *Dr. G Kotreshwar, Risk Management : Insurance and Derivatives, Himalaya Publishing House*
Direct Taxes
• *Income Tax Act- Bare act* • *Dr V K Singhania-Direct Tax Law & Practice*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Services Marketing
• *Valarie A. Zeuhaml &Mary Jo Bitner, Service Marketing, Tata McgrawHill, 6th Edition* • *Christoper Lovelock, JochenWirtz, Jayanta Chatterjee, Service Marketing People, Technology, Strategy – A South Asian Perspective , Pearson Education, 7th Edition* • *Ramneek Kapoor, Justin Paul &Biplab Halder, Services Marketing-Concepts And Practices, McgrawHill, 2011* • *Harsh V.Verma, Services Marketing Text &Cases, Pearson Education, 2nd Edition* • *K. Ram Mohan Rao, Services Marketing, Pearson Education, 2nd Edition, 2011* • *C. Bhattacharjee, Service Sector Management, Jaico Publishing House, Mumbai, 2008* • *Govind Apte, Services Marketing, Oxford Press, 2004*
E-Commerce & Digital Marketing
• *D Nidhi ,E-Commerce Concepts and Applications, ,Edn 2011, International Book house P.ltd* • *Bajaj Kamlesh K,E-Commerce- The cutting edge of Business* • *Whiteley David, E-Commerce Technologies and Apllications-2013* • *E-Business & E-Commerce Management 3rd Ed, Pearson Education* • *Kalokota & Robinson,E-Business 2.0 Road map for Success, Pearson Education* • *Elias M. Awad ,Electronic Commerce, 3rd Edition, Pearson Education* • *Erfan Turban et.al ,Electronic Commerce - A Managerial Perspective, Pearson Education* • *R. Kalokota, Andrew V. Winston, Electronic Commerce - A Manger's Guide, Pearson Education* • *Tripathi, E-Commerce, Jaico Publishing House, Mumbai, Edn. 2010.*
Sales & Distribution Management
• *A. Nag, Sales And Distribution Management, Mcgraw Hill, 2013 Edition* • *Richard R. Still, Edward W. Cundiff, Norman A.P. Govoni, Sales Management, Pearson Education, 5th Edition* • *Krishna K. Havaldar, Vasant M. Cavale, Sales And Distribution Management – Text & Cases, Mcgraw Hill Education, 2nd Edition, 2011* • *Dr.Matin Khan, Sakes And Distribution Management, Excel Books, 1st Edition* • *Kotler & Armstrong, Principles Of Marketing – South Asian Perspective, Pearson Education, 13th Edition*
Customer Relationship Management
• *Baran Roger J. & Robert J. Galka (2014), Customer Relationship Management: The Foundation of Contemporary Marketing Strategy, Routledge Taylor & Francis Group.* • *Anderrson Kristin and Carol Kerr (2002), Customer Relationship Management, Tata McGraw-Hill.* • *Ed Peelen, Customer Relationship Management, Pearson Education* • *Bhasin Jaspreet Kaur (2012), Customer Relationship Management, Dreamtech Press.* • *Judith W. Kincaid (2006), Customer Relationship Management Getting it Right, Pearson Education.* • *Jill Dyche' (2007), The CTM Handbook: A Business Guide to Customer Relationship Management, Pearson Education.* • *Valarie A Zeithmal, Mary Jo Bitner, Dwayne D Gremler and Ajay Pandit (2010), Services Marketing Integrating Customer Focus Across the Firm, Tata McGraw Hill.* • *Urvashi Makkar and Harinder Kumar Makkar (2013), CRM Customer Relationship Management, McGraw Hill Education.*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Industrial Marketing
• *Industrial Marketing: A practices in India by S.L. Gupta, Sanjeev Bahadur, and Hitesh Gupta: Excel Books (First Edition)* • *Industrial Marketing by Hory, Sankar and Mukerjee by Excel Books (First Edition)* • *Industrial Marketing: A Process of Creating and Maintaining Exchange by Krishnamacharyulu , Lalitha R, Publisher: Jaico Book House* • *Industrial Marketing by Ghosh, Publisher: Oxford University Press* • *Industrial Marketing by K. K. Havaldar, Publisher: Tata McGraw-Hill Publishing Company limited* • *Industrial Marketing Management by Govindarajan, Publisher: Vikas Publishing House Pvt. Ltd.* • *Industrial Marketing by Phadtare M. T, Publisher: Prentice Hall of India Private Limited*
Strategic Marketing Management
• *Alexander Chernav, Strategic management, Eight Edition ,June 2014,Cerebellum press* • *Richardn m.s Wilson, Collin Gilligan, Strategic marketing management,3rd edition, Elsevier* • *Subhash .C.Jain, Marketing Strategy, India edition, cengage learning* • *Sharan Jagpal, Marketng strategy, oxford university press* • *David A. Aker, Startegic Market Management, John Wiley & Sons, 2001* • *Philip Kotler, Kevin Keller, Abraham Koshy, Mithileshwar Jha, Marketing Management, Pearson, 13th edition*
Finance for HR Professionals & Compensation Management
• *Gary Dessler, Biju Varkkey, Human Resource Management, Pearson, 12th edition* • *Mick Marchington and Adrian Wilkinson, Human Resource Management at Work – People Management and Development- IIIrd Edition,* • *Shashi K. Gupta, Rosy Joshi, Human Resource Management, Kalyani Publishers* • *Gary Dessler, Framework for HRM, 3rd Edition, Pearson Education* • *Ashwathappa, Human Resource Management* • *Luis.R.Gomez, David.B.Balkin, Robert. L. Cardy, Managing Human Resources – IVth Edition, (Eastern Economy Edition)* • *Milkovich, George T, Newman J.M, Compensation, Tata Mc Graw Hill.* • *Henderson, R.O, Compensation Management, Pearson Edition .* • *BD Singh, Compensation and Reward Management, Excel Books.* • *Karen Permant, Joe Knight, Financial Intelligence for HR Professionals* • *Sharma A.M, Understanding Wage system, Himalaya Publishing House, Mumbai.*
Strategic Human Resource Management & HR Policies
• *Michael Armstrong, Angela Baron, Handbook of Strategic HRM, Jaico publishing House* • *Armstrong M.-Strategic Human Resource Management_ A Guide to Action (2006)* • *Strategic Human Resource Management, Tanuja Agarwal* • *Strategic Human Resource Management, Jeffrey A. Mello* • *Gary Dessler, Human Resource Management, PHI, New Delhi, 2003* • *Charles R. Greer, Strategic Human Resource Management, Pearson Education, 2003* • *Rajib Lochan Dhar, Strategic Human Resource Management, Excel Books, NewDelhi, 2008*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Performance Management & Career Planning
• *Shashi K. Gupta, Rosy Joshi, Human Resource Management, Kalyani Publishers* • *Armstrong, Michael, Baron, Performance Management, Jaico Publishers* • *Robert Bacal, Performance Management, McGraw-Hill Education, 2007* • *T.V. Rao, Performance Management and Appraisal Systems: HR Tools for Global Competitiveness, Response Books, New Delhi, 2007.* • *Davinder Sharma, Performance Appraisal and Management, Himalaya Publishing House.* • *A.S. Kohli, T.Deb, Performance Management, Oxford University Press.* • *Herman Agnuinis, Performance Management, Second edition, Pearson Education.*
Industrial Relations
• *Davar R S: Personnel Management and Industrial Relations in India* • *Mamoria C B: Industrial Relations* • *Charles Myeres: Industrial Relations in India* • *Arun Monappa: Industrial Relations* • *Sharma A M : Industrial Relations* • *Ahuja K K : Industrial Relations Theory and Practice* • *C.S. Vekata Ratnam : Globalisation and Labour-Management Relations* • *Srivastava K D: Laws relating to Trade Unions and Unfair Labour Practice* • *A.M.Sarma: A conceptual and legal frame work* • *Farnham, David and John Pimlot, Understanding Industrial Relations, London: Cassell* • *Ratna Sen, Industrial Relations in India, Shifting Paradigms, Macmillan India Ltd., New Delhi, 2009.* • *C.S.Venkata Ratnam, Globalisation and Labour Management Relations, Response Books, 2010.* • *Srivastava, Industrial Relations and Labour Laws, Vikas, 6 th edition, 2012.* • *P.R.N Sinha, Indu Bala Sinha, Seema Priyardarshini Shekhar. Industrial Relations, Trade Unions and Labour Legislation.* • *Srivastava, S. C. :Industrial Relations and Labour Laws, Vikas Publishing House Pvt Ltd, New Delhi.* • *Sinha, P.R.N., Sinha, Indu Bala and Shekhar, Seema Priyadarshini Industrial Relations, Trade Unions and Labour Legislation, Pearson Education, New Delhi.*
Talent & Competency Management
• *Dessler Gary, A Framework for Human Resource Management, Pearson Publication, 7th Edition.* • *Dessler Gary, Varkkey Biju, Fundamentals of Human Resource Management, Pearson Publication,14th Edition Rao VSP, Human Resource Management, Vikas Publishing, New Delhi* • *K. Aswathappa – Human Resources and Personnel Management, Tata McGraw Hill* • *Robbins SP, Timothy A, Judge & Sanghi Seema, Organizational Behaviour, Pearson Education, New Delhi,13th edition.* • *Lance A Berger, Dorothy R Berger, Talent Management Hand Book, McGraw Hill* • *Hasan, M., Singh, A. K., Dhamija, S. (eds.), Talent management in India: Challenges and opportunities, Atlantic Publication* • *Seema Sanghi: The Handbook of Competency Mapping: Understanding, Designing and Implementing Competency Models in Organizations, Sage Publishing*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester V with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Stress Management
• *Stress management by Susan R. Gregson* • *Stress management: Leading to Success By B Hiriyappa* • *Strategic Stress Management: An Organizational Approach by V. Sutherland, C. Cooper* • *Stress Management: An Integrated Approach to Therapy by Dorothy H.G. Cotton* • *Stress Management by A. K. Rai* • *Organizational Stress Management: A Strategic Approach By A. Weinberg, V. Sutherland, C. Cooper* • *Stress Management by Dr. Nivedita*
Logistics and Supply Chain Management
• *David Simchi Levi, Philip Kaminshy, Edith Simchi Levi, Designing & Managing the Supply Chain - Concepts, Strategies and Case Studies Logistics* • *Donald Waters, An Introduction to Supply Chain* • *Martin Christopher, Logistics & Supply Chain Management - Strategies for Reducing Cost & Improving Services* • *Vinod Sople, Logistic Management - The Supply Chain Imperative* • *Donald J Bowersox & David J Closs, Logistic Management - The Integrated Supply Chain Process* • *Alan Rushton, Phil Croucher, Peter Baker, The Handbook of Logistics and Distribution Management- Understanding the Supply Chain* • *Donald J. Bowersox & David J Closs, Logistical Management-The Integrated Supply Chain Process, McGraw Hill Education* • *Ronald H Ballou & Samir K Srivastava, Business Logistics/ Supply Chain Management- Pearson* • *Donald J Bowersox, David J Closs & M Bixby Cooper, Supply Chain Logistics Management- The McGraw Hill Companies*
Corporate Communication & Public Relations
• *Richard R. Dolphin, The Fundamentals of Corporate Communication* • *Joep Cornelissen, Corporate Communications: Theory and Practice* • *James L.Horton,Integrating Corporate Communication:The Cost Effective Use of Message & Medium* • *Sandra Oliver, Handbook of Corporate Communication & Public Relations A Cross-Cultural Approach* • *Rosella Gambetti, Stephen Quigley, Managing Corporate Communication* • *Joseph Fernandez, Corporate Communications: A 21st Century Primer* • *C.B.M. van Riel, Chris Blackburn, Principles of Corporate Communication* • *Jaishri Jethwaney, Corporate Communication: Principles and Practice*

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2018-2019)

Semester VI

No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***	
1,2,3 & 4	**Any four courses from the following list of the courses	**12**
2	***Core Course (CC)***	
5	Operation Research	**04**
3	***Ability Enhancement Course (AEC)***	
6	Project Work	**04**
	Total Credits	**20**

** *List of group of Elective Courses(EC)for Semester VI (Any Four)*	
Group A: Finance Electives (Any four Courses)	
1	International Finance
2	Innovative Financial Services
3	Project Management
4	Strategic Financial Management
5	Financing Rural Development
6	Indirect Taxes
Group B:Marketing Electives (Any four Courses)	
1	Brand Management
2	Retail Management
3	International Marketing
4	Media Planning & Management
5	Sports Marketing
6	Marketing of Non Profit Organisation
Group C: Human Resource Electives (Any four Courses)	
1	HRM in Global Perspective
2	Organisational Development
3	HRM in Service Sector Management
4	Workforce Diversity
5	Human Resource Accounting & Audit
6	Indian Ethos in Management

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

1. International Finance

Modules at a Glance

SN	Modules	No. of Lectures
1	Fundamentals of International Finance	15
2	Foreign Exchange Markets, Exchange Rate Determination & Currency Derivatives	15
3	World Financial Markets & Institutions & Risks	15
4	Foreign Exchange Risk, Appraisal & Tax Management	15
	Total	**60**

Objectives

SN	Objectives
1	The objective of this course is to familiarize the student with the fundamental aspects of various issues associated with International Finance
2	The course aims to give a comprehensive overview of International Finance as a separate area in International Business
3	To introduce the basic concepts, functions, process, techniques and create an awareness of the role, functions and functioning of International Finance in this Globalised Market

SN	Modules/ Units
1	**Fundamentals of International Finance**
	a) Introduction to International Finance: • Meaning/ Importance of International Finance, Scope of International Finance, Globalization of the World Economy, Goals of International Finance, The Emerging Challenges in International Finance **b) Balance of Payment:** • Introduction to Balance of Payment, Accounting Principles in Balance of Payment, Components of Balance of Payments, Balance of Payment Identity Indian Heritage in Business, Management, Production and Consumption. **c) International Monetary Systems:** • Evolution of International Monetary System , Gold Standard System , Bretton Woods System, Flexible Exchange Rate Regimes – 1973 to Present, Current Exchange Rate Arrangements, European Monetary System, Fixed & Flexible Exchange Rate System **d) An introduction to Exchange Rates:** • Foreign Bank Note Market, Spot Foreign Exchange Market • Exchange Rate Quotations ▪ Direct & Indirect Rates ▪ Cross Currency Rates ▪ Spread & Spread % • Factors Affecting Exchange Rates
2	**Foreign Exchange Markets, Exchange Rate Determination & Currency Derivatives**
	a) Foreign Exchange Markets: • Introduction to Foreign Exchange Markets, Structure of Foreign Exchange Markets, Types of Transactions & Settlement Date, Exchange Rate Quotations & Arbitrage, Forward Quotations (Annualized Forward Margin) **b) International Parity Relationships & Foreign Exchange Rate:** • Interest Rate Parity, Purchasing Power Parity & Fishers Parity, Forecasting Exchange Rates (Efficient Market Approach, Fundamental Approach, Technical Approach, Performance of the Forecasters), Global Financial Markets & Interest Rates (Domestic & Offshore Markets, Money Market Instruments) **c) Currency & Interest Rate Futures:** • Introduction to Currency Options (Option on Spot, Futures & Futures Style Options), Futures Contracts, Markets & the Trading Process, Hedging & Speculation with Interest Rate Futures, Currency Options in India

SN	Modules/ Units
3	**World Financial Markets & Institutions & Risks**
	a) Euro Currency Bond Markets: • Introduction to Euro Currency Market, Origin of Euro Currency Market, Euro Bond Market (Deposit, Loan, Notes Market), Types of Euro Bonds, Innovation in the Euro Bond Markets, Competitive Advantages of Euro Banks, Control & Regulation of Euro Bond Market **b) International Equity Markets & Investments:** • Introduction to International Equity Market, International Equity Market Benchmarks, Risk & Return from Foreign Equity Investments, Equity Financing in the International Markets, Depository Receipts – ADR,GDR,IDR **c) International Foreign Exchange Markets:** • Meaning of International Foreign Exchange Market, FERA v/s FEMA, Scope & Significance of Foreign Exchange Markets, Role of Forex Manager, FDI v/s FPI, Role of FEDAI in Foreign Exchange Market **d) International Capital Budgeting:** • Meaning of Capital Budgeting, Capital Budgeting Decisions, Incremental Cash Flows, Cash Flows at Subsidiary and Parent Company, Repatriation of Profits, Capital Budgeting Techniques – NPV
4	**Foreign Exchange Risk, Appraisal & Tax Management**
	a) Foreign Exchange Risk Management: • Introduction to Foreign Exchange Risk Management, Types of Risk, Trade & Exchange Risk, Portfolio Management in Foreign Assets, Arbitrage & Speculation **b) International Tax Environment:** • Meaning of International Tax Environment, Objectives of Taxation, Types of Taxation, Benefits towards Parties doing Business Internationally, Tax Havens, Tax Liabilities **c) International Project Appraisal:** • Meaning of Project Appraisal, Review of Net Present Value Approach (NPV), Option Approach to Project Appraisal, Project Appraisal in the International Context, Practice of Investment Appraisal

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

2. Innovative Financial Services

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Traditional Financial Services	15
2	Issue Management and Securitization	15
3	Financial Services and its Mechanism	15
4	Consumer Finance and Credit Rating	15
	Total	**60**

Objectives

SN	Objectives
1	To familiarize the learners with the fundamental aspects of various issues associated with various Financial Services
2	To give a comprehensive overview of emerging financial services in the light of globalization
3	To introduce the basic concepts, functions, process, techniques and create an awareness of the role, functions and functioning of financial services

SN	Modules/ Units
1	**Introduction to Traditional Financial Services**
	a) Financial Services: • Concept, Objectives/Functions, Characteristics, Financial Service Market, Financial Service Market Constituents, Growth of Financial Services in India, Problems in Financial Services Sector, Banking and Non-Banking Companies, Regulatory Framework **b) Factoring and Forfaiting:** • Introduction, Types of Factoring, Theoretical Framework, Factoring Cost, Advantages and Disadvantages of Factoring, Factoring in India, Factoring v/s Forfaiting, Working of Forfaiting, Benefits and Drawbacks of Forfaiting, Practical Problems. **c) Bill Discounting:** • Introduction, Framework, Bill Market Schemes, Factoring V/s Bill Discounting in Receivable Management.
2	**Issue Management and Securitization**
	a) Issue Management and Intermediaries: • Introduction, Merchant Bankers/ Lead Managers, Underwriters, Bankers to an Issue, Brokers to an Issue **b) Stock Broking:** • Introduction, Stock Brokers, SubBrokers, Foreign Brokers, Trading and Clearing/Self Clearing Members, Stock Trading (Cash and Normal) Derivative Trading **c) Securitization:** • Definition, Securitization v/s Factoring, Features of Securitization, Pass Through Certificates, Securitization Mechanism, Special Purpose Vehicle, Securitisable Assets, Benefits of Securitization, New Guidelines on Securitization
3	**Financial Services and its Mechanism**
	a) Lease and Hire-Purchase: • Meaning, Types of Lease - Finance Lease, Operating Lease, Advantages and Disadvantages of Leasing, Leasing in India, Legal Aspects of Leasing. • Definition of Hire Purchase, Hire Purchase and Installment Sale Characteristics, Hire Purchase and Leasing, Advantages of Hire Purchase, Problems of Hire Purchase. **b) Housing Finance:** • Introduction, Housing Finance Industry, Housing Finance Policy Aspect, Sources of Funds, Market of Housing Finance, Housing Finance in India- Major Issues, Housing Finance in India – Growth Factors, Housing Finance Institutions in India, National Housing Bank (NHB), Guidelines for Asset Liability Management System in HFC, Fair Trade Practice Code for HFC's, Housing Finance Agencies

SN	Modules/ Units
	c) Venture Capital: Introduction, Features of Venture Capital, Types of Venture Capital Financing Stages, Disinvestment mechanisms, Venture Capital Investment process, Indian Scenario
4	**Consumer Finance and Credit Rating**
	a) Consumer Finance: • Introduction, Sources, Types of Products, Consumer Finance Practice in India, Mechanics of Consumer Finance, Terms, Pricing, Marketing and Insurance of Consumer Finance, Consumer Credit Scoring, Case for and against Consumer Finance **b) Plastic Money:** • Growth of Plastic Money Services in India, Types of Plastic Cards- Credit card- Debit Card- Smart card- Add-on Cards, Performance of Credit Cards and Debit Cards, Benefits of Credit Cards, Dangers of Debit Cards, Prevention of Frauds and Misuse, Consumer Protection. Indian Scenario. • Smart Cards- Features, Types, Security Features and Financial Applications **c) Credit Rating:** • Meaning, Origin, Features, Advantages of Rating, Regulatory Framework, Credit Rating Agencies, Credit Rating Process, Credit Rating Symbols. Credit Rating Agencies in India, Limitations of Rating

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

3. Project Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Project Management & Project Initiation	15
2	Analyzing Project Feasibility	15
3	Budgeting, Cost & Risk Estimation in Project Management	15
4	New Dimensions in Project Management	15
	Total	**60**

Objectives

SN	Objectives
1	The objective of this course is to familiarize the learners with the fundamental aspects of various issues associated with Project Management
2	To give a comprehensive overview of Project Management as a separate area of Management
3	To introduce the basic concepts, functions, process, techniques and create an awareness of the role, functions and functioning of Project Management

SN	Modules/ Units
1	**Introduction to Project Management & Project Initiation**
	a) Introduction to Project Management: • Meaning/Definition of Project & Project Management, Classification of Projects, Why Project Management, Characteristics/Importance of Project Management, Need for Project Management (Objectives), History of Project Management **b) Organizational Structure (Project Organization):** • Meaning/Definition of Organizational Structure, Organizational Work Flow, Developing Work Integration Positions, Types of Organizational Structure, Forms of Organization, Strategic Business Units (SBU) in Project Management. **c) Project Initiation:** • **Project Selection**-Meaning of Project Selection, Importance of Project Selection, Criteria for Project Selection (Models), Types of Project Selection, Understanding Risk & Uncertainty in Project Selection • **Project Manager**-Meaning of Project Manager, Role of Project Manager, Importance of Project Manager, Role of Consultants in Project Management, Selecting Criteria for Project Manager • **Project Planning**-Importance of Project Planning, Functions of Project Planning, System Integration, Project Management Life Cycle, Conflicts & Negotiation Handling in Project Management, Planning Cycle & Master Production Scheduling
2	**Analyzing Project Feasibility**
	a) Project Feasibility Analysis: • Meaning/Definition of Project Feasibility, Importance of Project Feasibility, Scope of Project Feasibility • Types of Project Feasibility- Market Feasibility, Technical Feasibility, Financial Feasibility, Economic Viability, Operational Feasibility • SWOT Analysis (Environment Impact Assessment, Social Cost Benefit Analysis) **b) Market Analysis:** • Meaning of Market Analysis**,** Demand Forecasting**,** Product Mix Analysis**,** Customer Requirement Analysis **c) Technical Analysis:** • Meaning of Technical Analysis, Use of Various Informational Tools for Analyzing, Advancement in the Era of E- Commerce in Project Management **d) Operational Analysis:** • Meaning of Operation Management, Importance of Operation Management, Operation Strategy - Levels of Decisions, Production Planning & Control, Material Management - Work Study & Method Study, Lean Operations

SN	Modules/ Units
3	**Budgeting, Cost & Risk Estimation in Project Management**
	a) Funds Estimation in Project: • Means of Financing, Types of Financing, Sources of Finance, Government Assistance towards Project Management for Start ups, Cost Control (Operating Cycle, Budgets & Allocations), Determining Financial Needs for Projects, Impact of Leveraging on Cost of Finance **b) Risk Management in Projects:** • What is Risk, Types of Risk in Projects, Risk Management Process, Risk Analysis & Identification, Impact of Risk Handling Measures, Work break Down Structure, New Venture Valuation (Asset Based, Earnings Based, Discounted Cash flow Models) **c) Cost Benefit Analysis in Projects** • Introduction to Cost Benefit Analysis, Efficient Investment Analysis, Cash - Flow Projections, Financial Criteria for Capital Allocation, Strategic Investment Decisions
4	**New Dimensions in Project Management**
	a) Modern Development in Project Management: • Introduction to Modern Development in Project Management, Project Management Maturity Model (PMMM), Continuous Improvement, Developing Effective Procedural Documentation, Capacity Planning **b) Project Monitoring & Controlling:** • Introduction to Project Monitoring & Controlling, The Planning – Monitoring-Controlling Cycle, Computerized Project Management Information System (PMIS), Balance in Control System in Project Management, Project Auditing – Life Cycle **c) Project Termination & Solving Project Management Problems:** • Meaning of Project Termination, Reasons for Termination of Projects, Process for Terminating Projects, Strategy/ Ways to Solve Project Management Problems, Project Review & Administrative Aspects, Execution Tools for Closing of Projects

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

Group A: Finance Electives

4. Strategic Financial Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Dividend Decision and XBRL	15
2	Capital Budgeting and Capital Rationing	15
3	Shareholder Value and Corporate Governance/ Corporate Restructuring	15
4	Financial Management in Banking Sector and Working Capital Financing	15
	Total	**60**

Objectives

SN	Objectives
1	To match the needs of current market scenario and upgrade the learner's skills and knowledge for long term sustainability
2	Changing scenario in Banking Sector and the inclination of learners towards choosing banking as a career option has made study of financial management in banking sector inevitable
3	To acquaint learners with contemporary issues related to financial management

SN	Modules/ Units
1	**Dividend Decision and XBRL**
	a) Dividend Decision: • Meaning and Forms of Dividend, Dividend-Modigliani and Miller's Approach, Walter Model, Gordon Model, Factors determining Dividend Policy, Types of Dividend Policy **b) XBRL:** • Introduction, Advantages and Disadvantages, Features and Users
2	**Capital Budgeting and Capital Rationing**
	a) Capital Budgeting: • Risk and Uncertainty in Capital Budgeting, Risk Adjusted Cut off Rate, Certainty Equivalent Method, Sensitivity Technique, Probability Technique, Standard Deviation Method, Co-efficient of Variation Method, Decision Tree Analysis, Construction of Decision Tree. **b) Capital Rationing:** • Meaning, Advantages, Disadvantages, Practical Problems
3	**Shareholder Value and Corporate Governance/Corporate Restructuring**
	a) Shareholder Value and Corporate Governance: • Financial Goals and Strategy, Shareholder Value Creation: EVA and MVA Approach, Theories of Corporate Governance, Practices of Corporate Governance in India **b) Corporate Restructuring:** • Meaning, Types, Limitations of Merger, Amalgamation, Acquisition, Takeover, Determination of Firm's Value, Effect of Merger on EPS and MPS, Pre Merger and Post Merger Impact.
4	**Financial Management in Banking Sector and Working Capital Financing**
	a) Financial Management in Banking Sector: • An Introduction, Classification of Investments, NPA & their Provisioning, Classes of Advances, Capital Adequacy Norms, Rebate on Bill Discounting, Treatment of Interest on Advances **b) Working Capital Financing:** • Maximum Permissible Bank Finance (Tandon Committee), Cost of issuing Commercial Paper and Trade Credit, Matching Approach, Aggressive Approach, Conservative Approach

Elective Courses (EC)

Group A: Finance Electives

5. Financing Rural Development

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Rural Banking	10
2	Micro Finance	15
3	MSME Finance	10
4	Final Accounts of the Banking Companies	15
5	Risk Management in Rural Finance	10
Total		**60**

Objectives

SN	Objectives
01	To acquaint the learners with the concept of rural banking
02	To give an overview of micro finance and MSME finance
03	To study the provisions of final accounts of the Banking Companies
04	To understand risk management in rural finance

Sr. No.	Modules / Units
1	**Rural Banking**
	Rural India – Demographic Features, Characteristics of Rural Society, Economic Features, Infrastructure in Rural Areas, Agriculture Economy, Rural Issues and Rural Development Policies, Sources and Pattern of agriculture in India, Trends in Agricultural Finance. Institutional Framework – Regulation of Rural Financial Services, Rural Credit Institutions, Financing Agriculture/ Allied Activities, Financing Rural Non Farm Sector, Priority Sector Lending, Rural Housing and Education Loans. Rural Banking – Financial Needs of the Poor, Role of Rural Banking, Transaction Costs, Risk Costs, Financing Poor as Bankable Opportunities Micro Credit and Self Help Groups.
2	**Micro Finance**
	Introduction – Emergence of Microfinance, Definition, Meaning and Scope, Importance and Assumptions. Lessons from International Experience. Models – Models of Microfinance across the world, Portfolio Securitization, SHG-2, National Rural Livelihood Mission, Impact of Microfinance, Impact Assessment and Monitoring, Microfinance and Poverty Assessment Tools. Financial Products and Services – Objectives, Introduction, The role of MFI – Minimalist V/s Integrated, Financial services/ products, Non – Financial Services, Designing Microfinance Models, Liquidity Management, The Revenue Model of an MFI**,** Cost, Volume and Profit Analysis, Measuring Operating Efficiency and Productivity in MFI's, Factors affecting Operating Expenses, Operating Efficiency.
3	**MSME Finance**
	Institutional Framework – Central Government, NIMSME, Indian Institute of Entrepreneurship Guwahati, NIESBUD, NSIC, Organizations under the control of State Government, SIDBI, CGTMSE, SMERA, SSI Association in India, Changing Role of MSME Associations , Policy Orientation & Resource Allocation. Financing Options & Modes – Financing MSME, Why lend to MSME Sector, Debt Finance, Equity Finance, Options for Financing MSME's, Financial Products and their Access, Existing MSME Loan Products and their Nature, Common Guidelines for lending to MSME Sector, Factoring, Credit Process, Credit Assessment, Costs and Risks specific to MSME Lending, Risk Rating, Monitoring and Review of Lending.
4	**Final Accounts of the Banking Companies**
	Legal Provision in Banking Regulation Act, 1949 relating to Accounts. Statutory reserves including Cash Reserve and Statutory Liquidity Ratio. Bill purchase and discounted, Rebate of Bill Discounted. Final Accounts in prescribed form Non – performing assets and Income from non – performing assets, Classification of Advances, standard, sub – standard, doubtful and provisioning requirement.
5	**Risk Management in Rural Finance**
	An Introduction –Objectives, Introduction , Types of risks for MFI's, Risk Management Framework for MFI's Indicators of Credit Risk, Portfolio at Risk (PAR), Causes of high Credit Risk , Impact of Delinquencies, Managing Credit Risk, Transaction Risk, Process, System & Technology, Relationship and Portfolio Risk. Cash Planning and Co-ordination between Operation Manager and Finance Manager. Compliance to State Acts, Revised Guidelines on Priority Sector, Compliance to RBI Guidelines on NBFC – MFI's, Self Regulation.

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Elective Courses (EC)

Group A: Finance Electives

6.Indirect Taxes

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Indirect Taxation and GST	10
2	Concept of Supply	20
3	Registration and Computation of GST	20
4	Filing of Returns	10
Total		**60**

Objectives

SN	Objectives
01	To understand the basics of GST
02	To study the registration and computation of GST
03	To acquaint the students with filing of returns in GST

Sr. No.	Modules / Units
1	**Introduction to Indirect Taxation and GST**
	A. Basics for Taxation - Direct Taxes and Indirect Taxes – Difference, Advantages and Disadvantages, Sources and Authority of Taxes in India (Art 246 of the Indian Constitution) **B. Introduction to GST** – Genesis of GST in India, Power to tax GST (Constitutional Provisions), Extent and Commencement, Meaning and Definition of GST, Benefits of GST, Conceptual Framework – CGST, IGST,SGST,UTGST, Imports of goods or services or both, Export of goods or services or both, Taxes subsumed and not subsumed under GST. **C. Definitions** – Goods (2(52) of CGST Act), Services (2(102) of CGST Act), Money (2(75) of CGST Act), Securities (2(101) of SCRA Act,1956), India(2(56) of CGST Act), Persons (2(84) of CGST Act),Taxable Person (2(107) of CGST Act), Business (2(17) of CGST Act), Consideration(2(31) of CGST Act), E- Commerce Operator (2(45) of CGST Act), Supplier(2(105) of CGST Act),Recipient(2(93) of CGST Act) **D. Levy and Collection of GST** – Levy and Collection of CGST, IGST, SGST,UTGST (Sec 9 of CGST Act), Composition Scheme under GST (Sec 10 of CGST Act), Power to Grant Exemption (Sec 11 of CGST Act)GST Rate Schedule for Goods and Services.
2	**Concept of Supply**
	A. Taxable Event Supply– Meaning and Scope of Supply (Section 7 Subsection 1, 2 and 3 of Act) Schedule I, Schedule II, Schedule III, Composite and Mixed Supplies (Sec 8 of CGST Act) **B. Place of Supply** – Location of Supplier of Goods and Services, Place of Supply of Goods (Sec 10, 11,12 and 13 of IGST Act), Special Provision for Payment of Tax by a Supplier of Online Information Database Access Retrieval. **C. Time of Supply**- Time of Supply (Sec 31 of CGST Act), Issue of Invoice by the Supplier (Sec 31 (1) and Sec 31(2)of CGST Act), Continuous Supply of Goods and Services, Goods Sent on Approval (Sec 31(7) of CGST Act) **D. Value of Supply** – Determination of Value of Supply (Sec 15 of CGST Act and CGST Rules 2017), Input Tax Credit (Sec 2(62) of CGST Act) Capital Goods (Sec 2(19) of CGST Act), Input Sec 2(59) of CGST Act), Input Service (Sec 2(60) of CGST Act). Eligibility and Conditions for taking Input Tax Credit (Sec 16 of CGST Act)
3	**Registration and Computation of GST**
	A. Registration – Persons liable for Registration (Sec 22 of the Act), Persons not liable for Registration, Procedure for Registration (Sec 25 of the Act), Deemed Registration(Sec 26 of the Act), Special Provisions (Sec 27 of the Act), Amendment, Cancellation and Revocation of Registration(Sec 28,Sec29and Sec 31 of the Act) **B. Computation of GST –** Computation of GST under Inter State and Intra State Supplies. **C. Payment of Tax-** Payment of Tax, Interest and other Amounts(Sec 49 of the Act), Interest on delayed Payment (Sec 50 of the Act), TDS (Sec 51 of the Act), TCS (Sec 52 of the Act)
4	**Filing of Returns**
	A. Documentation- Tax Invoices (Sec 31 and 32 of the Act), Credit and Debit notes(Sec 34 of the Act), Electronic Way Bill **B. Returns –**Types of Returns and Provisions relating to filing of Returns (Sec 37 to Sec 48 of the Act)

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Elective Courses (EC)

Group B: Marketing Electives

1. Brand Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Brand Management	15
2	Planning and Implementing Brand Marketing Programs	15
3	Measuring and Interpreting Brand Performance	15
4	Growing and Sustaining Brand Equity	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the meaning and significance of Brand Management
2	To Know how to build, sustain and grow brands
3	To know the various sources of brand equity

SN	Modules/ Units
1	**Introduction to Brand Management**
	a) Introduction to Brand Management: • Meaning of Brand, Branding, Brand Management, Importance of Branding to Consumers, Firms, Brands v/s Products, Scope of Branding, Branding Challenges and Opportunities, Strategic Brand Management Process, Customer Based Brand Equity model (CBBE), Sources of Brand Equity, Steps of Brand Building including Brand Building Blocks, Brand Positioning: Meaning, Importance, Basis
2	**Planning and Implementing Brand Marketing Programs**
	a) Planning and Implementing Brand Marketing Programs: • Brand Elements: Meaning, Criteria for choosing Brand Elements, Types of Brand Elements • Integrating Marketing Programs and Activities • Personalising Marketing: Experiential Marketing, One to One Marketing, Permission Marketing • Product Strategy: Perceived Quality and Relationship Marketing • Pricing Strategy: Setting Prices to Build Brand Equity • Channel Strategy: Direct, Indirect Channels • Promotion Strategy: Developing Integrated Marketing Communication Programs • Leveraging Secondary Brand Associations to Build Brand Equity: Companies, Countries, Channel of Distribution, Co-branding, Characters, Events.
3	**Measuring and Interpreting Brand Performance**
	a) The Brand Value Chain **b) Measuring Sources of Brand Equity:** • **Qualitative Research Techniques**: Projective Techniques: Completion, Comparison, Brand Personality and Values: The Big Five, Free Association • **Quantitative Research Techniques:** Brand Awareness: Recognition, Recall, Brand Image, Brand Responses **c) Young and Rubicam's Brand Asset Valuator** **d) Measuring Outcomes of Brand Equity** • **Comparative Methods**: Brand based Comparative Approaches, Marketing Based Comparative Approaches, Conjoint Analysis • **Holistic Methods:** Residual Approaches, Valuation Approaches: Historical Perspectives and Interbrand's Brand Valuation Methodology

4	**Growing and Sustaining Brand Equity**
	a) Designing & Implementing Branding Strategies: • **Brand Architecture**: Meaning of Brand Architecture, The Brand-Product Matri, Breadth of a Branding Strategy, Depth of a Branding Strategy • **Brand Hierarchy:** Meaning of Brand Hierarchy, Building Equity at Different Hierarchy Levels • **Cause Marketing to Build Brand Equity:** Meaning of Cause Marketing, Advantages, Green Marketing **b) Brand Extensions:** • Meaning, Advantages, Disadvantages, Brand Extension and Brand Equity **c) Managing Brands over Time:** • Reinforcing Brands, Revatilising Brands **d) Building Global Customer Based Brand Equity**

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Elective Courses (EC)

Group B: Marketing Electives

2. Retail Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Retail Management- An overview	15
2	Retail Consumer and Retail Strategy	15
3	Merchandise Management and Pricing	15
4	Managing and Sustaining Retail	15
	Total	**60**

Objectives

SN	Objectives
1	To familiarize the students with retail management concepts and operations
2	To provide understanding of retail management and types of retailers
3	To develop an understanding of retail management terminology including merchandize management, store management and retail strategy.
4	To acquaint the students with legal and ethical aspects of retail management
5	To create awareness about emerging trends in retail management

SN	Modules/ Units
1	**Retail Management- An overview**
	a) Retail Management: • Introduction and Meaning, Significance, Factors Influencing Retail Management, Scope of Retail Management **b) Retail Formats:** • Concept of Organized Retailing: Factors Responsible for the Growth of Organized Retail in India, Multichannel Retailing: Meaning and Types, E-tailing: Meaning, Advantages and Limitations **c) Emerging Trends in Retailing** • Impact of Globalization on Retailing • I.T in Retail: Importance, Advantages and Limitations, Applications of I.T. in Retail: EDI, Bar Coding, RFID Tags, Electronic Surveillance, Electronic Shelf Labels • FDI in Retailing: Meaning, Need for FDI in Indian Retail Scenario • Franchising: Meaning, Types, Advantages and Limitations, Franchising in India • Green Retailing • Airport Retailing
2	**Retail Consumer and Retail Strategy**
	a) Retail Consumer/Shopper: • Meaning of Retail Shopper, Factors Influencing Retail Shoppers, Changing Profile of Retail Shoppers, Market Research as a Tool for Understanding Retail Markets and Shoppers **b) CRM in Retail:** • Meaning, Objectives • Customer Retention Approaches: Frequent Shopper Programme, Special Customer Services, Personalization, Community **c) Retail Strategy:** • Meaning, Steps in Developing Retail Strategy, Retail Value Chain **d) Store Location Selection:** • Meaning, Types of Retail Locations, Factors Influencing Store Location **e) HRM in Retail:** • Meaning, Significance, Functions • Organization Structure in Retail: Meaning, Factors Influencing Designing Organization Structure, Organization Structure for Small Stores/Single Stores/Independent Retailers and Retail Store Chain/Department Store

SN	Modules/ Units
3	**Merchandise Management and Pricing**
	a) Merchandise Management • Concept, Types of Merchandise, Principles of Merchandising, Merchandise Planning- Meaning and Process, Merchandise Category – Meaning, Importance, Components, Role of Category Captain, Merchandise Procurement/Sourcing- Meaning, Process, Sources for Merchandise **b) Buying Function:** • Meaning, Buying Cycle, Factors Affecting Buying Functions, Functions of Buying for Different Types of Organizations Young and Rubicam's Brand Asset Valuator- Independent Store, Retail Chain, Non-store Retailer **c) Concept of Lifestyle Merchandising** **d) Private Label** • Meaning, Need and Importance, Private Labels in India **e) Retail Pricing** • Meaning, Considerations in Setting Retail Pricing • Pricing Strategies: High/ Low Pricing: Meaning, Benefits, Everyday Low Pricing: Meaning, Benefits, Market Skimming, Market Penetration, Leader Pricing, Odd Pricing, Single Pricing, Multiple Pricing, Anchor Pricing • Variable Pricing and Price Discrimination- Meaning Types: ▪ Individualized Variable Pricing/First Degree Price ▪ Self-Selected Variable Pricing/ Second Degree Price Discrimination- Clearance and Promotional Markdowns, Coupons, Price Bundling, Multiple – Unit Pricing ▪ Variable Pricing by Market Segment/ Third Degree Price Discrimination
4	**Managing and Sustaining Retail**
	a) Retail Store Operations: • Meaning, Responsibilities of Store Manager, The 5 S's of Retail Operations (Systems, Standards, Stock, Space, Staff) **b) Store Design and Layout:** • Store Design- Meaning, Objectives, Principles, Elements of Exterior and Interior Store Design, Store Atmospherics and Aesthetics • Store Layout- Meaning, Types: Grid, Racetrack, Free Form • Signage and Graphics: Meaning, Significance, Concept of Digital Signage • Feature Areas: Meaning, Types: Windows, Entrances, Freestanding Displays, End Caps, Promotional Aisles, Walls, Dressing Rooms, Cash Wraps

SN	Modules/ Units
	c) Visual Merchandising and Display: • Visual Merchandising- Meaning, Significance, Tools Used for Visual Merchandising • The Concept of Planogram • Display- Meaning, Methods of Display, Errors in Creating Display **d) Mall Management** • Meaning and Components: Positioning, Zoning, Promotion and Marketing, Facility Management, Finance Management **e) Legal and Ethical Aspects of Retailing** • Licenses/Permissions Required to Start Retail Store in India • Ethical Issues in Retailing **Career Options in Retailing**

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Elective Courses (EC)

Group B: Marketing Electives

3. International Marketing

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to International Marketing & Trade	15
2	International Marketing Environment and Marketing Research	15
3	International Marketing Mix	15
4	Developments in International Marketing	15
	Total	**60**

Objectives

SN	Objectives
1	To understand International Marketing, its Advantages and Challenges.
2	To provide an insight on the dynamics of International Marketing Environment.
3	To understand the relevance of International Marketing Mix decisions and recent developments in Global Market

SN	Modules/ Units
1	**Introduction to International Marketing & Trade**
	a) Introduction of International Marketing: • Meaning, Features of International Marketing, Need and Drivers of International Marketing, Process of International Marketing, Phases of International Marketing, Benefits of International Marketing, Challenges of International Marketing, Difference between Domestic and International Marketing, Different Orientations of International Marketing : EPRG Framework, Entering International Markets :Exporting, Licensing, Franchising, Mergers and Acquisition, Joint Ventures, Strategic Alliance, Wholly Owned Subsidiaries, Contract Manufacturing and Turnkey Projects, Concept of Globalization **b) Introduction to International Trade:** • Concept of International Trade, Barriers to Trade: Tariff and Non Tariff, Trading Blocs : SAARC, ASEAN, NAFTA, EU, OPEC
2	**International Marketing Environment and Marketing Research**
	a) International Marketing Environment: • Economic Environment : International Economic Institution (World Bank, IMF, IFC) ,International Economic Integration (Free Trade Agreement, Customs Union, Common Market, Economic Union) • Political and Legal Environment: Political System (Democracy, Authoritarianism, Communism), Political Risk, Political Instability, Political Intervention. Legal Systems (Common Law, Civil Law, Theocratic Law), Legal Differences, Anti Dumping Law and Import License. • Cultural Environment : Concept , Elements of Culture (Language, Religion, Values and Attitude , Manners and Customs, Aesthetics and Education) , HOFSTEDE's Six Dimension of Culture , Cultural Values (Individualism v/s Collectivism) **b) Marketing Research:** • Introduction, Need for Conducting International Marketing Research, International Marketing Research Process, Scope of International Marketing Research, IT in Marketing Research
3	**International Marketing Mix**
	a) International Product Decision • International Product Line Decisions, Product Standardization v/s Adaptation Argument, International Product Life Cycle, Role of Packaging and Labelling in International Markets, Branding Decisions in International Markets, International Market Segmentation and Targeting, International Product Positioning

SN	Modules/ Units
	b) International Pricing Decision: • Concept of International Pricing, Objectives of International Pricing, Factors Affecting International Pricing • International Pricing Methods: Cost Based, Demand Based, Competition Based , Value Pricing, Target Return Pricing and Going Rate Pricing • International Pricing Strategies : Skimming Pricing, Penetration Pricing , Predatory Pricing • International Pricing Issues : Gray Market , Counter Trade, Dumping, Transfer Pricing **c) International Distribution Decisions** • Concept of International Distribution Channels, Types of International Distribution Channels, Factors Influencing Selection of International Distribution Channel **d) International Promotion Decisions** • Concept of International Promotion Decision • Planning International Promotional Campaigns: Steps - Determine the Target Audience, Determine Specific Campaigns, Determine Budget, Determine Message, Determine Campaign Approach and Determine Campaign Effectiveness • Standardization V/S Adaptation of International Promotional Strategies • International Promotional Tools/Elements
4	**Developments in International Marketing**
	a) Introduction -Developing International Marketing Plan: • Preparing International Marketing Plan, Examining International Organisational Design, Controlling International Marketing Operations, Devising International Marketing Plan **b) International strategies:** • Need for International Strategies, Types of International Strategies **c) International Marketing of Services** • Concept of International Service Marketing, Features of International Service Marketing, Need of International Service Marketing, Drivers of Global Service Marketing, Advantages and Disadvantages of Global Service Marketing, Service Culture

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Elective Courses (EC)

Group B: Marketing Electives

4. Media Planning and Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Overview of Media and Media Planning	15
2	Media Mix & Media Strategy	15
3	Media Budgeting, Buying & Scheduling	15
4	Media Measurement, Evaluation	15
	Total	**60**

Objectives

SN	Objectives
1	To understand Media Planning, Strategy and Management with reference to current business scenario.
2	To know the basic characteristics of all media to ensure most effective use of advertising budget.
3	To provide an insight on Media Planning, Budgeting, Scheduling and Evaluating the Different Media Buys.

SN	Modules/ Units
1	**Overview of Media and Media Planning**
	a) Overview of Media and Media Planning: • Meaning of Media & Features of Media, Meaning of Media Planning , Scope of Media planning , Media Planning Elements, Role of Media in Business, Media Planning Process, Impact of Marketing Objectives on Media Planning, Factors Influencing Media Planning Decisions, Role and Importance of Media in Consumer Buying Decision, Role of Media Planner, Challenges of Media Planning, Organization Structure of Media Company, Regulatory Framework and Legal Aspects in Media Planning **b) Media Research:** • Meaning, Role and Importance • Sources of Media Research : Audit Bureau of Circulation, Press Audits, National Readership Survey/IRS, Businessmen's Readership Survey, TRP, National Television Study, ADMAR Satellite Cable Network Study, Reach and Coverage Study, ClB Listenership Survey
2	**Media Mix and Media Strategy**
	a) Media Mix: • Meaning, Need for Media Mix, Identifying Audience for Mass Media , Factors Affecting Media Mix Decision, Types of Media Mix Decisions: Broad Media Classes, Media Vehicles, Media Units, Deciding Ideal Media Mix **b) Media Choices:** • **Print Meaning-** Factors Affecting Selection of Print Media Decisions , Types of Print Media, Advantages and Limitations • **Television-** Meaning, Factors Affecting Selection of Television Media Decisions, Advantages and Limitations • **Radio-** Meaning, Factors Affecting Selection of Radio Media Decision, Advantages and Limitations • **Out of Home (OOH)-** Meaning, Types of OOH, Factors Affecting OOH Planning Decision, Advantages and Limitations **c) Emerging Media:** • Online, Mobile, Gaming, In flight, In Store, Interactive Media **d) Media Strategy:** • Meaning, Need for Media Strategy, Situation Analysis for Media Strategy and its Components • Steps in Formulating Media Strategies: Defining the Target Group, Market Prioritization, Media Weights, Media Mix, Media Scheduling.

SN	Modules/ Units
3	**Media Budgeting, Buying & Scheduling**
	a) Media Budget • Meaning • Factors to be considered while Framing a Budget: Advertising Task, Competitive Framework, Market Dominance, Market Coverage, Media Cost, Market Task, Pricing ,Frequency of Purchase • Importance of Media Budget. • Methods of Setting Media Budget - Status Quo, Inflation Adjusted, Advertising Sales, Case Rate & Advertising Margin Method, Share of Market, Yardstick Method, Effective Frequency & Reach Method & Margin Analysis ROI Based Approach, Experimental Approach, Break Even Planning. **b) Media Buying:** • Meaning, Role of Media Buyer, Objectives of Media Buying, • Buying Process: Buying Brief, Environmental Analysis, Science and Art of Buying, Benchmarking Buying Plan Presentation Deal Management and Post Buy • Buying brief: Concept & Elements of Buying Brief, Art of Media Buying – Negotiation in Media Buying, Plan Presentation and Client Feedback • Criteria in Media Buying **c) Media Scheduling** • Meaning, Importance • Factors Affecting Scheduling: Sales Pattern, Purchase Cycle, Product Availability, Competitive Activity, Marketing Task, Budget Constraints, Target Group. • Scheduling Patterns – Continuity, Flighting, Pulsing • Scheduling Strategies for Creating Impact: Road Block , Day or Day part • Emphasis, Multiple Spotting, Teasers

SN	Modules/ Units
4	**Developments in International Marketing**
	a) Media Measurement: • **Basic Metrics:** Reach, Cumulative/Frequency Reach, Discrete & Cumulative distribution, Average Opportunity to See (AOTS), Effective frequency/Reach • **Television Metrics:** Dairy v/s Peoplemeter,TRP,/TVR, Program Reach & Time Spent, Stickiness Index, Ad Viewership • **Radio Metrics:** Arbitron Radio Rating • **Print Metrics:** Circulation, Average Issue Readership (AIR), Total or Claimed Reader, Sole or Solus reader. • **OOH Metrics:** Traffic Audit Bureau (TAB) **b) Benchmarking Metrics:** • Share, Profile, and Selectivity Index **c) Plan Metrics:** • Gross Rating Points (GRP), Gross Impressions (GI), Share of Voice (SOV). **d) Evaluating Media Buys** • **Evaluating Television Media Buying:** Dysfunctional Card Rate, Secondary and Effective Rate, Deal Composition, Cost Per Rating Point(CPRP), Reach Delivered by the Buy, Visibility Spots, Bonus Percentage, Upgrades and Spot Fixing, Sponsorships • **Evaluating Print Media Buying:** Discount on Rate Card, Negotiated Rate, Cost Per Thousand (CPT), Market Share Incentives, Readership v/s Circulation Track, Growth Incentives, Combination Rate Incentives, Full Page Discounts and Size Upgrades, Discount for Colour Ads, Date Flexibility Incentives, Positioning, Innovations. • **Evaluating Other Media Buys:** Radio Buys, Outdoor Buys, Cinema Buys, Internet Buys, and Mobile Buys

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Elective Courses (EC)

Group B: Marketing Electives

5. Sports Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Sports Marketing: Introduction, Environment & Research	15
2	The Sports Product, Pricing Strategies & Sponsorship	15
3	Promotion & Distribution Strategies in Sports Marketing	15
4	Legal aspects & Marketing of Major Sport Events	15
Total		**60**

Objectives

SN	Objectives
01	To equip the learner with an understanding of the business of sports marketing
02	To help the learner understand environmental factors influencing sports marketing
03	To help the learner understand components of marketing mix in the context of sports marketing
04	To understand legal aspects in sports marketing & franchising agreements

Sr. No.	Modules / Units
1	**Sports Marketing: Introduction, Environment & Research**
	Introduction to sports marketing: Sports marketing definition & characteristics, marketing myopia in sports, distinctive features of sports marketing, Model of sports Industry, Implementation of sports marketing programme Environment & Research in Sports Marketing: Environmental factors, individual factors, decision making for sports involvement, role of research in sports marketing: types of primary market research, common problems in sports marketing research
2	**The sports Product, Pricing Strategies & Sponsorship**
	The sports products: Core & extensions, key issues in sports products strategy, managing sports brands, brand equity: benefits & development, Sales: Definition, sales approaches used in sports, selling sports to the community Pricing strategies: The basics of pricing, core issues, factors affecting pricing Sponsorship: Definition, growth of sponsorship, evaluating and ensuring sponsorship effectiveness, selling the sponsorship, ethical issues in selling the sponsorships
3	**Promotion & Distribution Strategies in Sports Marketing**
	Promotional strategies: Promotional concepts & practice, components of promotion mix for sports marketing: Sales promotion, sponsorship, public relation, digital marketing & advertising. Media options in sports marketing, Distribution strategies: Placing core products & their extensions, the facility: marketing channels, the product-place matrix
4	**Legal Aspects & Marketing of major Sport Events**
	Cross impact among the 5Ps of sports marketing mix Legal aspects of sports marketing: Endorsement agreement, Player agreement, Franchise agreement & Sponsorship agreement Marketing of major sport events: Olympic Games, Commonwealth Games, ICC Cricket World Cup, Indian Premier League, FIFA Football World Cup, Wimbledon tennis tournament

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Elective Courses (EC)

Group B: Marketing Electives

6. Marketing of Non-Profit Organisation

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Non-profit Organization	15
2	Segmenting Targeting Positioning, Product mix & Pricing mix in Non-profit organizations	15
3	Promotion mix, Place mix of non-profit organizations & advocacy of non-profit organizations	15
4	Corporate Social Responsibility, innovations & Ethics in non-profit organizations	15
Total		**60**

Objectives

SN	Objectives
01	This course introduces students to the challenges of marketing in the non-profit sector.
02	To understand the role and application of marketing to promote social change and to achieve social goals for non-profits organizations including social and cause related marketing, fundraising
03	To apply marketing in a diverse range of non-profit environments including charities, social programs and ideas, health, education, arts, as well as goods and services
04	To understand the advocacy v/s lobbying and the concept of CSR and the policy framework of CSR under the Companies Act of 2013

Sr. No.	Modules / Units
1	**Introduction to Non-profit Organization**
	a) **Non-profit organization**: Meaning of Non-Profit Organization, Features of non-profit organization, Characteristics of Non Profit marketing, Stakeholders in non-profit organization, Types of non-profit organization: Charities, newly emerging social enterprise sector, public sector, political parties and campaign organizations, classification of non-profit organizations, Social need: concept, social need as a basis for developing sustainable business model for a non-profit organization. b) **Fundraising**: meaning, common techniques to solicit funds, fund raising loyalty ladder, marketing and communication for fundraising
2	**Segmenting Targeting Positioning, Product mix & Pricing mix in Non-profit organizations**
	a) **Segmentation, Targeting & Positioning of non-profit organizations**: Strategic Marketing for Non-Profit Organization, Steps in Strategic Marketing of non-profit organization, Market Segmentation, Targeting & Positioning in non-profit organization b) **Product mix & Pricing mix in non-profit organization**: Budgeting, cost effective marketing mix, Cost Management, Product or offer in non-profit organization, level of offer in non-profit organization, Pricing Objectives in non-profit organizations, Pricing Strategies in non-profit organizations
3	**Promotion mix, Place mix of non-profit organizations & advocacy of non-profit organizations**
	a) **Promotion Mix**: Promotion of non-profit Organizations: Marketing Communication Strategies, Integrated Marketing Communication in nonprofit organizations, Image & reputation, Marketing Communication process, Marketing communication process, Role of Audience, message and vehicle in non-profit organization communication. Significance of place in non-profit organizations, Challenges for non-profit organizations in rural areas. b) **Advocacy & Fund Raising in non-profit organization**: Meaning, steps in building support for advocacy, advocacy tactics: lobbying, Coalition Building, outreach to media, educating policy makers on issues, educating public on policy issue, building relationship with policy maker. Distinctive characteristics of advocacy groups, Steps in crafting an advocacy plan, steps in engaging policy makers for lobbying, advocacy v/s lobbying, Evaluating advocacy. **Fund Raising**: meaning, Principles of fundraising, Fund raising cycle, The fund raising pyramid and donor life cycle.
4	**Corporate Social Responsibility, innovations & Ethics in non-profit organizations**
	a) **Corporate social responsibility**: CSR, Importance of CSR, history and evolution of CSR, Policy framework for CSR in India, Section 135 of Companies Act 2013, Role of CSR committee on Boards Code of Ethics in non-profit organization, hierarchy of ethical values in non-profit organization, careers in CSR. b) **Trends and Innovations**: Current trends, innovations and opportunities in CSR, Influence of non-profit organizations and their impact on corporate CSR, Challenges faced by non-profit organizations in India. c) **Non-Governmental Organization (NGO)**: Meaning of Non-Government Organization (NGO), Difference between Voluntary Organization & NGO, Steps of Voluntarism, Types of NGO: advocacy of chosen cause, Small or Grassroot NGO, Mother NGO, National NGO, corporate NGO, Global NGO's

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Elective Courses (EC)

Group C: Human Resource Electives

1. HRM in Global Perspective

Modules at a Glance

SN	Modules	No. of Lectures
1	International HRM – An Overview	15
2	Global HRM Functions	15
3	Managing Expatriation and Repatriation	15
4	International HRM Trends and Challenges	15
	Total	**60**

Objectives

SN	Objectives
1	To introduce the students to the study and practice of IHRM
2	To understand the concepts, theoretical framework and issues of HRM in Global Perspective
3	To get insights of the concepts of Expatriates and Repatriates
4	To find out the impact of cross culture on Human Resource Management
5	To provide information about Global Workforce Management
6	To study International HRM Trends and Challenges

SN	Modules/ Units
1	**International HRM – An Overview**
	a) International HRM – An Overview: • International HRM- Meaning and Features, Objectives, Evolution of IHRM, Reasons for Emergency of IHRM, Significance of IHRM in International Business, Scope/Functions • Difference between International HRM and Domestic HRM • Approaches to IHRM- Ethnocentric, Polycentric, Geocentric and Regiocentric • Limitations to IHRM • Qualities of Global Managers • Organizational Dynamics and IHRM • Components of IHRM- Cross Cultural Management and Comparative HRM • Cross Cultural Management- Meaning, Features, Convergence of Cultures, Role of IHRM in Cross Culture Management, Problems of Cross Cultural Issues in Organizations, Importance of Cultural Sensitivity to International Managers • Comparative HRM- Meaning, Importance, Difference between IHRM and Comparative HRM • Managing Diversity in Workforce • Dealing with Cultural Shock
2	**Global HRM Functions**
	a) Global HRM Functions: • International Recruitment and Selection- Meaning- Sources of International Labour Market, Global Staffing, Selection Criteria, Managing Global Diverse Workforce • International Compensation – Meaning, Objectives, Components of International Compensation Program, Approaches to International Compensation • HRM Perspectives in Training and Development - Meaning, Advantages, Cross Cultural Training, Issues in Cross Cultural Training • International Performance Management – Meaning, Factors Influencing Performance, Criterion used for Performance Appraisal of International Employees, Problems Faced in International Performance Management • Motivation and Reward System- Meaning, Benchmarking Global Practices • International Industrial Relations – Meaning, Key Issues in International Industrial Relations, Trade Union and International IR

SN	Modules/ Units
3	**Managing Expatriation and Repatriation**
	a) Managing Expatriation and Repatriation • Concepts of PCNs (Parent-Country Nationals), TCNs(Third-Country Nationals) and HCNs(Host-Country Nationals) • Expatriation- Meaning, Reasons for Expatriation, Factors in Selection of Expatriates, Advantages of Using Expatriates, Limitations of using Expatriates, Role of Family, the Role of Non-expatriates, Reasons for Expatriate Failure, Women and Expatriation, Requirements/Characteristics of Effective Expatriate Managers • Repatriation- Meaning, Repatriation Process, Factors affecting Repatriation Process, Role of Repatriate, Challenges faced by Repatriates
4	**International HRM Trends and Challenges**
	a) International HRM Trends and Challenges: • Emerging Trends in IHRM • Off Shoring – Meaning, Importance, Off Shoring and HRM in India • International Business Ethics and IHRM – Meaning of Business Ethics, Global Values, International Corporate Code of Conduct, Criminalization of Bribery, Operationalizing Corporate Ethics of HR in Overall Corporate Ethics Programme • Managing International Projects and Teams- Meaning, How Projects are Managed across the World and Challenges in Managing International Projects across the World • HR in MNCs – Industrial Relations in MNCs • Role of Technology on IHRM • IHRM and Virtual Organization- Meaning and Features of Virtual Organization, Difference between Virtual Organization and Traditional Organization, Managing HR in Virtual Organization • Growth in Strategic Alliances and Cross Border Mergers and Acquisitions- Impact on IHRM • Knowledge Management and IHRM

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Elective Courses (EC)

Group C: Human Resource Electives

2. Organisational Development

Modules at a Glance

SN	Modules	No. of Lectures
1	International HRM – An Overview	15
2	Global HRM Functions	15
3	Managing Expatriation and Repatriation	15
4	International HRM Trends and Challenges	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept of Organisational Development and its Relevance in the organisation
2	To Study the Issues and Challenges of OD while undergoing Changes
3	To get an Understanding of Phases of OD Programme
4	To Study the OD Intervention to meet the Challenges faced in the Organisation
5	To get an Insight into Ethical Issues in OD

SN	Modules/ Units
1	**Organisational Development – An Overview**
	a) Organisational Development – An Overview: • Organisational Development – Meaning, Features, Evolution, Components, Objectives, Principles, Process, Importance • Relevance of Organisational Development for Managers, OD- HRD Interface, Participation of Top Management in OD • OD Practitioner – Meaning, Role of OD Practitioner, Competencies of an OD Practitioner • Emerging Trends in OD • OD in Global Setting
2	**Organisational Diagnosis, Renewal and Change**
	a) Organisational Diagnosis, Renewal and Change: • Organisational Diagnosis - Meaning, Need, Phases, Levels of Organisational Diagnosis, Techniques of Organisational Diagnosis, Tools used in Organisational Diagnosis • Organizational Renewal, Re-energising, OD and Business Process Re-Engineering (BPR), OD and Leadership Development • Organisational Change- Meaning, Organisational Life Cycle, Planned Change, Organizational Growth and its Implication for Change • Change Agents- Meaning, Features, Types, Role, Skills required
3	**OD Interventions**
	a) Managing Expatriation and Repatriation • OD Interventions- Meaning, Features, Factors Affecting Success of Interventions, Steps in OD Interventions • Types of Interventions- Human Resource Intervention, Structural Intervention, Strategic Interventions, Third Party Peace Making Intervention • Techniques of OD Intervention : ▪ Traditional: Sensitive Training, Grid Training, Survey Feedback. ▪ Modern : Process Consultation, Third Party, Team Building, Transactional Analysis • Evaluation of OD Interventions : Process, Types, Methods, Importance

SN	Modules/ Units
4	**OD Effectiveness**
	a) OD Effectiveness: • Issues Faced in OD- Issues Related to Client Relationship, Power-Individual skills and Attributes as a Source of Power, Power and Influence Tactics, Politics and OD • Values in OD – Meaning, Professional Values, Value Conflict and Dilemma • Ethics in OD – Meaning, Factors Influencing Ethical Judgement, Ethical Guidelines for OD Professionals • Organisational Effectiveness- Meaning , Effectiveness v/s Efficiency, Approaches of Organisational Effectiveness : Goal Approach, System Resource Approach, Strategic Constituency Approach, Internal Process Approach; Parameters for Judging Organisational Effectiveness, Ways to Enhance Organisational Effectiveness

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Elective Courses (EC)

Group C: Human Resource Electives

3. HRM in Service Sector Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Service Sector Management- An Overview	15
2	Managing Human Element in Service Sector	15
3	Issues and Challenges of HR in Service Sector	15
4	HRP Evaluation, Attrition, Retention & Globalization	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept and growing importance of HRM in service sector
2	To understand how to manage human resources in service sector
3	To understand the significance of human element in creating customer satisfaction through service quality
4	To understand the Issues and Challenges of HR in various service sectors

SN	Modules/ Units
1	**Service Sector Management- An Overview**
	a) Service Sector Management- An Overview: • **Services -** Meaning, Features, Classification of Services: End User, Degree of Tangibility, People Based Services, Expertise Required, Orientation Towards Profit, By Location • **Service Sector Management –** Meaning, Significance of Service Sector, Reasons for Growth in Service Sector • **Service Organization** - Importance of Layout and Design of Service Organization, Servicescape • **Service Culture in Organization –** Meaning, Developing Service Culture in Organization • **Relationship Marketing –** Meaning, Need and Importance in Service Sector Organizations, Six Market Model • Role of Service Employee • **Role of Customers in Service Process–** Customers as Productive Resources, Customers as Contributors to Service Quality, Customers as Competitors • **Service Encounter and Moment of Truth –**Meaning, Nature, Elements of Service Encounter
2	**Managing Human Element in Service Sector**
	a) Managing Human Element in Service Sector: • **Human Element in Service Sector –** Introduction, Role and Significance • The Services Triangle • **Front Line Employees /Boundary Spanners–** Meaning, Issues Faced by Front Line Employees: Person/ Role Conflicts, Organization/ Client Conflict, Interclient Conflict • **Emotional Labour –** Meaning, Strategies for Managing Emotional Labour • **Recruitment in Service Sector–** Recruiting Right People, Recruitment Procedures and Criteria, Challenges in Recruitment in Service Sector • **Selection of Employees in Service Sector –** Interviewing Techniques: Abstract Questioning, Situational Vignette, Role Playing • Develop People to Deliver Service Quality • Compensating Employees in Service Sector • Motivating Employees for Services • **Empowerment of Service Workers –** Meaning, Advantages and Limitations

SN	Modules/ Units
3	**Issues and Challenges of HR in Service Sector**
	a) Issues and Challenges of HR in Service Sector: • **Quality Issues in Services**: Meaning and Dimensions of Service Quality, The Service – Gap Model, Reasons and Strategies to fill the Gaps • **Delivering Services through Agents and Brokers** - Meaning, Advantages, Challenges, Strategies for Effective Service Delivery through Agents and Brokers • **HRM in Public Sector Organizations and Non –** Profit Sector in India • **Issues and Challenges of HR in Specific Services:** ▪ Business and Professional Services: Banking and Insurance, Legal, Accountancy ▪ Infrastructure: Roads, Railways, Power ▪ Public Services: Police, Defense, Disaster Management ▪ Trade Services: Wholesale and Retail, Advertising, Maintenance and Repairs ▪ Personnel Services: Education, Health Care, Hotels • Social and Charitable Services
4	**HRP Evaluation, Attrition, Retention & Globalization**
	a) HRP Evaluation, Attrition, Retention & Globalization: • **Human Resource Planning Evaluation in Service Sector –** Meaning, HRP Evaluation Process, Purpose of HRP Evaluation in Service Sector, Issues Influencing HRP Evaluation in Service Sector • **Service Leadership –** Meaning, Integrating Marketing Operation and Human Resources, Creating a Leading Service Organization, The Service – Profit Chain Model • **Attrition in Service Sector –**Meaning, Reasons for Attrition in Service Sector, Cycle of Failure, Cycle of Mediocrity and Cycle of Success • **Retaining the Best People in Service Sector –** Including Employees in Company's Vision, Treat Employees as Customers, Measure and Reward String Service Performers • **Globalization of Services-** Meaning, Reasons for Globalization of Services, Impact of Globalization on Indian Service Sector. Organisational Effectiveness, Ways to Enhance Organisational Effectiveness

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Elective Courses (EC)

Group C:Human Resource Electives

4. Workforce Diversity

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Workforce Diversity - An Overview	15
2	Workforce Diversity and HRM Functions	15
3	Strategies to Manage Diversity	15
4	Issues in Managing Diversity and Recent Trends	15
Total		**60**

Objectives

SN	Objectives
01	To understand the nature of workforce diversity
02	To familiarize the learners with the strategies to deal with work force diversity
03	To understand the impact of technology in managing workforce diversity
04	To be able to interlink between workforce diversity and HRM functions

Sr. No.	Modules / Units
1	**Workforce Diversity - An Overview**
	• Meaning of Workforce • Workforce Diversity - Meaning, Features and Significance • Dimensions of Workforce Diversity • Advantages and Limitations of having a diverse workforce • Positive and Negative effects of workforce diversity in workplace
2	**Workforce Diversity and HRM Functions**
	• Steps to Recruiting and Retaining a Diverse Workforce • Workforce Diversity and HRM Functions – Diversity and Recruitment, Diversity and Supervision, Diversity and Training, Diversity and Compensation, Diversity and Performance Management, Diversity and Work life Balance • Role of Recruiter in Hiring Diversified Workforce • Workforce Diversity – Key to Organizational Performance • Workforce Diversity as a Determinant of Sustainable Competitive Advantage
3	**Strategies to Manage Diversity**
	• Organizational Strategies for Managing Workforce Diversity –Workplace Inclusion Strategies through Corporate Leadership, Diversity Training and Mentoring • Diversity Management Programmes - Concept • Corporate Culture and Diversity at workplace • Techniques of Managing Work Force Diversity • Approaches to Diversity Management System
4	**Issues in Managing Diversity and Recent Trends**
	• Best Practices in Achieving Workforce Diversity • Diversity and Multi-culturism • Global workforce diversity management • Recent Trends of Diversity • Role of Technology in Handling Workforce Diversity • Workforce Diversity Management for Creativity and Innovation • Ethical and Legal Issues in Managing Diversity

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Elective Courses (EC)

Group C: Human Resource Electives

5. Human Resource Accounting & Auditing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Human Resource Accounting: An Overview	15
2	Methods and Human Resource Accounting Practices in India	15
3	Human Resource Audit: An Overview	15
4	HR Audit for Legal Compliance and Safe Business Practices	15
Total		**60**

Objectives

SN	Objectives
01	To understand the value of human resource in organizations
02	To understand the importance of Human Resource Accounting at National and International level
03	To familiarize with the Human Resource Accounting Practices in India
04	To familiarize the learners with the process and approaches of Human Resources Accounting and Audit
05	To understand the significance of Human Resource Auditing as a Tool of Human Resource Valuation

Sr. No.	Modules / Units
1	**Human Resource Accounting: An Overview**
	• Human Resource Accounting – Meaning, Need and Objectives of HR Accounting • Historical Development of Human Resource Accounting, • Cost of Human Resource - Acquisition Cost, Training and Development Cost and additional Cost • Benefits and Limitations of Human Resource Accounting • Reporting of Human Resource Accounting at National Levels • Disclosures at International Level
2	**Methods and Human Resource Accounting Practices in India**
	• **Methods of Human Resource Accounting**: **1. Cost of Production Approach - Concept** i. Historical Cost Model – Meaning, Advantages and Limitations ii. Replacement Cost Model – Meaning, Advantages and Limitations iii. Opportunity Cost - – Meaning, Advantages and Limitations **2. Capitalized Earnings Approach - Concept** i. Economic Value Model - Meaning, Advantages and Limitations ii. Capitalization of Salary - Meaning, Advantages and Limitations • **Statutory Provisions governing HR accounts** • **Human Resource Accounting Practices in India**
3	**Human Resource Audit: An Overview**
	• Human Resource Audit - Meaning, Features, Objectives of HR Audit • Benefits and limitations of HR Audit • Need and Significance of HR Audit • Process of HR Audit • Approaches of HR Audit • Principles of Effective HR Auditing • Role of HR Auditor • Methods of conducting HR Audit – Interview, Workshop, Observation, Questionnaire. • Components of HR Audit • HR Audit and Workforce Issues : Workforce Communication and Employee Relations, Performance Management, Compensation System, Teambuilding System
4	**HR Audit for Legal Compliance and Safe Business Practices**
	• Areas covered by HR Audit - Pre-employment Requirements, Hiring Process, New-hire Orientation Process, Workplace Policies and Practices • HR Audit as Intervention - Introduction, Effectiveness of Human Resource Development Audit as an Intervention • Human Resource Audit and Business Linkages • Human Resource Auditing as a Tool of Human Resource Valuation: Introduction, Rationale of Human Resource Valuation and Auditing, Valuation of Human Resources, Issues in Human Capital Measurement and Reporting.

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Elective Courses (EC)

Group C: Human Resource Electives

6. Indian Ethos in Management

Modules at a Glance

SN	Modules	No. of Lectures
1	Indian Ethos – An Overview	15
2	Work Ethos and Values	15
3	Stress Management	15
4	Indian Systems of Learning	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept of Indian Ethos in Management
2	To link the Traditional Management System to Modern Management System
3	To understand the Techniques of Stress Management
4	To understand the Evolution of Learning Systems in India

SN	Modules/ Units
1	**Indian Ethos – An Overview**
	a) Indian Ethos • Meaning, Features, Need, History, Relevance, Principles Practised by Indian Companies, Requisites, Elements, Role of Indian Ethos in Managerial Practices **b) Management Lessons from Scriptures:** • Management Lessons from Vedas, Management Lessons from Mahabharata, Management Lessons from Bible, Management Lessons from Quran, Management Lessons from Kautilya's Arthashastra Indian Heritage in Business, Management, Production and Consumption. Ethics v/s Ethos Indian Management v/s Western Management
2	**Work Ethos and Values**
	a) Work Ethos: • Meaning, Levels, Dimensions, Steps, Factors Responsible for Poor Work Ethos **b) Values:** • Meaning, Features, Values for Indian Managers, Relevance of Value Based Management in Global Change, Impact of Values on Stakeholders: Employees, Customers, Government, Competitors and Society. • Values for Managers, Trans-Cultural Human Values in Management and Management Education, Secular v/s Spiritual Values in Management, Importance of Value System in Work Culture
3	**Stress Management**
	a) Stress Management: • Meaning, Types of Stress at Work, Causes of Stress, Consequences of Stress b) **Stress Management Techniques:** • Meditation : Meaning, Techniques, Advantages, Mental Health and its Importance in Management, Brain Storming, Brain Stilling, Yoga: Meaning, Significance **c) Leadership:** • Meaning, Contemporary Approaches to Leadership, Joint Hindu Family Business – Leadership Qualities of Karta **d) Motivation:** • Meaning, Indian Approach to Motivation, Techniques

SN	Modules/ Units
4	**Indian Systems of Learning**
	a) Learning: Meaning, Mechanisms • Gurukul System of Learning : Meaning, Features, Advantages, Disadvantages • Modern System of Learning: Meanings, Features, Advantages, Disadvantages • Karma: Meaning, Importance of Karma to Managers, Nishkama Karma • Laws of Karma: The Great Law, Law of Creation, Law of Humility, Law of Growth, Law of Responsibility, Law of Connection • Corporate Karma: Meaning, Methodology, Guidelines for good Corporate Karma • Self-Management: Personal growth and Lessons from Ancient Indian Education System • Personality Development: Meaning, Determinants, Indian Ethos and Personality Development

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Core Course (CC)

5. Operations Research

Modules at a Glance

SN	Modules	No. of Lectures
1	Introduction to Operations Research and Linear Programming	15
2	Assignment and Transportation Models	15
3	Network Analysis	15
4	Job Sequencing and Theory of Games	15
	Total	**60**

Objectives

SN	Objectives
1	To help students to understand operations research methodologies
2	To help students to solve various problems practically
3	To make students proficient in case analysis and interpretation

SN	Modules/ Units
1	**Introduction to Operations Research and Linear Programming**
	a) Introduction To Operations Research • Operations Research - Definition, Characteristics of OR, OR Techniques, Areas of Application, Limitations of OR. **b) Linear Programming Problems: Introduction and Formulation** • Introduction to Linear Programming • Applications of LP • Components of LP • Requirements for Formulation of LP Problem • Assumptions Underlying Linear Programming • Steps in Solving LP Problems • LPP Formulation (Decision Variables, Objective Function, Constraints, Non Negativity Constraints) **c) Linear Programming Problems: Graphical Method** • Maximization & Minimization Type Problems. (Max. Z & Min. Z) • Two Decision Variables and Maximum Three Constraints Problem • Constraints can be "less than or equal to", "greater than or equal to" or a combination of both the types i.e. mixed constraints. • Concepts: Feasible Region of Solution, Unbounded Solution, Redundant Constraint, Infeasible Solution, Alternative Optima. **d) Linear Programming Problems: Simplex Method** • Only Maximization Type Problems. (Only Max. Z). No Minimization problems. (No Min. Z) Numericals on Degeneracy in Maximization Simplex Problems. • Two or Three Decision Variables and Maximum Three Constraints Problem. (Up to Maximum Two Iterations) • All Constraints to be "less than or equal to" Constraints. ("Greater than or Equal to" Constraints not included.) • Concepts : Slack Variables, Surplus Variables, Artificial Variables, Duality, Product Mix and Profit, Feasible and Infeasible Solution, Unique or Alternate Optimal Solution, Degeneracy, Non Degenerate, Shadow Prices of Resources, Scarce and Abundant Resources, Utilized and Unutilized Capacity of Resources, Percentage Utilization of Resources, Decision for Introduction of a New Product. **Note:** 1. Surplus Variable, Artificial Variable and Duality to be covered only at Conceptual level for Theory Questions only and not included in Numerical. 2. Sensitivity Analysis including Profit Range and Capacity Range is not included.

SN	Modules/ Units
2	**Assignment and Transportation Models**
	a) Assignment Problem – Hungarian Method • Maximization & Minimization Type Problems. • Balanced and Unbalanced Problems. • Prohibited Assignment Problems, Unique or Multiple Optimal Solutions. • Simple Formulation of Assignment Problems. • Maximum 5 x 5 Matrix. Up to Maximum Two Iterations after Row and Column Minimization. **Note:** 1. Travelling Salesman Assignment Problem is not included. **b) Transportation Problems** • Maximization & Minimization Type Problems. • Balanced and Unbalanced problems. • Prohibited Transportation Problems, Unique or Multiple Optimal Solutions. • Simple Formulation of Transportation Problems. • Initial Feasible Solution (IFS) by: a. North West Corner Rule (NWCR) b. Least Cost Method (LCM) c. Vogel's Approximation Method (VAM) • Maximum 5 x 5 Transportation Matrix. • Finding Optimal Solution by Modified Distribution (MODI) Method. (u, v and Δ) • Maximum Two Iterations (i.e. Maximum Two Loops) after IFS. **Note:** 1. Production Scheduling Problem is not included. 2. Time Minimization Problem is not included. 3. Degeneracy Concept to be covered only at Conceptual Level. Not to be included in Numerical.

SN	Modules/ Units
3	**Network Analysis**
	a) Critical Path Method (CPM) • Concepts: Activity, Event, Network Diagram, Merge Event, Burst Event, Concurrent and Burst Activity, • Construction of a Network Diagram. Node Relationship and Precedence Relationship. • Principles of Constructing Network Diagram. • Use of Dummy Activity • Numerical Consisting of Maximum Ten (10) Activities. • Critical Path, Sub-critical Path, Critical and Non-critical Activities, Project Completion Time. • Forward Pass and Backward Pass Methods. • Calculation of EST, EFT, LST, LFT, Head Event Slack, Tail Event Slack, Total Float, Free Float, Independent Float and Interfering Float **b) Project Crashing** • Meaning of Project Crashing. • Concepts: Normal Time, Normal Cost, Crash Time, Crash Cost of Activities. Cost Slope of an Activity. • Costs involved in Project Crashing: Numericals with Direct, Indirect, Penalty, crash cost and Total Costs. • Time – Cost Trade off in Project Crashing. • Optimal (Minimum) Project Cost and Optimal Project Completion Time. • Process of Project Crashing. • Numerical Consisting of Maximum Ten (10) Activities. • Numerical based on Maximum Four (04) Iterations of Crashing **c) Program Evaluation and Review Technique (PERT)** • Three Time Estimates of PERT: Optimistic Time (a), Most Likely Time (m) and Pessimistic Time (b). • Expected Time (te) of an Activity Using Three Time Estimates. • Difference between CPM and PERT. • Numerical Consisting of Maximum Ten (10) Activities. • Construction of PERT Network using tevalues of all Activities. • Mean (Expected) Project Completion Time. • Standard Deviation and Variance of Activities. • Project Variance and Project Standard Deviation. • 'Prob. Z' Formula. • Standard Normal Probability Table. Calculation of Probability from the Probability Table using 'Z' Value and Simple Questions related to PERT Technique. • Meaning, Objectives, Importance, Scope, RORO/LASH

SN	Modules/ Units
4	**Job Sequencing and Theory of Games**
	a) Job Sequencing Problem • Processing Maximum 9 Jobs through Two Machines only. • Processing Maximum 6 Jobs through Three Machines only. • Calculations of Idle Time, Elapsed Time etc. **b) Theory of Games** • Introduction • Terminology of Game Theory: Players, Strategies, Play, Payoff, Payoff matrix, Maximin, Maximax, Saddle Point. • Types of Games. • Numericals based on: ▪ Two Person Zero Sum Games including strictly determinable and Fair Game - Pure Strategy Games (Saddle Point available). Principles of Dominance method.

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Reference Books

Reference Books
International Finance
• *P G Apte, International Financial Management, 5th Edition, The McGraw Hill* • *Cheol . S. Eun & Bruce G. Resnick, International Finance Management* • *Maurice D. Levi, International Finance – Special Indian Edition* • *Prakash G. Apte, International Finance – A Business Perspective* • *V A. Aadhani, International Finance*
Innovative Financial Services
• *IM Pandey, Financial Management, Vikas Publishing House Ltd.* • *Khan M.Y., Financial Services, Mc Graw Hill Education.* • *Dr.S.Gurusamy, Financial Services, Vijay Nicole Imprints.* • *Financial Market and Services, E, Gordon and K. Natrajan, Himalaya Publishing House*
Project Management
• *Harold Kerzer, Project Management – A System Approach to Planning, Scheduling & Controlling* • *Jack.R.Meredith & Samuel.J.Mantel, Jr.,Project Management – A Managerial Approach* • *Bhavesh.M.Patel, Project Management – Strategic Financial Planning , Evaluation & Control*
Strategic Financial Management
• *C. Paramasivan& T. Subramanian, Financial Management* • *IM Pandey, Financial Management* • *Ravi Kishor, Financial Management* • *Khan & Jain, Financial Management* • *Van Horne &Wachowiz, Fundamentals of Financial Management* • *Prasanna Chandra, Strategic Financial Management*
Financing Rural Development
• *Rural Banking – IIB Macmillan* • *MicroFinance Perspective and Finance - IIB Macmillan* • *MSME in India – Taxman*
Indirect Taxes
• *GST Bare Act 2017* • *GST Law & Practice - V.S Datey (6th Edition)* • *GST Laws – National Academy of Customs, Indirect Tax*
Brand Management
• *Keller Kevin Lane, Strategic Brand Management: Building, Measuring and Managing Brand Equity* • *Keller Kevin Lane, Strategic Brand Management-2008* • *Elliot, Richard, Strategic Brand Management-2008* • *Kapferer, Jean-Noel, Strategic Brand Management-2000* • *Kishen, Ram, Strategic Brand Management- 2013* • *Keller Kevin Lane, Strategic Brand Management 4e-2015*

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Reference Books

Reference Books
Retail Management
• *Michael Levy & Barton A Weitz, "Retailing Management", Tata Mc Graw Hill* • *Gibson G. Vedamani, "Retail Management- Functional Principles and Practices", Jaico Publishing House, Mumbai.* • *Jim, "Retail Strategies-understanding why we shop", Jaico Publishing House, Mumbai.* • *Dunne Lusch, "Retail Management", South Western Cengage Learning* • *K.S. Menon, "Store Management", Macmillan India Ltd.,* • *Keith Lincoln, Lars Thomessen & Anthony Aconis, "Retailization -Brand Survival in the Age of Retailer Power", Kogan Page Ltd.,* • *Swapna Pradhan, "Retailing Management–Text and Cases", 4th Edn, Tata Mc Graw Hill.* • *Bajaj, Tulli & Shrivastava, "Retail Management", Oxford University Press* • *Kishore Biyani, "It Happens in India",& " The Wall Mart Story"* • *Store Manager, Organiser / Planner- DMS Retail* • *Dr. RamKishen Y. "International Retail Marketing Strategies", Jaico Publishing House, Mumbai.*
International Marketing
• *Dr. Shakeel Ahmad Siddiqui, International Marketing, Dreamtech press , Edition 2011* • *Philip R.Cateora, John L. Graham, Prashanth Salwan, International Marketing , Tata Mcgraw hill Education Private limited, New Delhi, Thirteenth Edition .* • *RajGopal, International Marketing, Vikas Publishing House Pvt. Ltd., Edition 2007.* • *Sak Onkvisit, John J.Shaw, International Marketing Analysis and Strategy, Pearson Publication, Third Edition* • *Francis Cherunilam, International Business, PHI Leaning Private Limited New Delhi, Fifth Edition .* • *Justin Paul and Ramneek Kapoor, International Marketing Text and Cases, Tata Mcgraw Hill Education Private Limited New Delhi, Second Edition.* • *Rakesh Mohan Joshi, International Marketing, Oxford University Press, Second Edition* • *Philip R. Cateora, John L. Graham, International Marketing, Tata Mcgraw Hill, Twelfth Edition* • *Rakesh Mohan Joshi, International Marketing Oxford University Press, First Edition* • *Michael R. Czinkota, Iikka A Ronkainen, International Marketing, Cengage Learning Edition 2007* • *Gerald Albaum, Edwin Duerr, Jesper Strandskov, International Marketing and Export Management, Pearson Publication , Fifth Edition*
Media Planning & Management
• *Arpita Menon , Media Planning and Buying, Tata McGraw Hill Education Private Limited , Second Edition 2010* • *Jack Z Sissors and Roger B. Baron, Advertising Media Planning, McGraw Hill Education India Pvt. Limited, Seventh Edition.* • *Larry Percy and Richard Elliott, Strategic Advertising Management , Oxford University Press, Second Edition* • *Larry d. Kelly and Donald W.Jugeneimer, Advertising Media Planning , PHI learning Private Limited,* • *Dennis .F.Herrick, Media Management in Age of Giants, Surjeet Publications* • *Charles Warner and Joseph Buchman, Media selling ,Surjeet Publication,3rd edition*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester VI with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Sports Marketing
• *Phil Schaaf -Sports Marketing - It's not just a game anymore .* • *Bernard J. Mullin (Author), Stephen Hardy (Author), William A. and Sutton (Author) - Sport Marketing* • *Larry DeGaris- Sports Marketing: A Practical Approach February 2015* • *Matthew D.Shank and Mark R. Lyberger, Sports Marketing: A Strategic Perspective, 5th edition3 October 2014* • *David Shilbury; Hans Westerbeek; Shayne Quick; Daniel Funk Allen & Unwin, 2009 (3rd edition), Strategic Sport Marketing*
Marketing of Non-Profit Organisation
• *Philip Kotler & Alan R Andersan, Strategic Marketing for nonprofit organization, 07th Edition, 2008, Prentice Hall.* • *Banies, Fill & Rosengren (2016), Marketing, Oxford University Press.* • *TCC Group & The California Endowment Fund, what makes an effective advocacy organization – A framework for determining advocacy capacity, June 2009, TCC Group.* • *Global CSR Summit, A study by Ernst & Young and PHD Chamber, 2013.* • *PWC & CII, Handbook on Corporate Social responsibility, 2013, CII Development Initiative Council.* • *Sahu Pani, Non- Governmental Organisations Development Actors, 2010, Himalaya Publishing, New Delhi* • *O.P.Goel, Strategic Management & Policy issues of NGO's, 2004, Isha Books, Delhi* • *B.R., Nanda, NGO Management, 2010, Surendra Publications, New Delhi* • *Snehlata Chnadra,,Guidelines for NGOs Management in India, 2003, Kanishka Publishers, Distributors, New Delhi* • *Shilaja Nagendra, Voluntary Organisations & Social Work,2007, Oxford Book Company, Jaipur*
HRM in Global Perspective
• *Peter J. Dowling, Marion Festing, Allen d. Engle Sr: International Human Resource Management, 5th Edition, Cengage Learning* • *P. L. Rao: International Human Resource Management, Text and Cases, Excel Books* • *Peer J. Dowling, Denice E. Welch and Randall S. Schuler (1999): International Human Resource Management, Managing People in a Multinational Context', South Western College Publishing.* • *Chris Brewster, Paul Sparrow and Guy Vernon, International Human Resource Management, The Universities Press* • *A.V.Phatak: International Dimensions of Management, Cincinnati, South Western College* • *Peter J. Dowling, Marion Festing, Allen D. Engle, International Human Resource Management, Thomson Learning.* • *Dennis R. Briscoe, Randall S. Schuler, International Human Resource Management: Policy and Practice for the Global Enterprise, Psychology Press* • *S C. Gupta: International Human Resource Management- Text and Cases, MacMillan Publishers*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester VI with effect from the Academic Year 2018-2019

Reference Books

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Organisational Development
• *Dr. Mrs. Anjali Ghanekar, Essentials of Organisation Development, Everest Publishing House* • *French,W.L. and Bell, C.H., Organisation Development, Prentice-Hall, New Delhi,1995.* • *Harvey, D.F. and Brown, D.R., An Experimental Approach to Organization Development, Prentice-Hall, Englewood Cliffs,N.J.,1990* • *Cummings, T. G. & Worley, C. G. (2009).Organization Development and Change (9th edition). Canada: South-Western Cengage Learning* • *Thomas G. Cummings and Christopher G. Worley, Organization Development and Change, Thomson South-Western, 8th Edition 2004.* • *Cummings, T. G., Theory of Organization Development and Change, South Western.* • *Ramanarayan, S. and Rao, T.V., Organization Development: Accelerating Learning and Transformation, 2nd Edition, Sage India, 2011.* • *Richard L, Organisation, Theory, Change and Design , India Edition(Cenage Learning)* • *Garath R Jones, Mary Mathew , Organisation Theory, Design and Change: Sixth Edition, Pearson* • *Wendell L French, Cecil H Bell, Jr, Veena Vohra ,Organisation Development , Sixth Edition, Pearson Education*
HRM in Service Sector Management
• *C. Bhattacharjee: Service Sector Management, An Indian Perspective, Jaico Publishing House* • *Christopher Lovelock, Jochen Wirtz, Jayanta Chatterjee: Services Marketing, Pearson* • *Christopher Lovelock: Services Marketing, People, Technology, Strategy, Pearson Education Asia* • *James A. Fitzsimmons, Mona J, Fitzsimmons: Service Management , Operations, Strategy, Information Technology, Tata McGraw – Hill* • *Zeithmal, Bitner, Gremler, Pandit: Services Marketing, Tata McGraw – Hill* • *Lovelock, Wirtz: Services Marketing, Pearson Education, 5th Edition* • *K. Rao: Services Marketing, Pearson Education* • *Ramneek Kapoor, Justin Paul, Biplab Halder: Services Marketing*
Workforce Diversity
• *Dessler Gary, A Framework for Human Resource Management, Pearson Publication, 7th Edition.* • *Handbook of Research on Workforce Diversity in a Global Society, edited by Scott, Chaunda L.* • *Diversity in the Workforce: Current Issues and Emerging Trendsedited by Marilyn Y. Byrd, Chaunda L. Scott* • *Managing Diversity: Human Resource Strategies for Transforming the Workplace Ellen Ernst Kossek, Sharon A. Lobel* • *Workforce Diversity Management: Challenges, Competencies and Strategies - Bahaudin Mujtaba* • *Handbook of Research on Organizational Culture and Diversity in the Modern, edited by Christiansen, Bryan, Chandan, Harish C*

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester VI with effect from the Academic Year 2018-2019

Reference Books

Reference Books
Human Resource Accounting & Auditing
• *HR Audit : Evaluating the human resource functions for business improvement by T.V. Rao, Response Books* • *Eric G. Flamholtz, Human Resource Accounting, Springer* • *Jac Fitzenz, How To Measure Human Resource Management, McGraw Hill* • *Rakesh Chandra Katiyar, Accounting For Human Resources , UK Publishing* • *M. Saeed, D.K. Kulsheshtha , Human Resource Accounting, Anmol Publications.* • *D. Prabakara Rao, Human Resource Accounting, Inter India Publications* • *Human Resource Management by Gary Dessler, Pearson Publications.* • *Rao, T.V. 2008. HRD Scorecard 2500, 1/e; New Delhi: Response Books* • *Udai Pareek and Rao T V (2003). Designing and Managing Human Resource*
Indian Ethos in Management
• *R Nandagopal, Ajith Sankar RN: Indian Ethics and Values in Management, Tata Mc Graw Hill* • *Bhatta, S.K., Business Ethics & Managerial Values.* • *Dave, Nalini V: Vedanta and Mana* • *Chakraborty, S.K.: Foundation of Managerial Work-Contributions from Indian Thought, Himalaya Publication House, Delhi 1998* • *Chakraborty, S.K.: Managerial Effectiveness and Quality of Work life – Indian Insights, Tata McGraw Hill Publishing Company, New Delhi – 1987* • *Chakraborty, S.K.: Management by Values, Oxford University Press 1991.* • *Nandagopal, Ajith Shankar, Indian Ethos and Values in Management, Tata Mc Graw Hill, 2010* • *Khandelwal Indian Ethos and Values for Managers, Himalaya Publishing House, 2009* • *Biswanath Ghosh, Ethics In Management and Indian Ethos, Vikas Publishing House, 2009* • *Joseph Des Jardins, An Introduction to Business Ethics , Tata Mc Graw Hill, 2009* • *S K Chakraborty, Management by Values, Oxford University Press, New Delhi, 2008*
Operation Research
• *Taha H.A., Operations Research - An Introduction, 6th Edition , Hall of India* • *Kapoor V.K., Operations Research Techniques for Management, 7th Edition, Sultan Chand & Sons* • *Kantiswarup, Gupta P.K. & Manmohan, Operations Research 9th Edition, Sultan Chand & Sons* • *Sharma S.D.,Operations Research, 8th Edition, Kedarnath, Ramnath& Company* • *Bronson R, Operations Research, 2nd Edition, Shaum's Outline Series* • *Vora N.D, Quantitative Techniques in Management, 3rd Edition, Tata McGraw Hill co.* • *Shreenath L.S, Principles & Application 3rd Ed,., PERT & CPM, Affiliated East-West Press Pvt. Ltd.* • *Wagener H.M.,Principles of Operations Research 2nd Edition, Prentice - Hall of India* • *Sasieni M, Yaspan A & John Wiley & Sons Friedman L, Operations Research - Methods & Problems 1st Edition* • *NatrajanBalasubramani, Tamilarasi, Operations Research, Pearson Education* • *G. Hadley, Linear Programming, Narosa Book Distributors Private Ltd* • *L.C. Jhamb, Quantitative Techniques (For Managerial Decisions VOL I), Everest Publishing House, Pune.* • *Paul Loomba, Linear Programming, Tata McGraw Hill Publishing Co. Ltd.* • *Aditham B. Rao , Operations Research Edition 2008, Jaico Publishing House, Mumbai*

University of Mumbai

Bachelor of Management Studies Programme
Guidelines for Project Work
at
Third Year
Semester VI

Under Choice Based Credit, Grading and Semester System

(To be implemented from Academic Year 2018-2019)

Board of Studies-in-Business Management

Introduction

Inclusion of project work in the course curriculum of the Bachelor of Management Studies programme is one of the ambitious aspects in the programme structure. The main objective of inclusion of project work is to inculcate the element of research analyse and scientific temperament challenging the potential of learner as regards to his/ her eager to enquire and ability to interpret particular aspect of the study. It is expected that the guiding teacher should undertake the counselling sessions and make the awareness among the learners about the methodology of formulation, preparation and evaluation pattern of the project work.

- There are two modes of preparation of project work
  1. Project work based on research methodology in the study area
  2. Project work based on internship in the study area

Guidelines for preparation of Project Work

1. General guidelines for preparation of project work based on Research Methodology

- The project topic may be undertaken in any area of Elective Courses.
- Each of the learner has to undertake a Project individually under the supervision of a teacher-guide.
- The learner shall decide the topic and title which should be specific, clear and with definite scope in consultation with the teacher-guide concerned.
- University/college shall allot a guiding teacher for guidance to the students based on her / his specialization.
- The project report shall be prepared as per the broad guidelines given below:
  - Font type: Times New Roman
  - Font size: 12-For content, 14-for Title
  - Line Space : 1.5-for content and 1-for in table work
  - Paper Size: A4
  - Margin : in Left-1.5, Up-Down-Right-1
  - The Project Report shall be bounded.
  - The project report should be 80 to 100 pages

Format

1st page (Main Page)

Title of the problem of the Project

A Project Submitted to

University of Mumbai for partial completion of the degree of

Bachelor of Management Studies

Under the Faculty of Commerce

By

Name of the Learner

Under the Guidance of

Name of the Guiding Teacher

Name and address of the College

Month and Year

2nd Page
This page to be repeated on 2nd page (i.e. inside after main page)

On separate page

Index

Chapter No. 1	Title of the Chapter	Page No.
(sub point 1.1, 1.1.1, ... And so on)		
Chapter No. 2	Title of the Chapter	
Chapter No. 3	Title of the Chapter	
Chapter No. 4	Title of the Chapter	
Chapter No. 5	Title of the Chapter	

List of tables, if any, with page numbers.

List of Graphs, if any, with page numbers.

List of Appendix, if any, with page numbers.

Abbreviations used:

Structure to be followed to maintain the uniformity in formulation and presentation of Project Work

(Model Structure of the Project Work)

- **Chapter No. 1: Introduction**

  In this chapter Selection and relevance of the problem, historical background of the problem, brief profile of the study area, definition/s of related aspects, characteristics, different concepts pertaining to the problem etc can be incorporated by the learner.

- **Chapter No. 2: Research Methodology**

  This chapter will include Objectives, Hypothesis, Scope of the study, limitations of the study, significance of the study, Selection of the problem, Sample size, Data collection, Tabulation of data, Techniques and tools to be used, etc can be incorporated by the learner.

- **Chapter No. 3: Literature Review**

  This chapter will provide information about studies done on the respective issue. This would specify how the study undertaken is relevant and contribute for value addition in information/ knowledge/ application of study area which ultimately helps the learner to undertake further study on same issue.

- **Chapter No. 4: Data Analysis, Interpretation and Presentation**

  This chapter is the core part of the study. The analysis pertaining to collected data will be done by the learner. The application of selected tools or techniques will be used to arrive at findings. In this, table of information's, presentation of graphs etc. can be provided with interpretation by the learner.

- **Chapter No. 5: Conclusions and Suggestions**

  In this chapter of project work, findings of work will be covered and suggestion will be enlisted to validate the objectives and hypotheses.

Note: If required more chapters of data analysis can be added.

- **Bibliography**
- **Appendix**

On separate page

Name and address of the college

Certificate

This is to certify that Ms/Mr _____has worked and duly completed her/his Project Work for the degree of Bachelor of Management Studies under the Faculty of Commerce in the subject of _____ and her/his project is entitled, "_____*Title of the Project*_____" under my supervision.

I further certify that the entire work has been done by the learner under my guidance and that no part of it has been submitted previously for any Degree or Diploma of any University.

It is her/ his own work and facts reported by her/his personal findings and investigations.

Seal of the College

Name and Signature of
Guiding Teacher

Date of submission:

On separate page

Declaration by learner

I the undersigned Miss / Mr. _____*Name of the learner*_____here by, declare that the work embodied in this project work titled "_____ _____*Title of the Project*_____", forms my own contribution to the research work carried out under the guidance of _____*Name of the guiding teacher*_____ is a result of my own research work and has not been previously submitted to any other University for any other Degree/ Diploma to this or any other University.

Wherever reference has been made to previous works of others, it has been clearly indicated as such and included in the bibliography.

I, here by further declare that all information of this document has been obtained and presented in accordance with academic rules and ethical conduct.

Name and Signature of the learner

Certified by

Name and signature of the Guiding Teacher

On separate page

Acknowledgment

(Model structure of the acknowledgement)

To list who all have helped me is difficult because they are so numerous and the depth is so enormous.

I would like to acknowledge the following as being idealistic channels and fresh dimensions in the completion of this project.

I take this opportunity to thank the **University of Mumbai** for giving me chance to do this project.

I would like to thank my **Principal, _____**for providing the necessary facilities required for completion of this project.

I take this opportunity to thank our **Coordinator_____**, for her moral support and guidance.

I would also like to express my sincere gratitude towards my project guide _____ whose guidance and care made the project successful.

I would like to thank my **College Library**, for having provided various reference books and magazines related to my project.

Lastly, I would like to thank each and every person who directly or indirectly helped me in the completion of the project especially **my Parents and Peers** who supported me throughout my project.

2. Guidelines for Internship based project work

- Minimum 20 days/ 100 hours of Internship with an Organisation/ NGO/ Charitable Organisation/ Private firm.
- The theme of the internship should be based on any study area of the elective courses
- Experience Certificate is Mandatory
- A project report has to be brief in content and must include the following aspects:
  - **Executive Summary:**

    A bird's eye view of your entire presentation has to be precisely offered under this category.
  - **Introduction on the Company:**

    A Concise representation of company/ organization defining its scope, products/ services and its SWOT analysis.
  - **Statement and Objectives:**

    The mission and vision of the organization need to be stated enshrining its broad strategies.
  - **Your Role in the Organisation during the internship:**

    The key aspects handled, the department under which you were deployed and brief summary report duly acknowledged by the reporting head.
  - **Challenges:**

    The challenges confronted while churning out theoretical knowledge into practical world.
  - **Conclusion:**

    A brief overview of your experience and suggestions to bridge the gap between theory and practice.
- The project report based on internship shall be prepared as per the broad guidelines given below:
  - Font type: Times New Roman
  - Font size: 12-For content, 14-for Title
  - Line Space : 1.5-for content and 1-for in table work
  - Paper Size: A4
  - Margin : in Left-1.5, Up-Down-Right-1
  - The Project Report shall be bounded.
  - The project report should be of minimum 50 pages

Evaluation pattern of the project work

The Project Report shall be evaluated in two stages viz.	
• **Evaluation of Project Report (Bound Copy)**	**60 Marks**
▪ Introduction and other areas covered	20 Marks
▪ Research Methodology, Presentation, Analysis and interpretation of data	30 Marks
▪ Conclusion & Recommendations	10 Marks
• **Conduct of Viva-voce**	**40 Marks**
▪ In the course of Viva-voce, the questions may be asked such as importance / relevance of the study, objective of the study, methodology of the study/ mode of Enquiry (question responses)	10 Marks
▪ Ability to explain the analysis, findings, concluding observations, recommendation, limitations of the Study	20 Marks
▪ Overall Impression (including Communication Skill)	10 Marks

Note:

- ***The guiding teacher along with the external evaluator appointed by the University/ College for the evaluation of project shall conduct the viva-voce examination as per the evaluation pattern***

Passing Standard

- Minimum of Grade E in the project component
- In case of failing in the project work, the same project can be revised for ATKT examination.
- Absence of student for viva voce: If any student fails to appear for the viva voce on the date and time fixed by the department such student shall appear for the viva voce on the date and time fixed by the Department, such student shall appear for the viva voce only along with students of the next batch.

Revised Syllabus of Courses of Bachelor of Management Studies Programme at Semester V and VI with effect from the Academic Year 2018-2019

Scheme of Evaluation

The performance of the learners will be evaluated in two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

A) Internal Assessment: 25 %

Question Paper Pattern
(Internal Assessment- Courses without Practical Courses)

Sr. No.	Particular	Marks
1	**One class test (20 Marks)**	
	Match the Column/ Fill in the Blanks/ Multiple Choice Questions ***(½ Mark each)***	05 Marks
	Answer in One or Two Lines (Concept based Questions) ***(01 Mark each)***	05 Marks
	Answer in Brief (Attempt Any Two of the Three) ***(05 Marks each)***	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

B) Semester End Examination: 75 %

i) Duration: The examination shall be of 2 ½ Hours duration

ii) Theory question paper pattern

- There shall be five questions each of 15 marks.
- All questions shall be compulsory with internal choice within the questions.
- Question may be subdivided into sub-questions a, b, c… and the allocation of marks depends on the weightage of the topic.

  (Detail question paper pattern has been given separately)

❖ **Passing Standard**

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

Question Paper Pattern

(Practical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 1/2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A. Sub Questions to be asked 10 and to be answered any 08 B. Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks. If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 1/2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5Marks.

UNIVERSITY OF MUMBAI
No. UG/21 of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Commerce & Management Faculty is invited to this office Circular No.UG/105 of 2016-17, dated 25th October, 2016 relating to syllabus of Bachelor of Commerce (B.Com.) degree course.

They are informed that the recommendations made by the Board of Studies in Commerce at its meeting held on 28th February, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 **vide** item No. 4.48 and that in accordance therewith, the revised syllabus as per the (CBCS) for the T.Y.B.Com. (Sem. V & VI), has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Dinesh Kamble)
I/c REGISTRAR

MUMBAI – 400 032
14th June, 2018

To

The Principals of the affiliated Colleges and Directors of the recognized Institutions in Commerce & Management Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.48/05/05/2018

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No. UG/21 -A of 2018 MUMBAI-400 032 14th June, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Commerce & Management,
2) The Chairman, Board of Studies in Commerce,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Professor-cum-Director, Institute of Distance and Open Learning (IDOL),
6) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

University of Mumbai

Revised Syllabus
and
Question Paper Pattern
of Courses of
Bachelor of Commerce Programme
at
Third Year
Semester V and VI

Under Choice Based Credit, Grading and Semester System

To be implemented from Academic Year 2018-2019

Faculty of Commerce

Bachelor of Commerce (B.Com) Programme

Under Choice Based Credit, Grading and Semester System

T.Y.B.Com

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***		***1A***	***Discipline Specific Elective(DSE) Courses***	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	**04+04**	1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	**04+04**
1B	***Discipline Related Elective(DRE) Courses***		***1B***	***Discipline Related Elective(DRE) Courses***	
3	Commerce V	**03**	3	Commerce VI	**03**
4	Business Economics V	**03**	4	Business Economics VI	**03**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
5 & 6	**Any two courses from the following list of the courses	**03+03**	5 & 6	**Any two courses from the following list of the courses	**03+03**
	Total Credits	**20**		**Total Credits**	**20**

****List of groups of Discipline Specific Elective(DSE) Courses for Semester V (Any One Group)***		****List of groups of Discipline Specific Elective(DSE) Courses for Semester VI (Any One Group)***	
Group A: Advanced Accountancy			
1	Financial Accounting and Auditing VII - Financial Accounting	1	Financial Accounting and Auditing IX - Financial Accounting
2	Financial Accounting and Auditing VIII - Cost Accounting	2	Financial Accounting and Auditing X - Cost Accounting
Group B: Business Management			
1	Business Management Paper - I	1	Business Management Paper - III
2	Business Management Paper - II	2	Business Management Paper - IV
Group C: Banking and Finance			
1	Banking and Finance Paper - I	1	Banking and Finance Paper - III
2	Banking and Finance Paper - II	2	Banking and Finance Paper - IV
Group D: Commerce			
1	Commerce Paper - I	1	Commerce Paper - III
2	Commerce Paper - II	2	Commerce Paper - IV
Group E: Quantitative Techniques			
1	Quantitative Techniques Paper - I	1	Quantitative Techniques Paper - III
2	Quantitative Techniques Paper - II	2	Quantitative Techniques Paper - IV
Group F: Economics			
1	Economics Paper - I	1	Economics Paper - III
2	Economics Paper - II	2	Economics Paper - IV
Note: Group selected in Semester V will continue in Semester VI			

**List of Ability Enhancement Courses (AEC) for Semester V (Any Two)		**List of Ability Enhancement Courses (AEC) for Semester VI (Any Two)	
1	Trade Unionism and Industrial Relations Paper - I	1	Trade Unionism and Industrial Relations. Paper - II
2	Computer systems & Applications Paper -I	2	Computer systems & Applications Paper - II
3	Export Marketing Paper - I	3	Export Marketing Paper - II
4	Marketing Research Paper - I	4	Marketing Research Paper - II
5	Investment Analysis and Portfolio Management Paper - I	5	Investment Analysis and Portfolio Management Paper - II
6	Transport Management Paper - I	6	Transport Management Paper - II
7	Entrepreneurship& M.S.S.I. Paper - I	7	Entrepreneurship& M.S.S.I. Paper - II
8	International Marketing Paper - I	8	International Marketing Paper - II
9	Merchant Banking Paper - I	9	Merchant Banking Paper - II
10	Direct & Indirect Taxation Paper - I	10	Direct & Indirect Taxation Paper - II
11	Labour Welfare & Practice Paper - I	11	Labour Welfare & Practice Paper - II
12	Purchasing & Store keeping Paper - I	12	Purchasing & Store keeping Paper - II
13	Insurance Paper - I	13	Insurance Paper - II
14	Banking Law & Practice Paper - I	14	Banking Law & Practice Paper - II
15	Regional Planning Paper - I	15	Regional Planning Paper - II
16	Rural Marketing Paper - I	16	Rural Marketing Paper - II
17	Elements of Operational Research Paper- I	17	Elements of Operational Research Paper - II
18	Psychology of Human Behaviour at work Paper - I	18	Psychology of Human Behaviour at work Paper - II
Note: Course selected in Semester V will continue in Semester VI			

B.Com. Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2018-2019)

Semester V

No. of Courses	Semester V	Credits
1	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	**04+04**
1B	***Discipline Related Elective(DRE) Courses***	
3	Commerce V	**03**
4	Business Economics V	**03**
2	***Ability Enhancement Courses (AEC)***	
5 & 6	**Any two courses from the following list of the courses	**03+03**
	Total Credits	**20**

List of groups of Discipline Specific Elective(DSE) Courses for Semester V (Any One Group)	
Group A: Advanced Accountancy	
1	Financial Accounting and Auditing VII - Financial Accounting
2	Financial Accounting and Auditing VIII - Cost Accounting
Group B: Business Management	
1	Business Management Paper - I
2	Business Management Paper - II
Group C: Banking and Finance	
1	Banking and Finance Paper - I
2	Banking and Finance Paper - II
Group D: Commerce	
1	Commerce Paper - I
2	Commerce Paper - II
Group E: Quantitative Techniques	
1	Quantitative Techniques Paper - I
2	Quantitative Techniques Paper - II
Group F: Economics	
1	Economics Paper - I
2	Economics Paper - II

****List of Ability Enhancement Courses (AEC) for Semester V (Any Two)**	
1	Trade Unionism and Industrial Relations Paper - I
2	Computer systems & Applications Paper -I
3	Export Marketing Paper - I
4	Marketing Research Paper - I
5	Investment Analysis and Portfolio Management Paper - I
6	Transport Management Paper - I
7	Entrepreneurship& M.S.S.I. Paper - I
8	International Marketing Paper - I
9	Merchant Banking Paper - I
10	Direct & Indirect Taxation Paper - I
11	Labour Welfare & Practice Paper - I
12	Purchasing & Store keeping Paper - I
13	Insurance Paper - I
14	Banking Law & Practice Paper - I
15	Regional Planning Paper - I
16	Rural Marketing Paper - I
17	Elements of Operational Research Paper- I
18	Psychology of Human Behaviour at work Paper - I

Revised Syllabus of Courses of B.Com. Programme at Semester V with Effect from the Academic Year 2018-2019

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

1. Financial Accounting and Auditing VII - Financial Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Preparation of Final Accounts of Companies	15
2	Internal Reconstruction	15
3	Buy Back of Shares	10
4	Investment Accounting (w.r.t. Accounting Standard- 13)	12
5	Ethical Behaviour and Implications for Accountants	08
	Total	**60**

Sr. No.	Modules / Units
1	**Preparation of Final Accounts of Companies**
	Relevant provisions of Companies Act related to preparation of Final Account (excluding cash flow statement) Preparation of financial statements as per Companies Act. (excluding cash flow statement) AS 1 in relation to final accounts of companies (disclosure of accounting policies) Adjustment for – 1. Closing Stock 2. Depreciation 3. Outstanding expenses and income 4. Prepaid expenses and Pre received income 5. Proposed Dividend and Unclaimed Dividend 6. Provision for Tax and Advance Tax 7. Bill of exchange (Endorsement, Honour, Dishonour) 8. Capital Expenditure included in Revenue expenditure and vice versa eg- purchase of furniture included in purchases 9. Unrecorded Sales and Purchases 10. Good sold on sale or return basis 11. Managerial remuneration on Net Profit before tax 12. Transfer to Reserves 13. Bad debt and Provision for bad debts 14. Calls in Arrears 15. Loss by fire (Partly and fully insured goods) 16. Goods distributed as free samples. 17. Any other adjustments as per the prevailing accounting standard.
2	**Internal Reconstruction**
	Need for reconstruction and company law provisions Distinction between internal and external reconstructions. Methods including alteration of share capital, variation of shareholder rights, sub division, consolidation, surrender and reissue / cancellation, reduction of share capital with relevant legal provisions and accounting treatment for same.
3	**Buy Back of Shares**
	Company Law / Legal provisions (including related restrictions, power, transfer to capital redemption reserve account and prohibitions) Compliance of conditions including sources, maximum limits and debt equity ratio. Cancellation of Shares Bought back(Excluding Buy Back of minority shareholding)

Sr. No.	Modules / Units
4	**Investment Accounting (w.r.t. Accounting Standard- 13)**
	For shares (variable income bearing securities) For debentures/Preference. shares (fixed income bearing securities) Accounting for transactions of purchase and sale of investments with ex and cum interest prices and finding cost of investment sold and carrying cost as per weighted average method (Excl. brokerage). Columnar format for investment account.
5	**Ethical Behaviour and Implications for Accountants**
	Introduction, Meaning of ethical behavior Financial Reports – What is the link between law, corporate governance, corporate social responsibility and ethics? What does the accounting profession mean by the ethical behavior? Implications of ethical values for the principles versus rule based approaches to accounting standards The principal based approach and ethics The accounting standard setting process and ethics The IFAC Code of Ethics for Professional Accountants Ethics in the accounting work environment – A research report Implications of unethical behavior for financial reports Company Codes of Ethics The increasing role of whistle – Blowing Why should student learn ethics?

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

2. Financial Accounting and Auditing Paper-VIII: Cost Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Cost Accounting	10
2	Material Cost	10
3	Labour Cost	10
4	Overheads	10
5	Classification of Costs and Cost Sheet	10
6	Reconciliation of cost and financial accounts	10
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Cost Accounting**
	(a) Objectives and scope of Cost Accounting (b) Cost centres and Cost units (c) Cost classification for stock valuation, Profit measurement, Decision making and control (d) Coding systems (e) Elements of Cost (f) Cost behaviour pattern, Separating the components of semi- variable costs
2	**Material Cost**
	(i) Procurement procedures—Store procedures and documentation in respect of receipts and issue of stock, Stock verification (ii) Inventory control —Techniques of fixing of minimum, maximum and reorder levels, Economic Order Quantity, ABC classification; Stocktaking and perpetual inventory (iii) Inventory accounting **Note-** Simple practical problems based on Calculation of EOQ, Raw Material Turnover ratio, Preparation of stock ledger and Valuation of Inventories, based on FIFO and Weighted average cost.
3	**Labour Cost**
	(i) Attendance and payroll procedures, Overview of statutory requirements, Overtime, Idle time and Incentives (ii) Labour turnover (iii) Utilisation of labour, Direct and indirect labour, Charging of labour cost, Identifying labour hours with work orders or batches or capital jobs (iv) Efficiency rating procedures (v) Remuneration systems and incentive schemes. **Note**-Simple practical problems based on Preparation of labour cost statement Remuneration and incentive systems based on Piece work plan, Haley Premium Plan, Rowan system, Gantt's Task
4	**Overheads**
	Functional analysis — Factory, Administration, Selling and Distribution Behavioural analysis — Fixed, Variable, Semi-variable cost Note-Simple practical problems on Departmentalization and apportionment of primary overheads, Computation of overhead rates including Machine overhead rates Basic concepts of treatment of over/under absorption of overheads- Direct Labour method and Prime Cost method
5	**Classification** of Costs and Cost Sheet
	Classification of costs, Cost of Sales, Cost Centre, Cost Unit, Profit Centre and Investment Centre Cost Sheet, Total Costs and Unit Costs, Different Costs for different purpose **Note**- Simple practical problems on preparation of cost sheet
6	**Reconciliation** of cost and financial accounts
	Practical problems based on Reconciliation of cost and Financial accounts.

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

1. Business Management Paper-III: Management and Organization Development

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Planning	15
3	Organizing as a Managerial Function	15
4	Staffing	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction**
	• Management – Definition and Characteristics • Management – as Science, art and profession – Levels of management and management skills • Development of Management Thought – Scientific Approach Administrative School, Behaviour School, Systems Approach and Contingency Approach. Evolution of Indian management thoughts and their relevance in the current era. • Functions of Management in a typical business organisation
2	**Planning**
	• Planning, forecasting, decision making and problem solving • Nature, characteristics, merits and limitations of planning. • Classification and components of plans • Essentials of a good plan and planning process • Management by objectives (MBO) – Importance and relevance
3	**Organizing as a Managerial Function**
	• Definition and Principles • Departmentalisation • Formal organisations – Functional, SBU, Matrix, Committees • Informal organisations – Relevance and Importance • Authority, responsibility, accountability and span of control • Organizational hierarchy – charts • Delegation of authority and decentralization • Emergence of virtual organisation – merits and limitations
4	**Staffing**
	• Importance of human resource in organisations • Estimation of human resource requirements • Human Asset Accounting • Job Analysis • Recruitment and selection • Training and Development • Performance Appraisal

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

2. Business Management Paper-V: Financial Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Financial Management	11
2	Study of Financial Statements	11
3	Ratio Analysis	12
4	Sources of Finance and Cash Flow Analysis	11
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Financial Management**
	• Definition, nature and functions of financial management • Objectives of financial management • Importance of financial management and limitations. • Preparation of financial Statements adhering to current statutory requirements.
2	**Study of Financial Statements**
	• Objectives of financial statement analysis and interpretation • Steps involved in the analysis of financial statements • Comparative Statements • Common Size Statements • Trend Analysis
3	**Ratio Analysis**
	• Ratio Analysis – Meaning and objectives and Classification of Ratios- Traditional classification, functional classification and classification from the point of view of users • Balance Sheet Ratios- Current Ratio, Liquid Ratio, Proprietary Ratio, Stock-Working Capital Ratio, Capital Gearing Ratio, Debt Equity Ratio • Revenue Statement Ratios - Gross Profit Ratio, Operating Ratio, Expense Ratios, Net Profit Ratio, Stock Turnover Ratio. • Combined Ratios - Return on Capital Employed, Return on Proprietors' Funds, Return on Equity Share Capital, Debtors' Turnover Ratio (Debtors' Velocity), Earning Per Share, Dividend Payout Ratio, Price Earning Ratio • Importance and limitations of Accounting Ratios
4	**Sources of Finance and Cash Flow Analysis**
	• Classification of sources of finance with reference to period , ownership and source of generation • Internal and external financing including choice of financial instruments • Cash Flow Statement – Meaning and Classification • Uses of Cash Flow statement • Preparation of Cash Flow Statement – Direct and Indirect

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group C: Banking and Finance

1. Banking and Finance Paper - I: Central Banking

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Indian Financial System	15
2	Financial Markets in India	15
3	Commodity Market	15
4	Derivatives Market	15
	Total	**60**

Sr. No.	Modules / Units
1	**Indian Financial System**
	A) Introduction, Meaning, Functions of financial system, Indian financial system from financial neutrality to financial activism and from financial volatility to financial stability, Role of Government in financial development, Overview of Phases of Indian financial system since independence (State Domination – 1947-1990, Financial sector reforms 1991 till Financial Sector Legislative Reforms Commission 2013), Monitoring framework for financial conglomerates. **B)** Structure of Indian Financial System – Banking & Non-Banking Financial Institutions, Organized and Unorganized Financial Markets, Financial Assets/Instruments, Fund based & Fee Based Financial Services.
2	**Financial Markets in India**
	A) Indian Money Market – Meaning, Features, Functions, Importance, Defects, Participants, Components of Organized and Unorganized markets and Reforms **B)** Indian Capital Market - Meaning, Features, Functions, Importance, Participants, Instruments, Reforms in Primary and Secondary Market. **C)** Indian Stock Market - Meaning and functions of Stock Exchange- NSE and BSE. **D)** Equity Market – Primary Market, IPO, Book Building, Role of Merchant Bankers, ASBA , Green Shoe Option, Issue of Bonus shares, Right Shares, Sweat Equity shares, ESOP. **E)** Indian Debt Market –Market Instruments, Listing, Primary and Secondary Segments
3	**Commodity Market**
	• Introduction to commodities market - Meaning History & origin, Types of commodities traded, • Structure of commodities market in India, • Participants in commodities market, Trading in commodities in India(cash & derivative segment), • Commodity exchanges in India & abroad • Reasons for investing in commodities.
4	**Derivatives Market**
	• Introduction to Derivatives market- Meaning, History & origin, • Elements of a derivative contract, • Factors driving growth of derivatives market, • Types of derivatives, Types of underlying assets, Participants in derivatives market, Advantages & disadvantages of trading in derivatives market, • Current volumes of derivative trade in India, • Difference between Forwards & Futures

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group C: Banking and Finance

2. Banking and Finance Paper - II: Financial Reporting Analysis

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Final Accounts of Banking Company	16
2	Final Accounts of Insurance Company	12
3	Preparation of Final Accounts of Companies	12
4	Cash Flow Analysis & Ethical Behavior and implications for accountants	12
5	Introduction to IFRS	08
	Total	**60**

Sr. No.	Modules / Units
1	**Final Accounts of Banking Company**
	Legal provision in Banking Regulation Act, 1949 relating to Accounts. Statutory reserves including Cash Reserve and Statutory Liquidity Ratio. Bill purchase and discounted, rebate of bill discounted. Final Accounts in prescribed form Non – performing assets and Income from non – performing assets. Classification of Advances, standard, sub – standard, doubtful and provisioning requirement.
2	**Final Accounts of Insurance Company**
	(a) Preparation and presentation of Corporate Final Accounts for Insurance Companies (b) Final Accounts in accordance with Insurance Legislation. (c) Study of Accounting Policies from Annual Reports of Listed Insurance Companies
3	**Preparation of Final Accounts of Companies**
	Relevant provisions of Companies Act related to preparation of Final Account (excluding cash flow statement) Preparation of financial statements as per Companies Act. (excluding cash flow statement) AS 1 in relation to final accounts of companies (disclosure of accounting policies) Adjustment for – 1. Closing Stock 2. Depreciation 3. Outstanding expenses and income 4. Prepaid expenses and Pre received income 5. Proposed Dividend and Unclaimed Dividend 6. Provision for Tax and Advance Tax 7. Bill of exchange (Endorsement, Honour, Dishonour) 8. Capital Expenditure included in Revenue expenditure and vice versa eg- purchase of furniture included in purchases 9. Unrecorded Sales and Purchases 10. Good sold on sale or return basis 11. Managerial remuneration on Net Profit before tax 12. Transfer to Reserves 13. Bad debt and Provision for bad debts 14. Calls in Arrears 15. Loss by fire (Partly and fully insured goods) 16. Goods distributed as free samples. Any other adjustments as per the prevailing accounting standard.

Sr. No.	Modules / Units
4	**Cash Flow Analysis as per AS 3 (Indirect Method Only)** **Ethical Behaviour and implications for accountants**
	Introduction, Meaning of ethical behavior Financial Reports – What is the link between law, corporate governance, corporate social responsibility and ethics? What does the accounting profession mean by the ethical behavior? Implications of ethical values for the principles versus rule based approaches to accounting standards The principal based approach and ethics The accounting standard setting process and ethics The IFAC Code of Ethics for Professional Accountants Ethics in the accounting work environment – A research report Implications of unethical behavior for financial reports Company Codes of Ethics The increasing role of whistle – Blowing Why should student learn ethics?
5	**Introduction to IFRS**
	IFRS 1- First time Adoption of International Financial Reporting Statements Objective, Scope, Definitions, First IFRS financial statements, Recognition and measurement, Comparative information, Explanation of transition to IFRS, Reconciliations, Interim financial reports, Designation of financial assets or financial liabilities, Use of fair value as deemed cost, Use of deemed cost, Exceptions to retrospective application of other IFRS, Exemptions for business combination, Exemptions from other IFRS and Presentation and Disclosure. **IFRS2**- Share Based Payment – Objective, Scope, Definitions, Recognition, Equity settled share based payment transactions, Transactions in which services are received, Treatment of vesting conditions, Expected Vesting Period, Determining the fair value of equity instruments granted, Modifications of terms and conditions, Cancellation, Cash settled share based payment transactions, Share based payment transactions in which the terms of the arrangement provide the counterparty with a choice of settlement, Share based payment transactions in which the terms of the arrangement provide the entity with a choice of settlement, Share based payment transactions among group entities (2009 Amendments) Disclosure.

Elective Courses (EC)
1 A. Discipline Specific Elective (DSE) Courses
Group D: Commerce

1. Commerce Paper - I:
Management of Service Industry

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Service Industry	15
2	Tourism and Hospitality Industry	15
3	Transport Industry	15
4	Health Care Industry	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Service Industry**
	Services-Concept- characteristics –classification-significance- importance of relationship marketing in services- technology and its impact on service industry- role of service industry in economic development- career opportunitie
2	**Tourism and Hospitality Industry**
	Tourism Industry- significance- challenges- types of Tourism products-Present scenario of travel and tourism in India- Future prospects- Government's Tourism policy- Role /functions of Indian Tourism Development Corporation and Maharashtra Tourism Development Corporation Hospitality Industry- characteristics- classification Restaurants- classification and types of consumers in a restaurant
3	**Transport Industry**
	Role of transport in economic development- types of transport (road, rail, air & ocean)- merits, demerits & recent trends in each mode
4	**Health Care Industry**
	Features- types of health care services- major inputs of health care industry- role of Corporates & Government in health care sector- emerging trends in health care industry

Elective Courses (EC)
1 A. Discipline Specific Elective (DSE) Courses
Group D: Commerce

2. Commerce Paper - II: Commercial Administration

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction and Orientation to Commercial Administration	15
2	Office Layout and Equipments	15
3	Office Communication	15
4	Information Management and Records	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction and Orientation to Commercial Administration**
	Commercial Administration: Meaning, nature and importance of Commercial Administration in business activity- role and functions of a commercial office- administrative structure of a commercial office- abilities, skills and attributes of office manager.
2	**Office Layout and Equipments**
	Office layout- Meaning, importance and types of office layout (enclosed or cellular/modular/ virtual etc.)- factors determining office layout- ergonomics with respect to comfort, health & safety **Office equipments**- various types of office equipments-functions of office equipments- types and uses of various office stationery-Role of IT in office administration
3	**Office Communication**
	Communication: Various channels of office communication- factors affecting selection of communication channels communication flows(upward/downward/vertical/horizontal/diagonal/grapevine)- barriers to effective communication- methods for intra firm communication- role of front office in communication with external stakeholders
4	**Information Management and Records**
	Information Management: Meaning and characteristics of information management- types of records to be maintained- characteristics of effective record management system- methods of classification of records-methods and procedures for managing inactive files- duties of record management Department.

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

3. Commerce - V
Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Marketing	12
2	Marketing Decisions I	11
3	Marketing Decisions	11
4	Key Marketing Dimensions	11
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Marketing**
	• Marketing, Concept, Features, Importance, Functions, Evolution, Strategic v/s Traditional Marketing • Marketing Research - Concept, Features, Process Marketing Information System-Concept, Components Data Mining- Concept, Importance • Consumer Behaviour- Concept, ,Factors influencing Consumer Behaviour Market Segmentation- Concept, Benefits, Bases of market segmentation Customer Relationship Management- Concept , Techniques Market Targeting- Concept, Five patterns of Target market Selection
2	**Marketing Decisions I**
	• Marketing Mix- Concept, Product- Product Decision Areas Product Life Cycle- Concept, Managing stages of PLC Branding- Concept , Components Brand Equity- Concept , Factors influencing Brand Equity • Packaging- Concept , Essentials of a good package Product Positioning- Concept, Strategies of Product Positioning Service Positioning- Importance & Challenges • Pricing- Concept, Objectives, Factors influencing Pricing, Pricing Strategies
3	**Marketing Decisions**
	• Physical Distribution- Concept, Factors influencing Physical Distribution, Marketing Channels (Traditional & Contemporary Channels) Supply Chain Management-Concept, Components of SCM • Promotion- Concept, Importance, Elements of Promotion mix Integrated Marketing Communication (IMC)- Concept, Scope ,Importance • Sales Management- Concept, Components, Emerging trends in selling Personal Selling- Concept , Process of personal selling, Skill Sets required for Effective Selling
4	**Key Marketing Dimensions**
	• Marketing Ethics: Concept, Unethical practices in marketing, General role of consumer organizations Competitive Strategies for Market Leader, Market Challenger, Market Follower and Market Nicher Marketing Ethics: • Rural Marketing- Concept, Features of Indian Rural Market, Strategies for Effective Rural Marketing Digital Marketing-Concept, trends in Digital Marketing Green Marketing- concept, importance • Challenges faced by Marketing Managers in 21st Century Careers in Marketing – Skill sets required for effective marketing Factors contributing to Success of brands in India with suitable examples, Reasons for failure of brands in India with suitable examples.

Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

4. Business Economics - V

Macro Economic Aspects of India

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Macro Economic overview of India	15
2	Agriculture During Post Reform Period	10
3	The Industry And Service Sector During Post Reform Period	10
4	Banking and Financial Market	10
	Total	**45**

Sr. No.	Modules / Units
1	**Macro Economic overview of India**
	• **Overview of New Economic Policy-1991, -** Role of Social Infrastructure with reference to education, health and family welfare. • **Sustainable Development Goals and Policy measures:** Make in India, Invest in India, and Skill Development and Training Programmes**.** • **Foreign Investment Policy Measures in India –** Foreign Investment Promotion Board**,** FDI- MNCs and their role.
2	**Agriculture During Post Reform Period**
	• **National Agricultural Policy 2000:** Objectives, Features and Implications • **Agricultural pricing and agricultural finance** • **Agricultural Marketing Development-**Agricultural Market infrastructure - Market information- Marketing training- Enabling environments-Recent developments
3	**The Industry And Service Sector During Post Reform Period**
	• **Policy Measures- Competition Act 2003,** Disinvestment Policy, Micro, Small and Medium Enterprises [MSME sector] since 2007**.** • **Industrial Pollution in India: Meaning**, Types, Effects and Control. • **Service Sector:** Recent trends, role and growth in Healthcare and Tourism Industry
4	**Banking and Financial Market**
	• **Banking Sector-** Recent trends, issues and challenges in Banking and Insurance Industry • **Money Market –** Structure, Limitations and Reforms. • **Capital Market –** Structure, Growth and Reforms**.**

Revised Syllabus of Courses of B.Com. Programme at Semester V with effect from the Academic Year 2018-2019

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

1. Trade Unionism and Industrial Relations Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Trade Unionism	12
2	Functions of Trade Unions	12
3	Leadership ideology, Recognition, Registration and administration of trade union	11
4	ILO- Objectives, Principles and Organs	10
	Total	**45**

Sr. No.	Modules / Units
1	**Trade Unionism**
	Meaning, Scope, Significance and Objectives, Structure of trade unions in India. New Role of Trade Union in the context of globalization
2	**Functions of Trade Unions**
	• Functions of trade unions with respect to: i) Wages ii) Labour welfare iii) Training and education iv) Social security) Awareness of social responsibility vi) Environmental awareness. • Problems of trade unions, Industrial dispute – causes of industrial disputes
3	**Leadership ideology, Recognition, Registration and administration of trade union**
	• Impact of recession and globalization on trade unions in India. • Problems of employees and need of trade unions in Information and Communication Industry.
4	**ILO- Objectives, Principles and Organs**
	ILO- Objectives, principles and organs. Impact of ILO on Indian trade union movement. • Workers participation in management – concept, pre-requisites, forms & levels of participation, benefit of workers Participation in Management • Women's participation in trade union activities.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

2. Computer Systems and Applications Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Data Communication, Networking and Internet	18
2	Database and MySQL	09
3	Database and MySQL	09
4	Spread Sheet	09
	Total	**45**

Sr. No.	Modules / Units
1	**Data Communication, Networking and Internet**
	a) Data Communication Component, Data representation, Distributed processing. (Concepts only) **b)** Network Basics and Infrastructure • Definition, Types (LAN, MAN, WAN) Advantages. • Network Structures – Server Based, Client server, Peer to Peer. • Topologies – Star, Bus, Ring. • Network Media, Wired – Twisted Pair, Co-axial, Fiber Optic and Wireless – Radio and Infrared. • Network Hardware: Hubs, Bridges, Switches, Routers. • Network Protocols – TCP/IP, OSI Model. **c)** Internet • Definition, Types of connections, sharing internet connection, Hot Spots. • Services on net- WWW, Email-Blogs. • IP addresses, Domain names, URLs, Hyperlinks, Web Browsers • Searching Directories, Search engines, Boolean search (AND, OR, NOT), Advanced search, Meta Search Engines. • Email – POP/SMTP accounts in Email, Different parts of an Email address. Receiving and sending emails with attachments by scanning attachments for viruses. • Cyber Crime, Hacking, Sniffing, Spoofing
2	**Database and MySQL**
	a) Introduction : To Databases, Relational and Non-relational database system MySQL as a Non-procedural Language. View of data. **b) MySQL Basics :**Statements (Schema Statements, Data statements, Transaction statements), names (table & column names), data types (Char, Varchar, Text, Mediumtext, Longtext, Smallint, Bigint, Boolean, Decimal, Float, Double, Date, Date Time, Timestamp, Year, Time), Creating Database, inserting data, Updating data, Deleting data, expressions, built-in-functions – lower, upper, reverse length, Itrim, rtrim, trim, left, right, mid, concat, now, time, date, curdate, day, month, year, dayname, monthname, abs, pow, mod, round, sqrt missing data(NULL and NOT NULL DEFAULT values) CREATE,USE, ALTER (Add, Remove, Change columns), RENAME, SHOW, DESCRIBE (CREATE TABLE, COLUMNS, STATUS and DATABASES only) and DROP (TABLE, COLUMN, DATABASES statements), PRIMARY KEY FOREIGN KEY (One and more columns) Simple Validity checking using CONSTRAINTS.
3	**Database and MySQL**
	a) MySQL Simple queries : TheSELECT statement (From, Where, Group By, Having, Order By, Distinct, Filtering Data by using conditions. Simple and complex conditions using logical, arithmetic and relational operators (=, !,=, <, >, <>, AND, OR, NOT, LIKE) Aggregate Funtions – count, sum, avg, max, min. **b) Multi-table queries:**Simple joins (INNER JOIN), SQL considerations for multi table queries(table aliases, qualified column names,all column selections self joins). **c) Nested Queries (Only up to two levels) :**Using sub queries, sub query search conditions, sub queries & joins, nested sub queries, correlated sub queries, sub queries in the HAVING clause. Simple Transaction illustrating START, COMMIT, and ROLLBACK.

Sr. No.	Modules / Units
4	**Spread Sheet**
	a) Creating and Navigating worksheets and adding information to worksheets • Types of data, entering different types of data such as texts, numbers, dates, functions. • Quick way to add data Auto complete, Autocorrect, Auto fill, Auto fit. Undo and Redo. • Moving data, contiguous and non contiguous selections, Selecting with keyboard. Cut-Copy, Paste. Adding and moving columns or rows. Inserting columns and rows. • Find and replace values. Spell check. • Formatting cells, Numbers, Date, Times, Font, Colors, Borders, Fills. **b) Multiple Spreadsheets** • Adding, removing, hiding and renaming worksheets. • Add headers/Footers to a Workbook. Page breaks, preview. • Creating formulas, inserting functions, cell references, Absolute, Relative (within a worksheet, other worksheets and other workbooks). **c) Functions** • Financial functions: FV, PV, PMT, PPMT, IPMT, NPER, RATE • Mathematical and statistical functions. ROUND, ROUNDDOWN, ROUNDUP, CEILING, FLOOR, INT, MAX, MIN, MOD, SQRT, ABS, SUM, COUNT, AVERAGE **d) Data Analysis** • Sorting, Subtotal. • Pivot Tables- Building Pivot Tables, Pivot Table regions, Rearranging Pivot Table.

Note :

a) Theory 03 lectures per week.

b) Practical batch size 20-25, 01 practical = 03 theory lectures per week.

c) 10 Practical's are to be completed in each semester.

Semester V

Topic	Number of Practical's
Word processing	01
Spread sheet	03
MySQL	06

Minimum 6 practical's are to be recorded in the journal in the Semester V
[Minimum 4 on SQL, 2 on MS-Excel)

❖ **Scheme of Examination**

Type	Marks	Duration
Theory	75	2 ½ hours
Practical	20	1 hour per batch of 10
Active Participation and Class conduct	05	---

- **Practical Examination Pattern- Semester V**

Sr. No.	Topic	Marks
01	MySQL	07
02	Spread Sheet	03
03	Journal	05
04	Viva	05

  - Practical examination to be conducted 2 to 3 weeks before the theory examination. Marks out of 25 to be submitted to the University before commencement of theory examination.
  - Software Requirement :
    MS-Excel 2010, VB 6.0
  - Hardware
    For a batch of 120 students minimum 10 computers with appropriate hardware and software installed on each computer. During practical hours maximum two student may share one computer.
  - For in house computing facility fee of rupees 750/- be charged for each student per Semester in the existing fee structure against head of computer fee/computer practical.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

3. Export Marketing Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Export Marketing	12
2	Global Framework for Export Marketing	11
3	India's Foreign Trade Policy	11
4	Export Incentives and Assistance	11
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Export Marketing**
	a) Concept and features of Export Marketing; Importance of Exports for a Nation and a Firm; Distinction between Domestic Marketing and Export Marketing b) Factors influencing Export Marketing; Risks involved in Export Marketing; Problems of India's Export Sector c) Major merchandise/commodities exports of India (since 2015); Services exports of India (since 2015); Region-wise India's Export Trade (since 2015)
2	**Global Framework for Export Marketing**
	a) Trade barriers; Types of Tariff Barriers and Non-Tariff barriers; Distinction between Tariff and Non-Tariff barriers b) Major Economic Groupings of the World; Positive and Negative Impact of Regional Economic Groupings; Agreements of World Trade Organisation (WTO) c) Need for Overseas Market Research; Market Selection Process, Determinants of Foreign Market Selection
3	**India's Foreign Trade Policy**
	a) Foreign Trade Policy (FTP) 2015-20 - Highlights and Implications, Export Trade facilitations and ease of doing business as per the new FTP b) Role of Directorate General of Foreign Trade (DGFT), Negative list of Exports, Deemed Exports c) Benefits to Status Holders & Towns of Excellence; Common benefits for EHTP, BTP and STP; Benefits enjoyed by (IIAs) Integrated Industrial Areas(SEZ), EOU, AEZ
4	**Export Incentives and Assistance**
	a. Financial Incentives available to Indian Exporters - Marketing Development Assistance (MDA), Market Access Initiative (MAI), Assistance to States for Infrastructure Development for Exports (ASIDE), Industrial Raw Material Assistance Centre(IRMAC), b. Institutional Assistance to Indian Exporters - Federation of Indian Export Organisations (FIEO), India Trade Promotion Organisation (ITPO), The Federation of Indian Chambers of Commerce and Industry (FICCI), Export Promotion Councils (EPCs) & Commodity Boards (CBs), Indian Institute of Foreign Trade (IIFT), Indian Institute of Packaging (IIP) c. Schemes - Export Promotion Capital Goods (EPCG) Scheme, Duty Exemption and Remission Schemes, Export Advance Authorisation Scheme; Duty Drawback (DBK); IGST Refund for Exporters

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

4. Marketing Research Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Marketing Research	12
2	Planning Research	11
3	Data Collection	11
4	Data Processing, Analysis, Reporting	11
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Marketing Research**
	a. Marketing Research- Definition, features, functions, significance of Marketing Research in marketing decision making, limitations of Marketing Research b. Steps in Marketing Research, Ethics in Marketing Research, Career options in Marketing Research, Qualities of a good Marketing Research professional c. Marketing Information System- Definition, components, essentials of a good MIS, Concept of Decision Support System- Components , importance Data Mining- concept, importance
2	**Planning Research**
	a. Research Design- concept, importance, types Hypothesis- concept, types, importance b. Questionnaire- concept, types of questions, steps in the preparation of questionnaire, essentials of a good questionnaire c. Sampling- concept, terms in sampling, techniques of sampling, essentials of good sampling
3	**Data Collection**
	a. Primary data-concept, merits, demerits, methods b. Secondary data- concept, merits, demerits, sources c. Qualitative and Quantitative research- concept, features, Qualitative v/s Quantitative research Integrating technology in data collection, methods- (online surveys, hand held devices, text messages, social networking), importance
4	**Data Processing, Analysis, Reporting**
	a. Stages in Data processing Editing- meaning, objectives, types Coding- meaning, guidelines Classification- meaning, methods Tabulation- meaning, methods b. Data Analysis & Interpretation Data Analysis- meaning, steps, use of statistical tools (SPSS, SAS, MS EXCEL, MINITAB) Data Interpretation- meaning, importance, stages c. Report Writing- concept, types, contents, essentials, use of visual aids in research report

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

5. Investment Analysis and Portfolio Management Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Portfolio Management – An Introduction	09
2	Portfolio Analysis and Selection	12
3	Portfolio Revision and Evaluation	12
4	Bond Valuation	12
	Total	**45**

Sr. No.	Modules / Units
1	**Portfolio Management – An Introduction**
	A) Investment - Meaning, Characteristics, Objectives, Investment V/s Speculation, Investment V/s Gambling and Types of Investors **B)** Portfolio Management – Meaning, Evolution, Phases, Role of Portfolio Managers, Advantages of Portfolio Management. **C)** Investment Environment in India and factors conducive for investment in India.
2	**Portfolio Analysis and Selection**
	A) Portfolio Analysis – Meaning and its Components, Calculation of Expected Return and Risk, Calculation of Covariance, Risk – Return Trade off. **B)** Portfolio Selection – Meaning, Feasible Set of Portfolios, Efficient Set of Portfolios, Selection of Optimal Portfolio, Markowitz Model, Limitations of Markowitz Model, Measuring Security Return and Portfolio Return and Risk under Single Index Model and Multi Index Model.
3	**Portfolio Revision and Evaluation**
	A) Portfolio Revision – Meaning, Need, Constraints and Strategies. **B)** Portfolio Evaluation – Meaning, Need, Measuring Returns (Sharpe, Treynor and Jensen Ratios) and Decomposition of Performance.
4	**Bond Valuation**
	A) Bond Valuation – Meaning, Measuring Bond Returns – Yield to Maturity, Yield to call and Bond Pricing. Bond Pricing Theorems, Bond Risks and Bond Duration. (Practical Problems on YTM and Bond Duration.)

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

6. Transport Management Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Transportation Network	11
2	Factors Influencing transport development	11
3	Transportation Planning and Production Management	11
4	Multi Modal Transport System in India	12
	Total	**45**

Sr. No.	Modules / Units
1	**Transportation Network**
	Definition of transport, Characteristics of transport, various mode of transport network- Air, Surface and Water; public transport and its importance, Element of Transport – way, unit of carriage, motive power, Terminal
2	**Factors Influencing transport development**
	Factors Influencing transport development: Physical, Economic, Political and Strategic, Concept of connectivity and accessibility, Transport organisation: terminal facilities for different modes, Transport Demand: Direction, Volume and Frequency
3	**Transportation Planning and Production Management**
	Classification of roads, types of parking, problems due to parking, nature of traffic problem in cities, traffic and environment - Pollution under control certificate agency, cost structure of different transport modes, discriminatory pricing
4	**Multi Modal Transport System in India**
	Intermodal systems – road/rail/sea; sea/air; road/air; road/rail, sea/rail, sea/road – Inland Container Depot (ICD) & Container Freight Station (CFS) Terminals, Roll-on/Roll-Off Service, Planning of multi modal transport system for Indian cities- Metro Rails, Light Rail Transit (LRT), Sub-Urban Trains, Ring Rail and Monorails, Bus Rapid Transit Systems.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

7. Entrepreneurship and Management of Small Scale Industries Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Entrepreneurship	11
2	Entrepreneurial Development	11
3	Entrepreneurial Project Development	11
4	Specialized Focus Areas in Entrepreneurship	12
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Entrepreneurship**
	Unit-1:- • Meaning, Features, Need and Significance, Concept of Entrepreneur and Entrepreneurship • Importance, Significance and Growth of Entrepreneurial activity • Classification and Types of Entrepreneurs • Functions of an Entrepreneur **Unit-2:** • Characteristics, Qualities and Competencies of a Successful Entrepreneur – Examples of Successful Indian Entrepreneurs. • Entrepreneurship as a Career - Creating Self-employment through Entrepreneurship • Scope of Entrepreneurship • Meaning, Features, Significance, Concept of Promoters - Types of Promoters **Unit-3:-** • Incentives and Subsidies to Entrepreneurs in India • Meaning, Features, Significance, Concept and Qualities of Intrapreneur – Meaning and • Concept of Intrapreneurship • Measures to Promote Intrapreneurship • Differentiating the Role of: Entrepreneurs and Businessman - Entrepreneurs and Managers - Entrepreneurs and Employees
2	**Entrepreneurial Development**
	Unit-1:- • Meaning, Significance and Concept of Entrepreneurial Development in India • Factors influencing Entrepreneurial Development – Pull and Push Factors • Barriers to Entrepreneurship • Managing the Problems faced by Entrepreneurs - Measures/Suggestions to Overcome Barriers to Entrepreneurship, Start up India-Make in India. **Unit-2:-** • Meaning, Concept and Inter-Linkage between: Innovation and Invention - Innovation and Entrepreneurship • Factors influencing Entrepreneurial Development and Motivation • Role of Psychological, Social and Cultural factors in Entrepreneurial Development • Theories of Entrepreneurship - Contribution of David McClelland and Joseph Schumpeter **Unit-3:-** • Need and Significance of Entrepreneurial Education and Training • Meaning,Concept & Areas of Entrepreneurship Development Programme (EDP) • Role of Entrepreneurial Development Programme (EDP) and Training Centers in India • Role of Entrepreneurial Development Institutes in India such as MSME-DI Mumbai, EDI Ahmedabad, MITCON, MCED, NIESBUD toward Entrepreneurial Development in India

Sr. No.	Modules / Units
3	**Entrepreneurial Project Development**
	Unit-1:- • Steps in Setting-up of an Entrepreneurial Venture • Idea Generation – Sources and Methods • Identification and Classification of Ideas • Meaning and Concept of Environment Scanning, SWOT Analysis and SWOT Matrix **Unit-2:-** • Meaning and Concept of Project Formulation • Meaning, Concept and Importance of Project Planning - Preparation of Project (Business) Plan -Points to be considered in Project Planning • Components of an ideal Business Plan: Market Plan, Financial Plan, Operational Plan, and HR Plan • Meaning and Concept of Project Report - Significance of Project Report - Contents of Project Report **Unit-3:-** • Meaning, Significance and Concept of Project Appraisal • Aspects and Methods of Project Appraisal: Economic Oriented Appraisal, Financial Appraisal, Market Oriented Appraisal, Technological Feasibility, Managerial Competency • Meaning, Concept, Significance and Importance of Feasibility Study • Types and Different Areas of Feasibility Study
4	**Specialized Focus Areas in Entrepreneurship**
	Unit-1:- • Meaning, Features, Concept, Role and Importance of Women Entrepreneurs • Problems faced by Women Entrepreneurs and Need for Promotion and Assistance • Measures/Suggestions to Overcome the Problems faced by Women Entrepreneurs • Agencies Supporting and Promoting Women Entrepreneurs- Stand up India. **Unit-2:-** • Meaning, Features, Concept, Role and Importance of Rural Entrepreneurs • Problems faced by Rural Entrepreneurs and Need for Promotion and Assistance • Measures/Suggestions to Overcome the Problems faced by Rural Entrepreneurs • Agencies Supporting and Promoting Rural Entrepreneurs **Unit-3:-** • Meaning, Features, Role and Importance, Concept of Social Entrepreneurship • Differentiating Role of Social Entrepreneurship and NGOs • Problems faced by Social Entrepreneurs and Need for Promotion and Assistance – Suggestions to Overcome the Challenges faced by Social Entrepreneurs • d. Examples of Social Entrepreneurship in India

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

8. International Marketing Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to International Marketing	12
2	Product Decisions in International Marketing	11
3	Finance and Pricing Decisions In International Marketing	11
4	International Marketing Environment	11
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to International Marketing**
	a. International Marketing- Features, Importance and scope of International Marketing. Domestic Marketing & International Marketing. **b.** Motivating Factors for International Marketing, Problems in International Marketing, Challenges faced by Indian Exporter in International Market. **c.** International Marketing Research – Need & importance, Scope & complexities, International Marketing Information System- Concept, Importance and Components.
2	**Product Decisions in International Marketing**
	a. Product-Product Mix, International Product Life Cycle, New Product Development steps. **b.** Branding – Factors affecting International branding, Importance, Types. **c.** Labeling, Marking & Packaging – Essential of Good Packaging in International Marketing, Importance of Labeling, Marking & Packaging.
3	**Finance and Pricing Decisions In International Marketing**
	a. Export Finance-, Types, Features, Procedure for obtaining export finance. **b.** Export Financial Institutions-Role and Functions of Commercial Banks, EXIM, SIDBI, ECGC Cover. **c.** Pricing – Factors determining pricing in International Marketing, quotations including INCO terms (Sums / Practical Problems) Pricing strategies in International Marketing.
4	**International Marketing Environment**
	a. International Marketing Environment- ,Components of International Marketing Environment (Eco, Social, Cultural, Legal & regulatory environment) **b.** Trade barriers – Types (Tariff and Non-Tariff Barriers), trading blocs (EU, SAARC, ASEAN). **c.** International Forums – WTO -Role/ Functions, Agreements (TRIMS, TRIPS, GATS, AOA, AOT), IMF, IBRD, BRICS- Role/ Functions.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

9. Merchant Banking Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Merchant Banking	11
2	Capital Funds	11
3	Issue Management Process	11
4	Issue Management & Due Diligence	12
	Total	**45**

Sr. No.	Modules / Units
1	**Merchant Banking**
	Merchant Banking and Financial Services: Introduction, Concept of merchant banking, Financial system in India and Development of merchant banks and regulations in India. Underwriting and Brokerage - Different roles played by underwriters and brokers in issue management and their responsibilities
2	**Capital Funds**
	Raising Capital from International Markets - Needs of Indian companies for raising funds from foreign markets, Usage of Euro issue, Evaluation of various types of depository receipts - American Depository Receipts, Global Depository Receipts, FCCBs and FCEBs.
3	**Issue Management Process**
	The process of issue management and merchant banker's role in it, The appointment of SEBI registered intermediaries and other intermediaries, The process of filing of offer document by the issuer with SEBI and the ROC with the help of the lead Merchant Banker, List of the documents to be submitted before opening of the issue, Copy of agreement between the Issuer and Merchant Banker, Certificate of compliance stating compliance of conditions, Due diligence certificate while registering DRHP/ Red Herring Prospectus/ prospectus with the ROC/ final post issue report, The type of In-Principle Approval from recognized stock exchanges for initial public issues as well as in the case for rights and further public offerings, the allotment, refund and payment of interest.
4	**Issue Management & Due Diligence**
	The general obligations of Intermediaries with respect to Public Issues and Rights Issue, The pricing in preferential issue, The pricing and restrictions on allotment of Qualified Institutional Placement, The pre-issue advertisement for rights issue, Utilization of funds raised through rights issue and the manner of disclosures in the offer document, The procedure for Institutional Placement Programme w.r.t Offer Document Pricing and Allocation/Allotment Restrictions, Minimum number of allotees, Restrictions on size of the offer, Period of subscription and display of demand, Transferability of eligible securities, The procedure for issue of Indian Depository Receipts (IDRs) w.r.t Eligibility Conditions for issue of IDR, Minimum Subscription Filing of Draft Prospectus, Due diligence Certificate, Payment of Fees and Issue of advertisements for IDR, Post Issue Reports, Undersubscribed Issue Finalisation of basis of allotment, The importance of due diligence, The role of external parties in the due diligence process and List of due diligence documents.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

10. Direct and Indirect Taxes Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Basic Terms	04
2	Scope of Total Income & Residential Status	04
3	Heads of Income	24
4	Deduction from Total Income	04
5	Computation of Total Income for Individual	09
	Total	**45**

Sr. No.	Modules / Units
1	**Basic Terms**
	Assessee, Assessment, Assessment Year, Annual value, Business, Capital Assets, Income, Person, Previous Year, Transfer
2	**Scope of Total Income & Residential Status**
	Scope of Total Income (S: 5) Residential Status (S: 6) for Individual assessee
3	**Heads of Income (S: 14)**
	• Salary (S: 15 to 17) • Income from House Properties (S: 22 to 27) • Profit and Gain From Business (S:28, 30, 31, 32, 35, 35D, 36, 37, 40, 40A 43B. • Capital Gains (S: 45, 48, 49, 50, 54, 54 EC) restricted to computation of Capital gain on transfer of residential house property only • Income from Other Sources (S: 56 to S: 59) Exclusions From Total Income (S: 10) Exclusion related to specified heads to be covered with relevant head.eg. Salary, Business Income, Capital Gain, Income from Other Sources
4	**Deduction from Total Income**
	S 80 A, S 80C, 80CCC, 80D, 80DD, 80E, 80 U, 80 TTA
5	**Computation of Total Income for Individual**

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

11. Labour Welfare and Practice Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Labour welfare	15
2	Labour Legislations in India	10
3	Agencies of Labour welfare	10
4	Industrial Hygiene & Occupational Health	10
	Total	**45**

Sr. No.	Modules / Units
1	**Labour welfare**
	• Meaning, Definition, Scope, Objective & Theories of Labour welfare. • Evolution of Labour Welfare in India. • Provisions for Labour welfare content in the Constitution of India (including Articles 41,42,43…..factories Act 1948, ESI Act 1948, Workmen's Compensation Act 1923)
2	**Labour Legislations in India**
	• Labour Welfare Facilities • National Commission on Labour and Labour Welfare • Labour Laws of the Elimination of Child Labour
3	**Agencies of Labour welfare**
	• Agencies of Labour welfare in India (Central govt. , State govt., Employers & Trade-Unions) • Labour Welfare Officer: role and functions. • Labour Administration in India
4	**Industrial Hygiene & Occupational Health**
	• Industrial hygiene & Occupational Health • Industrial accidents – causes & prevention. • Occupational diseases & Statutory Provisions, Fatigue, Frustration, Absentism

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

12. Purchasing and Store Keeping Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Material Management and Material Requirement Planning	12
2	Materials Research & 'E' Material management	11
3	Scientific Purchasing	11
4	Purchase procedure	11
	Total	**45**

Sr. No.	Modules / Units
1	**Material Management and Material Requirement Planning**
	a. Material Management – Definition, Concept, Importance, Objectives, Functions, Scope, Responsibilities of material manager, Interdepartmental relationship. **b. Materials budget** – Purpose, Procedures & Factors. **c. Material Requirement Planning –** Concept, Need, Objectives and Factors affecting MRP.
2	**Materials Research & 'E' Material management**
	a. Material Research – Meaning, Definition, Need, Importance, Scope & Functions. **b. 'E' Material Management –** Concept, Application & Operation, Uses & Advantages, Classes/ Types of materials. **c. Coding and Standardization –** Nature, Methods and Advantages of Codification, Standardization – Nature & Importance.
3	**Scientific Purchasing**
	a. Purchase Department - Types of Buyers/ Consumers, Personality traits for Purchase executives/ Manager-qualities & qualification, Functions of Purchase department, Records maintain by Purchase department **b. Scientific Purchasing** - Meaning, Importance, Objectives & Principles, Purchase policies-Centralized vs decentralized purchasing. **c. Suppliers** – Sources of supplier, Selection of Suppliers – Methods, Vendor rating & Vendor development.
4	**Purchase procedure**
	a. Purchase procedure - Make or Buy or Import decision, Buyer & Seller relationship – Techniques, Ethics in Buying – Principles, Purchase methods, Documentation. **b. National purchase Procedure** – Steps/procedure, Purchase requisition, quotations – types, Invoice – Types and different Methods of payment settlement, Legal aspect of contract- Contents and Clauses**.** **c. International Purchase Procedure** – Need, Indent house / firm – Functions & Services offered by Indent house, Steps/Procedure of Importing, Documentations, Emerging trends in purchasing.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

13. Insurance Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Risk Management	11
2	Insurance	11
3	Insurance Market	11
4	Insurance Regulation	12
	Total	**45**

Sr. No.	Modules / Units
1	**Risk Management**
	a. Risk - Concept, different types of risks - actual and consequential losses b. Risk Management- Management of risks – Concept and Methods, loss minimization techniques c. Insurance Terminology**:** Common terms used in insurance - terms common to both life and non-life insurance - terms as specific to life and non-life insurance
2	**Insurance**
	a. Insurance **–** Concept**,** Nature of insurance, evolution of insurance, Different Types of insurance –importance of insurance, Insurance contract – Concept and Terms of an insurance contract b. Fundamental principles of insurance contract – principle of insurable interest, principle of indemnity, principle of subrogation, principle of contribution, principle of disclosure of all relevant information, principle of utmost good faith. Relevance of proximate cause c. ***Policy documents:*** Importance of a policy document, Format of a policy document
3	**Insurance Market**
	a. Insurance Market- Various Constituents of Insurance Market, operations of insurance companies - operations of intermediaries – specialist insurance companies – insurance specialists b. Insurance customers – different customer needs -importance of understanding customers – customer mind-sets' - customer satisfaction - customer behaviour at purchase point - customer behaviour at the time of claim. c. Ethics in Insurance – concept and importance of ethical behaviour
4	**Insurance Regulation**
	a. Role of regulators – IRDA – Role, functions and importance b. Management of risk by individuals – management of risk by insurers – fixing of premiums, how insurance takes care of unexpected eventualities. c. Reinsurance – Concept and its importance for insurers - role of insurance in Economic development and social security - contribution of insurance to the society. Double Insurance

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

14. Banking Law and Practice Paper - I
Central Banking

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	An Overview of Central Banking	09
2	RBI as the Central Bank of India	09
3	Supervisory Role of RBI	09
4	Central Banking in other Countries	09
5	Central Banking in the Cyber World	09
	Total	**45**

Sr. No.	Modules / Units
1	**An Overview of Central Banking**
	Overview: Concept of Central Banking – Institutional Growth of Central Banking – The Changing Face of Central Banking. Role of Central Banks: Determination of Goals – Inflation Targeting – Exchange Rate Targeting – Money Supply Targeting – Money-Growth Targeting – Viable Alternatives to Central Bank – Central Banking in India. Contemporary Issues- Autonomy and Independence- credibility, accountability and transparency of a central bank
2	**RBI as the Central Bank of India**
	Policy Framework for RBI: Organizational Framework – Operational Framework – Role as a Central Banker – Promotional Role of RBI – Regulatory Role of RBI. RBI and Monetary Policy: Macroeconomic Policies: Objectives – What is a Monetary Policy? – Goals, Targets and Instruments – Monetary Policy in India. A Brief Overview of Fiscal Policy- Striking Balance between Inflation and Growth through Monetary and Fiscal Policies
3	**Supervisory Role of RBI**
	Regulation and Supervision: Need for Regulation and Supervision – Banking Regulation Act, 1949 – Banking Regulation and Supervision – Functions of the Department of Supervisory – Regulations Review Authority – Unified Regulator v/s Multiple Regulators. RBI – On-site Inspection and Off-site Monitoring and Surveillance: The Core Principles for Effective Supervision – On-site Examination – Off-site Surveillance – On-site Inspection and Off-site Monitoring in India – Off-site Monitoring in Different Countries – Computerized Off-site Monitoring and Surveillance (OSMOS). RBI and Financial System- Introduction- Functions- Characteristics of Financial System- Role of RBI in regulating Financial System and Financial Sector Reforms
4	**Central Bank in other Countries**
	Federal Reserve System – Bank of England – The European Central Banking, Bank of Japan, Peoples Bank of China Interconnectivity of Central Banks with Other International Financial Institutions- ADB- IMF- World Bank- BIS- Objectives- Role and Functions
5	**Central Banking in Cyber World:**
	E Banking, E money, IT induced Changes and Monetary Policy, E payments, Risks in the New IT ERA, Impact of IT, Globalization and Central Banks.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

15. Regional Planning Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Development	15
2	Factors Determining Regional Planning	10
3	Problems in India	10
4	Human and Environmental Impacts	10
	Total	**45**

Sr. No.	Modules / Units
1	**Development**
	• Development: Meaning – Growth versus Development • Factors promoting development of resources, infrastructure, technology, culture – diversities & disparities & need for balanced growth. • Concept and Nature of Planning, need for planning of region
2	**Factors Determining Regional Planning**
	• Factors determining regional planning Area versus regions, formal functional & problem regions – utility of these concepts in identifying regions for planning. • National versus regional planning- Regional hierarchy & Multi-level planning
3	**Problems in India**
	• Regional Problem in India- varying levels of development- causative factors • Problems characterizing development-potential, declining • Backward and ecologically sensitive regions examples-Inter related nature of regional problem.
4	**Human and Environmental Impacts**
	• Human and Environmental impacts of regional planning • Rural and Urban planning policy • Rural and Tribal Development Plans.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

16. Rural Marketing Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Rural Marketing	11
2	Rural Consumer Behaviour	12
3	Marketing Mix – Product and Price in Rural Marketing	11
4	Marketing Mix– Promotion and Distribution in Rural Marketing	11
	Total	**45**

Sr. No.	Modules / Units
1	**Rural Marketing**
	a. Rural Marketing-Concept, Nature, Scope, Significance of Rural Marketing b. Factors contributing to Growth of rural markets, e-rural marketing, growing importance of rural marketing, challenges in rural marketing c. Components and classification of Rural markets, Rural Marketing Information System
2	**Rural Consumer Behaviour**
	a. Rural Consumer behaviour-features, Rural Market VS Urban Market, Lifestyle of rural consumer, Classification of rural consumers, factors influencing consumer behaviour b. Rural Marketing Research- Significance, Tools of marketing research for rural marketing c. FMCG sector in Rural India-concept and classification of consumer goods
3	**Marketing Mix – Product and Price in Rural Marketing**
	a. Potential and size of the Rural Markets, Marketing mix for rural marketing b. Product Strategy - Product mix Decisions - Competitive product strategies for rural markets, importance of Branding, Packaging and Labelling in rural marketing c. Pricing strategy – pricing objectives, pricing policies, innovative pricing methods for rural markets
4	**Marketing Mix– Promotion and Distribution in Rural Marketing**
	a. Promotion strategy - appropriate media - Designing right promotion mix – promotional campaigns b. Distribution - Logistics Management - Problems encountered, Channels for rural markets, selection of appropriate channels- Factors c. New approaches and strategies to reach out rural markets

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

17. Elements of Operational Research Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Operation Research	10
2	Replacement Theory	05
3	Linear Programming Problems (LPP)	15
4	Transportation Problem	15
	Total	**45**

Pre-requisites: ***Use of Normal Distribution in finding Probabilities. Concept of present value of money. Application of derivatives to obtain minima of Cost functions***

Sr. No.	Modules / Units
1	**Introduction to Operation Research and Replacement Theory**
	Introduction: Meaning and scope of Operations Research, Applications in Business, Commerce and Industry, limitations of Operations Research.
2	**Replacement Theory**
	Replacement Theory: Replacement Models for items that deteriorate with time assuming value money i) constant ii) changes with time. Replacement of items that fail completely using individual and Group replacement.
3	**Linear Programming Problems (LPP)**
	Mathematical Formulation of LPP . Solution to the LPP using Graphical Method, Simplex Method and Big M method Duality in LPP. Detection of optimum solution to primal using optimum solution to the dual.
4	**Transportation Problem**
	Description and Formulation of Transportation Problem Initial Basic Feasible Solution by i) North West Corner Rule, ii) Least Cost Entry Method (Matrix Minima), iii) Vogel's Approximation Method. Optimum Solution by MODI Method. Existence of Alternative optimum solution. Impact of change in some cost Coefficients on optimum solution. Maximization type and Unbalanced Transportation Problems.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

18. Psychology of Human Behavior at Work Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	What is Organizational Behaviour?	11
2	Attitudes and Job Satisfaction	11
3	Motivation Concepts	12
4	Leadership	11
	Total	**45**

Sr. No.	Modules / Units
1	**What is Organizational Behaviour?**
	a) The importance of interpersonal skills b) What managers do - management functions, roles, and skills c) Defining organizational behaviour; Disciplines that contribute to the OB field d) Challenges and Opportunities for OB - Responding to globalization; managing work force diversity; coping with "temporariness"; helping employees balance work–life conflicts; creating a positive work environment; improving ethical behaviour
2	**Attitudes and Job Satisfaction**
	a) Attitudes - Main components of attitudes; Major Job Attitudes b) Job Satisfaction - Measuring job satisfaction. What causes job satisfaction? The impact of satisfied and dissatisfied employees on the workplace
3	**Motivation Concepts**
	a) Defining Motivation; 4 early theories of motivation b) Contemporary theories of motivation - Goal Setting Theory, Equity Theory/ Organizational justice, Expectancy Theory
4	**Leadership**
	a) What is Leadership? Trait theories, Behavioural theories b) Contingency Theory – The Fiedler Model c) Charismatic Leadership and Transformational Leadership - Key characteristics of a charismatic leader; characteristics of transactional leaders; characteristics of transformational leaders d) Leading for the future: Mentoring

Reference Books

Reference Books
Elective Courses (EC)
Discipline Specific Elective (DSE) Courses
Group A: Advanced Accountancy
1. Financial Accounting and Auditing VII- Financial Accounting
• *Ashish K. Bhattacharyya – "Financial Accounting for Business Managers", Prentice Hall of India Pvt. Ltd.* • *Shashi K. Gupta – "Contemporary Issues in Accounting", Kalyani Publishers.* • *R. Narayanaswamy – "Financial Accounting", Prentice Hall of India, New Delhi* • *Ashok Sehgal – "Fundamentals of Financial Accounting", Taxmann's Publishers* • *Financial Accounting Reporting – Barry Elliot and Jamie Elliot – Prentice Hall (14th Edition*
2. Financial Accounting and Auditing VIII- Cost Accounting
• *Cost Accounting- A managerial emphasis by Horngren, Charles, Foster and Datar, Prentice Hall* • *Management Accounting by Khan and Jain, Tata McGraw Hill* • *Practical Costing by P C Tulsian, Vikas New Delhi* • *Advanced problems and solutions in cost Accounting by S N Maheshwari, Sultan Chand New Delhi* • *Cost Accounting (For B. Com 4th Sem, Delhi Univ) by Arora M N, Vikas Publishing House Pvt. Ltd.* • *A Textbook of Cost And Management Accounting - 10th Edn by Arora M N, Vikas Publishing House Pvt. Ltd.* • *Cost Accounting: Principles & Practice - 12 Edn by Arora M N, Vikas Publishing House Pvt. Ltd.* • *Essentials of Cost Accounting by Arora M N, Vikas Publishing House Pvt. Ltd.* • *Students Guide to Cost Accounting & Financial Management (Set of 2 Volumes) (CA-IPCC) (Group I) by Bhavesh N. Chandarana, Taxmann* • *Lectures on Costing by Swaminathan: S. Chand and Company (P) Ltd., New Delhi* • *Cost Accounting by C.S. Rayudu, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Cost Accounting by Jawahar Lal and Seema Srivastava, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Cost Accounting by Ravi M. Kishore, Taxmann Ltd., New Delhi* • *Principles and Practices of Cost Accounting by N.K. Prasad, Book Syndicate Pvt. Ltd., Calcutta* • *Cost Accounting Theory and Practice by B.K. Bhar, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Cost Accounting Principles and Practice by M.N. Arora, Vikas Publishing House Pvt. Ltd., New Delhi* • *Advanced Cost and Management Accounting: Problems and Solutions by V.K. Saxena and C.D. Vashist, S. Chand and Company (P) Ltd., New Delhi* • *Cost Accounting by S.P. Jain and K.L. Narang, Kalyani Publishers, Ludhiana* • *Modern Cost and Management Accounting by M. Hanif, Tata McGraw Hill Education Pvt. Ltd., New Delhi* • *Fundamentals of Cost Accounting by Jhamb. H. V., Ane Books Pvt. Ltd.* • *Cost Accounting by Gupta Nirmal, Ane Books Pvt. Ltd.*
Discipline Specific Elective (DSE) Courses
Group B: Business Management
1. Business Management Paper I
• *Essentials of Management by Koontz and Weihrich / McGraw Hill* • *Principles of Management by Koontz and O. Donnel/ Tata McGraw Hill, New Delhi* • *Principles of Management: Theory and practices by Sarangi S.K. VMP Publishers and Distributors.* • *Guide to Management Ideas by Tim Hindle, The Economist* • *Principles of Management by Terry G.R. AITBS* • *Business Organization and Principles of Management by Dutta Chowdury, Central Education*

Reference Books

- *Principles of Management, Daver Rustoms, Crown*
- *Principles of Management, Tripathi P.C. Tata McGraw Hill, New York*
- *Management Theory and Practices by Dale, Ernest / McGraw Hill, New York.*
- *Practice of Management by Peter Drucker / Allied Publisher, New Delhi*
- *Management by Ricky W Griffin / Houghton Mifflin Company*
- *Management by Gary Dessler / Prentice Hall*
- *Management by Stephen Robbins, Mary Coulter / Prentice Hall*
- *Management by James Stoner, Edward Freeman / Prentice Hall*
- *Time Management by Roberta Roesch, Tata Mc Graw Hill*
- *Time Management by Marc MANCINI, Tata Mc Graw Hill*

2. Business Management Paper II

- *Fundamentals of Financial Management(5th edition) by Chandra Prasanna (2010). Tata McGraw Hill Education Pvt. Ltd.: New Delhi*
- *Financial Management – Analytical and Conceptual Approach (12th edition) by Kuchhal S.C. (1995).Chaitanya Publishing House: Allahabad*
- *Financial Management by Reddy R.Jayprakash (2010) APH Publishing Corporation: New Delhi*
- *Financial Management – Theory and Practice (5 & 6th edition) by Chandra Prasanna (2003, 2004). Tata McGraw Hill Education Pvt. Ltd.: New Delhi*
- *Fundamentals of Financial Management (13th edition) by Horne, James C. Van (2012) PHI Learning Pvt. Ltd.: New Delhi*
- *Financial Management and decision making by Samuels, John (1999) International Thomson Nusiness Press : London*
- *Financial Management - problems & solutions (2nd edition) by Kishore, Ravi M. (2010) Taxmann Publication Pvt. Ltd.: New Delhi*
- *Financial Management : theory, concepts and cases(5th rev edition) by Rustagi, R.P. (2011) Taxmann Publication Pvt. Ltd.: New Delhi*
- *Financial Management : principles & problems (7th edition) by Srivastava, R.M.&VermaShubhra (2002) PragatiPrakashan: Meerut*
- *Fundamentals of Financial Management – problems and solutions (3rd edition) by Maheswari, S.N. (2006) Sultan Chand and Sons: New Delhi*

Discipline Specific Elective (DSE) Courses

Group C: Banking and Finance

1. Banking and Finance Paper- I Financial Markets

- *Khan M.Y, Financial Services, Mc Graw Hill Education.*
- *Dr.S. Gurusamy, Financial Services, Vijay Nicole Imprints.*
- *E. Gordon and K. Natarajan – Financial Markets and Services*
- *Niti Chatnani- Commodity markets McGraw Hill Publication*
- *S. Kevin, - Commodities & financial derivatives PHI Learning Pvt ltd*

2. Banking and Finance Paper- II Financial Reporting Analysis

- *Ashish K. Bhattacharyya – "Financial Accounting for Business Managers", Prentice Hall of India Pvt. Ltd.*
- *Shashi K. Gupta – "Contemporary Issues in Accounting", Kalyani Publishers.*
- *R. Narayanaswamy – "Financial Accounting", Prentice Hall of India, New Delhi*
- *Ashok Sehgal – "Fundamentals of Financial Accounting", Taxmann's Publishers*
- *IFRS – Dr Ram Mohan Bhave and Dr Anjali Bhave*

Reference Books

Discipline Specific Elective (DSE) Courses

Group D: Commerce

1. Commerce Paper I

- *Bhattacharjee, Service Sector Mgt; An Indian Perspective, Jaico Publishing house, 2011.*
- *Christoper lovelock, service marketing –people technology, strategy, pearson education, IV Edi, 2003.*
- *Valarie A. Zeithaml 8 Mary Jo Bitner, Services Marketing, Tata Mcgraw-Hill, 2000.*
- *A. Vijaykumar, service sector in India – Recent Policy initiative, New century Publication, 2008.*

2. Commerce Paper II

- *Office Management, Pillai R S N, S. Chand Publishers, 2010*
- *Office Organisation & Management, N.Kumar & R. Mttal, Anmol Publisher, 2001*
- *Office Management, Balachandran, Tata Mc Graw Hill, 2009*

Discipline Related Elective(DRE) Courses

3. Commerce V

- *Phillip Kotler. (2005) Marketing Management, Englewood cliffs, Prentice Hall, NJ*
- *Richard M. S Wilson, Colin gilligam, Strategic Marketing Management, Viva BooksPvt. Ltd.,2003.*
- *Walker –Boyd, Larreche , Marketing Strategies –Planning Implementations, TataMacgraw Hill.2004.*
- *Neelamegam,S.(2007) Marketing in India : Cases and Readings, Vikas, New Delhi*
- *Kotler, P., Keller, K.L. Koshy, A. &Jha. M. (2009). Marketing Management: A South Asian Perspective. (Thirteenth Ed). Pearson Education, New Delhi.*
- *Gandhi, J.C. Marketing a Managerial Introduction TataMcGrawHill.*
- *Maheshwari, R.P., Jindal, Lokesh, (2011). Marketing Management Theory and Practice.*
- *Sherlekar, S.A. Marketing Management. Himalaya Publishing House.*
- *Saxena, Rajan. Marketing Management*
- *Ramaswamy & Kumari Nama. Marketing Management*

4. Business Economics V

- *Indian Economic Survey Reports (Annual), Ministry of Finance, Government of India*
- *Indian Economy by Misra and Puri, Himalaya Publishing House - Delhi*
- *Gaurav Dutt & Ashwini Mahajan, (2016) Indian Economy, S.Chand& company PVT LTD New Delhi*
- *A.N.Agarwal – Indian Economy problems of Development and Planning New Age International Publisher*
- *RuddarDatt K.P.M Sundharam – Indian Economy S. Chand E-co LTD. Delhi*
- http://www.environmentalpollution.in/industrial-pollution/industrial-pollution-types-effects-and-control-of-industrial-pollution/299 *for industrial pollution*

Ability Enhancement Courses (AEC)

1. Trade Unionism and Industrial Relations Paper I

- *Myers C.A. & Kannappan S. (1970), 'Industrial Relation in India' , Asia publishing House, India.*
- *Singh, J.K. (1988), 'Labour Economics. Principles Problem and Practices', Deep andDeep Publication Pvt. Ltd. New Delhi.*
- *Jackson, M.P. , Strikes*
- *Karnik V.B. (1974),'Indian labour, Problems and prospects', Minewal Associations.*
- *Joshi C.K (1967), ' Unionism in Developing Economy', Asia Publication House, Bombay.*
- *Mamoria C.B. &Mamoria S.(1992),'Dynamics of Industrial Relation in India', Himalaya Publishing House.*
- *Sahani, Dr, N.K. (2009) 'Industrial Relations' Kalyani Pub. Ludhiyana.*
- *Tripathi, P.C. (2009) 'Personal Management and Ind. Relations' – Sultan Chand and Jons, New Delhi.*
- *Memoria&Memoria- 'Ind. Relations' Himalaya Pub. House, Mumbai.*
- *A.M. Sharma- 'Ind. Relations' - Himalaya Pub. House, Mumbai.*
- *G.Ramanugan- The Honey bee to words a new culture in Ind, Relations- Sterling Pub. Pvt. Ltd.*

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2. Computer Systems and Applications Paper I

- *Data Communication and Networking -Behrouz A Forouzan*
- *Introduction to Computers – Peter Norton, Tata McGraw Hill*
- *Fundamentals of Database Systems - Elmasri Navathe, Somayajulu, Gupta*
- *Database Systems and Concepts - Henry F. Korth, Silberschatz, Sudarshan McGraw Hill*
- *DBMS - Date*
- *The complete reference SQL - Vikram Vaswani TMH*
- *The complete reference SQL - James R. Groff & Paul N. Weinberg TMG*
- *Learning SQL - Alan Beaulieu O'REILLY.*
- *Learning MySQL - Seyed M. M. and Hugh Williams, O'REILLY.*
- *SQL a complete reference - Alexis Leon & Mathews Leon TMG*

3. Export Marketing Paper I

- *Export Policy Procedures& Documentation– M. I. Mahajan, Snow White Publications Pvt. Ltd, 26th Edition,*
- *International Business, K. Aswathappa,McGraw-Hill Education (India) Pvt. Ltd.,6th Edition*
- *Export Import Procedures - Documentation and Logistics, C. Rama Gopal, New Age International Publishers, 2006 / Reprint Jan 2016*
- *International Trade and Export Management, Francis Cherunilam, Himalaya Publishing House, 20th Edition, 2017*
- *R. K. Jain's, Foreign Trade Policy & Handbook of Procedures [With Forms, Circulars & Public Notices], Centax Publication, 2017*
- *EXIM Policy & Handbook of EXIM Procedure – VOL I & II*
- *International Marketing and Export Management, Gerald Albaum, Edwin Duerr, Alexander Josiassen, Pearson Publications, 8th Edition, June 2016*
- *International Marketing Strategy,IsobelDoole and Robin Lowe, 5th Edition, Thomson Learning, 2008.*
- *Global marketing, Warren J. Keegan 9th Edition Pearson Education, Delhi,*
- *New Import Export Policy - Nabhi Publications, 2017*
- *P.K. Khurana, Export Management, Galgotia Publishing Co, New Delhi*
- *P.K.Vasudeva, International Marketing-, Excel Books, fourth edition, New Delhi*
- *Paras Ram, Export documentation and procedure A-Z*
- *Export: What, Where, How?Paras Ram, & Nikhil K. Garg, Anupam Publishers, 47th Edition, 2016-17*
- *International Marketing, Mary C. Gilly, John L. Graham, Philip R. Cateora, 14th Edition, Tata McGraw-Hill Co. Ltd., 2014*
- *International Marketing Management, An Indian Perspective,R.L.Varshney and B. Bhattacharya, Sultan Chand & Sons, 24th Edition, 2012*
- *International Marketing Analysis and Strategy, SakOnkvisit, John J. Shaw, Prentice-Hall of India Pvt. Ltd., 5th Edition, 2008*
- *International Marketing, Subhash C. Jain, South-Western, 6th Edition, 2001*
- *Export Management, T.A.S.Balagopal , Himalaya Publishing House, Mumbai, 2014*
- *Michael R. Czinkota and Iikka A. Ronkainen, International Marketing, South-Western, 10th Edition, 2012*
- *Export-Import and Logistics Management, Charlie Hill, Random Publications, 2014*
- *International Marketing Management, M.V. Kulkarni, Everest Publishing House*

4. Marketing Research Paper I

- *Marketing Research Text and Cases, Rajendra Nargundkar, McGraw Hill, 2nd edition*
- *Marketing Research (Text with Cases), Suja Nair, Himalaya Publishing House, Maharashtra, 2014*
- *Marketing Research, John Boyce, Tata McGraw Hill Publishing Co. Ltd., Maharashtra, 2011*
- *Encyclopaedia of Marketing Research Series, S.D. Singh, Anmol Publications Pvt. Ltd., New Delhi, 2012*
- *Marketing Research: A Global Outlook, V. Kumar, Sage Publications, New Delhi, 2015*
- *Marketing Research, G. C. Beri, McGraw Hill, New Delhi, 2007*
- *Fundamentals of Marketing Research, M.K. Gawande, Chandralok Prakashan, Kanpur, 2012*
- *Marketing Research: The impact of internet, Gates, Roger et al, John Wiley & sons, Great Britain, 2002*

Reference Books

5. Investment Analysis and Portfolio Management Paper I

- *Security Analysis and Portfolio Management, Prasanna Chandra, Tata McGraw Hill*
- *Financial Management, Prasanna handra, Tata McGraw Hill*
- *Security Analysis and Portfolio Management, Ravi Kishor, Taxman Publishers*
- *Financial Management, Khan & Jain, Tata McGraw Hill*
- *Fundamentals of Investment Management, Hirt and Block, Tata McGraw Hill. Ed 2009.*
- *Portfolio Management Handbook, Robert A. Strong, Jaico Publishing House, Mumbai*

6. Transport Management Paper I

- *Phil Hughes & Ed Ferrett (2010). International Health and Safety at Work. Routledge Publisher.*
- *Mather J. C. (ed.) (1992). 'Transport and Economic Development', Chugh Publications, Allahabad.*
- *Modak S.K. (1980). 'Adgunik Parivahanache Arthashastra', Maharashtra Vidhyapeeth Grantha Nirmitee Mandal, Nagpur.*
- *Hugh M. Kindred & Mary R. Brooks (1997). 'Multimodal Transport Rules'. Martinus Nijhoff Publishers.*
- *Multimodal Transportation of Goods Act, 1993 Along With Allied Rules, Professional Book Publishers.*
- *Slim Hammadi & Mekki Ksouri (2013). Multimodal Transport Systems. John Wiley & Sons.*
- *Joseph S. Szyliowicz, Luca Zamparini, Genseric L.L. Reniers & Dawna L. Rhoades (2016). Multimodal Transport Security: Frameworks and Policy Applications in Freight and Passenger Transport. Edward Elgar Publishing.*
- *United Nations Economic and Social Commission for Asia and the Pacific (2004). Manual on Modernization of Inland Water Transport for Integration within a Multimodal Transport System. United Nations Publications.*
- *Jean-Paul Rodrique, Claude Comtois & Brian Slack (2013). The Geography of Transport Systems. Routledge.*
- *Christos N. Pyrgidis (2016). Railway Transportation System: Design, Construction and Operation. CRC Press.*
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- *Popkes, C.A. (1986). Traffic Control and Road Accident Prevention. Chapman and Hall Limited.*
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- *B.C. Vaidya (2003). 'Geography of Transport Development in India' Concept Publishing Company*

7. Entrepreneurship & Management of Small Scale Industries Paper I

- *Batra G.S. and Dangal R.C., Entrepreneurship and Small Scale Industries, Deep and Deep Publications Pvt. Ltd.*
- *Entrepreneurial Development, Colombo Plan, 1998, Tata McGraw Hill, New Delhi.*
- *Entrepreneurship Development, Himalaya Publishing House, Mumbai.*
- *Gupta C.B., Entrepreneurial Development, 1995, Somaiya Publication, New Delhi.*
- *Hisrich R.D., Cases in International Entrepreneurship, 1997, Liven, Chicago.*
- *Hisrich Robert D and Peters Michael, Entrepreneurship, 2002, Tata McGraw Hill, New Delhi,*
- *Mascarenhas Romeo S., Entrepreneurship and Management of Small and Medium Enterprises, Vipul Prakashan, Mumbai.*

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- *Mascarenhas Romeo S., Management of Small Scale Industries, Vipul Prakashan, Mumbai.*
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- *Vasant Desai, Entrepreneurship and Management of Small and Medium Enterprises, Himalaya Publishing House.*
- *Vasant Desai, Small Scale Industries and Entrepreneurship, Himalaya Publishing House.*
- *Yerram Raju B. and Pujari Ram R., The Small Entrepreneur Starting and Growing, Excel Publication, New Delhi.*

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- *International Marketing - Rathor Jani Rathor*
- *International Business - P. Suhbarau*
- *Global Marketing Strategy - Jeannet&Hennssey*
- *Managing International Marketing - dr. V. O. Varkey*
- *Modern Marketing Research – M.N.Mithani*
- *Marketing Research – G.C.Berry*
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9. Merchant Banking Paper I

- *Merchant Banking and Financial Services – Dr. S Guruswamy Fourth Edition, Delhi Publishing House.*
- *Merchant Banking Principles & Practices – H. R Machiraju New Age International Ltd*
- *Merchant Banking – NISM 2015 Edition*
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10. Direct and Indirect Taxation Paper I

- *Students guide to Income Tax (simplified version) by V.K.Singhania and Monica Singhania, Taxmann*
- *Systematic approach to Income Tax by Ahuja & Gupta, Bharat Law Publication*
- *Income Tax by T.M. Manorahan, Snow White*
- *Direct Tax ready reckoner by N.V.Mehta, Kuber Publication*
- *Indirect Taxes by V.S.Datey, Taxmann*
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- *Indirect Taxes Law and Practice by V. S. Datey, Taxmann*

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11. Labour Welfare & Practice Paper I

- *Jayant S. Railkar- Labour welfare & Practice – Vipul Prakashan.*
- *A.M. Sarma – Aspects of Labour welfare & Social Security – Himalaya Publications.*
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12. Purchasing and Storekeeping Paper I

- *Ammer. Dean S : Materials Management (Richard D. Irwin Inc. U.S.A.).*
- *Baily, Peter and Farmer, D. : Purchasing Principles and Techniques : Arnold Heinemann, Publishers India New Delhi.*
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- *Bagade, Shankar D. : Production and Materials Management : Himalaya.*
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- *Magee, John F. : Production Planning and Inventory Control (McGrow Hill, U.S.A.).*
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- *Varma : Essentials of Store Keeping and Purchasing : M. M. Sultan Chand.*
- *Westing, J. H., Fine, I.V., Zenz, G. J. : Purchasing Management (Wiley Eastern Ltd., New Delhi).*

13. Insurance Paper I

- *General Insurance, John Magee & David Bicklhaupt,*
- *Operational Transformation of General Insurance Industry during the period 1950 to 1990 &Beyond, R D Samarth*
- *Study on Distribution Functions in General Insurance & Role of Intermediaries, Arun Agarwal / PR Rao*
- *General Insurance for Information Technology Professionals, Martin Frappoli*
- *S. Arunajatesan and T.R. Vishwanathan: Risk Management and Insurance:Macmillan, New Delhi.*
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- *Kenneth Black Jr. and Harold D. Skipper Jr.: Life and Health Insurance: Pearson, New Delhi*
- *Uma Narang, Insurance Industry in India, Features, Reforms & Outlook, New century Publication, 2013*

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14. Banking Law and Practice Paper I Central Banking

- *Central Banking- IIBF- MacMillan Publishers*
- *Central Banking – ICFAI Press*
- *Theory and Practice of Central Banking in India- V.A.Avdhani*
- *Central Banking- M H deKock*
- *Central Banking in Planned Economy- The Indian Experiment- C.R.Basu*

15. Regional Planning

- *Glasson, J. (1974), 'An Introduction to Regional planning, Hutchinson & Co., London.*
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- *Sen. L.K. (ed.) (1972),'Reading in micro level planning and rural growth centers, NICD, Hyderabad.*
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16. Rural Marketing Paper I

- *DantwalaM.L., Indian Agriculture Since Independence Oxford & IBH Publishing Co. Pvt. Ltd. NewDelhi–110001, 1990.*
- *Habeeb U.R.,Rahman K.S., Rural Marketing in India, HPH-Mumbai 400004---2003*
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17. Elements of Operation Research Paper I

- *PERT & CPM Principles and Applications by L.S.Srinath*
- *Operations Research Principles & Practice by Ravinderan, Phillips Solber.*
- *Schaum's outline series Therory & Problems of Operations Research by Richard Bronson*
- *Operations Research by H.A.Taha*
- *Operations Research by Gupta & Hira*
- *Operations Research Theory & Applications by J.K.Sharma*
- *Operations Research Problems & Solutions by V.K.Kapoor*
- *Quantitative Techniques by Shenoy, Shrivastav & Sharma*
- *Introduction to Operations Research by Hiller & Lieberman*
- *Operations Research Techniques for Management by B.Banerjee*
- *Operations Research by Gupta & Manmohan*
- *Quantitative Techniques by N.D.Vohra*

18. Psychology of Human Behaviour at work Paper I

- *Robbins, S. P. Judge, T. A. & Vohra, N. (2013). Organizational Behavior. (15th ed.), Indian subcontinent adaptation, New Delhi: Pearson Education, Dorling Kindersley India pvt ltd.*
- *Aquinas, P. G. (2013). Organisational Behavior Concepts Realities Application and Challenges. (2nd ed.) New Delhi: Excel Books*
- *Ashliegh, A. M. (2012). The psychology of people in organizations. Pearson Education*
- *Baltus, R. (2012). Personal psychology for work and life. Tata McGraw Hill*
- *Dash, C. (2013). Organisational behavior. New Delhi: International Book House*
- *Gibson, J. L., Ivancevich, J. M., & Konopaske, R.(2013). Organisations: Behaviour, Structure, Processes. Tata McGraw Hill*
- *Greenberg, J. (2013). Behaviour in organizations (10th ed.). PHI Learning Private Limited.*

Reference Books

- *Luthans, F. (2013). Organisational behaviour: An evidence –based approach. Tata McGraw Hill*
- *McShane, S. L., Glinow, M. A., Sharma, R. R. (2012) Organisational behavior. (5th ed.): Tata McGraw Hill, New Delhi.*
- *Pareek, U. & Khanna, S. (2011). Understanding organizational behavior. Oxford University Press*
- *Rajendra, P. Maheshwari, J. & Mahajan, P. (2012). Business organization management. (2nd Revised ed.) New Delhi: International Book House*
- *Riggio, R. (2012). Introduction to industrial and organizational psychology. Pearson Education*
- *Schultz, D. & Schultz,S.(2013). Psychology and work today. Pearson*
- *Shankar, M. (2013). Organizational behavior. International Book House*
- *Sharma, S. (2013). Organisational behavior. New Delhi: Tata McGraw Hill.*
- *Singh, K. (2012). Organizational behaviour text and cases. New Delhi: Pearson Education.*

B.Com. Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2018-2019)

Semester VI

No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***	
1A	***Discipline Specific Elective(DSE) Courses***	
1 & 2	*Any one group of courses from the following list of the Groups (A/B/C/D/E/F)	**04+04**
1B	***Discipline Related Elective(DRE) Courses***	
3	Commerce VI	**03**
4	Business Economics VI	**03**
2	***Ability Enhancement Courses (AEC)***	
5 & 6	**Any two courses from the following list of the courses	**03+03**
	Total Credits	**20**

List of groups of Discipline Specific Elective(DSE) Courses for Semester VI (Any One Group)	
Group A: Advanced Accountancy	
1	Financial Accounting and Auditing IX - Financial Accounting
2	Financial Accounting and Auditing X - Cost Accounting
Group B: Business Management	
1	Business Management Paper - III
2	Business Management Paper - IV
Group C: Banking and Finance	
1	Banking and Finance Paper - III
2	Banking and Finance Paper - IV
Group D: Commerce	
1	Commerce Paper - III
2	Commerce Paper - IV
Group E: Quantitative Techniques	
1	Quantitative Techniques Paper - III
2	Quantitative Techniques Paper - IV
Group F: Economics	
1	Economics Paper - III
2	Economics Paper - IV

List of Ability Enhancement Courses (AEC) for Semester VI (Any Two)	
1	Trade Unionism and Industrial Relations Paper - II
2	Computer systems & Applications Paper - II
3	Export Marketing Paper - II
4	Marketing Research Paper - II
5	Investment Analysis Portfolio Paper - II
6	Transport Management Paper - II
7	Entrepreneurship& M.S.S.I. Paper - II
8	International Marketing Paper - II
9	Merchant Banking Paper - II
10	Direct & Indirect Taxation Paper - II
11	Labour Welfare & Practice Paper - II
12	Purchasing & Store keeping Paper - II
13	Insurance Paper - II
14	Banking Law & Practice Paper - II
15	Regional Planning Paper - II
16	Rural Marketing Paper - II
17	Elements of Operational Research Paper - II
18	Psychology of Human Behaviour at work Paper - II

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

1. Financial Accounting and Auditing Paper-IX: Financial Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	AS – 14 - Amalgamation, Absorption & External Reconstruction	15
2	Accounting of Transactions of Foreign Currency	15
3	Liquidation of Companies	10
4	Underwriting of Shares & Debentures	10
5	Accounting for Limited Liability Partnership	10
	Total	**60**

Sr. No.	Modules / Units
1	**AS – 14 - Amalgamation, Absorption & External Reconstruction (excluding inter-company holdings)**
	In the nature of merger and purchase with corresponding accounting treatments of pooling of interests and purchase method respectively. Meaning and Computation of purchase consideration. Problems based on purchase method only.
2	**Accounting of Transactions of Foreign Currency**
	In relation to purchase and sale of goods, services and assets and loan and credit transactions. Computation and treatment of exchange rate differences
3	**Liquidation of Companies**
	Introduction, Underwriting, Underwriting Commission Provision of Companies Act with respect to Payment of underwriting commission Underwriters, Sub-Underwriters, Brokers and Manager to issues Types of underwriting, Abatement Clause Marked, Unmarked and Firm-underwriting applications, Liability of the underwriters in respect of underwriting contract Practical problems
4	**Underwriting of Shares & Debentures**
	Meaning of liquidation or winding up Preferential payments Overriding preferential payments Preparation of statement of affairs, deficit / surplus account Liquidator's final statement of account
5	**Accounting for Limited Liability Partnership**
	Statutory Provisions Conversion of partnership firm into LLP Final Accounts

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group A: Advanced Accountancy

2. Financial Accounting and Auditing Paper-X: Cost Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Cost Control Accounts	10
2	Contract Costing	10
3	Process Costing	10
4	Introduction to Marginal Costing	10
5	Introduction to Standard Costing	10
6	Some Emerging concepts of Cost accounting	10
	Total	**60**

Sr. No.	Modules / Units
1	**Cost Control Accounts**
	Advantages and Disadvantages Cost Control Accounts, Principal Accounts, Subsidiary Accounts to be maintained Note- Simple practical problems on preparation of cost control accounts
2	**Contract Costing**
	Progress payments, Retention money, Contract accounts, Accounting for material, Accounting for Tax deducted at source by the contractee, Accounting for plant used in a contract, treatment of profit on incomplete contracts, Contract profit and Balance sheet entries. Excluding Escalation clause **Note-** Simple practical problems
3	**Process Costing**
	Process loss, Abnormal Gains and Losses, Joint products and by-products. Excluding Equivalent units, Inter-process profit **Note-** Simple Practical problems Process Costing and joint and by-products
4	**Introduction to Marginal Costing**
	Marginal costing meaning, applications, advantages, limitations Contribution, Breakeven analysis, Margin of safety and profit volume graph. ***Note****-Simple Practical problems based on Marginal Costing excluding decision making*
5	**Introduction to Standard Costing**
	Various types of standards, Setting of standards, Basic concepts of Material and Labour variance analysis. **Note**-Simple Practical problems based on Material and labour variances excluding sub-variances
6	**Some Emerging concepts of Cost accounting**
	Target Costing Life cycle Costing Benchmarking ABC Costing **Note**- No practical problems

Revised Syllabus of Courses of B.Com. Programme at Semester VI with effect from the Academic Year 2018-2019

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

1. Business Management Paper-IV
Management and Organization Development

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Directing & Leading	15
02	Co-ordination & Motivation	15
03	Controlling & Information Management	15
04	Contemporary Issues in Management	15
	Total	**60**

Sr. No.	Modules / Units
1	**Directing and Leading**
	• Communication as an important tool for effective direction and leadership • Barriers to Communication • Ethical issues in using social media for communication • Role of a leader in business organisations - qualities of a good leader • Style of leadership • Leadership continuum – developing an effective leader – path goal theory • Transactional and transformational leaders
2	**Co-ordination and Motivation**
	• Co-ordination as essence of management • Co-ordination vs co-operation vs conciliation • Motivation – meaning and importance of motivation • Financial and non-financial motivators • Theories of Motivation – Maslow's theory – Herzberg's theory – McGregor's theory.
3	**Controlling and information Management**
	• Definition and steps in controlling. • Strategic and operational controlling techniques. • Requirements of an effective control system. • Flow of information n a typical organisation - Need for managing information. • Designing and developing modern MIS - Introduction to ERP.
4	**Contemporary Issues in Management**
	• Challenges in organisational growth and development - management perspective • Change management • Importance of time management and tools for effective time management • Addressing diversity due to human resource mobility • Conflict management.

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group B: Business Management

2. Business Management Paper-VI
Financial Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Capital Budgeting and Evaluation techniques	11
02	Working Capital Management	11
03	Receivable Management, Cash Management and Marketable Securities	12
04	Basic Principles of Cost Accounting	11
	Total	**45**

Sr. No.	Modules / Units
1	**Capital Budgeting and Evaluation techniques**
	• Capital Budgeting - Meaning and Importance • Evaluation techniques • Pay-back method and ARR • NPV and Profitability index • Choice of evaluation techniques, uses and limitations
2	**Working Capital Management**
	• Working Capital – Meaning and Importance • Factors determining Working Capital requirements, Working Capital cycle • Classification of Working Capital – Gross and Net Working Capital, Permanent and Variable Working Capital, Positive and Negative Working Capital, Cash and Net Current Assets concept of Working Capital • Management of Working Capital • Estimation of Working Capital requirement
3	**Receivable Management, Cash Management and Marketable Securities Management**
	• Receivables Management – Meaning and importance, aspects of receivable management, Credit Policy and Credit Evaluation • Control of accounts receivables – Day's Sales Outstanding, Ageing Schedule, ABC Analysis • Cash Management – Meaning, motives of holding cash, ways of speeding up cash collections • Preparation of Cash Budget • Understanding the role of marketable securities in corporate financial management
4	**Basic Principles of Cost Accounting**
	• Cost Accounting – Meaning, classification of costs and non-cost items • Preparation of Cost sheet • Marginal Costing - Meaning, features, advantages and limitations of marginal costing, • Break Even Analysis • Application of marginal costing

Elective Courses (EC)

1 A. Discipline Specific Elective (DSE) Courses

Group C: Banking and Finance

1. Banking and Finance Paper-III: Risk Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Foundations of Risk Management	15
02	Capital markets Risk Management	15
03	Credit Market Risk Management	15
04	Risk Measurement	15
	Total	**60**

Sr. No.	Modules / Units
1	**Foundations of Risk Management**
	• Basic risk types • The role of risk management • Enterprise Risk Management (ERM) • History of financial disasters and risk management failures • 2007 financial crisis
2	**Capital Market Risk Management**
	• Equity, currencies & commodities markets in India • Introduction to Derivatives • Forward, Future and option contracts • Hedging through Derivatives contract • Fixed-income securities • Fixed-income risk management through derivatives • Rating agencies
3	**Credit Market Risk Management**
	• Introduction, • Information required for evaluation of credit risk, • Procedure for Credit Risk Management, • Credit Lifecycle, • Loan Review Mechanism, • RBI guidelines on Credit Rating Framework in Banks, • Introduction of Basel Norms and calculation of capital adequacy ratio
4	**Risk Measurement**
	• Estimation of volatilities and correlations (application to volatility term structures) Monte Carlo simulations (application to interest rate forecasting) • Linear Value-at-Risk (application to market, credit and operational risk) • Option valuation • Risk-adjusted return on capital (RAROC) & beta calculation • Risk management of derivatives (application to convertible risk) • Interest rates and measures of interest rate sensitivity

Elective Courses (EC)
1 A. Discipline Specific Elective (DSE) Courses
Group C: Banking and Finance

2. Banking and Finance Paper-IV: Actuarial Analysis in Banking and Insurance

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Probability & Mathematical Statistics	12
02	Models	12
03	Mortality Model	12
04	Contingencies	12
05	Statistical Methods	12
	Total	**60**

Sr. No.	Modules / Units
1	**Probability & Mathematical Statistics**
	Concepts of Probability, Bayes' Theorem, Concepts of Random Variable, Probability Distribution, Distribution Function, Expected Value, Variance and Higher Moments, Basic Discrete And Continuous Distributions, Central Limit Theorem, Statistical Inference And Sampling Distribution, Confidence Intervals For Unknown Parameters. Test Hypotheses, Concepts Of Analysis Of Variance
2	**Models**
	The Principles of Actuarial Modelling., General Principles of Stochastic Processes, Markov Chain, Markov Process., Concept of Survival Models., Estimation Procedures for Lifetime Distributions., Maximum Likelihood Estimators For The Transition Intensities In Models Of Transfers Between States With Piecewise Constant Transition Intensities.
3	**Mortality Model**
	Binomial Model of Mortality, Derive A Maximum Likelihood Estimator for The Probability of Death, How to Estimate Transition Intensities Depending on Age, Exactly Or Using The Census Approximation., How To Test Crude Estimates For Consistency With A Standard Table Or A Set Of Graduated Estimates, And Describe The Process Of Graduation.
4	**Contingencies**
	Simple assurance and annuity contracts, means and variances of the present values of the payments under these contracts, assuming constant deterministic interest. Expressions in the form of sums for the mean and variance of the present value of benefit payments under each contract above, in terms of the curtate random future lifetime, assuming that death benefits are payable at the end of the year of death and that annuities are paid annually in advance or in arrear, and, where appropriate, Obtain expressions in the form of integrals for the mean and variance of the present value of benefit payments under each contract above, in terms of the random future lifetime, assuming that death benefits are payable at the moment of death and that annuities are paid continuously, and, where appropriate.
5	**Statistical Methods**
	Concepts of decision theory, Decision function and a risk function. Apply decision criteria to determine which decision functions are best with respect to a specified criterion. In particular consider the minimax criterion and the Bayes criterion. Calculate probabilities and moments of loss distributions both with and without limits and risk-sharing arrangements. The properties of the statistical distributions which are suitable for modelling individual and aggregate losses. Apply the principles of statistical inference to select suitable loss distributions for sets of claims. Concepts of excesses (deductibles), and retention limits. The operation of simple forms of proportional and excess of loss reinsurance.

Elective Courses (EC)
1 A. Discipline Specific Elective (DSE) Courses
Group D: Commerce

1. Commerce III:
Management of Service Industry

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Housing and Construction Industry	15
02	Computer Services and e- commerce	15
03	Banking	15
04	Insurance	15
	Total	**60**

Sr. No.	Modules / Units
1	**Housing and Construction Industry**
	Characteristics- scope- challenges-promotion activities of construction industry- role of co-operative societies and Government schemes- career opportunities
2	**Computer Services and e- commerce**
	e-commerce- concept-functions- merits & limitations IT enabled services (ITES): features- Business Process Outsourcing: concept- advantages & challenges- Consultancy services: classification & significance
3	**Banking**
	Types of Banks- functions of a commercial bank-types of banking products-role of RBI- recent trends in Banking- Career opportunities in Banking
4	**Insurance**
	Concept- importance- types (Life, Fire, Marine & General)- Regulation of Insurance sector: role of Insurance Regulatory and Development Authority of India – Foreign Direct Investment in insurance sector- career opportunities in insurance sector

Elective Courses (EC)
1 A. Discipline Specific Elective (DSE) Courses
Group D: Commerce

2. Commerce IV:
Commercial Administration

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Human Resource Management for office	15
02	Office Services -I	15
03	Office Services -II	15
04	Office Services -III	15
	Total	**60**

Sr. No.	Modules / Units
1	**Human Resource Management for office**
	Human Resource Management: Meaning, nature and importance of human resource management- scope of HR functions in an office- duties and responsibilities of HR officer- records and information to be maintained with respect to the human resource- important HR legislations in India.
2	**Office Services -I**
	Reception & hospitality: Role and function of the reception desk- duties and responsibilities of a receptionist, importance of reception. **Meetings & Travel Arrangement**: meaning and procedure for business meetings- types of meetings- information and services related to travel- procedure for making travel arrangements
3	**Office Services -II**
	Accounts & financial services: Role and functions of an accounts department/ officer- documents to be prepared by the accounts officer- types of hardware and software used – procedure for making and receiving payments- bank and cash related documents and procedures, digital payments. **Sales, marketing and customer care**: functions of sales & marketing officer- functions of customer service officer, importance of customer care
4	**Office Services -III**
	Procurement & dispatch: role and functions of procurement officer- procedure for procurement of materials and services- functions of a dispatch clerk- documents to be maintained with respect to procurement and dispatch **Inventory management:** meaning and nature of inventory management, functions of inventory management - stock records to be maintained manual and electronic

Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

3. Commerce-VI

Human Resource Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Human Resource Management	12
02	Human Resource Development	11
03	Human Relations	11
04	Trends In Human Resource Management	11
	Total	**45**

Sr. No.	Modules / Units
1	**Human Resource Management**
	• Human Resource Management – Concept, Functions, Importance, Traditional v/s Strategic Human Resource Management • Human Resource Planning- Concept Steps in Human Resource Planning Job Analysis-Concept, Components, Job design- Concept, Techniques • Recruitment- Concept, Sources of Recruitment Selection - Concept , process , Techniques of E,selection,
2	**Human Resource Development**
	• Human Resource Development- Concept, functions Training- Concept, Process of identifying training and development needs, Methods of Training & Development (Apprenticeship, understudy, job rotation, vestibule training, case study, role playing, sensitivity training, In, basket, management games) Evaluating training effectiveness- Concept, Methods • Performance Appraisal- Concept, Benefits, Limitations, Methods Potential Appraisal-Concept, Importance • Career Planning- Concept, Importance Succession Planning- Concept, Need Mentoring- Concept, Importance Counseling- Concept, Techniques.
3	**Human Relations**
	• Human Relations- Concept, Significance Leadership –Concept, Transactional & Transformational Leadership Motivation- Concept, Theories of Motivation,(Maslow's Need Hierarchy Theory, Vroom's Expectancy Theory, McGregor's Theory X and Theory Y, Pink's Theory of Motivation) • Employees Morale- Concept, Factors affecting Morale, Measurement of Employees Morale Emotional Quotient and Spiritual Quotient- Concept, Factors affecting EQ & SQ • Employee Grievance- Causes, Procedure for Grievance redressal Employee welfare measures and Healthy & Safety Measures.
4	**Trends In Human Resource Management**
	• HR in changing environment: Competencies- concept, classification Learning organizations- Concept, Creating an innovative organization, Innovation culture- Concept, Need, Managerial role. • Trends in Human Resource Management,: Employee Engagement- Concept, Types Human resource Information System (HRIS) – Concept, Importance, Changing patterns of employment. • Challenges in Human Resource Management: Employee Empowerment, Workforce Diversity. Attrition, Downsizing, Employee Absenteeism, Work life Balance, Sexual Harassment at work place, Domestic and International HR Practices, Millennial (Gen Y)Competency Mapping

Elective Courses (EC)

1 B. Discipline Related Elective (DRE) Courses

4. Business Economics-VI
International Economics

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Introduction to International Trade	10
02	Commercial Policy	10
03	Balance of payments and International Economic Organization	15
04	Foreign Exchange market	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to International Trade**
	• Theories of International Trade - Ricardo's Theory of Comparative Costs and the Heckscher- Ohlin Theory. • Terms of Trade - Types and Limitations. • Gains from International trade - Offer Curves and Reciprocal Demand.
2	**Commercial Policy**
	• Commercial Trade Policy –Free Trade and Protection – Pros and Cons. • Tariff And Non Tariff Barriers: Meaning, Types and Effects • International Economic Integration – Types and Objectives:-EU and Brexit, ASAEN
3	**Balance of payments and International Economic Organization**
	• Balance of Payment: Meaning, Structure, Types of Disequilibrium. • Causes and measures to correct the disequilibrium in Balance of Payments • WTO- Recent Developments in TRIPS, TRIMS and GATS.
4	**Foreign Exchange market**
	• Foreign Exchange Market: Meaning, Functions, Determination of Equilibrium Rate of Exchange. • Purchasing Power Parity Theory, Spot and Forward Exchange Rates, Arbitrage. • Role of Central Bank in foreign exchange rate management, Managed flexible exchange rate system of India.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

1. Trade Unionism and Industrial Relations Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Industrial relations	12
2	Industrial conflicts and its Measures for Prevention and Settlement	12
3	Collective bargaining and Workers Participation in Management	11
4	Industrial relations in Public Sector Multi-nationals, and Co-operative Sector	10
	Total	**45**

Sr. No.	Modules / Units
1	**Industrial relations**
	• Industrial relations: Meaning, Importance, Scope, Role and Impact on Labour Laws legislation, Execution, Employer, Trade Unions and Judiciary • Recommendations of Second National Commission on labour 2002.
2	**Industrial conflicts and its Measures for Prevention and Settlement**
	• Industrial conflicts: Meaning causes and impact. Strike: Meaning, Types &Legal aspects. Concept of lockout. • Measures for prevention and settlement of industrial conflicts- (a) Conciliation (b) Mediation (c) Arbitration (d) Adjudication.
3	**Collective bargaining and Workers Participation in Management**
	• Collective bargaining: concept, principles and importance. Collective bargaining in India. • Workers participation in management- Meaning, Types with reference to India.
4	**Industrial relations in Public Sector Multi-nationals, and Co-operative Sector**
	• Industrial relations in public sector, multi-nationals, and co-operative Sector. • Plant level Industrial relations:- standing orders and grievance procedure. • Work and role of labour welfare officer.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

2. Computer Systems and Applications Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	E – Commerce	18
2	Advanced Spread Sheet	09
3	Advanced Spread Sheet	09
4	Visual Basic	09
	Total	**45**

Sr. No.	Modules / Units
1	**E – Commerce**
	a) Definition of E-commerce b) Features of E-commerce c) Types of E-commerce (B2C, B2B, C2C, P2P) d) Business Models in E-commerce (Advertising, Subscription, Transaction Fee, Sales Revenue, Affiliate Revenue) e) Major B2C models (Portal, Etailer, Content Provider, Transaction Broker, Market Creator, Service Provider, Community Provider). f) E-Commerce Security: Integrity, Non repudiation, Authenticity, Confidentiality, Privacy Availability. g) Encryption: Definition, Digital Signatures, SSL. h) Payment Systems: Digital Cash, Online stored value, Digital accumulating balance payment, Digital credit accounts, digital checking. i) How an Online credit card transaction works. SET protocol. j) Limitation of E-commerce. k) M-commerce (Definition and Features).
2	**Advanced Spread Sheet**
	a) Multiple Spread sheets • Creating and using templates, Using predefined templates, Adding protection option. • Creating and Linking Multiple Spreadsheets. • Using formulas and logical operators. • Creating and using named ranges. • Creating Formulas that use reference to cells in different worksheets. **b) Functions** • Database Functions LOOKUP, VLOOKUP, HLOOKUP • Conditional Logic functions IF, Nested IF, COUNTIF, SUMIF, AVERAGEIF • String functions LEFT, RIGHT, MID, LEN, UPPER, LOWER, PROPER, TRIM, FIXED
3	**Advanced Spread Sheet**
	a) Functions • Date functions TODAY, NOW, DATE, TIME, DAY, MONTH, YEAR, WEEKDAY, DAYS360 • Statistical Functions COUNTA, COUNTBLANK, CORREL, LARGE, SMALL **b) Data Analysis** • Filter with customized condition. • The Graphical representation of data Column, Line, Pie and Bar charts. • Using Scenarios, creating and managing a scenario. • Using Goal Seek • Using Solver • Understanding Macros, Creating, Recording and Running Simple Macros. Editing a Macro(concept only)

Sr. No.	Modules / Units
4	**Visual Basic**
	a) Introduction to Visual Basic, Introduction Graphical User Interface (GUI). Programming Language (Procedural, Object Oriented, Event Driven), Writing VB Projects. The Visual Basic Environment b) Introduction to VB Controls Text boxes, Frames, Check boxes, Option button, Designing the User Interface, Default & Cancel property, tab order, Coding for controls using Text, Caption, Value property and Set Focus method c) Variables, Constants, and Calculations Variable and Constant, Data Type (String, Integer, Currency, Single, Double, Date), Naming rules/conventions, Constants (Named & Intrinsic), Declaring variables, Val Function, Arithmetic Operations, Formatting Data. d) Decision and Condition Condition, Comparing numeric variables and constants, Comparing Strings, Comparing Text Property of text box, Compound Conditions (And, Or, Not). If Statement, if then-else Statement, LCase and Ucase function, Using If statements with Option Buttons & Check Boxes. Msgbox (Message box) statement Input Validation : Is Numeric function. e) Sub-procedures and Sub-functions, Using common dialog box, Creating a new sub–procedure, Writing a Function procedure. Simple loops using For Next statements and Do while statement and display output using MsgBox Statement.

Note :

a) Theory 03 lectures per week.

b) Practical batch size 20-25, 01 practical = 03 theory lectures per week.

c) 10 Practical's are to be completed in each semester.

Semester VI

Topic	Number of Practical's
Presentation skills	01
Advanced Spread Sheet	06
Introduction to Visual Basic	03

Minimum 6 practical's are to be recorded in the journal in the Semester VI
[Minimum 4 on VB, 2 on Advanced Spread Sheet)

❖ **Suggested list of Practical's for Semester VI**

1. Preparing a PowerPoint presentation on an E-Commerce website.
2. Calculation of DA, HRA, PF, Gross Salary and Net Salary using Spread Sheet
3. Calculation of Income Tax using Spread Sheet
4. Filtering data and Graphical representation of data using Spread Sheet
5. Using VLOOKUP and HLOOKUP using Spread Sheet
6. Creating and managing a scenario using Spread Sheet
7. Use of Goal Seek and Solver using Spread Sheet

8. Write a project in VB to design a suitable form to add two numbers and display their sum.
9. Write a project in VB to design a suitable form to enter sales and calculate and display the bonus which is 10% of sales.
10. Write a project in VB to design a suitable form to enter salary and calculate and display the DA which is 90% of salary.

❖ **Scheme of Examination**

Type	Marks	Duration
Theory	75	2½ hours
Practical	20	1 hour per batch of 10
Active Participation and Class conduct	05	---

- **Theory Examination Pattern**

  All questions are compulsory

Question No.	Unit No.	Marks	Marks with Internal Option
Q. 1.	Objective type based on I, (II,III) and IV	11+2+2	23
Q. 2.	I	15	30
Q. 3.	II	15	30
Q. 4.	III	15	30
Q. 5.	IV	15	30

- **Practical Examination Pattern- Semester VI**

Sr. No.	Topic	Marks
01	Advanced Spread sheet	07
02	Introduction to VB Programing	03
03	Journal	05
04	Viva	05

  - Practical examination to be conducted 2 to 3 weeks before the theory examination. Marks out of 25 to be submitted to the University before commencement of theory examination.
  - Software Requirement :
    Spread Sheet 2010, VB 6.0
  - Hardware
    For a batch of 120 students minimum 10 computers with appropriate hardware and software installed on each computer. During practical hours maximum two student may share one computer.
  - For in house computing facility fee of rupees 750/- be charged for each student per Semester in the existing fee structure against head of computer fee/computer practical.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

3. Export Marketing Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Product Planning and Pricing Decisions for Export Marketing	12
2	Export Distribution and Promotion	11
3	Export Finance	11
4	Export Procedure and Documentation	11
	Total	**45**

Sr. No.	Modules / Units
1	**Product Planning and Pricing Decisions for Export Marketing**
	a) Planning for Export Marketing with regards to Product, Branding, Packaging b) Need for Labelling and Marking in Exports, Factors determining Export Price; Objectives of Export Pricing c) International Commercial (INCO) Terms; Export Pricing Quotations – Free on Board (FOB), Cost Insurance and Freight (CIF) and Cost and Freight (C&F); Problems on FOB quotation
2	**Export Distribution and Promotion**
	a) Factors influencing Distribution Channels; Direct and Indirect Exporting Channels; Distinction between Direct and Indirect Exporting Channels b) Components of Logistics in Export marketing; Selection criteria of Modes of Transport; Need for Insurance in Export Marketing c) Sales Promotion Techniques used in Export Marketing; Importance of Trade Fairs and Exhibitions; Benefits of Personal Selling; Essentials of Advertising in Export Marketing;
3	**Export Finance**
	a) Methods of Payment In export marketing; Procedure to open Letter of Credit, Types and Benefits of Countertrade b) Features of Pre-Shipment and Post-shipment finance; Procedure to obtain Export Finance; Distinction between Pre-shipment Finance and Post Shipment Finance. c) Role of Commercial Banks, EXIM Bank, SIDBI in financing exporters; Role of ECGC
4	**Export Procedure and Documentation**
	a. Registration with different authorities; Pre-shipment Procedure involved in Exports; Procedure of Quality Control and Pre-shipment Inspection; b. Shipping and Custom Stage Formalities; Role of Clearing & Forwarding Agent; Post-shipment Procedure for Realisation of Export Proceeds; Procedure of Export under Bond and Letter of Undertaking. (LUT) c. Importance of - Commercial Invoice cum Packing list, Bill of Lading/ Airway Bill, Shipping Bill/Bill of Export, Consular Invoice, Certificate of Origin

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

4. Marketing Research Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Applications of Marketing Research-I	12
2	Applications of Marketing Research-II	11
3	Applications of Marketing Research-III	11
4	Managing Marketing Research	11
	Total	**45**

Sr. No.	Modules / Units
1	**Applications of Marketing Research-I**
	a. Product Research- concept, areas, steps in new product development Product Testing & Test Marketing- concept, methods b. Brand Research- concept, components of a Brand, importance of brand research Packaging Research- concept, importance c. Price Research- concept, factors influencing pricing, importance of price research, methods of price research
2	**Applications of Marketing Research-II**
	a. Physical Distribution research- concept, types of distribution channels, Supply Chain Management- concept, components of supply chain management, importance of physical distribution research b. Promotion Research- concept, elements of promotion, importance of promotion research Advertising Research- concept, scope, pre & post testing methods of advertising effectiveness c. Consumer Research- concept, objectives, methods Motivation Research- concept, importance
3	**Applications of Marketing Research-III**
	a. Sales Research- concept, significance, scope/areas b. Rural Marketing Research-concept, features of Indian rural market, sources of data, research tools, do's and don'ts in rural Marketing Research c. Global Marketing Research- concept, factors affecting Global Marketing , need and scope of Global Marketing Research
4	**Managing Marketing Research**
	a. Organizing Marketing Research activity- factors involved in organizing Marketing Research activity, methods of organizing Marketing Research activity, In house marketing department,--structure, merits , demerits b. Professional Marketing Research agencies- structure, merits, demerits, professional standards c. Prominent Marketing Research agencies- HTA, ORG, IMRB, NCAER, Nielson

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

5. Investment Analysis and Portfolio Management Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Fundamental Analysis	12
2	Technical Analysis	11
3	Efficient Market Theory	11
4	Capital Asset Pricing Model	11
	Total	**45**

Sr. No.	Modules / Units
1	**Fundamental Analysis**
	A) Economy Analysis – Meaning, Framework, Economic Analysis, Forecasting, Barometric or Indicator Approach, Econometric Model Building and Opportunistic Model Building. **B)** Industry Analysis – Concept of Analysis, Industry Life Cycle, Industry Characteristics Company Analysis – Financial Statements, Analysis of Financial Statements, (Practical questions on Debt equity ratios, total debt ratio, proprietary ratios, interest coverage ratio, Profitability ratios related to sales, investment and equity shares Efficiency or Activity Ratios) and Assessment of risk (Leverages)
2	**Technical Analysis**
	A) Dow Theory **B)** Meaning and Principles of Technical Analysis, Price Chart, Line Chart, Bar Chart, Japanese Candlestick Chart, Trends and Trend Reversals, Chart Patterns, Support and Resistance, Reversal Patterns, Continuation Patterns and Elliot Wave Theory **C)** Mathematical Indicators – Calculation of Moving Averages (Simple and Exponential Moving Average), Oscillators and Relative Strength Index **D)** Market Indicators **E)** Fundamental Analysis V/s Technical Analysis
3	**Efficient Market Theory**
	A) Random Walk Theory **B)** The Efficient Market Hypothesis **C)** Forms of Market Efficiency **D)** Competitive Market Hypothesis
4	**Capital Asset Pricing Model**
	A) CAPM – Fundamental Notions of Portfolio Theory, Assumption of CAPM, Efficient Frontier with Riskless Lending and Borrowing, Capital Market Line, Security Market Line and Pricing of Securities with CAPM. **B)** Arbitrage Pricing Theory (APT) – The Return Generating Model, Factors Affecting Stock Return, Expected Return on Stock, APT V/s CAPM.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

6. Transport Management Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Indian Surface Transport Service	11
2	Marketing of Transport Services	11
3	Transport Organisation	11
4	Safety Management Systems	12
	Total	**45**

Sr. No.	Modules / Units
1	**Indian Surface Transport Service**
	Development of Railway network and problem-changes in composition of passenger and freight traffic, Development of Road transport- Growth of Automobile Industry, Indian Motor Vehicle Acts, Urban transport problems with special defence to Mumbai
2	**Marketing of Transport Services**
	Marketing of transport services: Role of Advertising – Changes in fares and freight rates and their impact on demand, Regulation of transport services: Licensing policies, transport taxation, role of International bodies in transport development
3	**Transport Organisation**
	Water transport: Present status of Inland and Coastal Shipping in India, Growth of Merchant Shipping, International competition and problems of port. Air transport: Working of Indian Airlines and Air India - International Airport Authority of India – Air Cargo.
4	**Safety Management Systems**
	Overview and Understanding Safety, factors for improving safety on roads – causes of accidents due to drivers and pedestrians-design, selection, operation and maintenance of motor trucks, Responsibility for Management of Safety, Basics of Safety Management, Safety Training Programme

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

7. Entrepreneurship and Management of Small Scale Industries Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Micro, Small and Medium Enterprises	11
2	Setting-up of SSI/SME/MSME	11
3	Organization of SSI/SME/MSME	11
4	Specialized Focus Areas in Micro, Small and Medium Enterprises	12
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Micro, Small and Medium Enterprises**
	Unit-1: – • Meaning, Features, Concept of SSI • Role and Importance of SSI • Evolution and Growth of SSI since Independence in India w.r.t. 5-Year Plans in India • SSI Support Mechanism in India - Central and State Level, Government and Non-Government Agencies support to SSI with due emphasis to Concessions and Incentives **Unit-2:-** • Meaning, Features, Concept of Micro, Small and Medium Enterprises • Need and Significance of MSMEs • Evolution and Growth of MSMEs since Economic Liberalization in India • Role and Importance of MSMEs **Unit-3:-** • Meaning, Features, Concept of Industrial Sickness • Causes of Industrial Sickness • Consequences of Industrial Sickness • Remedies to Resolve the Problem of Industrial Sickness
2	**Setting-up of SSI/SME/MSME**
	Unit-1:- • Steps in Setting-up a SSI/SME/MSME • Registration Procedure – Benefits of Registration – De-registration • Environmental and Locational Issues – Environmental Clearance • Steps in Setting up a SSI/SME/MSME in India with Special Reference to Clearances and Permissions required **Unit-2:-** • Meaning, Features, Concept of Regulatory Environment in India • Brief insights relating to Laws affecting SSI/SME/MSME • MSME Policy in India - Highlights of MSMED Act, 2006 • Classification of Manufacturing and Service Industries under MSMED Act, 2006 **Unit-3:-** • Growth and Expansion of SSI/SME/MSME • Options available to SSI/SME/MSME for Growth and Expansion (Part-I): Ancillarisation, Licensing, Franchising • Options available to SSI/SME/MSME for Growth and Expansion (Part-II): Outsourcing, Insourcing • Options available to SSI/SME/MSME for Growth and Expansion (Part-III): Mergers, Acquisitions, Takeovers in India and at Global Level

Sr. No.	Modules / Units
3	**Organization of SSI/SME/MSME**
	Unit-1:- • Meaning, Features, Concept of Organisation Structure of SSI/SME/MSME • Overview of Principles of Management applicable in Management of SSI/SME/MSME - Types of Organisation of SSI/SME/MSME • Problems and Prospects of SSI/SME/MSME • Legal Framework and Regulations Governing SSI/SME/MSME - Government Measures, Policy Support, Taxation Benefits for SSI/SME/MSME **Unit-2:-** • Meaning, Features, Concept of SSI/SME/MSME Funding • Requirements of Capital (Fixed and Working) for SSI/SME/MSME • Factors Determining Capital (Fixed and Working) Requirements of SSI/SME/MSME • Sources of Institutional Finance to SSI/SME/MSME **Unit-3:-** • Meaning, Features, Concept of Marketing Mechanism in SSI/SME/MSME • Marketing related Problems of SSI/SME/MSME - Measures to Reduce Marketing related Problems of SSI/SME/MSME • Export Potential of SSI/SME/MSME - Export Incentives available to SSI/SME/MSME – SSI/SME/MSME and Special Economic Zones (SEZs) • Role of Self Help Groups (SHGs) in Development of SSI/SME/MSME
4	**Specialized Focus Areas in Micro, Small and Medium Enterprises**
	Unit-1:- • Meaning, Features, Concept, Significance of Rural Industries • Nature of activities involved in Rural Industries - Measures to Support and Promote Rural Industries • Meaning, Features, Concept, Significance and Role of Rural Artisans • Measures to Support and Promote Rural Artisans – Role of Government and Non-Government Agencies in Promoting Rural Artisans **Unit-2:-** • Meaning, Features, Concept, Significance of Agro-based Industries • Nature of activities involved in Agro-based Industries - Measures to Support and Promote Agro-based Industries • Meaning, Features, Concept of Ancillary Industries • Nature of activities involved in Ancillary Industries - Measures to Support and Promote Ancillary Industries **Unit-3:-** • Meaning and Concept of Industrial Estates • Features of Industrial Estates • Utility and Significance of Industrial Estates to SSI/SME/MSME Sector • Policy Initiatives and Measures to Revive Industrial Estates

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

8. International Marketing Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	International Marketing Channels & Physical Distribution	12
2	Procedures & Policy Framework in International Marketing	11
3	International Trade Promotion Organization	11
4	Export Assistance, Incentives & Documentation	11
	Total	**45**

Sr. No.	Modules / Units
1	**International Marketing Channels & Physical Distribution**
	a. International Marketing Channels- , Need and Importance. **b.** Method of Entry in International Market. Factors influencing selection of Suitable Channels. **c.** Physical Distribution – Importance, Scope and Problems.
2	**Procedures & Policy Framework in International Marketing**
	a. Foreign Trade Policy (FTP), 2015-20-Highlights and implications. **b.** Export Procedure- Registration Procedure, Role of Customs House Agent, Customs/Shipment Formalities, Procedure of Export Proceeds Realization. Procedure to obtain ISO Certification. **c.** Import Procedure involved in International Market.
3	**International Trade Promotion Organization**
	a. Export Marketing Organisation- and Types, Role and Functions of Export Promotion Councils, Commodity Board, IPP, FIEO, IIFT, DGFT, ITPO and IIP. **b.** Export Promotion Organisation- and Types. **c.** E- Marketing – Features Importance and Impact.
4	**Export Assistance, Incentives & Documentation**
	a. Main Assistance available for Exporters. **b.** Incentives available for exporters- Duty Drawback, EPCG, MDA, ASIDE, IRMAC. **c.** Export Documentation-and Importance, Main Export Documents- Commercial Invoice, Consular Invoice, Certificate of Origin, Shipping Bill, Mats Receipt, GR Form and Bill of Exchange.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

9. Merchant Banking Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Factoring	11
2	Securitization	11
3	Mergers, Acquisitions & Takeovers	11
4	Disinvestment and Buyback of Equity Shares	12
	Total	**45**

Sr. No.	Modules / Units
1	**Factoring**
	Factoring: Concept, Nature and Scope of Factoring, Forms of Factoring , Factoring vis-à-vis Bills Discounting , Factoring vis-àvis Credit Insurance, Factoring vis-à-vis Forfeiting, Evaluation of a factor , Evaluation of factoring, Status of Factoring in India.
2	**Securitization**
	Securitization / Mortgages: Meaning, Nature and Scope of Securitization, Securitization as a Funding Mechanism, Securitization of Residential Real Estate and Mortgages -Features, Types and Provisions. Security Brokerage: Meaning of Brokerage, Types of Brokers, Difference between Broker and Jobber, SEBI Regulations relating to brokerage business in India.
3	**Mergers, Acquisitions & Takeovers**
	Difference between Mergers, Acquisitions and Takeover, The Role of Merchant Banker in M&A and Takeovers, SEBI (Substantial Acquisition of Shares and Takeovers) Regulations, 2011 w.r.t Substantial acquisition of shares or voting rights, Voluntary Offer- Offer Size, Offer Price, Payment Mode, Exemptions and Process of Open Offer.
4	**Disinvestment and Buyback of Equity Shares**
	The Role of Merchant Banker in Disinvestment Process, Role and Obligations of Merchant Banker in Buyback of Equity Shares, Role of Merchant Banker in Delisting of Shares, Role of Merchant Banker in Issue and Listing of Debt Securities and The Role of Merchant Banker in ESOP

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

10. Direct and Indirect Taxation Paper - II
Goods and Service Tax Act

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	09
2	Levy and Collection of Tax	09
3	Time, Place and Value of Supply	09
4	Input Tax Credit & Payment of Tax	09
5	Registration under GST Law	09
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction**
	• What is GST • Need for GST • Dual GST Model • Definitions Section 2(17) Business Section 2(13) Consideration Section 2(45) Electronic Commerce Operator Section 2(52) Goods Section 2(56) India Section2 (78) Non taxable Supply Section 2(84) Person Section 2(90) Principal Supply Section 2(93) Recipient Section 2(98) Reverse charge Section 2(102) Services Section 2(105) Supplier Section 2(107) Taxable Person Section 2(108) Taxable Supply • Goods & Services Tax Network (GSTN)
2	**Levy and Collection of Tax**
	• Scope of Supply • Non taxable Supplies • Composite and Mixed Supplies • Composition Levy • Levy and Collection of tax • Exemption from tax
3	**Time, Place and Value of Supply**
	• Time of Supply • Place of Supply • Value of Supply
4	**Input Tax Credit & Payment of Tax**
	• Eligibility for taking Input Tax Credit • Input Tax Credit in Special Circumstances • Computation of Tax Liability and payment of tax
5	**Registration under GST Law**
	• Persons not liable registration • Compulsory registration • Procedure for registration • Deemed registration • Cancellation of registration

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

11. Labour Welfare and Practice Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Social Security	15
2	Labour Markets	10
3	Labour Force in India	10
4	Globalization &Labour	10
	Total	**45**

Sr. No.	Modules / Units
1	**Social Security**
	• Meaning, Definition &Objective of Social Security. • Various Social Security provisions made in India (Employees provident fund Act, Maternity benefit Act, Family Pension Scheme, Provision of Gratuity Act 1972) • Trade Union – Structure, Types & Functions.
2	**Labour Markets**
	• Demand for and supply of labour- determinants of demand for and supply of labour – • Mobility of Labour • Problems of Agricultural Labour, Child Labour and Female Labour
3	**Labour Force in India**
	• Factors determining Labour Force. • Labour Force & Human Development in India • Participation of workers in Management • Industrial disputes
4	**Globalization &Labour**
	• Globalisation & Labour Markets in India. • Impact of Labour Migration. • ILO- Aims & objectives & impact on Labour Welfare.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

12. Purchasing and Store Keeping Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Store Keeping and Materials Handling	12
2	Store Accounting and Store Record	11
3	Inventory Control	11
4	Logistics and Supply Chain Management (SCM)	11
	Total	**45**

Sr. No.	Modules / Units
1	**Store Keeping and Materials Handling**
	• **Store Keeping -** Concept, Meaning, Objectives, Functions of Storekeeping, Types of stores, Stages in storekeeping, Duties and Responsibilities of Storekeeper. • **Material handling** – Objective, Advantages & Principles, Protection and Preservation of materials in store. • **Store Location & Layout** – Location of Store House, Factors influencing store location, Objectives, Principles and Types of store layout.
2	**Store Accounting and Store Record**
	• **Store Accounting** – Objectives, Importance, Advantages, Need for Store Accounting, Methods of Valuation of Material – FIFO, LIFO, Simple average & Weighted average method • **Store Record** – Concept, Objectives, Need, and Documents required for Store Record • **Store Ledger & Bin card** – Meaning, Advantages of Store ledger and Bin card, Stock Audit, Lead time- Concept & Classification
3	**Inventory Control**
	• **Stock levels & Value analysis** – Types of stock level, Value analysis – Concept, Essentials & Steps. • **ABC analysis** – Purpose, Steps and Advantages of ABC analysis. • **Inventory Control** – Objectives, Advantages and Disadvantages of Periodical & Perpetual Inventory Control, Selective Inventory control techniques, Economic Order Quantity – Importance.
4	**Logistics and Supply Chain Management (SCM)**
	• **Logistics –** Concepts, Nature, Importance & Challenges • **Supply chain management –** concepts, Objectives, Benefits & Process of Supply Chain Management • **Recent trends in logistics & SCM –** Role of IT in logistics / SCM, Issues & Challenges in logistics, Logistics Outsourcing – Concept & Benefits.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

13. Insurance Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Life Insurance Products	11
2	General Insurance	11
3	Miscellaneous Coverage's	11
4	Insurance Business Environment in India	12
	Total	**45**

Sr. No.	Modules / Units
1	**Life Insurance Products**
	a. Different products offered by life insurers – term plans, pure endowment plans, combinations of plans, traditional products b. Market linked policies, of Annuities and group policies. c. Procedure for obtaining life insurance policy, procedure for settlement of Claims.
2	**General Insurance**
	a. Fire Insurance- Risks faced by the owner of assets – exposure to perils – features of products covering fire and allied perils, Procedure for obtaining fire insurance policy b. Marine Insurance- Products covering marine and transit risks -products covering financial losses due to accidents, Procedure for obtaining marine insurance policy c. Health insurance - Products covering financial losses due to hospitalization - products covering miscellaneous risks. Procedure for obtaining health/ Medi-claim insurance policy
3	**Miscellaneous Coverage's**
	a. Motor insurance – Liability only policy – Package policy –Personal Accident insurance b. Burglary insurance – Baggage insurance – Legal Liability insurance – Public & Product Liability insurances – Professional Indemnity insurance c. Workmen's Compensation insurance – Fidelity Guarantee insurance – Banker's Indemnity insurance – Carrier's Legal Liability insurance – Jeweller's Block insurance -Aviation insurance – Engineering insurance – Rural insurances – Micro insurance
4	**Insurance Business Environment in India**
	a. Specialised Insurances*:* Industrial All Risks insurance – Advance Loss of Profits insurance – Oil & Energy Risks insurance – Satellite insurance b. Challenges in Insurance Industry, LIC v/s Private Insurance Companies in India c. Recent trends in Insurance, Growth of Insurance Business, Actuarial Role, Reasons for attraction of Foreign Insurance Companies in India.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

14. Banking Law and Practice Paper - II
Corporate and Securities Law

Modules at a Glance

Sr. No.	Modules	No. of Lectures
01	Company Law – An Overview	12
02	Regulatory Framework Governing Stock Exchanges as per Securities Contracts Regulation Act 1956	11
03	Security Exchange Board of India	11
04	The Depositories Act, 1996	11
	Total	**45**

Sr. No.	Modules / Units
1	**Company Law – An Overview**
	• Development of Company Law in India • **Doctrines Governing Corporates** – Lifting the Corporate Veil**,** Doctrine of Ultra Vires, Constructive Notice, Indoor Management, Alter Ego. The Principle of Non Interference (Rule in Foss V/s Harbottle) – Meaning , Advantages , Disadvantages & Exceptions, Majority and Minority Rights under Companies Act • **Application of Company Law to Banking and Insurance Sector** Application of Companies Act to Banking and Insurance sector governed by Special Acts. S.1(4) of Companies Act 2013 Exceptions provided (S.67(3), S.73(1), S.129(1), 179(3), S.180(1)(c), S.186, S.189
2	**Regulatory Framework governing Stock Exchanges as per Securities Contracts Regulation Act 1956**
	• Definition of Securities, Spot Delivery Contract, Ready Delivery Contract, Stock Exchange. • Corporatisation and demutualisation of Stock Exchange –Meaning, Procedure & Withdrawal • Power of Recognised Stock Exchange to make rules restricting voting rights etc • Power of Central Government to Direct Rules or Make rules • Power of SEBI to make or amend bye laws of recognised stock exchange • Books and Accounts to be maintained by recognized stock exchange • Grounds on which stock exchange can delist the securities of a company. • Section 3 to Section 20
3	**Security Exchange Board of India**
	• SEBI: Objectives-terms-establishment-powers-functions-accounts and audit-penalties –registration. • Issues of Disclosure Investors Protection Guidelines: Pre & Post obligations-conditions for issue-Debt Security-IPO-E-IPO-Employee option-right-bonus-preferential allotment intermediary-operational-promoter lock in period requirements-offer document.
4	**The Depositories Act, 1996**
	• Depository – Meaning , Benefits , Models, Functions Participants • The Depository Act 1996 – Objectives, Eligibility condition for depository services, Fungibility, Bye laws of depository , Governance of Depository and Internal audit of depository Participants • BSDA and single registration for depository participants.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

15. Regional Planning Paper - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Regional Planning Strategies & Techniques	15
2	Regionalization of Planning in India	10
3	Regional Development in Maharashtra	10
4	Problem Regions and Case Studies	10
	Total	**45**

Sr. No.	Modules / Units
1	**Regional Planning Strategies & Techniques**
	• Regional planning strategies & techniques • Planning machinery & problems of co-ordination – integrated area development • Multi-level nature of planning in India, specific contribution of planning at different levels.
2	**Regionalization of Planning in India**
	• Regionalization of planning in India: an assessment • Regional development & efficiency • Ecological dimension – strategy for future.
3	**Regional Development in Maharashtra**
	• Regional development in Maharashtra – regional backlogs causative factors. • Strategies for regional development – achievements & failures • Strategy for future.
4	**Problem Regions and Case Studies**
	• Problem regions: Nature of problems& strategies for its solution • Case Studies: Mumbai Metropolitan Region-Vidharbha, South Kokan, Marathwada, Western Ghats, Sugarcane growing areas

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

16. Rural Marketing Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Agricultural Marketing	11
2	Rural Marketing and Market Regulation	12
3	Institutional Support to Rural Marketing	11
4	Problems in Rural Marketing	11
	Total	**45**

Sr. No.	Modules / Units
1	**Agricultural Marketing**
	a. Agricultural Marketing- Concept, Nature and Types, Agriculture produce-concept and types of Agricultural Markets. b. Marketing agencies, Risks involved in marketing, Types of risks, Measures to minimise risks c. Contract Marketing (Farmer – Processor linkage), Marketing channels for agricultural produce
2	**Rural Marketing and Market Regulation**
	a. Regulated Market- APMC Act 1963, Standardisation and Grading, Inspection of quality, AGMARK b. The National Council for State Marketing Boards (NCOSAMB) State Trading corporation (STC), Public Distribution System(PDS) – Need and importance c. Fruit Products order (FPO) 1955 - objectives, Consumer Protection Act 1986-Rights of Consumers
3	**Institutional Support to Rural Marketing**
	a. Commission on Agriculture Costs and Prices (CACP)- Role, Functions and Importance b. National Agriculture Co-operative Marketing Federation (NAFED)-Role, Functions and Importance c. Agriculture and Processed Food Exports Development Authority (APEDA)-Role, Functions and Importance
4	**Problems in Rural Marketing**
	a. Problems in rural marketing---Strategies for rural marketing--- Integration, Efficiency, Cost and Price Spread b. Need for marketing finance, Source of marketing finance, Non Institutional---Institutions---Commercial Banks---PACS, Farmers Service Societies (FSS), RRBs and NABARD c. Challenges and recent trends in rural marketing

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

17. Elements of Operational Research Paper - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Project Analysis	15
2	Theory of Games	15
3	Inventory Models	15
	Total	**45**

Sr. No.	Modules / Units
1	**Project Analysis**
	Basic concepts and Definitions, Gannt Charts and its weaknesses, CPM and PERT networks, Numbering of Events, Contractual Obligation Time, Earliest occurrence time, Latest allowable occurrence Time and Slack Time for Events, Different types of floats for activities. Critical Path Calculations, Probability Assessment in PERT Networks. Time Cost Trade - Off Analysis for CPM Networks
2	**Theory of Games**
	Basic Concept and Definitions. Two Person Zero Sum Game. Saddle point, Pure and Mixed Strategies. Reducing the size of the game using dominance property. Optimum Solution to a 2x2 game without saddle point. Graphical solution to 2xn and mx2 games.
3	**Inventory Models**
	Costs in Inventory management Deterministic Inventory Models- EOQ Model with Instantaneous Replenishment and Constant Rate of Demand Assuming that shortages are not allowed (Mathematical derivation expected), its price break model. Other EOQ models with instantaneous/uniform rate of replenishment and constant rate of demand assuming shortages are allowed/not allowed.

Elective Courses (EC)

2. Ability Enhancement Courses (AEC)

18. Psychology of Human Behavior at Work Paper-II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Understanding Work Teams	11
2	Conflict and Negotiation	11
3	Emotions and Moods	12
4	Organizational Change and Stress Management	11
	Total	**45**

Sr. No.	Modules / Units
1	**Understanding Work Teams**
	a) Differences between groups and teams; Types of teams b) Creating effective teams
2	**Conflict and Negotiation**
	a) Defining Conflict; transitions in conflict thought b) The Conflict Process c) Negotiation: Bargaining strategies; the negotiation process
3	**Emotions and Moods**
	a) What are Emotions and Moods? The basic emotions; sources of emotions and moods b) Emotional Intelligence c) Organizational Behaviour applications of emotions and moods
4	**Organizational Change and Stress Management**
	a) a Forces for Change **b)** Work Stress and its Management

Reference Books

Reference Books
Elective Courses (EC)
Discipline Specific Elective (DSE) Courses
Group A: Advanced Accountancy
1. Financial Accounting and Auditing IX- Financial Accounting
• *Ashish K. Bhattacharyya – "Financial Accounting for Business Managers", Prentice Hall of India Pvt. Ltd.* • *Shashi K. Gupta – "Contemporary Issues in Accounting", Kalyani Publishers.* • *R. Narayanaswamy – "Financial Accounting", Prentice Hall of India, New Delhi* • *Ashok Sehgal – "Fundamentals of Financial Accounting", Taxmann's Publishers* • *Financial Accounting Reporting – Barry Elliot and Jamie Elliot – Prentice Hall (14th Edition*
2. Financial Accounting and Auditing X- Cost Accounting
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- *McShane, S. L., Glinow, M. A., Sharma, R. R. (2012) Organisational behavior. (5th ed.): Tata McGraw Hill, New Delhi.*
- *Pareek, U. & Khanna, S. (2011). Understanding organizational behavior. Oxford University Press*
- *Rajendra, P. Maheshwari, J. & Mahajan, P. (2012). Business organization management. (2nd Revised ed.) New Delhi: International Book House.*
- *Riggio, R. (2012). Introduction to industrial and organizational psychology. Pearson Education*
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- *Shankar, M. (2013). Organizational behavior. International Book House*
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Revised Syllabus of Courses of B.Com. Programme at Semester V and VI with effect from the Academic Year 2018-2019

Question Paper Pattern

(Practical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-6 Q-6	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 or 10/5 Marks.

Revised Syllabus of Courses of B.Com. Programme at Semester V and VI with effect from the Academic Year 2018-2019

Question Paper Pattern

(Theoretical Courses)

Maximum Marks: 100

Questions to be set: 06

Duration: 03 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered any 10 B) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	20 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-6 Q-6	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 06 To be answered 04	10 Marks 10 Marks 20 Marks

Note:

Theory question of 15 marks may be divided into two sub questions of 7/8 or 10/5 Marks.

UNIVERSITY OF MUMBAI
No. UG/176 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the B.Sc. degree course , **vide** this office Circular No. UG/177 of 2011, dated 20th June, 2011 and the Principals of affiliated Colleges in Arts, Science and Commerce are hereby informed that the recommendation made by the Ad-hoc Board of Studies in Information Technology at its meeting held on 4th July, 2016 has been accepted by the Academic Council at its meeting held on 14th July, 2016 **vide** item No. 4.76 and that in accordance therewith, the revised syllabus as per the Choice Based Credit System for F.Y. B.Sc. programme in Information Technology (Sem. I & II), which is available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI – 400 032
22 November, 2016

(Dr.M.A.Khan)
REGISTRAR

To,

The Principals of the affiliated Colleges in Arts, Science and Commerce.

A.C/4.76/14.07.2016

****

No. UG/176 -A of 2016 MUMBAI-400 032 22 November, 2016

Copy forwarded with Compliments for information to:-

1) The Co-ordinator, Faculty of Science,
2) The Chairman, Board of Studies in Information Technology,
3) The Professor-cum-Director, Institute of Distance & Open Learning (IDOL)
4) The Director, Board of College and University Development,
5) The Co-Ordinator, University Computerization Centre,
6) The Controller of Examinations.

(Dr.M.A.Khan)
REGISTRAR

PTO..

Academic Council 14/07/2016
Item No: 4.76

UNIVERSITY OF MUMBAI

Syllabus for F.Y.B.Sc.

Programme: B.Sc.

Course: Information Technology

with effect from the academic year

2016 – 2017

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Semester – 1			
Course Code	**Course Type**	**Course Title**	**Credits**
USIT101	Core Subject	Imperative Programming	2
USIT102	Core Subject	Digital Electronics	2
USIT103	Core Subject	Operating Systems	2
USIT104	Core Subject	Discrete Mathematics	2
USIT105	Ability Enhancement Skill Course	Communication Skills	2
USIT1P1	Core Subject Practical	Imperative Programming Practical	2
USIT1P2	Core Subject Practical	Digital Electronics Practical	2
USIT1P3	Core Subject Practical	Operating Systems Practical	2
USIT1P4	Core Subject Practical	Discrete Mathematics Practical	2
USIT1P5	Ability Enhancement Skill Course Practical	Communication Skills Practical	2
		Total Credits	**20**

Semester – 2			
Course Code	**Course Type**	**Course Title**	**Credits**
USIT201	Core Subject	Object oriented Programming	2
USIT202	Core Subject	Microprocessor Architecture	2
USIT203	Core Subject	Web Programming	2
USIT204	Core Subject	Numerical and Statistical Methods	2
USIT205	Ability Enhancement Skill Course	Green Computing	2
USIT2P1	Core Subject Practical	Object Oriented Programming Practical	2
USIT2P2	Core Subject Practical	Microprocessor Architecture Practical	2
USIT2P3	Core Subject Practical	Web Programming Practical	2
USIT2P4	Core Subject Practical	Numerical and Statistical Methods Practical	2
USIT2P5	Ability Enhancement Skill Course Practical	Green Computing Practical	2
		Total Credits	**20**

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Preamble

The B.Sc. Information Technology programme was started in 2001 with an aim to make the students employable and impart industry oriented training. The main objectives of the course are:

- to think analytically, creatively and critically in developing robust, extensible and highly maintainable technological solutions to simple and complex problems.
- to apply their knowledge and skills to be employed and excel in IT professional careers and/or to continue their education in IT and/or related post graduate programmes.
- to be capable of managing complex IT projects with consideration of the human, financial and environmental factors.
- to work effectively as a part of a team to achieve a common stated goal.
- to adhere to the highest standards of ethics, including relevant industry and organizational codes of conduct.
- to communicate effectively with a range of audiences both technical and non-technical.
- to develop an aptitude to engage in continuing professional development.

The new syllabus is aimed to achieve the objectives. The syllabus spanning three years covers the industry relevant courses. The students will be ready for the jobs available in different fields like:

- Software Development (Programming)
- Website Development
- Mobile app development
- Embedded Systems Programming
- Embedded Systems Development
- Software Testing
- Networking
- Database Administration
- System Administration
- Cyber Law Consultant
- GIS (Geographic Information Systems)
- IT Service Desk
- Security

And many others

The students will also be trained in communication skills and green computing.

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SEMESTER I

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B. Sc (Information Technology)		Semester – I	
Course Name: Imperative Programming		**Course Code: USIT101**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction:** Types of Programming languages, History, features and application. Simple program logic, program development cycle, pseudocode statements and flowchart symbols, sentinel value to end a program, programming and user environments, evolution of programming models., desirable program characteristics. **Fundamentals:** Structure of a program. Compilation and Execution of a Program, Character Set, identifiers and keywords, data types, constants, variables and arrays, declarations, expressions, statements, Variable definition, symbolic constants.	**12**
II	**Operators and Expressions:** Arithmetic operators, unary operators, relational and logical operators, assignment operators, assignment operators, the conditional operator, library functions. **Data Input and output:** Single character input and output, entering input data, scanf function, printf function, gets and puts functions, interactive programming.	**12**
III	**Conditional Statements and Loops:** Decision Making Within A Program, Conditions, Relational Operators, Logical Connectives, If Statement, If-Else Statement, Loops: While Loop, Do While, For Loop. Nested Loops, Infinite Loops, Switch Statement **Functions:** Overview, defining a function, accessing a function, passing arguments to a function, specifying argument data types, function prototypes, recursion, modular programming and functions, standard library of c functions, prototype of a function: foo1lal parameter list, return type, function call, block structure, passing arguments to a function: call by reference, call by value.	**12**
IV	**Program structure:** Storage classes, automatic variables, external variables, static variables, multifile programs, more library functions, **Preprocessor:** Features, #define and #include, Directives and Macros **Arrays:** Definition, processing, passing arrays to functions, multidimensional arrays, arrays and strings.	**12**
V	**Pointers:** Fundamentals, declarations, Pointers Address Operators, Pointer Type Declaration, Pointer Assignment, Pointer Initialization, Pointer Arithmetic, Functions and Pointers, Arrays And Pointers, Pointer Arrays, passing functions to other functions	**12**

	Structures and Unions: Structure Variables, Initialization, Structure Assignment, Nested Structure, Structures and Functions, Structures and Arrays: Arrays of Structures, Structures Containing Arrays, Unions**,** Structures and pointers.	

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Programming with C	Byron Gottfried	Tata McGRAW-Hill	2nd	1996
2.	Programming Logic and Design	Joyce Farell	Cengage Learning	8th	2014
3.	"C" Programming"	Brian W. Kernighan and Denis M. Ritchie.	PHI	2nd	
4.	Let us C	Yashwant P. Kanetkar,	BPB publication		
5.	C for beginners	Madhusudan Mothe	X-Team Series	1st	2008
6.	21st Century C	Ben Klemens	OReilly	1st	2012

B. Sc (Information Technology)		Semester – I	
Course Name: Imperative Programming Practical		**Course Code: USIT1P2**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical: (Can be done in any imperative language)	
1.	**Basic Programs:**
a.	Write a program to display the message HELLO WORLD.
b.	Write a program to declare some variables of type int, float and double. Assign some values to these variables and display these values.
c.	Write a program to find the addition, subtraction, multiplication and division of two numbers.
2.	**Programs on variables:**
a.	Write a program to swap two numbers without using third variable.
b.	Write a program to find the area of rectangle, square and circle.
c.	Write a program to find the volume of a cube, sphere, and cylinder.
3.	**Conditional statements and loops(basic)**
a.	Write a program to enter a number from the user and display the month name. If number >13 then display invalid input using switch case.
b.	Write a program to check whether the number is even or odd.
c.	Write a program to check whether the number is positive, negative or zero.
d.	Write a program to find the factorial of a number.
e.	Write a program to check whether the entered number is prime or not.
f.	Write a program to find the largest of three numbers.
4.	**Conditional statements and loops(advanced)**
a.	Write a program to find the sum of squares of digits of a number.
b.	Write a program to reverse the digits of an integer.
c.	Write a program to find the sum of numbers from 1 to 100.
d.	Write a programs to print the Fibonacci series.
e.	Write a program to find the reverse of a number.
f.	Write a program to find whether a given number is palindrome or not.
g.	Write a program that solve the quadratic equation $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
h.	Write a program to check whether the entered number is Armstrong or not.
i.	Write a program to count the digit in a number
5.	**Programs on patterns:**
a.	Programs on different patterns.

6.	**Functions:**
a.	Programs on Functions.
7.	**Recursive functions**
a.	Write a program to find the factorial of a number using recursive function.
b.	Write a program to find the sum of natural number using recursive function.
8.	**Arrays**
a.	Write a program to find the largest value that is stored in the array.
b.	Write a program using pointers to compute the sum of all elements stored in an array.
c.	Write a program to arrange the 'n' numbers stored in the array in ascending and descending order.
d.	Write a program that performs addition and subtraction of matrices.
e.	Write a program that performs multiplication of matrices.
9.	**Pointers**
a.	Write a program to demonstrate the use of pointers.
b.	Write a program to perform addition and subtraction of two pointer variables.
10.	**Structures and Unions**
a.	Programs on structures.
b.	Programs on unions.

B. Sc (Information Technology)		Semester – I	
Course Name: Digital Electronics		**Course Code: USIT102**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Number System:** Analog System, digital system, numbering system, binary number system, octal number system, hexadecimal number system, conversion from one number system to another, floating point numbers, weighted codes binary coded decimal, non-weighted codes Excess – 3 code, Gray code, Alphanumeric codes – ASCII Code, EBCDIC, ISCII Code, Hollerith Code, Morse Code, Teletypewriter (TTY), Error detection and correction, Universal Product Code, Code conversion. **Binary Arithmetic:** Binary addition, Binary subtraction, Negative number representation, Subtraction using 1's complement and 2's complement, Binary multiplication and division, Arithmetic in octal number system, Arithmetic in hexadecimal number system, BCD and Excess – 3 arithmetic.	**12**
II	**Boolean Algebra and Logic Gates:** Introduction, Logic (AND OR NOT), Boolean theorems, Boolean Laws, De Morgan's Theorem, Perfect Induction, Reduction of Logic expression using Boolean Algebra, Deriving Boolean expression from given circuit, exclusive OR and Exclusive NOR gates, Universal Logic gates, Implementation of other gates using universal gates, Input bubbled logic, Assertion level. **Minterm, Maxterm and Karnaugh Maps:** Introduction, minterms and sum of minterm form, maxterm and Product of maxterm form, Reduction technique using Karnaugh maps – 2/3/4/5/6 variable K-maps, Grouping of variables in K-maps, K-maps for product of sum form, minimize Boolean expression using K-map and obtain K-map from Boolean expression, Quine Mc Cluskey Method.	**12**
III	**Combinational Logic Circuits:** Introduction, Multi-input, multi-output Combinational circuits, Code converters design and implementations **Arithmetic Circuits:** Introduction, Adder, BCD Adder, Excess – 3 Adder, Binary Subtractors, BCD Subtractor, Multiplier, Comparator.	**12**
IV	**Multiplexer, Demultiplexer, ALU, Encoder and Decoder:** Introduction, Multiplexer, Demultiplexer, Decoder, ALU, Encoders. **Sequential Circuits: Flip-Flop:** Introduction, Terminologies used, S-R flip-flop, D flip-fop, JK flip-flop, Race-around condition, Master – slave JK flip-flop, T flip-flop,	**12**

	conversion from one type of flip-flop to another, Application of flip-flops.	
V	**Counters:** Introduction, Asynchronous counter, Terms related to counters, IC 7493 (4-bit binary counter), Synchronous counter, Bushing, Type T Design, Type JK Design, Presettable counter, IC 7490, IC 7492, Synchronous counter ICs, Analysis of counter circuits. **Shift Register:** Introduction, parallel and shift registers, serial shifting, serial–in serial–out, serial–in parallel–out , parallel–in parallel–out, Ring counter, Johnson counter, Applications of shift registers, Pseudo-random binary sequence generator, IC7495, Seven Segment displays, analysis of shift counters.	**12**

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Digital Electronics and Logic Design	N. G. Palan	Technova		
2.	Make Electronics	Charles Platt	O'Reilly	1st	2010
3.	Modern Digital Electronics	R. P. Jain	Tata McGraw Hill	3rd	
4.	Digital Principles and Applications	Malvino and Leach	Tata McGraw Hill		
5.	Digital Electronics: Principles, Devices and Applications,	Anil K. Maini	Wiley		2007

B. Sc (Information Technology)		Semester – I	
Course Name: Digital Electronics Practical		**Course Code: USIT1P2**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	**Study of Logic gates and their ICs and universal gates:**
a.	Study of AND, OR, NOT, XOR, XNOR, NAND and NOR gates
b.	IC 7400, 7402, 7404, 7408, 7432, 7486, 74266
c.	Implement AND, OR, NOT, XOR, XNOR using NAND gates.
d.	Implement AND, OR, NOT, XOR, XNOR using NOR gates.
2.	**Implement the given Boolean expressions using minimum number of gates.**
a.	Verifying De Morgan's laws.
b.	Implement other given expressions using minimum number of gates.
c.	Implement other given expressions using minimum number of ICs.
3.	**Implement combinational circuits.**
a.	Design and implement combinational circuit based on the problem given and minimizing using K-maps.
4.	**Implement code converters.**
a.	Design and implement Binary – to – Gray code converter.
b.	Design and implement Gray – to – Binary code converter.
c.	Design and implement Binary – to – BCD code converter
d.	Design and implement Binary – to – XS-3 code converter
5.	**Implement Adder and Subtractor Arithmetic circuits.**
a.	Design and implement Half adder and Full adder.
b.	Design and implement BCD adder.
c.	Design and implement XS – 3 adder.
d.	Design and implement binary subtractor.
e.	Design and implement BCD subtractor.
f.	Design and implement XS – 3 subtractor.
6.	**Implement Arithmetic circuits.**
a.	Design and implement a 2-bit by 2-bit multiplier.
b.	Design and implement a 2-bit comparator.
7.	**Implement Encode and Decoder and Multiplexer and Demultiplexers.**
a.	Design and implement 8:3 encoder.
b.	Design and implement 3:8 decoder.
c.	Design and implement 4:1 multiplexer. Study of IC 74153, 74157
d.	Design and implement 1:4 demultiplexer. Study of IC 74139
e.	Implement the given expression using IC 74151 8:1 multiplexer.
f.	Implement the given expression using IC 74138 3:8 decoder.

8.	**Study of flip-flops and counters.**
a.	Study of IC 7473.
b.	Study of IC 7474.
c.	Study of IC 7476.
d.	Conversion of Flip-flops.
e.	Design of 3-bit synchronous counter using 7473 and required gates.
f.	Design of 3-bit ripple counter using IC 7473.
9.	**Study of counter ICs and designing Mod-N counters.**
a.	Study of IC 7490, 7492, 7493 and designing mod-n counters using these.
b.	Designing mod-n counters using IC 7473 and 7400 (NAND gates)
10.	**Design of shift registers and shift register counters.**
a.	Design serial – in serial – out, serial – in parallel – out, parallel – in serial – out, parallel – in parallel – out and bidirectional shift registers using IC 7474.
b.	Study of ID 7495.
c.	Implementation of digits using seven segment displays.

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Digital Electronics and Logic Design	N. G. Palan	Technova		
2.	Digital Principles and Applications	Malvino and Leach	Tata McGraw Hill		

B. Sc (Information Technology)		Semester – I	
Course Name: Operating Systems		**Course Code: USIT103**	
Periods per week 1 Period is 50 minutes		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction:** What is an operating system? History of operating system, computer hardware, different operating systems, operating system concepts, system calls, operating system structure. **Processes and Threads:** Processes, threads, interprocess communication, scheduling, IPC problems.	**12**
II	**Memory Management:** No memory abstraction, memory abstraction: address spaces, virtual memory, page replacement algorithms, design issues for paging systems, implementation issues, segmentation. **File Systems:** Files, directories, file system implementation, file-system management and optimization, MS-DOS file system, UNIX V7 file system, CD ROM file system.	**12**
III	**Input-Output:** Principles of I/O hardware, Principles of I/O software, I/O software layers, disks, clocks, user interfaces: keyboard, mouse, monitor, thin clients, power management, **Deadlocks:** Resources, introduction to deadlocks, the ostrich algorithm, deadlock detection and recovery, deadlock avoidance, deadlock prevention, issues.	**12**
IV	**Virtualization and Cloud:** History, requirements for virtualization, type 1 and 2 hypervisors, techniques for efficient virtualization, hypervisor microkernels, memory virtualization, I/O virtualization, Virtual appliances, virtual machines on multicore CPUs, Clouds. **Multiple Processor Systems** Multiprocessors, multicomputers, distributed systems.	**12**
V	**Case Study on LINUX and ANDROID:** History of Unix and Linux, Linux Overview, Processes in Linux, Memory management in Linux, I/O in Linux, Linux file system, security in Linux. Android **Case Study on Windows:** History of windows through Windows 10, programming windows, system structure, processes and threads in windows, memory management, caching in windows, I/O in windows, Windows NT file system, Windows power management, Security in windows.	**12**

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Modern Operating Systems	Andrew S. Tanenbaum, Herbert Bos	Pearson	4th	2014
2.	Operating Systems – Internals and Design Principles	Willaim Stallings	Pearson	8th	2009
3.	Operating System Concepts	Abraham Silberschatz, Peter B. Galvineg Gagne	Wiley	8th	
4.	Operating Systems	Godbole and Kahate	McGraw Hill	3rd	

B. Sc (Information Technology)		Semester – II	
Course Name: Operating Systems Practical		**Course Code: USIT1P3**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	Installation of virtual machine software.
2.	Installation of Linux operating system (RedHat / Ubuntu) on virtual machine.
3.	Installation of Windows operating system on virtial machine.
4.	**Linux commands: Working with Directories:**
a.	pwd, cd, absolute and relative paths, ls, mkdir, rmdir,
b.	file, touch, rm, cp. mv, rename, head, tail, cat, tac, more, less, strings, chmod
5.	**Linux commands: Working with files:**
a.	ps, top, kill, pkill, bg, fg,
b.	grep, locate, find, locate.
c.	date, cal, uptime, w, whoami, finger, uname, man, df, du, free, whereis, which.
d.	Compression: tar, gzip.
6.	**Windows (DOS) Commands – 1**
a.	Date, time, prompt, md, cd, rd, path.
b.	Chkdsk, copy, xcopy, format, fidsk, cls, defrag, del, move.
7.	**Windows (DOS) Commands – 2**
a.	Diskcomp, diskcopy, diskpart, doskey, echo
b.	Edit, fc, find, rename, set, type, ver
8.	**Working with Windows Desktop and utilities**
a.	Notepad
b.	Wordpad
c.	Paint
d.	Taskbar
e.	Adjusting display resolution
f.	Using the browsers
g.	Configuring simple networking
h.	Creating users and shares
9.	**Working with Linux Desktop and utilities**
a.	The vi editor.
b.	Graphics
c.	Terminal

d.	Adjusting display resolution
e.	Using the browsers
f.	Configuring simple networking
g.	Creating users and shares
10.	**Installing utility software on Linux and Windows**

B. Sc. (Information Technology)		Semester – I	
Course Name: Discrete Mathematics		**Course Code: USIT104**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction**: Variables, The Language of Sets, The Language of Relations and Function **Set Theory**: Definitions and the Element Method of Proof, Properties of Sets, Disproofs, Algebraic Proofs, Boolean Algebras, Russell's Paradox and the Halting Problem. **The Logic of Compound Statements**: Logical Form and Logical Equivalence, Conditional Statements, Valid and Invalid Arguments	**12**
II	**Quantified Statements**: Predicates and Quantified Statements, Statements with Multiple Quantifiers, Arguments with Quantified Statements **Elementary Number Theory and Methods of Proof**: Introduction to Direct Proofs, Rational Numbers, Divisibility, Division into Cases and the Quotient-Remainder Theorem, Floor and Ceiling, Indirect Argument: Contradiction and Contraposition, Two Classical Theorems, Applications in algorithms.	**12**
III	**Sequences, Mathematical Induction, and Recursion**: Sequences, Mathematical Induction, Strong Mathematical Induction and the Well-Ordering Principle for the Integers, Correctness of algorithms, defining sequences recursively, solving recurrence relations by iteration, Second order linear homogenous recurrence relations with constant coefficients. general recursive definitions and structural induction. **Functions**: Functions Defined on General Sets, One-to-One and Onto, Inverse Functions, Composition of Functions, Cardinality with Applications to Computability	**12**
IV	**Relations**: Relations on Sets, Reflexivity, Symmetry, and Transitivity, Equivalence Relations, Partial Order Relations **Graphs and Trees**: Definitions and Basic Properties, Trails, Paths, and Circuits, Matrix Representations of Graphs, Isomorphism's of Graphs, Trees, Rooted Trees, Isomorphism's of Graphs, Spanning trees and shortest paths.	**12**
V	**Counting and Probability:** Introduction, Possibility Trees and the Multiplication Rule, Possibility Trees and the Multiplication Rule, Counting Elements of Disjoint Sets: The Addition Rule, The Pigeonhole Principle, Counting Subsets of a Set: Combinations, r-Combinations with Repetition Allowed, Probability Axioms and Expected Value, Conditional Probability, Bayes' Formula, and Independent Events.	**12**

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Discrete Mathematics with Applications	Sussana S. Epp	Cengage Learning	4^{th}	2010
2.	Discrete Mathematics, Schaum's Outlines Series	Seymour Lipschutz, Marc Lipson	Tata MCGraw Hill		2007
3.	Discrete Mathematics and its Applications	Kenneth H. Rosen	Tata MCGraw Hill		
4.	Discrete mathematical structures	B Kolman RC Busby, S Ross	PHI		
5.	Discrete structures	Liu	Tata MCGraw Hill		

B. Sc. (Information Technology)		Semester – I	
Course Name: Discrete Mathematics Practical		**Course Code: USIT1P4**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical: Write the programs for the following using SCILAB	
1.	**Set Theory**
a.	Inclusion Exclusion principle.
b.	Power Sets
c.	Mathematical Induction
2.	**Functions and Algorithms**
a.	Recursively defined functions
b.	Cardinality
c.	Polynomial evaluation
d.	Greatest Common Divisor
3.	**Counting**
a.	Sum rule principle
b.	Product rule principle
c.	Factorial
d.	Binomial coefficients
e.	Permutations
f.	Permutations with repetitions
g.	Combinations
h.	Combinations with repetitions
i.	Ordered partitions
j.	Unordered partitions
4.	**Probability Theory**
a.	Sample space and events
b.	Finite probability spaces
c.	Equiprobable spaces
d.	Addition Principle
e.	Conditional Probability
f.	Multiplication theorem for conditional probability
g.	Independent events
h.	Repeated trials with two outcomes
5.	**Graph Theory**
a.	Paths and connectivity
b.	Minimum spanning tree
c.	Isomorphism

6.	**Directed Graphs**
a.	Adjacency matrix
b.	Path matrix
7.	**Properties of integers**
a.	Division algorithm
b.	Primes
c.	Euclidean algorithm
d.	Fundamental theorem of arithmetic
e.	Congruence relation
f.	Linear congruence equation
8.	**Algebraic Systems**
a.	Properties of operations
b.	Roots of polynomials
9.	**Boolean Algebra**
a.	Basic definitions in Boolean Algebra
b.	Boolean algebra as lattices
10.	**Recurrence relations**
a.	Linear homogeneous recurrence relations with constant coefficients
b.	Solving linear homogeneous recurrence relations with constant coefficients
c.	Solving general homogeneous linear recurrence relations

B. Sc (Information Technology)		Semester – I	
Course Name: Communication Skills		**Course Code: USIT105**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**The Seven Cs of Effective Communication:** Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness **Understanding Business Communication:** Nature and Scope of Communication, Non-verbal Communication, Cross-cultural communication, Technology-enabled Business Communication	**12**
II	**Writing Business Messages and Documents:** Business writing, Business Correspondence, Instructions Business Reports and Proposals, Career building and Resume writing. **Developing Oral Communication Skills for Business:** Effective Listening, Business Presentations and Public Speaking, Conversations, Interviews	**12**
III	**Developing Oral Communication Skills for Business:** Meetings and Conferences, Group Discussions and Team Presentations, Team Briefing, **Understanding Specific Communication Needs:** Communication across Functional Areas	**12**
IV	**Understanding Specific Communication Needs:** Corporate Communication, Persuasive Strategies in Business Communication, Ethics in Business Communication, Business Communication Aids	**12**
V	**Presentation Process:** Planning the presentations, executing the presentations, Impressing the audience by performing, Planning stage: Brainstorming, mind maps / concept maps, executing stage: chunking theory, creating outlines, Use of templates. Adding graphics to your presentation: Visual communication, Impress stage: use of font, colour, layout, Importance of practice and performance.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Business Communication	Edited by Meenakshi Raman and Prakash Singh	Oxford University Press	Second	
2.	Professional Communication	Aruna Koneru	Tata McGraw Hill		

3.	Strategies for improving your business communication	Prof. M. S. Rao	Shroff publishers and distributors		2016
4.	Business Communication	Dr. Rishipal and Dr. Jyoti Sheoran	SPD		2014
5.	Graphics for Learning: Proven Guidelines for Planning, Designing, and Evaluating Visuals in Training Materials	Ruth C. Clark, Chopeta Lyons,	Pfeiffer, Wiley		2011
6.	Basic Business Communication: Skills for Empowering the Internet Generation	Lesikar Raymond V and Marie E. Flatley.	Tata McGraw-Hill	10^{th}	2005
7.	Nonverbal Communication: Notes on the Visual Perception of Human Relations	Ruesh, Jurgen and Weldon Kees	University of California Press		1966
8.	Business Communication Today	Bovee, Courtland L.; Thill, John V.	Pearson Education Ltd.		2015
9.	Communication Skills	Dr. Nageshwar Rao Dr. Rajendra P. Das	Himalaya Publishing House		

B. Sc (Information Technology)		Semester – I	
Course Name: Communication Skills Practical		Course Code: USIT1P5	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

List of Practical Questions:	
1.	Communication Origami, Guessing Game, Guessing the emotion
2.	Body Language, Follow All Instructions, Effective Feedback Skills
3.	The Name Game, Square Talk (Effective Communication), Room 101 (Influential and persuasive skills)
4.	Back to Back Communication, Paper Shapes (Importance of two-way communication), Memory Test(Presentation Skills)
5.	Exercises on Communication Principles
6.	Exercises on communication icebreakers
7.	Communication exercises
	For the following practicals, Microsoft Office, Open Office, Libre Office or any other software suite can be used.
8.	Use of word processing tools for communication
9.	Use of spreadsheet tools for communication
10.	Use of presentation tools for communication

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SEMESTER II

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B. Sc. (Information Technology)		Semester – II	
Course Name: Object Oriented Programming		**Course Code: USIT201**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Object Oriented Methodology**: Introduction, Advantages and Disadvantages of Procedure Oriented Languages, what is Object Oriented? What is Object Oriented Development? Object Oriented Themes, Benefits and Application of OOPS. **Principles of OOPS:** OOPS Paradigm, Basic Concepts of OOPS: Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing	**12**
II	**Classes and Objects:** Simple classes (Class specification, class members accessing), Defining member functions, passing object as an argument, Returning object from functions, friend classes, Pointer to object, Array of pointer to object. **Constructors and Destructors:** Introduction, Default Constructor, Parameterized Constructor and examples, Destructors	**12**
III	**Polymorphism:** Concept of function overloading, overloaded operators, overloading unary and binary operators, overloading comparison operator, overloading arithmetic assignment operator, Data Conversion between objects and basic types, **Virtual Functions:** Introduction and need, Pure Virtual Functions, Static Functions, this Pointer, abstract classes, virtual destructors.	**12**
IV	**Program development using Inheritance:** Introduction, understanding inheritance, Advantages provided by inheritance, choosing the access specifier, Derived class declaration, derived class constructors, class hierarchies, multiple inheritance, multilevel inheritance, containership, hybrid inheritance. **Exception Handling:** Introduction, Exception Handling Mechanism, Concept of throw & catch with example	**12**
V	**Templates:** Introduction, Function Template and examples, Class Template and examples. **Working with Files:** Introduction, File Operations, Various File Modes, File Pointer and their Manipulation	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Object Oriented Analysis and Design	Timothy Budd	TMH	3rd	2012
2.	Mastering C++	K R Venugopal, Rajkumar Buyya, T Ravishankar	Tata McGraw Hill	2nd Edition	2011

3.	C++ for beginners	B. M. Hirwani	SPD		2013
4.	Effective Modern C++	Scott Meyers	SPD		
5.	Object Oriented Programming with C++	E. Balagurusamy	Tata McGraw Hill	4th	
6.	Learning Python	Mark Lutz	O' Reilly	5th	2013
7.	Mastering Object Oriented Python	Steven F. Lott	Pact Publishing		2014

B. Sc. (Information Technology)		Semester – II	
Course Name: Object Oriented Programming Practical		**Course Code: USIT2P1**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical: To be implemented using object oriented language	
1.	**Classes and methods**
a.	Design an employee class for reading and displaying the employee information, the getInfo() and displayInfo() methods will be used repectively. Where getInfo() will be private method
b.	Design the class student containing getData() and displayData() as two of its methods which will be used for reading and displaying the student information respectively.Where getData() will be private method.
c.	Design the class Demo which will contain the following methods: readNo(), factorial() for calculating the factorial of a number, reverseNo() will reverse the given number, isPalindrome() will check the given number is palindrome, isArmstrong() which will calculate the given number is armStrong or not.Where readNo() will be private method.
d.	Write a program to demonstrate function definition outside class and accessing class members in function definition.
2.	**Using friend functions.**
a.	Write a friend function for adding the two complex numbers, using a single class
b.	Write a friend function for adding the two different distances and display its sum, using two classes.
c.	Write a friend function for adding the two matrix from two different classes and display its sum.
3.	**Constructors and method overloading.**
a.	Design a class Complex for adding the two complex numbers and also show the use of constructor.
b.	Design a class Geometry containing the methods area() and volume() and also overload the area() function .
c.	Design a class StaticDemo to show the implementation of static variable and static function.
4.	**Operator Overloading**
a.	Overload the operator unary(-) for demonstrating operator overloading.
b.	Overload the operator + for adding the timings of two clocks, And also pass objects as an argument.
c.	Overload the + for concatenating the two strings. For e.g “Py” + “thon” = Python
5.	**Inheritance**
a.	Design a class for single level inheritance using public and private type derivation.
b.	Design a class for multiple inheritance.
c.	Implement the hierarchical inheritance.

6.	**Virtual functions and abstract classes**
a.	Implement the concept of method overriding.
b.	Show the use of virtual function
c.	Show the implementation of abstract class.
7.	**String handling**
a.	String operations for string length , string concatenation
b.	String operations for string reverse, string comparison,
c.	Console formatting functions.
8.	**Exception handling**
a.	Show the implementation of exception handling
b.	Show the implementation for exception handling for strings
c.	Show the implementation of exception handling for using the pointers.
9.	**File handling**
a.	Design a class FileDemo open a file in read mode and display the total number of words and lines in the file.
b.	Design a class to handle multiple files and file operations
c.	Design a editor for appending and editing the files
10.	**Templates**
a.	Show the implementation for the following
b.	Show the implementation of template class library for swap function.
c.	Design the template class library for sorting ascending to descending and vice-versa

B. Sc. (Information Technology)		Semester – II	
Course Name: Microprocessor Architecture		**Course Code: USIT202**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Microprocessor, microcomputers, and Assembly Language:** Microprocessor, Microprocessor Instruction Set and Computer Languages, From Large Computers to Single-Chip Microcontrollers, Applications. **Microprocessor Architecture and Microcomputer System:** Microprocessor Architecture and its operation's, Memory, I/O Devices, Microcomputer System, Logic Devices and Interfacing, Microprocessor-Based System Application. **8085 Microprocessor Architecture and Memory Interface:** Introduction, 8085 Microprocessor unit, 8085-Based Microcomputer, Memory Interfacing, Interfacing the 8155 Memory Segment, Illustrative Example: Designing Memory for the MCTS Project, Testing and Troubleshooting Memory Interfacing Circuit, 8085-Based Single-Board microcomputer.	**12**
II	**Interfacing of I/O Devices** Basic Interfacing concepts, Interfacing Output Displays, Interfacing Input Devices, Memory Mapped I/O, Testing and Troubleshooting I/O Interfacing Circuits. **Introduction to 8085 Assembly Language Programming:** The 8085 Programming Model, Instruction Classification, Instruction, Data and Storage, Writing assembling and Execution of a simple program, Overview of 8085 Instruction Set, Writing and Assembling Program. **Introduction to 8085 Instructions:** Data Transfer Operations, Arithmetic Operations, Logic Operation, Branch Operation, Writing Assembly Languages Programs, Debugging a Program.	**12**
III	**Programming Techniques With Additional Instructions:** Programming Techniques: Looping, Counting and Indexing, Additional Data Transfer and 16-Bit Arithmetic Instructions, Arithmetic Instruction Related to Memory, Logic Operations: Rotate, Logics Operations: Compare, Dynamic Debugging. **Counters and Time Delays:** Counters and Time Delays, Illustrative Program: Hexadecimal Counter, Illustrative Program: zero-to-nine (Modulo Ten) Counter, Generating Pulse Waveforms, Debugging Counter and Time-Delay Programs. **Stacks and Sub-Routines:** Stack, Subroutine, Restart, Conditional Call, Return Instructions, Advanced Subroutine concepts.	**12**

IV	**Code Conversion, BCD Arithmetic, and 16-Bit Data Operations:** BCD-to-Binary Conversion, Binary-to-BCD Conversion, BCD-to-Seven-Segment-LED Code Conversion, Binary-to-ASCII and ASCII-to-Binary Code Conversion, BCD Addition, BCD Subtraction, Introduction To Advanced Instructions and Applications, Multiplication, Subtraction With Carry. **Software Development System and Assemblers:** Microprocessors-Based Software Development system, Operating System and Programming Tools, Assemblers and Cross-Assemblers, Writing Program Using Cross Assemblers. **Interrupts:** The 8085 Interrupt, 8085 Vectored Interrupts, Restart as S/W Instructions, Additional I/O Concepts and processes.	**12**
V	**The Pentium and Pentium Pro microprocessors:** Introduction, Special Pentium registers, Memory management, Pentium instructions, Pentium Pro microprocessor, Special Pentium Pro features. **Core 2 and later Microprocessors:** Introduction, Pentium II software changes, Pentium IV and Core 2, i3, i5 and i7. **SUN SPARC Microprocessor:** Architecture, Register file, data types and instruction format	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Microprocessors Architecture, Programming and Applications with the 8085.	Ramesh Gaonkar	PENRAM	Fifth	2012
2.	Computer System Architecture	M. Morris Mano	PHI		1998
3.	Structured Computer Organization	Andrew C. Tanenbaum	PHI		

B. Sc. (Information Technology)		Semester – II	
Course Name: Microprocessor Architecture Practical		**Course Code: USIT2P2**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	**Perform the following Operations related to memory locations.**
a.	Store the data byte 32H into memory location 4000H.
b.	Exchange the contents of memory locations 2000H and 4000H
2.	**Simple assembly language programs.**
a.	Subtract the contents of memory location 4001H from the memory location 2000H and place the result in memory location 4002H.
b.	Subtract two 8-bit numbers.
c.	Add the 16-bit number in memory locations 4000H and 4001H to the 16-bit number in memory locations 4002H and 4003H. The most significant eight bits of the two numbers to be added are in memory locations 4001H and 4003H. Store the result in memory locations 4004H and 4005H with the most significant byte in memory location 4005H.
d.	Add the contents of memory locations 40001H and 4001H and place the result in the memory locations 4002Hand 4003H.
e.	Subtract the 16-bit number in memory locations 4002H and 4003H from the 16-bit number in memory locations 4000H and 4001H. The most significant eight bits of the two numbers are in memory locations 4001H and 4003H. Store the result in memory locations 4004H and 4005H with the most significant byte in memory location 4005H.
f.	Find the l's complement of the number stored at memory location 4400H and store the complemented number at memory location 4300H.
g.	Find the 2's complement of the number stored at memory location 4200H and store the complemented number at memory location 4300H.
3.	**Packing and unpacking operations.**
a.	Pack the two unpacked BCD numbers stored in memory locations 4200H and 4201H and store result in memory location 4300H. Assume the least significant digit is stored at 4200H.
b.	Two digit BCD number is stored in memory location 4200H. Unpack the BCD number and store the two digits in memory locations 4300H and 4301H such that memory location 4300H will have lower BCD digit.
4.	**Register Operations.**
a.	Write a program to shift an eight bit data four bits right. Assume that data is in register C.
b.	Program to shift a 16-bit data 1 bit left. Assume data is in the HL register pair
c.	Write a set of instructions to alter the contents of flag register in 8085.
d.	Write a program to count number of l's in the contents of D register and store the count in the B register.

5.	**Multiple memory locations.**
a.	Calculate the sum of series of numbers. The length of the series is in memory location 4200H and the series begins from memory location 4201H. a. Consider the sum to be 8 bit number. So, ignore carries. Store the sum at memory location 4300H. b. Consider the sum to be 16 bit number. Store the sum at memory locations 4300H and 4301H
b.	Multiply two 8-bit numbers stored in memory locations 2200H and 2201H by repetitive addition and store the result in memory locations 2300H and 2301H.
c.	Divide 16 bit number stored in memory locations 2200H and 2201H by the 8 bit number stored at memory location 2202H. Store the quotient in memory locations 2300H and 2301H and remainder in memory locations 2302H and 2303H.
d.	Find the number of negative elements (most significant bit 1) in a block of data. The length of the block is in memory location 2200H and the block itself begins in memory location 2201H. Store the number of negative elements in memory location 2300H
e.	Find the largest number in a block of data. The length of the block is in memory location 2200H and the block itself starts from memory location 2201H. Store the maximum number in memory location 2300H. Assume that the numbers in the block are all 8 bit unsigned binary numbers.
6.	**Calculations with respect to memory locations.**
a.	Write a program to sort given 10 numbers from memory location 2200H in the ascending order.
b.	Calculate the sum of series of even numbers from the list of numbers. The length of the list is in memory location 2200H and the series itself begins from memory location 2201H. Assume the sum to be 8 bit number so you can ignore carries and store the sum at memory location 2Sample problem:
c.	Calculate the sum of series of odd numbers from the list of numbers. The length of the list is in memory location 2200H and the series itself begins from memory location 2201H. Assume the sum to be 16-bit. Store the sum at memory locations 2300H and 2301H.
d.	Find the square of the given numbers from memory location 6100H and store the result from memory location 7000H
e.	Search the given byte in the list of 50 numbers stored in the consecutive memory locations and store the address of memory location in the memory locations 2200H and 2201H. Assume byte is in the C register and starting address of the list is 2000H. If byte is not found store 00 at 2200H and 2201H
f.	Two decimal numbers six digits each, are stored in BCD package form. Each number occupies a sequence of byte in the memory. The starting address of first number is 6000H Write an assembly language program that adds these two numbers and stores the sum in the same format starting from memory location 6200H
g.	Add 2 arrays having ten 8-bit numbers each and generate a third array of result. It is necessary to add the first element of array 1 with the first element of array-2 and so on. The starting addresses of array l, array2 and array3 are 2200H, 2300H and 2400H, respectively

7.	**Assembly programs on memory locations.**
a.	Write an assembly language program to separate even numbers from the given list of 50 numbers and store them in the another list starting from 2300H. Assume starting address of 50 number list is 2200H
b.	Write assembly language program with proper comments for the following: A block of data consisting of 256 bytes is stored in memory starting at 3000H. This block is to be shifted (relocated) in memory from 3050H onwards. Do not shift the block or part of the block anywhere else in the memory.
c.	Add even parity to a string of 7-bit ASCII characters. The length of the string is in memory location 2040H and the string itself begins in memory location 2041H. Place even parity in the most significant bit of each character.
d.	A list of 50 numbers is stored in memory, starting at 6000H. Find number of negative, zero and positive numbers from this list and store these results in memory locations 7000H, 7001H, and 7002H respectively
e.	Write an assembly language program to generate fibonacci number.
f.	Program to calculate the factorial of a number between 0 to 8.
8.	**String operations in assembly programs.**
a.	Write an 8085 assembly language program to insert a string of four characters from the tenth location in the given array of 50 characters
b.	Write an 8085 assembly language program to delete a string of 4 characters from the tenth location in the given array of 50 characters.
c.	Multiply the 8-bit unsigned number in memory location 2200H by the 8-bit unsigned number in memory location 2201H. Store the 8 least significant bits of the result in memory location 2300H and the 8 most significant bits in memory location 2301H.
d.	Divide the 16-bit unsigned number in memory locations 2200H and 2201H (most significant bits in 2201H) by the B-bit unsigned number in memory location 2300H store the quotient in memory location 2400H and remainder in 2401H
e.	DAA instruction is not present. Write a sub routine which will perform the same task as DAA.
9.	**Calculations on memory locations.**
a.	To test RAM by writing '1' and reading it back and later writing '0' (zero) and reading it back. RAM addresses to be checked are 40FFH to 40FFH. In case of any error, it is indicated by writing 01H at port 10
b.	Arrange an array of 8 bit unsigned no in descending order
c.	Transfer ten bytes of data from one memory to another memory block. Source memory block starts from memory location 2200H where as destination memory block starts from memory location 2300H
d.	Write a program to find the Square Root of an 8 bit binary number. The binary number is stored in memory location 4200H and store the square root in 4201H.
e.	Write a simple program to Split a HEX data into two nibbles and store it in memory
10.	**Operations on BCD numbers.**
a.	Add two 4 digit BCD numbers in HL and DE register pairs and store result in memory locations, 2300H and 2301H. Ignore carry after 16 bit.
b.	Subtract the BCD number stored in E register from the number stored in the D register
c.	Write an assembly language program to multiply 2 BCD numbers

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Microprocessors Architecture, Programming and Applications with the 8085.	Ramesh Gaonkar	PENRAM	Fifth	2012
2.	8080A/8085 Assembly Language Programming	Lance A. Leventhel	Osborne		1978

B. Sc (Information Technology)		Semester – II	
Course Name: Web Programming		**Course Code: USIT203**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Internet and the World Wide Web:** What is Internet? Introduction to internet and its applications, E-mail, telnet, FTP, e-commerce, video conferencing, e-business. Internet service providers, domain name server, internet address, World Wide Web (WWW): World Wide Web and its evolution, uniform resource locator (URL), browsers – internet explorer, Netscape navigator, opera, Firefox, chrome, Mozilla. search engine, web saver – apache, IIS, proxy server, HTTP protocol **HTML5:** Introduction, Why HTML5? Formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors. Style sheets, CSS formatting text using style sheets, formatting paragraphs using style sheets.	**12**
II	**HTML5 Page layout and navigation:** Creating navigational aids: planning site organization, creating text based navigation bar, creating graphics based navigation bar, creating graphical navigation bar, creating image map, redirecting to another URL, creating division based layouts: HTML5 semantic tags, creating divisions, creating HTML5 semantic layout, positioning and formatting divisions. **HTML5 Tables, Forms and Media:** Creating tables: creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, formatting tables: applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment, creating user forms: creating basic form, using check boxes and option buttons, creating lists, additional input types in HTML5, Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page.	**12**
III	**Java Script:** Introduction, Client-Side JavaScript, Server-Side JavaScript, JavaScript Objects, JavaScript Security, **Operators**: Assignment Operators, Comparison Operators, Arithmetic Operators, % (Modulus), ++(Increment), --(Decrement), -(Unary Negation), Logical Operators, Short-Circuit Evaluation, String Operators, Special Operators, ?: (Conditional operator), , (Comma operator), delete, new, this, void **Statements:** Break, comment, continue, delete, do...while, export, for, for...in, function, if...else, import, labelled, return, switch, var, while, with,	**12**

	Core JavaScript (Properties and Methods of Each) : Array, Boolean, Date, Function, Math, Number, Object, String, regExp **Document and its associated objects:** document, Link, Area, Anchor, Image, Applet, Layer **Events and Event Handlers :** General Information about Events, Defining Event Handlers, event, onAbort, onBlur, onChange, onClick, onDblClick, onDragDrop, onError, onFocus, onKeyDown, onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove, onReset, onResize, onSelect, onSubmit, onUnload	
IV	**PHP:** Why PHP and MySQL? Server-side scripting, PHP syntax and variables, comments, types, control structures, branching, looping, termination, functions, passing information with PHP, GET, POST, formatting form variables, superglobal arrays, strings and string functions, regular expressions, arrays, number handling, basic PHP errors/problems	**12**
V	**Advanced PHP and MySQL :** PHP/MySQL Functions, Integrating web forms and databases, Displaying queries in tables, Building Forms from queries, String and Regular Expressions, Sessions, Cookies and HTTP, E-Mail	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Web Design The Complete Reference	Thomas Powell	Tata McGraw Hill		-
2.	HTML5 Step by Step	Faithe Wempen	Microsoft Press		2011
3.	PHP 5.1 for Beginners	Ivan Bayross Sharanam Shah,	SPD		2013
4.	PHP Project for Beginners	SharanamShah, Vaishali Shah	SPD		2015
5.					
6.	PHP 6 and MySQL Bible	Steve Suehring, Tim Converse, Joyce Park	Wiley		2009
7.	Head First HTML 5 programming	Eric Freeman	O'Reilly		2013
8.	JavaScript 2.0: The Complete Reference	Thomas Powell and Fritz Schneider	Tata McGraw Hill	2nd	

B. Sc. (Information Technology)		Semester – II	
Course Name: Web Programming Practical		**Course Code: USIT2P3**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	**Use of Basic Tags**
a.	Design a web page using different text formatting tags.
b.	Design a web page with links to different pages and allow navigation between web pages.
c.	Design a web page demonstrating all Style sheet types
2.	**Image maps, Tables, Forms and Media**
a.	Design a web page with Imagemaps.
b.	Design a web page demonstrating different semantics
c.	Design a web page with different tables. Design a webpages using table so that the content appears well placed.
d.	Design a web page with a form that uses all types of controls.
e.	Design a web page embedding with multimedia features.
3.	**Java Script**
a.	Using JavaScript design, a web page that prints factorial/Fibonacci series/any given series.
b.	Design a form and validate all the controls placed on the form using Java Script.
c.	Write a JavaScript program to display all the prime numbers between 1 and 100.
a.	Write a JavaScript program to accept a number from the user and display the sum of its digits.
d.	Write a program in JavaScript to accept a sentence from the user and display the number of words in it. (Do not use split () function).
e.	Write a java script program to design simple calculator.
4.	**Control and looping statements and Java Script references**
a.	Design a web page demonstrating different conditional statements.
b.	Design a web page demonstrating different looping statements.
c.	Design a web page demonstrating different Core JavaScript references (Array, Boolean, Date, Function, Math, Number, Object, String, regExp).
5.	**Basic PHP I**
a.	Write a PHP Program to accept a number from the user and print it factorial.
b.	Write a PHP program to accept a number from the user and print whether it is prime or not.
6.	**Basic PHP II**
a.	Write a PHP code to find the greater of 2 numbers. Accept the no. from the user.

b.	Write a PHP program to display the following Binary Pyramid: 1 0 1 1 0 1 0 1 0 1
7.	**String Functions and arrays**
a.	Write a PHP program to demonstrate different string functions.
b.	Write a PHP program to create one dimensional array.
8.	**PHP and Database**
a.	Write a PHP code to create: • Create a database College • Create a table Department (Dname, Dno, Number_Of_faculty)
b.	Write a PHP program to create a database named "College". Create a table named "Student" with following fields (sno, sname, percentage). Insert 3 records of your choice. Display the names of the students whose percentage is between 35 to 75 in a tabular format.
c.	Design a PHP page for authenticating a user.
9.	**Email**
a.	Write a program to send email with attachment.
10.	**Sessions and Cookies**
a.	Write a program to demonstrate use of sessions and cookies.

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	HTML5 Step by Step	Faithe Wempen	Microsoft Press		2011
2.	JavaScript 2.0: The Complete Reference	Thomas Powell and Fritz Schneider	Tata McGraw Hill	2nd	
3.	PHP 6 and MySQL Bible	Steve Suehring, Tim Converse, Joyce Park	Wiley		2009
4.	PHP 5.1 for Beginners	Ivan Bayross Sharanam Shah,	SPD		2013
5.	PHP Project for Beginners	SharanamShah, Vaishali Shah	SPD		2015
6.	Murach's PHP and MySQL	Joel Murach Ray Harris	SPD		2011

B. Sc. (Information Technology)		Semester – II	
Course Name: Numerical and Statistical Methods		**Course Code: USIT204**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Mathematical Modeling and Engineering Problem Solving:** A Simple Mathematical Model, Conservation Laws and Engineering Problems **Approximations and Round-Off Errors:** Significant Figures, Accuracy and Precision, Error Definitions, Round-Off Errors **Truncation Errors and the Taylor Series:** The Taylor Series, Error Propagation, Total Numerical Errors, Formulation Errors and Data Uncertainty	**12**
II	**Solutions of Algebraic and Transcendental Equations:** The Bisection Method, The Newton-Raphson Method, The Regula-falsi method, The Secant Method. **Interpolation:** Forward Difference, Backward Difference, Newton's Forward Difference Interpolation, Newton's Backward Difference Interpolation, Lagrange's Interpolation.	**12**
III	**Solution of simultaneous algebraic equations (linear) using iterative methods:** Gauss-Jordan Method, Gauss-Seidel Method. **Numerical differentiation and Integration:** Numberical differentiation, Numerical integration using Trapezoidal Rule, Simpson's $1/3^{rd}$ and $3/8^{th}$ rules. **Numerical solution of 1st and 2nd order differential equations:** Taylor series, Euler's Method, Modified Euler's Method, Runge-Kutta Method for 1^{st} and 2^{nd} Order Differential Equations.	**12**
IV	**Least-Squares Regression:** Linear Regression, Polynomial Regression, Multiple Linear Regression, General Linear Least Squares, Nonlinear Regression **Linear Programming:** Linear optimization problem, Formulation and Graphical solution, Basic solution and Feasible solution.	**12**
V	**Random variables:** Discrete and Continuous random variables, Probability density function, Probability distribution of random variables, Expected value, Variance. **Distributions:** Discrete distributions: Uniform, Binomial, Poisson, Bernoulli, Continuous distributions: uniform distributions, exponential, (derivation of mean and variance only and state other properties and discuss their applications) Normal distribution state all the properties and its applications.	**12**

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Introductory Methods of Numerical Methods	S. S. Shastri	PHI	Vol – 2	
2.	Numerical Methods for Engineers	Steven C. Chapra, Raymond P. Canale	Tata Mc Graw Hill	6th	2010
3.	Numerical Analysis	Richard L. Burden, J. Douglas Faires	Cengage Learning	9th	2011
4.	Fundamentals of Mathematical Statistics	S. C. Gupta, V. K. Kapoor			
5.	Elements of Applied Mathematics	P.N.Wartikar and J.N.Wartikar	A. V. Griha, Pune	Volume 1 and 2	

B. Sc. (Information Technology)		Semester – II	
Course Name: Numerical and Statistical Methods Practical		**Course Code: USIT2P4**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	**Iterative Calculation**
a.	Program for iterative calculation.
b.	Program to calculate the roots of a quadratic equation using the formula.
c.	Program to evaluate e^x using infinite series.
2.	**Solution of algebraic and transcendental equations:**
a.	Program to solve algebraic and transcendental equation by bisection method.
b.	Program to solve algebraic and transcendental equation by false position method.
c.	Program to solve algebraic and transcendental equation by Secant method.
d.	Program to solve algebraic and transcendental equation by Newton Raphson method.
3.	**Interpolation**
a.	Program for Newton's forward interpolation.
b.	Program for Newton's backward interpolation.
c.	Program for Lagrange's interpolation.
4.	**Solving linear system of equations by iterative methods**
a.	Program for solving linear system of equations using Gauss Jordan method.
b.	Program for solving linear system of equations using Gauss Seidel method.
5.	**Numerical Differentiation**
a.	Programing to obtain derivatives numerically.
6.	**Numerical Integration**
a.	Program for numerical integration using Trapezoidal rule.
b.	Program for numerical integration using Simpson's $1/3^{rd}$ rule.
c.	Program for numerical integration using Simpson's $3/8^{th}$ rule.
7.	**Solution of differential equations**
a.	Program to solve differential equation using Euler's method
b.	Program to solve differential equation using modified Euler's method.
c.	Program to solve differential equation using Runge-kutta 2^{nd} order and 4^{th} order methods.
8.	**Regression**
a.	Program for Linear regression.
b.	Program for Polynomial Regression.

c.	Program for multiple linear regression.
d.	Program for non-linear regression.
9.	**Random variables and distributions**
a.	Program to generate random variables.
b.	Program to fit binomial distribution.
c.	Program to fit Poisson distribution.
10.	**Distributions**
a.	Program for Uniform distribution.
b.	Program for Bernoulli distribution
c.	Program for Negative binomial distribution.

B. Sc. (Information Technology)		Semester – II	
Course Name: Green Computing		**Course Code: USIT205**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Overview and Issues:** Problems: Toxins, Power Consumption, Equipment Disposal, Company's Carbon Footprint: Measuring, Details, reasons to bother, Plan for the Future, Cost Savings: Hardware, Power. **Initiatives and Standards:** Global Initiatives: United Nations, Basel Action Network, Basel Convention, North America: The United States, Canada, Australia, Europe, WEEE Directive, RoHS, National Adoption, Asia: Japan, China, Korea.	**12**
II	**Minimizing Power Usage:** Power Problems, Monitoring Power Usage, Servers, Low-Cost Options, Reducing Power Use, Data De-Duplication, Virtualization, Management, Bigger Drives, Involving the Utility Company, Low-Power Computers, PCs, Linux, Components, Servers, Computer Settings, Storage, Monitors, Power Supplies, Wireless Devices, Software. **Cooling:** Cooling Costs, Power Cost, Causes of Cost, Calculating Cooling Needs, Reducing Cooling Costs, Economizers, On-Demand Cooling, HP's Solution, Optimizing Airflow, Hot Aisle/Cold Aisle, Raised Floors, Cable Management, Vapour Seal, Prevent Recirculation of Equipment Exhaust, Supply Air Directly to Heat Sources, Fans, Humidity, Adding Cooling, Fluid Considerations, System Design, Datacentre Design, Centralized Control, Design for Your Needs, Put Everything Together.	**12**
III	**Changing the Way of Work:** Old Behaviours, starting at the Top, Process Reengineering with Green in Mind, Analysing the Global Impact of Local Actions, Steps: Water, Recycling, Energy, Pollutants, Teleworkers and Outsourcing, Telecommuting, Outsourcing, how to Outsource. **Going Paperless:** Paper Problems, The Environment, Costs: Paper and Office, Practicality, Storage, Destruction, Going Paperless, Organizational Realities, Changing Over, Paperless Billing, Handheld Computers vs. the Clipboard, Unified Communications, Intranets, What to Include, Building an Intranet, Microsoft Office SharePoint Server 2007, Electronic Data Interchange (EDI), Nuts and Bolts, Value Added Networks, Advantages, Obstacles.	**12**

IV	**Recycling:** Problems, China, Africa, Materials, Means of Disposal, Recycling, Refurbishing, Make the Decision, Life Cycle, from beginning to end, Life, Cost, Green Design, Recycling Companies, Finding the Best One, Checklist, Certifications, Hard Drive Recycling, Consequences, cleaning a Hard Drive, Pros and cons of each method, CDs and DVDs, good and bad about CD and DVDs disposal, Change the mind-set, David vs. America Online **Hardware Considerations:** Certification Programs, EPEAT, RoHS, Energy Star, Computers, Monitors, Printers, Scanners, All-in-Ones, Thin Clients, Servers, Blade Servers, Consolidation, Products, Hardware Considerations, Planned Obsolescence, Packaging, Toxins, Other Factors, Remote Desktop, Using Remote Desktop, Establishing a Connection, In Practice	**12**
V	**Greening Your Information Systems:** Initial Improvement Calculations, Selecting Metrics, Tracking Progress, Change Business Processes, Customer Interaction, Paper Reduction, Green Supply Chain, Improve Technology Infrastructure, Reduce PCs and Servers, Shared Services, Hardware Costs, Cooling. **Staying Green:** Organizational Check-ups, Chief Green Officer, Evolution, Sell the CEO, SMART Goals, Equipment Check-ups, Gather Data, Tracking the data, Baseline Data, Benchmarking, Analyse Data, Conduct Audits, Certifications, Benefits, Realities, Helpful Organizations.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Green IT	Toby Velte, Anthony Velte, Robert Elsenpeter	McGraw Hill		2008
2.	Green Data Center: Steps for the Journey	Alvin Galea, Michael Schaefer, Mike Ebbers	Shroff Publishers and Distributers		2011
3.	Green Computing and Green IT Best Practice	Jason Harris	Emereo		
4.	Green Computing Tools and Techniques for Saving Energy, Money and Resources	Bud E. Smith	CRC Press		2014

B. Sc. (Information Technology)		Semester – II	
Course Name: Green Computing Practical		Course Code: USIT2P5	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Project and Viva Voce	
1.	A project should be done based on the objectives of Green Computing. A report of minimum 50 pages should be prepared. The report should have a font size of 12, Times new roman and 1.5 line spacing. The headings should have font size 14. The report should be hard bound.
2.	The project can be done individually or a group of two students.
3.	The students will have to present the project during the examination.
4.	A certified copy of the project report is essential to appear for the examination.

Evaluation Scheme:

1. **Internal Evaluation (25 Marks).**
   i. **Test: 1 Class test of 20 marks. (Can be taken online)**

Q	Attempt ***any four*** of the following:	20
a.		
b.		
c.		
d.		
e.		
f.		

   ii. **5 marks: Active participation in the class, overall conduct, attendance.**

2. **External Examination: (75 marks)**

	All questions are compulsory	
Q1	(Based on Unit 1) Attempt ***any three*** of the following:	15
a.		
b.		
c.		
d.		
e.		
f.		
Q2	(Based on Unit 2) Attempt ***any three*** of the following:	15
Q3	(Based on Unit 3) Attempt ***any three*** of the following:	15
Q4	(Based on Unit 4) Attempt ***any three*** of the following:	15
Q5	(Based on Unit 5) Attempt ***any three*** of the following:	15

3. **Practical Exam: 50 marks**

A Certified copy journal is essential to appear for the practical examination.

1.	Practical Question 1	20
2.	Practical Question 2	20
3.	Journal	5
4.	Viva Voce	5

OR

1.	Practical Question	40
2.	Journal	5
3.	Viva Voce	5

UNIVERSITY OF MUMBAI
No. UG/109 of 2016-17

CIRCULAR:-

A reference is invited to the Syllabi relating to the Bachelor of Management Studies (B.M.S) degree programme **vide** this office Circular No. UG/144 of 2011 dated 14th June, 2011 the Principals of affiliated Colleges in Commerce are hereby informed that the approved by the Academic Council at its meeting held on 24th June, 2016 **vide** item No. 4.80 and that in accordance therewith, the revised syllabus as per Choice Based Credit System for (B.M.S) Program – Course Structure (Sem. I to VI), which is available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

MUMBAI – 400 032
October, 2016

(Dr.M.A. Khan)
REGISTRAR

To,

The Principals of affiliated Colleges in Commerce and the Heads of recognized Institutions concerned.

A.C/4.80 /24/06/2016

****

No. UG/109-A of 2016-17 MUMBAI-400 032 25 October, 2016

Copy forwarded with compliments for information to:-

1) The Dean, Faculty of Commerce,
2) The Director, Board of College and University Development,
3) The Controller of Examinations,
4) The Professor-cum- Director, Institute of Distance and Open Learning (IDOL),
5) The Co-Ordinator, University Computerization Centre.

(Dr.M.A. Khan)
REGISTRAR

PTO..

AC 24-06-2016
Item No. 4.80

University of Mumbai

Bachelor of Management Studies (BMS) Programme
Three Year Integrated Programme- Six Semesters
Course Structure

Under Choice Based Credit *System*

To be implemented from Academic Year- 2016-2017 Progressively

Board of Studies-in-Business Management, University of Mumbai

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

FYBMS

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1	Introduction to Financial Accounts	**03**	1	Principles of Marketing	**03**
2	Business Law	**03**	2	Industrial Law	**03**
3	Business Statistics	**03**	3	Business Mathematics	**03**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***		***2A***	***Ability Enhancement Compulsory Course (AECC)***	
4	Business Communication - I	**03**	4	Business Communication -II	**03**
2B	****Skill Enhancement Courses (SEC)***		**2B**	*****Skill Enhancement Courses (SEC)***	
5	Any one course from the following list of courses	**02**	5	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
6	Foundation of Human Skills	**03**	6	Business Environment	**03**
7	Business Economics-I	**03**	7	Principles of Management	**03**
	Total Credits	**20**		**Total Credits**	**20**

****List of Skill Enhancement Courses (SEC) for Semester I (Any One)***		*****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course - I	1	Foundation Course - Value Education and Soft Skill - II
2	Foundation Course in NSS - I	2	Foundation Course in NSS - II
3	Foundation Course in NCC - I	3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - I	4	Foundation Course in Physical Education - II
Note: Course selected in Semester I will continue in Semester II			

SYBMS

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1 & 2	*Any one group of courses from the following list of the courses	**06**	1 & 2	** Any one group of courses from the following list of the courses	**06**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
3	Information Technology in Business Management - I	**02**	3	Information Technology in Business Management-II	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
4	Environmental Management	**03**	4	Business Economics-II	**03**
5	Business Planning & Entrepreneurial Management	**03**	5	Business Research Methods	**03**
6	Accounting for Managerial Decisions	**03**	6	Ethics & Governance	**03**
7	Strategic Management	**03**	7	Production & Total Quality Management	**03**
	Total Credits	**20**		**Total Credits**	**20**

****List of group of ElectiveCourses(EC) for Semester III (Any two)***		***** List of group of Elective Courses(EC) for Semester IV (Any two)***	
Group A: Finance Electives (Any Two Courses)			
1	Basics of Financial Services	1	Financial Institutions & Markets
2	Introduction to Cost Accounting	2	Auditing
3	Equity & Debt Market	3	Strategic Cost Management
4	Corporate Finance	4	Behavioural Finance
Group B:Marketing Electives (Any Two Courses)			
1	Consumer Behaviour	1	Integrated Marketing Communication
2	Product Innovations Management	2	Rural Marketing
3	Advertising	3	Event Marketing
4	Social Marketing	4	Tourism Marketing
Group C: Human Resource Electives(Any Two Courses)			
1	Recruitment & Selection	1	Human Resource Planning & Information System
2	Motivation and Leadership	2	Training & Development in HRM
3	Employees Relations & Welfare	3	Change Management
4	Organisation Behaviour & HRM	4	Conflict & Negotiation
Note: Group selected in Semester III will continue in Semester IV			

TYBMS

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1,2,3 & 4	*Any four courses from the following list of the courses	**12**	1,2,3 & 4	**Any four courses from the following list of the courses	**12**
2	***Core Courses (CC)***		***2***	***Core Courses (CC)***	
5	Logistics & Supply Chain Management	**04**	5	Operation Research	**04**
3	✓ ***Project Work***		***3***	✓ ***Project Work***	
6	Project Work I	**04**	6	Project Work II	**04**
	Total Credits	**20**		**Total Credits**	**20**

✓ ***Note:*** *Project work is considered as a special course involving application of knowledge in solving/analyzing/exploring a real life situation/ difficult problem. Project work would be of 04 credits. A project work may be undertaken in any area of Elective Courses/ study area selected*

****List of group of Elective Courses(EC) for Semester V (Any four)***		***** List of group of Elective Courses(EC) for Semester VI (Any four)***	
Group A: Finance Electives (Any four Courses)			
1	Investment Analysis & Portfolio Management	1	International Finance
2	Commodity & Derivatives Market	2	Innovative Financial Services
3	Wealth Management	3	Project Management
4	Strategic Financial Management	4	Risk Management in Banking Sector
5	Risk Management	5	Direct Taxes
6	Financing Rural Development	6	Indirect Taxes
Group B:Marketing Electives (Any four Courses)			
1	Services Marketing	1	Brand Management
2	E-Commerce & Digital Marketing	2	Retail Management
3	Sales & Distribution Management	3	International Marketing
4	Customer Relationship Management	4	Media Planning & Management
5	Industrial Marketing	5	Corporate Communication & Public Relations
6	Strategic Marketing Management	6	Marketing of Non Profit Organisation
Group C: Human Resource Electives (Any four Courses)			
1	Finance for HR Professionals & Compensation Management	1	HRM in Global Perspective
2	Strategic Human Resource Management & HR Policies	2	Organisational Development
3	Performance Management & Career Planning	3	HRM in Service Sector Management
4	Industrial Relations	4	Workforce Diversity
5	Talent & Competency Management	5	Human Resource Accounting & Audit
6	Stress Management	6	Indian Ethos in Management
Note: Group selected in Semester III will continue in Semester V &Semester VI			

University of Mumbai

Revised Syllabus
and
Question Paper Pattern
of Courses
of
Bachelor of Management Studies(BMS) Programme
First Year
Semester I and II

Under Choice Based Credit, Grading and Semester System

(To be implemented from Academic Year- 2016-2017)

Board of Studies-in-Business Management, University of Mumbai

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

FYBMS

(To be implemented from Academic Year- 2016-2017)

No. of Courses	Semester I	Credits	No. of Courses	Semester II	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1	Introduction to Financial Accounts	**03**	1	Principles of Marketing	**03**
2	Business Law	**03**	2	Industrial Law	**03**
3	Business Statistics	**03**	3	Business Mathematics	**03**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***		***2A***	***Ability Enhancement Compulsory Course (AECC)***	
4	Business Communication - I	**03**	4	Business Communication -II	**03**
2B	****Skill Enhancement Courses (SEC)***		**2B**	*****Skill Enhancement Courses (SEC)***	
5	Any one course from the following list of courses	**02**	5	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
6	Foundation of Human Skills	**03**	6	Business Environment	**03**
7	Business Economics-I	**03**	7	Principles of Management	**03**
	Total Credits	**20**		**Total Credits**	**20**

****List of Skill Enhancement Courses (SEC) for Semester I (Any One)***		*****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course - I	1	Foundation Course- II
2	Foundation Coursein NSS - I	2	Foundation Coursein NSS - II
3	Foundation Course in NCC - I	3	Foundation Course in NCC - II
4	Foundation Course inPhysical Education - I	4	Foundation Course inPhysical Education - II
Note: Course selected in Semester I will continue in Semester II			

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2016-2017)

Semester I

No. of Courses	Semester I	Credits
1	***Elective Courses (EC)***	
1	Introduction to Financial Accounts	**03**
2	Business Law	**03**
3	Business Statistics	**03**
2	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***	
4	Business Communication - I	**03**
2B	****Skill Enhancement Courses (SEC)***	
5	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
6	Foundation of Human Skills	**03**
7	Business Economics-I	**03**
	Total Credits	**20**

****List of Skill Enhancement Courses (SEC) for Semester I (Any One)***	
1	Foundation Course - I
2	Foundation Course in NSS - I
3	Foundation Course in NCC - I
4	Foundation Course in Physical Education - I

Revised Syllabus of Courses ofBachelor of Management Studies (BMS) Programme at Semester I with Effect from the Academic Year 2016-2017

Elective Courses (EC)

1. Introduction to Financial Accounts

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Accounting Transactions	15
3	Depreciation Accounting & Trial Balance	15
4	Final Accounts	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction**
	• **Meaning and Scope of Accounting:** Need and development, definition: Book-Keeping and accounting, Persons interested in accounting, Branches of accounting, Objectives of accounting • **Accounting principles**: Introductions to Concepts and conventions. • **Introduction to Accounting Standards:** Meaning and Scope) ▪ **AS 1 :** Disclosure to Accounting Policies ▪ **AS 6:** Depreciation Accounting. ▪ **AS 9:** Revenue Recognition. ▪ **AS 10:** Accounting For Fixed Assets. • **International Financial Reporting Standards (IFRS):** Introduction to IFRS ▪ **IAS-1:**Presenttion of Financial Statements (Introductory Knowledge) ▪ **IAS-2:**Inventories (Introductory Knowledge) • **Accounting in Computerized Environment:** Introduction, Features and application in various areas of Accounting
2	**Accounting Transactions**
	• **Accounting transactions**: Accounting cycle, Journal, Journal proper, Opening and closing entries, Relationship between journal & ledger: Rules regarding posting: Trial balance: Subsidiary books (Purchase, Purchase Returns, Sales, Sales Returns & cash book –Triple Column), Bank Reconciliation Statement. • **Expenditure**:Classification of Expenditure- Capital, revenue and Deferred Revenue expenditureUnusual expenses: Effects of error: Criteria test. • **Receipts:** Capital receipt, Revenue receipt, distinction between capital receipts and revenue receipts. • **Profit or Loss:** Revenue profit or loss, capital profit or loss
3	**Depreciation Accounting & Trial Balance**
	• **Depreciation accounting:** Practical problem based on depreciation using SLM and RBM methods. (Where Provision for depreciation Account not maintained). • **Preparation of Trial Balance:**Introduction and Preparation of Trial Balance
4	**Final Accounts**
	• Introduction to Final Accounts of a Sole proprietor. • Rectification of errors. • Manufacturing Account, Trading Account, Profit and Loss Account and Balance Sheet. • Preparation and presentation of Final Accounts in horizontal format • Introduction to Schedule 6 of Companies Act ,1956

Revised Syllabus of Courses ofBachelor of Management Studies (BMS) Programme at Semester I with Effect from the Academic Year 2016-2017

Elective Courses (EC)

2. Business Law

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Contract Act, 1872 & Sale of Goods Act, 1930	15
2	Negotiable Instrument Act, 1981 & Consumer Protection Act, 1986	15
3	Company Law	15
4	Intellectual Property Rights(IPR)	15
	Total	**60**

Sr. No.	Modules / Units
1	**Contract Act, 1872 & Sale of Goods Act, 1930**
	• **Contract Act,1872:** Essential elements of Contract; Agreement and Contract – Capacity to Contract, free consent, consideration, lawful objects/ consideration, Breach of contract. Remedies for breach of Contract. • **Sale of Goods Act,1930:** Scope of Act, Sale and Agreement to sell, essential of a valid Sale Contract – Conditions and warranties – Implied Condition and warranties, Rights of an unpaid seller.
2	**Negotiable Instrument Act, 1981 & Consumer Protection Act, 1986**
	• **Negotiable Instrument Act,1981:** Introduction of Negotiable Instruments – Characteristics of negotiable instruments, Promissory note, Bills of exchange, Cheque, Dishonour of Cheque. • **Consumer Protection Act, 1986:** Objects of Consumer Protection- Introduction of Consumers, who is consumer? Meaning of the words "Goods and services" – Meaning of thewords "Defects and Deficiencies of goods and services" Consumer disputes and Complaints.
3	**Company Law**
	• **Company Law:** What is company? – Incorporation of company – MOA, AOA, Prospectus, Meetings, Meaning of transfer and transmission of shares.
4	**Intellectual Property Rights(IPR)**
	• **Intellectual Property Rights (IPR)** ▪ IPR definition/ objectives ▪ Patent definition. What is patentable? What is not patentable? Invention And its Attributes, Inventors and Applications ▪ Trademarks, definition, types of trademarks, infringement and passing off. ▪ Copy right definition and subject in which copy right exists, Originality, Meaning and Content, Authors and Owners, Rights and Restrictions. ▪ Geographical indications (only short notes)

Revised Syllabus of Courses ofBachelor of Management Studies (BMS) Programme at Semester I with Effect from the Academic Year 2016-2017

Elective Courses (EC)

3. Business Statistics

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Statistics	15
2	Measures of Dispersion, Co-Relation and Linear Regression	15
3	Time Series and Index Number	15
4	Probability andDecision Theory	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Statistics**
	• **Introduction:** Functions/Scope, Importance, Limitations • **Data:** Relevance of Data(Current Scenario), Type of data(Primary & Secondary), Primary(Census vs Samples, Method of Collection (In Brief), Secondary(Merits, Limitations, Sources) (In Brief) • **Presentation Of Data:**Classification – Frequency Distribution – Discrete & Continuous, Tabulation, Graph(Frequency, Bar Diagram, Pie Chart, Histogram, Ogives) • **Measures Of Central Tendency:**Mean(A.M, Weighted, Combined), Median(Calculation and graphical using Ogives), Mode(Calculation and Graphical using Histogram), Comparative analysis of all measures of Central Tendency
2	**Measures of Dispersion, Co-Relation and Linear Regression**
	• **Measures Of Dispersion:** Range with C.R(Co-Efficient Of Range), Quartiles & Quartile deviation with CQ (Co-Efficient Of Quartile), Mean Deviation from mean with CMD (Co-Efficient Of Mean Deviation), Standard deviation with CV(Co-Efficient Of Variance), Skewness& Kurtosis (Only concept) • **Co-Relation:** Karl Pearson, Rank Co-Relation • **Linear Regression:** Least Square Method
3	**Time Series and Index Number**
	• **Time Series:** Least Square Method, Moving Average Method, Determination of Season • **Index Number:** Simple(unweighted) Aggregate Method, Weighted Aggregate Method, Simple Average of Price Relatives, Weighted Average of Price Relatives, Chain Base Index Numbers, Base Shifting, Splicing and Deflating, Cost of Living Index Number
4	**Probability and Decision Theory**
	• **Probability:** Concept of Sample space, Concept of Event, Definition of Probability, Addition & Multiplication laws of Probability, Conditional Probability, Bayes' Theorem(Concept only), Expectation & Variance, Concept of Probability Distribution(Only Concept) • **Decision Theory:** Acts, State of Nature Events, Pay offs, Opportunity loss, Decision Making under Certainty, Decision Making under Uncertainty, • Non-Probability: Maximax, Maximin, Minimax, Regret, Laplace &Hurwicz) • **Probabilitistics (Decision Making under risk):**EMV, EOL, EVPI • Decision Tree

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Ability Enhancement Courses (AEC)

4. Business Communication- I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Theory of Communication	15
2	Obstacles to Communication in Business World	15
3	Business Correspondence	15
4	Language and Writing Skills	15
	Total	**60**

Sr. No.	Modules / Units
1	**Theory of Communication**
	Concept of Communication: Meaning, Definition, Process, Need, FeedbackEmergence of Communication as a key concept in the Corporate and Global worldImpact of technological advancements on Communication **Channels and Objectives of Communication**: **Channels-** Formal and Informal- Vertical, Horizontal, Diagonal, Grapevine **Objectives of Communication**: Information, Advice, Order and Instruction, Persuasion, Motivation, Education,Warning, and Boosting the Morale of Employees(A brief introduction to these objectives to be given) **Methods and Modes of Communication:** Methods: Verbal and Nonverbal, Characteristics of Verbal Communication Characteristics of Non-verbal Communication, Business Etiquette Modes: Telephone and SMS Communication 3 (General introduction to Telegram to be given) Facsimile Communication [Fax] Computers and E- communication Video and Satellite Conferencing
2	**Obstacles to Communication in Business World**
	Problems in Communication /Barriers to Communication: Physical/ Semantic/Language / Socio-Cultural / Psychological / Barriers, Ways to Overcome these Barriers **Listening:** Importance of Listening Skills, Cultivating good Listening Skills – 4 **Introduction to Business Ethics:** Concept and Interpretation, Importance of Business Ethics, Personal Integrity at the workplace, Business Ethics and media, Computer Ethics, Corporate Social Responsibility Teachers can adopt a case study approach and address issues such as the following so as to orient and sensitize the student community to actual business practices: Surrogate Advertising, Patents and Intellectual Property Rights, Dumping of Medical/E-waste, Human Rights Violations and Discrimination on the basis of gender, race, caste, religion, appearance and sexual orientation at the workplace Piracy, Insurance, Child Labour
3	**Business Correspondence**
	Theory of Business Letter Writing: Parts, Structure, Layouts—Full Block, Modified Block, Semi - Block Principles of Effective Letter Writing, Principles of effective Email Writing, **Personnel Correspondence:** Statement of Purpose, Job Application Letter and Resume, Letter of Acceptance of Job Offer, Letter of Resignation [Letter of Appointment, Promotion and Termination, Letter of Recommendation (to be taught but not to be tested in the examination)]

Sr. No.	Modules / Units
4	**Language and Writing Skills**
	Commercial Terms used in Business Communication **Paragraph Writing:** Developing an idea, using appropriate linking devices, etc Cohesion and Coherence, self-editing, etc [Interpretation of technical data, Composition on a given situation, a short informal report etc.] **Activities** ▪ Listening Comprehension ▪ Remedial Teaching ▪ Speaking Skills: Presenting a News Item, Dialogue and Speeches ▪ Paragraph Writing: Preparation of the first draft, Revision and Self – Editing, Rules of spelling. ▪ Reading Comprehension: Analysis of texts from the fields of Commerce and Management

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Skill Enhancement Courses (SEC)

5. Foundation Course -I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Indian Society	05
2	Concept of Disparity- 1	10
3	Concept of Disparity-2	10
4	The Indian Constitution	10
5	Significant Aspects of Political Processes	10
	Total	**45**

Sr. No.	Modules / Units
1	**Overview of Indian Society**
	Understand the multi-cultural diversity of Indian society through its demographic composition: population distribution according to religion, caste, and gender; Appreciate the concept of linguistic diversity in relation to the Indian situation; Understand regional variations according to rural, urban and tribal characteristics; Understanding the concept of diversity as difference
2	**Concept of Disparity- 1**
	Understand the concept of disparity as arising out of stratification and inequality; Explore the disparities arising out of gender with special reference to violence against women, female foeticide (declining sex ratio), and portrayal of women in media;Appreciate the inequalities faced by people with disabilities and understand the issues of people with physical and mental disabilities
3	**Concept of Disparity-2**
	Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof; Understand inter-group conflicts arising out of communalism; Examine the causes and effects of conflicts arising out of regionalism and linguistic differences
4	**The Indian Constitution**
	Philosophy of the Constitution as set out in the Preamble; The structure of the Constitution-the Preamble, Main Body and Schedules; Fundamental Duties of the Indian Citizen; tolerance, peace and communal harmony as crucial values in strengthening the social fabric of Indian society; Basic features of the Constitution
5	**Significant Aspects of Political Processes**
	The party system in Indian politics; Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics; Role and significance of women in politics

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Skill Enhancement Courses (SEC)

5.Foundation Course in NSS - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to NSS	10
2	Concept of Society and Social Issues in India	15
3	Indian Constitution and Social Justice	10
4	Human Personality and National Integration	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to NSS**
	Introduction to National Service Scheme(NSS) Orientation and structure of National Service Scheme(NSS) National Service Scheme(NSS)- its objectives The historical perspective of National Service Scheme(NSS) National Service Scheme(NSS)- Symbol and its meaning National Service Scheme(NSS)- its hierarchy from national to college level **National Service Scheme(NSS) Regular activities** Distribution of working hours- Association between issues and programs- community project- urban rural activities, Association- modes of activity evaluation
2	**Concept of Society and Social Issues in India**
	History and philosophy of social sciences in India Concept of society- Development of Indian society - Features of Indian Society- Division of labour and cast system in India **Basic social issues in India** Degeneration of value system, Family system, Gender issues, Regional imbalance
3	**Indian Constitution and Social Justice**
	Indian Constitution Features of Indian Constitution - Provisions related to social integrity and development **Social Justice** Social Justice- the concept and its features Inclusive growth- the concept and its features
4	**Human Personality and National Integration**
	Dimensions of human personality Social Dimension of Human personality- Understanding of the socity Physical Dimension of Human personality- Physical Exercise, Yoga, etc. **National integration & Communal Harmony** National Integration- its meaning, importance and practice Communal Harmony- its meaning, importance and practice

Revised Syllabus of Courses ofBachelor of Management Studies (BMS)Programme at Semester I

with Effect from the Academic Year 2016-2017

Skill Enhancement Courses (SEC)

5.Foundation Course in NCC - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to NCC, National Integration & Awareness	10
2	Drill: Foot Drill	10
3	Adventure Training, Environment Awareness and Conservation	10
4	Personality Development and Leadership	10
5	Specialized Subject: Army/ Navy/ Air	05
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to NCC, National Integration & Awareness**
	Desired outcome: The students will display sense of patriotism, secular values and shall be transformed into motivated youth who will contribute towards nation building through national unity and social cohesion. • Genesis, Aims, Objectives of NCC & NCC Song • Organisation& Training • Incentives & Benefits • Religions, Culture, Traditions and Customs of India • National Integration: Importance and Necessity • Freedom Struggle
2	**Drill: Foot Drill**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes. • General and Words of Command • Attention, Stand at Ease and Stand Easy, Turning and Inclining at the Halt • Sizing, Forming Up in Three Ranks and Numbering, Open and Close Order March and Dressing • Saluting at the Halt, Getting On Parade, Dismissing and Falling Out • Marching, Length of Pace and Time of Marching in Quick Time and Halt, Slow March and Halt • Turning on the March and Wheeling. • Saluting on the March. • Formation of squad and Squad Drill.
3	**Adventure Training, Environment Awareness and Conservation**
	Adventure Training **Desired outcome**: The students will overcome fear & inculcate within them the sense of adventure, sportsmanship,espirit-d-corp and develop confidence , courage , determination, diligence and quest for excellence. • Any Two such as – Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, Sailing,Scuba Diving etc **Environment Awareness and Conservation** Desired outcome: The student will be aware of the conservation of natural resources and protection of environment. • Natural Resources – Conservation and Management • Water Conservation and Rainwater Harvesting

Sr. No.	Modules / Units
4	**Personality Development and Leadership**
	Desired outcome: The student will develop an all-round personality with adequate leadership traits to deal / contribute effectively in life. • Introduction to Personality Development • Factors Influencing /Shaping Personality: Physical, Social, Physiological, Philosophical and Psychological • Self Awareness Know yourself/ Insight • Change Your Mind Set • Communication Skills: Group Discussion / Lecturettes (Public Speaking) • Leadership Traits • Types of Leadership
5	**Specialized Subject: Army Or Navy Or Air**
	<u>Army</u> **Desired outcome:** The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects **A. Armed Force** • Basic organisation of Armed Forces • Organisation of Army • Badges and Ranks **B. Introduction to Infantry and weapons and equipments** • Characteristics of 7.62mm SLR Rifle, Ammunition, Fire power, Stripping, Assembling and Cleaning **C. Military history** • Biographies of renowned Generals (Carriapa / Sam Manekshaw) • Indian Army War Heroes- PVCs **D. Communication** • Types of Communications • Characteristics of Wireless Technologies (Mobile, Wi-Fi etc.) ***OR*** **<u>Navy</u>** **A. Naval orientation and service subjects** • History of the Indian Navy-Pre and Post Independence, Gallantry award winners • Organization of Navy- NHQ, Commands, Fleets, Ships and shore establishments • Types of Warships and their role • Organization of Army and Air Force- Operational and Training commands • Ranks of Officers and Sailors, Equivalent Ranks in the Three Services **B. Ship and Boat Modelling** • Principles of Ship Modelling • Maintenance and Care of tools

Sr. No.	Modules / Units
	C. Search and Rescue • SAR Organization in the Indian ocean **D. Swimming** Floating for three minutes and Free style swimming for 50 meters ***OR*** **AIR** **A. General Service Knowledge** • Development of Aviation • History of IAF **B. Principles of Flight** • Introduction • Laws of Motion • Glossary of Terms. **C. Airmanship** • Introduction • Airfield Layout • Rules of the Air • Circuit Procedure • ATC/RT Procedures • Aviation Medicine **D. Aero- Engines** • Introduction to Aero-engines

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Skill Enhancement Courses (SEC)

5.Foundation Course in Physical Education - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Basic Relevant concepts in Physical Education	10
2	Components of Physical Fitness	15
3	Testing Physical Fitness	10
4	Effect of Exercise on various Body System	10
	Total	**45**

Sr. No.	Modules / Units
1	**Introduction to Basic Relevant concepts in Physical Education**
	• Dimensions and determinants of Health, Fitness & Wellness • Concept of Physical Education and its importance • Concept of Physical Fitness and its types • Concept of Physical Activity, exercise and its types & benefits
2	**Components of Physical Fitness**
	• Concept of components of Physical Fitness • Concept and components of HRPF • Concept and components of SRPF • Importance of Physical Education in developing physical fitness components.
3	**Testing Physical Fitness**
	• Tests for measuring Cardiovascular Endurance • Tests for measuring Muscular Strength& Endurance • Tests for measuring Flexibility • Tests for measuring Body Composition
4	**Effect of Exercise on various Body System**
	• Effect of exercises on Musculoskeletal system • Effect of exercises on Circulatory System • Effect of exercises on Respiratory System • Effect of exercises on Glandular System

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WithEffect from the Academic Year 2016-2017

Core Courses (CC)

6.Foundation of Human Skills

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Understanding of Human Nature	15
2	Introduction to Group Behaviour	15
3	Organizational Culture and Motivation at workplace	15
4	Organisational Change, Creativity and Development and Work Stress	15
	Total	**60**

Sr. No.	Modules / Units
1	**Understanding of Human Nature**
	• **IndividualBehaviour:**Concept of a man, individual differences, factors affecting individual differences, Influence of environment • **Personality and attitude:** Determinants of personality, Personality traits theory, Big five model, Personality traits important for organizational behaviour like authoritarianism, locus of control, Machiavellianism, introversion-extroversion achievement orientation , self – esteem, risk taking, self-monitoring and type A and B personalities, Concept of understanding self through JOHARI WINDOWS, Nature and components of attitude, Functions of attitude, Ways of changing attitude, Reading emotions • **Thinking, learning and perceptions:** Thinking skills, thinking styles and thinking hat, Managerial skills and development, Learning characteristics, theories of learning (classical conditioning, operant conditioning and social learning approaches), Intelligence, type (IQ, EQ, SQ, at work place), Perception features and factor influencing individual perception, Effects of perceptual error in managerial decision making at work place. (Errors such as Halo effect, stereotyping, prejudice attributional).
2	**Introduction to Group Behaviour**
	• **Introduction to Group Behaviour** ▪ **Group Dynamics:** Nature, types, group behaviour model (roles, norms, status, process, structures) ▪ **Team effectiveness:** nature, types of teams, ways of forming an effective team. ▪ Setting goals. • **Organizational processes and system.** ▪ **Power and politics:** nature, bases of power, politics nature, types, causes of organizational politics, political games. ▪ **Organizational conflicts and resolution**: Conflict features, types, causes leading to organizational conflicts, levels of conflicts, ways to resolve conflicts through five conflicts resolution strategies with outcomes.
3	**Organizational Culture and Motivation at workplace**
	• **Organizational Culture:** ▪ Characteristics of organizational culture. ▪ Types, functions and barriers of organizational culture ▪ Ways of creating and maintaining effective organization culture • **Motivation at workplace**: Concept of motivation Theories of motivation in an organisational set up. ▪ A.Maslow Need Heirachy ▪ F.Hertzberg Dual Factor ▪ Mc.Gregor theory X and theory Y. Waysofmotivating through carrot (positive reinforcement) and stick (negative reinforcement) at workplace.

4	**Organisational Change, Creativity and Development and Work Stress**
	• **Organisational change and creativity:** Concepts of organisational change, Factors leading/influencing organisational change, Kurt Lewins model of organisational change and development, Creativity and qualities of a creative person, Ways of enhancing creativity for effective decision making, Creative problem solving. • **Organisational Development and work stress:** Need for organisational development, OD Techniques, Stress, types of stress, Causes and consequences of job stress, Ways for coping up with job stress

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Core Courses (CC)

7. Business Economics - I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	10
2	Demand Analysis	10
3	Supply and Production Decisions and Cost of Production	15
4	Market structure: Perfect competition and Monopoly and Pricing and Output Decisions under Imperfect Competition	15
5	Pricing Practices	10
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction**
	Scope and Importance of Business Economics - basic tools- Opportunity Cost principle- Incremental and Marginal Concepts. Basic economic relations - functional relations: equations- Total, Average and Marginal relations- use of Marginal analysis in decision making, The basics of market demand, market supply and equilibrium price- shifts in the demand and supply curves and equilibrium
2	**Demand Analysis**
	Demand Function - nature of demand curve under different markets Meaning, significance, types and measurement of elasticity of demand (Price, income cross and promotional)- relationship between elasticity of demand and revenue concepts **Demand estimation and forecasting:** Meaning and significance - methods of demand estimation : survey and statistical methods *(numerical illustrations on trend analysis and simple linear regression)*
3	**Supply and Production Decisions and Cost of Production**
	Production function: short run analysis with Law of Variable Proportions- Production function with two variable inputs- isoquants, ridge lines and least cost combination of inputs- Long run production function and Laws of Returns to Scale - expansion path - Economies and diseconomies of Scale. **Cost concepts:** Accounting cost and economic cost, implicit and explicit cost, fixed and variable cost - total, average and marginal cost - Cost Output Relationship in the Short Run and Long Run *(hypothetical numerical problems to be discussed)*, LAC and Learning curve - Break even analysis *(with business applications)*
4	**Market structure: Perfect competition and Monopoly and Pricing and Output Decisions under Imperfect Competition**
	Short run and long run equilibrium of a competitive firm and of industry - monopoly - short run and long- run equilibrium of a firm under Monopoly **Monopolistic competition:**Equilibrium of a firm under monopolistic competition, debate over role of advertising *(topics to be taught using case studies from real life examples)* **Oligopolistic markets:** key attributes of oligopoly - Collusive and non collusive oligopoly market - Price rigidity - Cartels and price leadership models *(with practical examples)*
5	**Pricing Practices**
	Cost oriented pricing methods: cost – plus (full cost) pricing, marginal cost pricing, Mark up pricing, discriminating pricing, multiple – product pricing - transfer pricing *(case studies on how pricing methods are used in business world)*

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2016-2017)

Semester II

No. of Courses	Semester II	Credits
1	***Elective Courses (EC)***	
1	Principles of Marketing	**03**
2	Industrial Law	**03**
3	Business Mathematics	**03**
2	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***	
4	Business Communication - II	**03**
2B	*****Skill Enhancement Courses (SEC)***	
5	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
6	Business Environment	**03**
7	Principles of Management	**03**
	Total Credits	**20**

*****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course - II
2	Foundation Course in NSS - II
3	Foundation Course in NCC - II
4	Foundation Course in Physical Education - II

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Elective Courses(EC)

1. Principles of Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Marketing	15
2	Marketing Environment, Research and Consumer Behaviour	15
3	Marketing Mix	15
4	Segmentation, Targeting and Positioning and Trends In Marketing	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Marketing**
	• **Introduction to Marketing:**Definition, features, advantages and scope of marketing. The 4P's and 4C's of marketing. Marketing v/s Selling. Marketing as an activity and function • **Concepts of Marketing:** Needs, wants and demands, transactions, transfer and exchanges. • **Orientations of a firm:** Production concept; Product concept; selling concept and marketing concept, social relationship, Holistic marketing.
2	**Marketing Environment, Research and Consumer Behaviour**
	• **The micro environment of business:** Management structure; Marketing Channels; Markets in which a firm operates; competitors and stakeholders. • **Macro environment:** Political Factors; Economic Factors; Socio Cultural Factors , Technological Factors (PEST Analysis) • **Marketing research:** Meaning, features, Importance of marketing research. Types of marketing research: Product research; Sales research; consumer/customer research; production research • **MIS:**Meaning, features and Importance • **Consumer Behaviour:** Meaning, feature, importance, factors affecting Consumer Behaviour
3	**Marketing Mix**
	• **Marketing mix:** Meaning –elements of Marketing Mix. • Product-product mix-product line lifecycle-product planning – New product development- failure of new product-levels of product. • Branding –Packing and packaging – role and importance • Pricing – objectives- factors influencing pricing policy and Pricing strategy. • Physical distribution – meaning – factor affecting channel selection-types of marketing channels • Promotion – meaning and significance of promotion. Promotion • tools (brief)
4	**Segmentation, Targeting and Positioning and Trends In Marketing**
	• Segmentation – meaning , importance , basis • Targeting – meaning , types • Positioning – meaning – strategies • New trends in marketing – E-marketing , Internet marketing and marketing using Social network • Social marketing/ Relationship marketing

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester II with Effect from the Academic Year 2016-2017

Elective Courses (EC)

2.Industrial Law

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Laws Related to Industrial Relations and Industrial Disputes	15
2	Laws Related to Health, Safety and Welfare	15
3	Social Legislation	15
4	Laws Related to Compensation Management	15
	Total	**60**

Sr. No.	Modules / Units
1	**Laws Related to Industrial Relations and Industrial Disputes**
	• Industrial Disputes Act, 1947: Definition, Authorities, Awards, Settlements, Strikes Lockouts, Lay Offs, Retrenchment and Closure • The Trade Union Act, 1926
2	**Laws Related to Health, Safety and Welfare**
	• The Factory Act 1948: (Provisions related to Health, Safety and Welfare) • The Workmen's Compensation Act, 1923 Provisions: ▪ Introduction: The doctrine of assumed risk, The doctrine of Common Employment, The doctrine of Contributory Negligence ▪ Definitions ▪ Employers liability for compensation (S-3 to 13) ▪ Rules as to Compensation (Sec 4 to Sec 9) (14 A & 17)
3	**Social Legislation**
	• Employee State Insurance Act 1948: Definition and Employees Provident Fund • Miscellaneous Provision Act 1948: Schemes, Administration and determination of dues
4	**Laws Related To Compensation Management**
	• The payment of Wages Act 1948: Objectives, Definition, Authorised Deductions • Payment of Bonus Act, 1965 • The Payment Of Gratuity Act, 1972

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester II with Effect from the Academic Year 2016-2017

Elective Courses (EC)

3.Business Mathematics

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Elementary Financial Mathematics	15
2	Matrices and Determinants	15
3	Derivatives and Applications of Derivatives	15
4	Numerical Analysis [Interpolation]	15
	Total	**60**

Sr. No.	Modules / Units
1	**Elementary Financial Mathematics**
	• **Simple and Compound Interest**: Interest compounded once a year, more than once a year, continuous, nominal and effective rate of interest • Annuity-Present and future value-sinking funds • **Depreciation of Assets:** Equated Monthly Installments (EMI)- using flat interest rate and reducing balance method. • **Functions:**Algebraic functions and the functions used in business and economics, Break Even and Equilibrium point. • **Permutation and Combination:** (Simple problems to be solved with the calculator only)
2	**Matrices and Determinants**
	• **Matrices:** Some important definitions and some important results. Matrix operation (Addition, scalar multiplication , matrix multiplication, transpose of a matrix) • **Determinants of a matrix of order two or three**: properties and results of Determinants • Solving a system of linear equations using Cramer's rule • Inverse of a Matrix (up to order three) using ad-joint of a matrix and matrix inversion method • **Case study:** Input Output Analysis
3	**Derivatives and Applications of Derivatives**
	• **Introduction and Concept:** Derivatives of constant function, logarithmic functions, polynomial and exponential function • **Rules of derivatives:** addition, multiplication, quotient • Second order derivatives • **Application of Derivatives:** Maxima, Minima, Average Cost and Marginal Cost. Total revenue, Marginal revenue, Average revenue. Average and Marginal profit. Price elasticity of demand
4	**Numerical Analysis [Interpolation]**
	• **Introduction and concept**: Finite differences – forward difference operator – Newton's forward difference formula with simple examples • Backward Difference Operator. Newton's backward interpolation formula with simple examples

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester II with Effect from the Academic Year 2016-2017

Ability Enhancement Courses (AEC)

4. Business Communication - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Presentation Skills	15
2	Group Communication	15
3	Business Correspondence	15
4	Language and Writing Skills	15
	Total	**60**

Sr. No.	Modules / Units
1	**Presentation Skills**
	Presentations: (to be tested in tutorials only) 4 Principles of Effective Presentation Effective use of OHP Effective use of Transparencies How to make a Power-Point Presentation
2	**Group Communication**
	Interviews: Group Discussion Preparing for an Interview, Types of Interviews – Selection, Appraisal, Grievance, Exit **Meetings:**Need and Importance of Meetings, Conduct of Meeting and Group Dynamics Role of the Chairperson, Role of the Participants, Drafting of Notice, Agenda and Resolutions **Conference:**Meaning and Importance of Conference Organizing a Conference Modern Methods: Video and Tele – Conferencing **Public Relations:** Meaning, Functions of PR Department, External and Internal Measures of PR
3	**Business Correspondence**
	Trade Letters: Order, Credit and Status Enquiry, Collection (just a brief introduction to be given) **Only following to be taught in detail:-** Letters of Inquiry, Letters of Complaints, Claims, Adjustments Sales Letters, promotional leaflets and fliers Consumer Grievance Letters, Letters under Right to Information (RTI) Act [Teachers must provide the students with theoretical constructs wherever necessary in order to create awareness. However students should not be tested on the theory.]
4	**Language and Writing Skills**
	Reports: Parts, Types, Feasibility Reports, Investigative Reports **Summarisation:** Identification of main and supporting/sub points Presenting these in a cohesive manner

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Skill Enhancement Courses (SEC)

5. Foundation Course – II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Globalisation and Indian Society	07
2	Human Rights	10
3	Ecology	10
4	Understanding Stress and Conflict	10
5	Managing Stress and Conflict in Contemporary Society	08
	Total	**45**

Sr. No	Modules /Units
1	**Globalisation and Indian Society**
	Understanding the concepts of liberalization, privatization and globalization;Growth of information technology and communication and its impact manifested in everyday life; Impact of globalization on industry: changes in employment and increasing migration; Changes in agrarian sector due to globalization; rise in corporate farming and increase in farmers' suicides.
2	**Human Rights**
	Concept of Human Rights; origin and evolution of the concept; The Universal Declaration of Human Rights;Human Rights constituents with special reference to Fundamental Rights stated in the Constitution
3	**Ecology**
	Importance of Environment Studies in the current developmental context; Understanding concepts of Environment, Ecology and their interconnectedness; Environment as natural capital and connection to quality of human life; Environmental Degradation- causes and impact on human life;Sustainable development- concept and components; poverty and environment
4	**Understanding Stress and Conflict**
	Causes of stress and conflict in individuals and society; Agents of socialization and the role played by them in developing the individual; Significance of values, ethics and prejudices in developing the individual; Stereotyping and prejudice as significant factors in causing conflicts in society. Aggression and violence as the public expression of conflict
5	**Managing Stress and Conflict in Contemporary Society**
	Types of conflicts and use of coping mechanisms for managing individual stress; Maslow's theory of self-actualisation;Different methods of responding to conflicts in society; Conflict-resolution and efforts towards building peace and harmony in society

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Skill Enhancement Courses (SEC)

5. Foundation Course in NSS - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Socio-economic Survey and Special Camp	10
2	Orientation of the College Unit and Communication Skills	15
3	Rapport with Community and Programme Planning	10
4	Government Organisations /Non-Government Organisations	10
	Total	**45**

Sr. No.	Modules / Units
1	**Socio-economic Survey and Special Camp**
	Socio economic survey Socio-economic survey- its meaning and need, Process of Socio-economic survey- design of questionnaire; data collection, data analysis and report writing **Special camping activity** Concept of camp- Identification of community problems- Importance of group living- Team building- Adoption of village- Planning for camp- pre camping, during the course of camp and post camping activities
2	**Orientation of the College Unit and Communication Skills**
	Training and orientation of the program unit in the college Leadership training – formation of need based programmmes- Concept of campus to community(C to C) activities **Communication skills and Documentation** Communication skills- the concept, Verbal, Non-Verbal communication The documentation- Activity Report Writing – basics of NSS accounting – Annual Report – Press note and preparation
3	**Rapport with Community and Programme Planning**
	Working with individual group and community Ice breaking- interaction games – conflict resolution **Program planning** Programme planning- the concept and its features, requirements for successful implementation of program- program flow charting- feedback
4	**Government Organisations /Non-Government Organisations**
	Structure of Government Organisations and Non-Government Organisations Government organisations (GO)- its meaning -Legal set up, functioning, Sources of funding Non-Government organisations (NGO)- its meaning -Legal set up, functioning, Sources of funding National Service Scheme(NSS)- Government organisations (GO) and Non-Government organisations (NGO) **Government schemes for community development** Schemes of Government welfare departments for community development- provisions & examples

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester II with Effect from the Academic Year 2016-2017

Skill Enhancement Courses (SEC)

5.Foundation Course in NCC - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Disaster Management, Social Awareness and Community Development	10
2	Health and Hygiene	10
3	Drill with Arms	10
4	Weapon Training	10
5	Specialized Subject: Army Or Navy Or Air	05
	Total	**45**

Sr. No.	Modules / Units
1	**Disaster Management, Social Awareness and Community Development**
	Disaster Management: **Desired outcome:** The student shall gain basic information about civil defence organisation / NDMA & shall provide assistance to civil administration in various types of emergencies during natural / manmade disasters • Civil Defence Organisation and Its Duties/ NDMA • Types of Emergencies/ Natural Disaster • Assistance during Natural / Other Calamities: Flood / Cyclone/ Earth Quake/ Accident etc. • 'Avan' model of NCC **Social Awareness and Community Development:** **Desired outcome:** The student shall have an understanding about social service and its need, about NGOs and shall participate in community action programmes for betterment of the community. • Basics of Social Service, Weaker Sections of Our Society and Their Needs • Social/ Rural Development Project: MNREGA, SGSY, NSAP etc. • Contribution of Youth towards Social Welfare • Civic Responsibilities • Causes & Prevention of HIV/AIDS; Role of Youth
2	**Health and Hygiene**
	Desired outcome: The student shall be fully aware about personal health and hygiene lead a healthy life style and foster habits of restraint and self awareness. • Structure and Functioning of the Human Body • Hygiene and Sanitation (Personal and Food Hygiene) • Infectious & Contagious Diseases & Their Prevention
3	**Drill with Arms**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes. • Attention, Stand at Ease and Stand Easy • Getting on Parade with Rifle and Dressing at the Order • Dismissing and Falling Out • Ground / Take Up Arms • Present From the Order and Vice-versa • General Salute, Salami Shastra
4	**Weapon Training**
	Desired outcome: The student shall have basic knowledge of weapons and their use and handling. • Characteristics of a Rifle / Rifle Ammunition and its Fire Power • Stripping, Assembling, Care and Cleaning and Sight Setting of .22 rifle • Stripping, Assembling, Care and Cleaning of 7.62mm SLR • Loading, Cocking and Unloading • The lying position, Holding and Aiming- I • Trigger control and firing a shot • Range procedure and safety precautions • Short range firing, Aiming- II -Alteration of sight

Sr. No.	Modules / Units
5	**Specialized Subject: Army Or Navy Or Air**
	Army **Desired outcome:** The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects **A. Map reading** • Introduction to types of Maps and Conventional signs • Scales and Grid system • Topographical forms and technical terms • Relief, contours and Gradients • Cardinal points and Types of North • Types of bearings and use of Service Protractor • Prismatic compass and its use and GPS **B. Field Craft and Battle Craft** • Introduction • Judging distance • Description of ground • Recognition, Description and Indication of landmarks and targets ***OR*** **Navy** **A. `Naval Communication** • Introduction to Naval Modern Communication, Purpose and Principles ▪ Introduction of Naval communication ▪ Duties of various communication sub-departments • Semaphore ▪ Introduction of position of letters and prosigns ▪ Reading of messages ▪ Transmission of messages **B. Seamanship** • **Anchor work** ▪ Parts of Anchor and Cable, their identification • **Rigging** ▪ Types of ropes and breaking strength- stowing, maintenance and securing of ropes ▪ Practical Bends and Hitches: Reef Knot, Half hitch, Clove Hitch, Rolling Hitch, Timber Hitch, Bow Line, Round Turn and Two half hitch and Bow line on the Bight and its basic elements and uses. ▪ Introduction to Shackles, Hooks, Blocks and Derricks, Coiling Down and Splicing of rope **C. Boat work** • Parts of Boat and Parts of an Oar • Instruction on boat Pulling- Pulling orders • Steering of boat under oars, Practical instruction on Boat Pulling, Precautions while pulling

Sr. No.	Modules / Units
	OR **Air** **A. Air frames** • Aircraft Controls • Landing Gear **B. Instruments** • Basic Flight Instruments **C. Aircraft Particulars** • Aircraft Particulars (Type specific) **D. Aero modelling** • History of Aero modelling • Materials used in Aero modelling • Type of Aero models • Flying/ Building of Aero models

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester II with Effect from the Academic Year 2016-2017

Skill Enhancement Courses (SEC)

5.Foundation Course in Physical Education - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Development of Fitness	10
2	Health, Fitness and Diseases	15
3	Yoga Education	10
4	Daily Schedule of Achieving Quality of Life and Wellness	10
	Total	**45**

Sr. No.	Modules / Units
1	**Development of Fitness**
	• Benefits of physical fitness and exercise and principles of physical fitness • Calculation of fitness index level 1-4 • Waist-hip ratio Target Heart Rate, BMI and types and principles of exercise (FITT) • Methods of training – continues, Interval, circuit, Fartlek and Plyometric
2	**Health, Fitness and Diseases**
	• Definition of obesity and its management • Communicable diseases, their preventive and therapeutic aspects • Factors responsible for communicable diseases • Preventive and therapeutic aspect of Communicable and non- communicable diseases
3	**Yoga Education**
	• Meaning and history of yoga • Ashtang yoga and types of yoga • Types of Suryanamaskar and Technique of Pranayam • Benefits of Yoga
4	**Daily Schedule of Achieving Quality of Life and Wellness**
	• Daily schedule based upon one's attitude, gender, age &occupation. • Basic – module: - Time split for rest, sleep, diet, activity & recreation. • Principles to achieve quality of life:- positive attitude, daily regular exercise, control over food habits & healthy hygienic practices.

Core Courses (CC)

6.Business Environment

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Business Environment	15
2	Political and Legal environment	15
3	Social and Cultural Environment, Technological environment and Competitive Environment	15
4	International Environment	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Business Environment**
	• **Business:** Meaning, Definition, Nature & Scope, Types of Business Organizations • **Business Environment**: Meaning, Characteristics, Scope and Significance, Components of Business Environment • **Micro and Macro Environment:** Definition, Differentiation, Analysis of Business Environment, SWOT Analysis. • **Introduction to Micro-Environment**: ▪ **Internal Environment:** Value system, Mission, Objectives, Organizational Structure, Organizational Resources, Company Image, Brand Equity ▪ **External Environment:** Firm, customers, suppliers, distributors, Competitors, Society • **Introduction to Macro Components**: Demographic, Natural, Political, Social, Cultural, Economic, Technological, International and Legal)
2	**Political and Legal environment**
	• **Political Institutions:** Legislature, Executive, Judiciary, Role of government in Business, Legal framework in India. • **Economic environment:** economic system and economic policies. Concept of Capitalism, Socialism and Mixed Economy • Impact of business on Private sector, Public sector and Joint sector • Sun-rise sectors of India Economy. Challenges of Indian economy.
3	**Social and Cultural Environment, Technological environment and Competitive Environment**
	• **Social and Cultural Environment:** Nature, Impact of foreign culture on Business, Traditional Values and its Impact, Social Audit - Meaning and Importance of Corporate Governance and Social Responsibility of Business • **Technological environment:** Features, impact of technology on Business • **Competitive Environment:** Meaning, Michael Porter's Five Forces Analysis, Competitive Strategies
4	**International Environment**
	• **International Environment –** ▪ **GATT/ WTO:** Objective and Evolution of GATT, Uruguay round, GATT v/s WTO, Functions of WTO, Pros and Cons of WTO. ▪ **Globalization:** Meaning, Nature and stages of Globalization, features of Globalization, Foreign Market entry strategies, LPG model. ▪ **MNCs:** Definition, meaning, merits, demerits, MNCs in India ▪ **FDI:** Meaning, FDI concepts and functions, Need for FDI in developing countries, Factors influencing FDI, FDI operations in India, • **Challenges faced by International Business and Investment Opportunities for Indian Industry.**

Core Courses (CC)

7. Principles of Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Nature of Management	15
2	Planning and Decision Making	15
3	Organising	15
4	Directing, Leadership, Co-ordination and Controlling	15
	Total	**60**

Sr. No.	Modules / Units
1	**Nature of Management**
	• **Management:** Concept, Significance, Role & Skills, Levels of Management, Concepts of PODSCORB, Managerial Grid. • Evolution of Management thoughts, Contribution of F.W Taylor, Henri Fayol and Contingency Approach.
2	**Planning and Decision Making**
	• **Planning:** Meaning, Importance, Elements, Process, Limitations and MBO. • **Decision Making**: Meaning, Importance, Process, Techniques of Decision Making.
3	**Organizing**
	• **Organizing:** Concepts, Structure (Formal & Informal, Line & Staff and Matrix), Meaning, Advantages and Limitations • **Departmentation:** Meaning, Basis and Significance • **Span of Control:** Meaning, Graicunas Theory, Factors affecting span of ControlCentralization vs Decentralization • **Delegation:** Authority & Responsibility relationship
4	**Directing, Leadership, Co-ordination and Controlling**
	• **Directing:** Meaning and Process • **Leadership:** Meaning, Styles and Qualities of Good Leader • **Co-ordination** as an Essence of Management • **Controlling:** Meaning, Process and Techniques • **Recent Trends:** Green Management & CSR

Reference Books

Reference Books
Introduction to Financial Accounts
• *Financial Accounts (a managerial emphasis): By Ashok Banerjee – Excel books* • *Fundamental of Accounting and Financial Analysis : By Anil Choudhary (Pearson education)* • *Indian Accounting Standards and IFRS for non-financial executives : By T.P. Ghosh– Taxman* • *Financial Accounting for Business Managers: By Ashish K. Bhattacharya.* • *Introduction to Accountancy by T.S. Grewal, S. Chand and Company (P) Ltd., New Delhi* • *Advance Accounts by Shukla and Grewal, S. Chand and Company (P) Ltd., New Delhi* • *Advanced Accountancy by R.L Gupta and M. Radhaswamy, S. Chand and Company (P) Ltd., New Delhi* • *Modern Accountancy by Mukherjee and Hanif, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Financial Accounting by LesileChandwichk, Pentice Hall of India AdinBakley (P) Ltd., New Delhi* • *Financial Accounting for Management by Dr. Dinesh Harsalekar, Multi-Tech. Publishing Co. Ltd., Mumbai* • *Financial Accounting by P.C. Tulsian, Pearson Publications, New Delhi* • *Accounting Principles by R.N. Anthony and J.S. Reece, Richard Irwin, Inc* • *Financial Accounting by Monga, J.R. Ahuja, GirishAhuja and Ashok Shehgal, Mayur Paper Back, Noida* • *Compendium of Statement and Standard of Accounting, ICAI* • *Indian Accounting Standards, Ashish Bhattacharya, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Financial Accounting by Williams, Tata Mc. Grow Hill and Co. Ltd., Mumbai* • *Company Accounting Standards by ShrinivasanAnand, Taxman, New Delhi* • *Financial Accounting by V. Rajasekaran, Pearson Publications, New Delhi* • *Introduction to Financial Accounting by Horngren, Pearson Publications, New Delhi* • *Financial Accounting by M. Mukherjee and M. Hanif, Tata McGraw Hill Education Pvt. Ltd., New Delhi* • *Financial Accounting a Managerial Perspective, Varadraj B. Bapat, MehulRaithatha, Tata McGraw Hill Education Pvt. Ltd., New Delhi*
Business Law
• *Elements of mercantile Law – N.D.Kapoor* • *Business Law – P.C. Tulsian* • *Business Law – SS Gulshan* • *Company Law – Dr.Avtar Singh* • *Indian contract Act – Dr.Avtar Singh* • *Law of Intellectual Property-V.K-Taraporevala*
Business Statistics
• *Statistics of Management , Richard Levin &David S. Rubin,Printice Hall of India , New Delhi.* • *Statistics for Business & Economics, David R Anderson, Dennis J Sweney, Thopmson Publication.* • *Fundamental of Statistics, S C Gupta, Himalya Publication House.* • *Business Statistics , Bharadwaj , Excel Books, Delhi* • *Business Mathematics, S.K Singh & J.K Singh, Brijwasi Book Distributor & Publisher.*

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- *National Humana rights commission- disability Manual*
- *Rural, Urban Migration : Trends, challenges & Strategies, S Rajagopalan, ICFAI- 2012*
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- *Problems of Communilism in india, Ravindra Kumar Mittal Pub*

Combating communalism in India: Key to National Integration, KawalKishor Bhardwaj, Mittal Pub

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- *University of Mumbai National Service Scheme Manual 2009.*
- *Avhan Chancellor's Brigade - NSS Wing, Training camp on Disaster Preparedness Guidelines, March 2012*
- *RashtriyaSevaYojanaSankalpana - Prof.Dr.SankayChakane, Dr.Pramod\Pabrekar, Diamond Publication, Pune*
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- *Social service opportunities in hospitals, Kapil K. Krishnan, TISS*
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- *Cadet's Hand book – Specialised Subjects, Army, Navy, Air-force, BY DG NCC, New Delhi.*
- *NCC OTA Precise, BY DG NCC, New Delhi.*
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Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester I and II with effect from the Academic Year 2016-2017

Scheme of Evaluation

The performance of the learners will be evaluated in two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

A) Internal Assessment: **25 %**

Question Paper Pattern
(Internal Assessment- Courses without Practical Courses)

Sr. No.	Particular	Marks
1	**One class test (20 Marks)**	
	Match the Column/ Fill in the Blanks/ Multiple Choice Questions ***(½ Mark each)***	05 Marks
	Answer in One or Two Lines (Concept based Questions) ***(01 Mark each)***	05 Marks
	Answer in Brief (Attempt Any Two of the Three) ***(05 Marks each)***	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

Question Paper Pattern
(Internal Assessment- Courses with Practical Courses)

Sr. No.	Particular	Marks
1	**Semester End Practical Examination (20 Marks)**	
	Journal	05 Marks
	Viva	05 Marks
	Laboratory Work	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

B) Semester End Examination: 75 %

i) Duration: The examination shall be of 2 ½ Hours duration

ii) Theory question paper pattern

- There shall be five questions each of 15 marks.
- All questions shall be compulsory with internal choice within the questions.
- Question may be subdivided into sub-questions a, b, c… and the allocation of marks depends on the weightage of the topic.
  (Detail question paper pattern has been given separately)

Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

Question Paper Pattern

(Practical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks. If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks.

University of Mumbai

Revised Syllabus
and
Question Paper Pattern
of Courses
of
Bachelor of Management Studies
(BMS) Programme
Second Year
Semester III and IV

Under Choice Based Credit, Grading and Semester System

(To be implemented from Academic Year- 2017-2018)

Board of Studies-in-Business Management, University of Mumbai

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

SYBMS

(To be implemented from Academic Year- 2017-2018)

No. of Courses	Semester III	Credits	No. of Courses	Semester IV	Credits
1	***Elective Courses (EC)***		***1***	***Elective Courses (EC)***	
1 & 2	*Any one group of courses from the following list of the courses	**06**	1 & 2	** Any one group of courses from the following list of the courses	**06**
2	***Ability Enhancement Courses (AEC)***		***2***	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Courses (AECC)***		***2A***	***Ability Enhancement Compulsory Courses (AECC)***	
3	Information Technology in Business Management - I	**03**	3	Information Technology in Business Management-II	**03**
2B	***Skill Enhancement Courses (SEC)***		***2B***	***Skill Enhancement Courses (SEC)***	
4	Foundation Course – III	**02**	4	Foundation course-IV	**02**
3	***Core Courses (CC)***		***3***	***Core Courses (CC)***	
5	Business Planning & Entrepreneurial Management	**03**	5	Business Economics-II	**03**
6	Accounting for Managerial Decisions	**03**	6	Business Research Methods	**03**
7	Strategic Management	**03**	7	Production & Total Quality Management	**03**
	Total Credits	**20**		**Total Credits**	**20**

****List of Skill Enhancement Courses (SEC) for Semester III (Any One)***		*****List of Skill Enhancement Courses (SEC) for Semester II (Any One)***	
1	Foundation Course (Environmental Management) - III	1	Foundation Course (Ethics & Governance)-IV
2	Foundation Course-Contemporary Issues-III	2	Foundation Course-Contemporary Issues-IV
3	Foundation Course in NSS - III	3	Foundation Course in NSS - IV
4	Foundation Course in NCC - III	4	Foundation Course in NCC - IV
5	Foundation Course in Physical Education- III	5	Foundation Course in Physical Education- IV
Note: Course selected in Semester I will continue in Semester III & IV			

*List of group of Elective Courses(EC) for Semester III (Any two)		** List of group of Elective Courses(EC) for Semester IV (Any two)	
Group A: Finance Electives (Any Two Courses)			
1	Basics of Financial Services	1	Financial Institutions & Markets
2	Introduction to Cost Accounting	2	Auditing
3	Equity & Debt Market	3	Strategic Cost Management
4	Corporate Finance	4	Corporate Restructuring
Group B:Marketing Electives (Any Two Courses)			
1	Consumer Behaviour	1	Integrated Marketing Communication
2	Product Innovations Management	2	Rural Marketing
3	Advertising	3	Event Marketing
4	Social Marketing	4	Tourism Marketing
Group C: Human Resource Electives(Any Two Courses)			
1	Recruitment & Selection	1	Human Resource Planning & Information System
2	Motivation and Leadership	2	Training & Development in HRM
3	Employees Relations & Welfare	3	Change Management
4	Organisation Behaviour & HRM	4	Conflict & Negotiation
Note: Group Selected in Semester III will continue in Semester IV.			

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2017-2018)

Semester III

No. of Courses	Semester III	Credits
1	***Elective Courses (EC)***	
1 & 2	*Any one group of courses from the following list of the courses	**06**
2	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***	
3	Information Technology in Business Management - I	**03**
2B	****Skill Enhancement Courses (SEC)***	
4	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
5	Business Planning & Entrepreneurial Management	**03**
6	Accounting for Managerial Decisions	**03**
7	Strategic Management	**03**
	Total Credits	**20**

****List of Skill Enhancement Courses (SEC) for Semester III (Any One)***	
1	Foundation Course (Environmental Management) - III
2	Foundation Course-Contemporary Issues-III
3	Foundation Course in NSS - III
4	Foundation Course in NCC - III
5	Foundation Course in Physical Education - III

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

1. Basics of Financial Services

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Financial System	14
2	Commercial Banks, RBI And Development Banks	16
3	Insurance	15
4	Mutual Funds	15
	Total	**60**

Objectives

SN	Objectives
1	The course aims at explaining the core concepts of business finance and its importance in managing a business
2	The objectives of develop a conceptual frame work of finance function and to acquaint the participants with the tools, types, instruments of financial system in the realm of Indian Financial Market.

Sr. No.	Modules / Units
1	**Financial System:**
	• An overview of Financial System, Financial Markets, Structure of Financial Market (Organised and Unorganized Market), Components of Financial System, Major Financial Intermediaries, Financial Products, Function of Financial System, Regulatory Framework of Indian Financial System(Overview of SEBI and RBI-Role and Importance as regulators).
2	**Commercial Banks, RBI And Development Banks**
	• **Concept of Commercial Banks-** Functions, Investment Policy of Commercial Banks, Liquidity in Banks, Asset Structure of Commercial Banks, Non-Performing Assets, Interest Rate reforms, Capital Adequacy Norms. • **Reserve Bank of India-**Organisation &Management, Role And Functions • **Development Banks-**Characteristics of Development Banks, Need And Emergence of Development Financial Institutions In India, Function of Development Banks.
3	**Insurance:**
	• Concept, Basic Characteristics of Insurance, Insurance Company Operations, Principles of Insurance, Reinsurance, Purpose And Need Of Insurance, Different Kinds of Life Insurance Products, Basic Idea About Fire And Marine Insurance and Bancassurance
4	**Mutual Funds:**
	• Concept of Mutual Funds, Growth of Mutual Funds in India, Features and Importance of Mutual Fund. Mutual Fund Schemes, Money Market Mutual Funds, Private Sector Mutual Funds, Evaluation of the Performance Of Mutual Funds, Functioning of Mutual Funds In India.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

2. Introduction to Cost Accounting

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Elements of Cost	20
3	Cost Projection	15
4	Emerging Cost Concepts	10
	Total	**60**

Objectives

SN	Objectives
1	This course exposes the students to the basic concepts and the tools used in Cost Accounting
2	To enable the students to understand the principles and procedure of cost accounting and to apply them to different practical situations

Sr. No.	Modules / Units
1	**Introduction**
	• Meaning, Nature and scope-Objective of Cost Accounting-Financial Accounting v/s Cost Accounting- Advantages and disadvantages of Cost Accounting-Elements of Costs-Cost classification (concept only)- - Installation of Cost Accounting System, Process (Simple and Inter process) and Job Costing (Practical Problems)
2	**Elements of Cost**
	• **Material Costing**- Stock valuation (FIFO & weighted average method), EOQ, EOQ with discounts, Calculation of Stock levels (Practical Problems) • **Labour Costing** – (Bonus and Incentive Plans) (Practical Problems) • **Overhead Costing** (Primary and Secondary Distribution)
3	**Cost Projection**
	• Cost Sheet (Current and Estimated)) (Practical Problems) • Reconciliation of financial accounts and cost accounting (Practical Problems)
4	**Emerging Cost Concepts**
	Uniform Costing and Interfirm Comparison, Emerging Concepts – Target Costing, Benchmarking, JIT, The Balanced Scorecard; Strategic Based Control; concept, process, implementation of Balanced Scorecard, Challenges in implementation of Balanced Scorecard

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

3. Equity and Debt Market

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Financial Market	15
2	Dynamics of Equity Market	15
3	Players in Debt Markets	15
4	Valuation of Equity & Bonds	15
	Total	**60**

Objectives

SN	Objectives
1	This paper will enable the students to understand the evolution of various aspects of financial markets which in turn will help them in framing the financial policies, development of financial instruments and processes and evolving the strategies during crisis. The teaching will be done mainly through materials available on internet and published research papers

Sr. No.	Modules / Units
1	**Introduction to Financial Market**
	• **Equity market** – meaning & definitions of equity share; Growth of Corporate sector & simultaneous growth of equity shareholders; divorce between ownership and management in companies; development of Equity culture in India & current position. • **Debt market** – Evolution of Debt markets in India; Money market & Debt markets in India; Regulatory framework in the Indian Debt market.
2	**Dynamics of Equity Market**
	• **Primary:** 1)IPO – methods followed (simple numerical) 2) Book building 3)Role of merchant bankers in fixing the price 4)Red herring prospectus – unique features 5)Numerical on sweat equity, ESOP & Rights issue of shares • **Secondary:** 1)Definition & functions of stock exchanges 2)Evolution & growth of stock exchanges 3)Stock exchanges in India 4)NSE, BSE OTCEI & overseas stock exchanges 5)Recent developments in stock exchanges 6)Stock market Indices
3	**Players in debt markets:**
	• **Players in debt markets:** 1)Govt. securities 2)Public sector bonds & corporate bonds 3)open market operations 4)Security trading corp. of India 5)Primary dealers in Govt. securities • **Bonds:** 1)Features of bonds 2)Types of bonds
4	**Valuation of Equity & Bonds**
	• **Valuation of equity**: 1. Balance sheet valuation 2. Dividend discount model(zero growth, constant growth & multiple growth) 3. Price earning model • **Valuation of bonds** 1. Determinants of the value of bonds 2. Yield to Maturity 3. Interest rate risk 4. Determinants of Interest Rate Risk

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

4. Corporate Finance

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Capital Structure and Leverage	15
3	Time Value of Money	15
4	Mobilisation of Funds	15
	Total	**60**

Objectives

SN	Objectives
1	The objectives of develop a conceptual frame work of finance function and to acquaint the participants with the tools techniques and process of financial management in the realm of financial decision making
2	The course aims at explaining the core concepts of corporate finance and its importance in managing a business
3	To providing understanding of nature, importance, structure of corporate finance related areas and to impart knowledge regarding source of finance for a business

Sr. No.	Modules / Units
1	**Introduction**
	• **Introduction To Corporate Finance:** Meaning, Principles of Corporate Finance, Significance of Corporate Finance, Amount of Capitalisation, Over Capitalisation and Under Capitalisation, Fixed capital and Working Capital funds. • **Introduction to ownership securities**– Ordinary Shares, Reference Shares, Creditor Ship Securities, Debtors and Bonds, Convertible Debentures, Concept of Private Placement of Securities.
2	**Capital Structure and Leverage**
	• Introduction to Capital Structure theories, EBIT – EPS analysis for Capital Structure decision. • Cost of Capital – Cost of Debt, Cost of Preference Shares, Cost of Equity Shares and Cost of Retained Earnings, Calculation of Weighted Cost of Capital. • Introduction to concept of Leverage - Operating Leverage, Financial Leverage and Combined Leverage.
3	**Time Value of Money**
	• Introduction to Time Value of Money – compounding and discounting • Introduction to basics of Capital Budgeting (time value of money based methods) – NPV and IRR (Net Present Value and Internal Rate of Return) • Importance of Risk and Return analysis in Corporate Finance
4	**Mobilisation of Funds**
	Public deposits and RBI regulations, Company deposits and SEBI regulations, Protection of depositors, RBI and public deposits with NBFC's. Foreign capital and collaborations, Foreign direct Investment (FDI) Emerging trends in FDI Global Depositary Receipts, Policy development, Capital flows and Equity Debt. Brief introduction & sources of short term Finance Bank Overdraft, Cash Credit, Factoring

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group B. Marketing Electives

1. Consumer Behaviour

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction To Consumer Behaviour:	14
2	Individual- Determinants of Consumer Behaviour	16
3	Environmental Determinants of Consumer Behaviour	15
4	Consumer decision making models and New Trends	15
	Total	**60**

Objectives

SN	Objectives
1	The basic objective of this course is to develop an understanding about the consumer decision making process and its applications in marketing function of firms
2	This course is meant to equip undergraduate students with basic knowledge about issues and dimensions of Consumer Behaviour. Students are expected to develop the skill of understanding and analysing consumer information and using it to create consumer- oriented marketing strategies.

Sr. No.	Modules / Units
1	**Introduction To Consumer Behaviour:**
	• Meaning of Consumer Behaviour, Features and Importance • Types of Consumer (Institutional & Retail), Diversity of consumers and their behaviour- Types Of Consumer Behaviour • Profiling the consumer and understanding their needs • Consumer Involvement • Application of Consumer Behaviour knowledge in Marketing • Consumer Decision Making Process and Determinants of Buyer • Behaviour, factors affecting each stage, and Need recognition.
2	**Individual- Determinants of Consumer Behaviour**
	• Consumer Needs &Motivation (Theories - Maslow, Mc Cleland). • Personality – Concept, Nature of personality, Freudian, non - Freudian and Trait theories, Personality Traits and it's Marketing significance, Product personality and brand personification. • Self Concept – Concept • Consumer Perception • Learning - Theory, Nature of Consumer Attitudes, Consumer Attitude • Formation &Change. • Attitude - Concept of attitude
3	**Environmental Determinants of Consumer Behaviour**
	• Family Influences on Buyer Behaviour, • Roles of different members, needs perceived and evaluation rules. • Factors affecting the need of the family, family life cycle stage and size. • Social Class and Influences. • Group Dynamics & Consumer Reference Groups, Social Class & Consumer Behaviour - Reference Groups, Opinion Leaders and Social Influences In-group versus out-group influences, role of opinion leaders in diffusion of innovation and in purchase process. • Cultural Influences on Consumer Behaviour Understanding cultural and sub-cultural influences on individual, norms and their role, customs, traditions and value system.
4	**Consumer decision making models and NewTrends**
	• Consumer Decision making models: Howard Sheth Model, Engel Blackwell, Miniard Model, Nicosia Models of Consumer Decision Making • Diffusion of innovations Process of Diffusion and Adoption, Innovation, Decision process, Innovator profiles • E-Buying behaviour The E-buyer vis-a vis the Brick and Mortar buyer, Influences on E-buying

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group B. Marketing Electives

2. Product Innovations Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Innovations Management	15
2	Managerial Aspects of Innovations functions	15
3	Product innovations, Process Innovations and Innovations Diffusion	15
4	New Product Development Strategy	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the concept of innovations and relevance of innovations in the present day scenario.
2	To understand the importance of protecting innovations and legal aspects related to innovations
3	To study product innovations, process innovations and innovations diffusion
4	To acquaint the students with stages in new product development

Sr. No.	Modules / Units
1	**Innovations Management**
	• **Introduction -Innovations Management** Innovations: Concept; Features; Types of Innovations; Innovations management; Features of Innovations Management; Significance of innovations; Principles of innovations. • **Thinking Tools for Innovations** Left and right brain thinking; Creative thinking; Traditional V/S Creative thinking; Intuition; Introduction to creativity; Process of creativity; Creativity methods • **Legal Aspects of innovations** Safeguarding innovations; Concept of Intellectual Property Rights; Patents; Patenting trends; trademarks; Industrial designs; Copyrights ;Trade secrets
2	**Managerial Aspects of Innovations functions**
	• **Organizing for Innovations** Introduction; Concepts; Organizational theories and structures; Traits of innovative organization; Factors influencing organizational design and Size decision. • **Strategizing Innovations** Introduction; Innovations as a strategy component; Developing innovation strategy; Innovation strategies; Market standing based strategies. • **Managing Innovations Functions** Introduction; Style at the top; Planning; Organizing; Staffing; Controlling; Characteristics of good management • **Climate and culture for innovations** Introduction; Need for creative organizations; Characteristics of creative organizations; Creating creative organizations – 7s framework; Fostering innovations climate and culture.
3	**Product innovations, Process Innovations and Innovations Diffusion**
	• **Introduction to product innovations** Types of new products; Technology strategy for product innovation; New product development process; Packaging innovations; Positioning innovations; New product failures; Cases of Innovating companies. • **Process Innovations** Introduction; Concept of Process; Features of process; Types of process innovations; Process Management; Process improvement methods; Business process reengineering; Benchmarking. • **Innovations Diffusion** Introduction; Concept of diffusion and adoption; Impact of innovations; Diffusion as an integral part of innovation strategy; Innovations diffusion theories; Factors influencing diffusion strategy; Internalization of innovations.
4	**New Product Development Strategy**
	• **New Product Development and Product specifications** Concept of new product development, specifications: Establishment of specifications, Establishing Target specifications; Setting the final specifications. • **Concept Generation, Selection and Testing** 5 step methods of concept generation, Methods for selecting a concept; Benefits of choosing a structured method; Concept screening; Concept scoring, 7- Test method of concept testing. • **Product testing** Introduction, Purpose of product testing; Overriding concerns of product testing; Major decision in constructing a product test.

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Elective Courses (EC)

Group B. Marketing Electives

3. Advertising

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Advertising	15
2	Strategy and Planning Process in Advertising	15
3	Creativity in Advertising	15
4	Budget, Evaluation, Current trends and careers in Advertising	15
	Total	**60**

Objectives

SN	Objectives
1	To understand and examine the growing importance of advertising
2	To understand the construction of an effective advertisement
3	To understand the role of advertising in contemporary scenario
4	To understand the future and career in advertising

Sr. No.	Modules / Units
1	**Introduction to Advertising**
	• Definition, Evolution of Advertising, Importance, Scope, Features, Benefits, Five M's of Advertising • Types of Advertising –consumer advertising, industrial advertising, institutional advertising, classified advertising, national advertising, generic advertising • Theories of Advertising : Stimulus Theory, AIDA, Hierarchy Effects Model, Means – End Theory, Visual Verbal Imaging, Cognitive Dissonance • Ethics and Laws in Advertising : Puffery, Shock Ads, Subliminal Advertising, Weasel Claim, Surrogate Advertising, Comparative Advertising Code of Ethics, Regulatory Bodies, Laws and Regulation – CSR, Public Service Advertising, Corporate Advertising, Advocacy Advertising • Social, cultural and Economic Impact of Advertising, the impact of ads on Kids, Women and Advertising
2	**Strategy and Planning Process in Advertising**
	• Advertising Planning process & Strategy : Introduction to Marketing Plan, Advertising Plan- Background, situational analysis related to Advertising issues, Marketing Objectives, Advertising Objectives, Target Audience, Brand Positioning (equity, image personality), creative Strategy, message strategy, media strategy, Integration of advertising with other communication tools • Role of Advertising in Marketing Mix : Product planning, product brand policy, price, packaging, distribution, Elements of Promotion, Role of Advertising in PLC • Advertising Agencies – Functions – structure – types - Selection criteria for Advertising agency – Maintaining Agency–client relationship, Agency Compensation.
3	**Creativity in Advertising**
	• Introduction to Creativity – definition, importance, creative process , Creative strategy development – Advertising Campaign – determining the message theme/major selling ideas – introduction to USP – positioning strategies – persuasion and types of advertising appeals – role of source in ads and celebrities as source in Indian ads – execution styles of presenting ads. • Role of different elements of ads – logo, company signature, slogan, tagline, jingle, illustrations, etc – • Creating the TV commercial – Visual Techniques, Writing script, developing storyboard, other elements (Optical, Soundtrack, Music) • Creating Radio Commercial – words, sound, music – scriptwriting the commercial – clarity, coherence, pleasantness, believability, interest, distinctiveness • Copywriting: Elements of Advertisement copy – Headline, sub-headline, Layout, Body copy, slogans. Signature, closing idea, Principles of Copywriting for print, OOH, essentials of good copy, Types of Copy, Copy Research

Sr. No.	Modules / Units
4	**Budget, Evaluation, Current trends and careers in Advertising**
	• Advertising Budget – Definition of Advertising Budget, Features, Methods of Budgeting • Evaluation of Advertising Effectiveness – Pre-testing and Post testing Objectives, Testing process for Advertising effectiveness, Methods of Pre-testing and Post-testing, Concept testing v/s Copy testing • Current Trends in Advertising : Rural and Urban Advertising, Digital Advertising, Content Marketing (Advertorials), retail advertising, lifestyle advertising, Ambush Advertising, Global Advertising – scope and challenges – current global trends • Careers in Advertising : careers in Media and supporting firms, freelancing options for career in advertising, role of Advertising Account Executives, campaign Agency family tree – topmost advertising agencies and the famous advertisements designed by them

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group B. Marketing Electives

4. Social Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Social Marketing & Its Environment	15
2	Social Marketing Plan, STP and Marketing Mix	15
3	Managing Behaviour for Social Change & NPO & CSR	15
4	Social marketing – A Sectoral Overview & Careers	15
	Total	**60**

Objectives

SN	Objectives
1	Understand the concept of social marketing, compare and contrast marketing in a profit-oriented corporate and a nonprofit social environment.
2	Analyze the impact of environment on social marketing & study the various behavior models/frameworks/theories for social change.
3	To study the basis of Segmentation, Targeting and Positioning and identify marketing mix of social marketing.
4	To provide an overview of the Not for Profit Sector (NPO) and comment on the CSR provision in the companies act of 2013.
5	To study overview of social marketing in various key sectors and Identify basic ethical issues in Social marketing and appreciate the careers in Social Marketing

Sr. No.	Modules / Units
1	**Introduction to Social Marketing & Its Environment**
	Definition of Social Marketing, Features, Need for Social Marketing, Evolution of Social Marketing, Social Marketing v/s Commercial Marketing, Challenges of Social Marketing. Social Marketing Unique Value Preposition, Relevance of Social marketing. Environment in Social Marketing, Components, Impact of Environment on Social Marketing.
2	**Social Marketing Plan, STP and Marketing Mix**
	• **Social Marketing Plan, Segmentation, Targeting & Positioning** Social Marketing Plan, Steps in developing social marketing plan, importance of planning. Segmentation, Basis of Segmentation, Criteria for evaluating segments, Targeting, Selecting Target Audience for Social Marketing, Positioning and Types of positioning. • **Social Marketing Mix** 1. Product: Social Product, Level of Product, Social Product Branding Decision. 2. Price: Monetary and non-monetary incentives for desired behavior, Pricing Objectives, Pricing Strategies. 3. Place: 5 A's of Distribution of Product in social marketing, Types of distribution channel 4. Promotion: Developing a Promotion Mix for social product, Message Strategy, Messenger Strategy, Creativity Strategy, selecting communication channel.
3	**Managing Behaviour for Social Change & NPO & CSR**
	• **Managing Behaviour for Social Change** Types of Behaviour Objectives, Knowledge objectives and belief objectives, Behaviour Change Models, Theories and Frameworks: Social Norm Theory, The diffusion of innovation model, The health belief model, The ecological model, Theory of reasoned action and theory of planned behaviour. Social Cognitive theory/social learning, The behavioural economics framework and the nudge factor, the science of habit framing, • **Not for Profit Organization (NPO) & CSR** Meaning, NGO, Voluntary Organization, Third Sector, NPO Sector. Status of Voluntary sector in India. Starting a Voluntary Organization in India: Trust, Society, Section 8 Company under the Companies Act of 2013. CSR, Meaning, Overview of CSR in India, Overview of CSR rules for corporation under Companies Act of 2013, CSR Impact Evaluation. Need for Governance in Not for Profit Sector, Ethics in Social Marketing
4	**Social Marketing – A Sectoral Overview & Careers**
	• Marketing Health • Marketing Education • Marketing Medicare • Marketing Sanitation • Marketing Financial Literacy & Savings • Marketing Digital Literacy • Marketing of Social Issues of Youth. • Social Work as a profession and Social Entrepreneurship,Careers in Social Marketing.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group C. Human Resource Electives

1. Recruitment & Selection

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Recruitment	18
2	Selection	15
3	Induction	15
4	Soft Skills	12
	Total	**60**

Objectives

SN	Objectives
1	The objective is to familiarize the students with concepts and principles, procedure of Recruitment and Selection in an organization.
2	To give an in depth insight into various aspects of Human Resource management and make them acquainted with practical aspect of the subject.

Sr. No.	Modules / Units
1	**Recruitment**
	• **Concepts of Recruitment**- -Meaning, Objectives, Scope & Definition, Importance and relevance of Recruitment. • **Job Analysis**--Concept, Specifications, Description, Process And Methods, Uses of Job Analysis • **Job Design**--Introduction, Definition, Modern Techniques, Factors affecting Job Design, Contemporary Issues in Job Designing. • **Source or Type of Recruitment**– a) Direct/Indirect, b)Internal/ External. Internal-Notification, Promotion– Types, Transfer –Types, Reference External-Campus Recruitment, Advertisement, Job Boards Website/Portals, Internship, Placement Consultancies-Traditional (In-House, Internal Recruitment, On Campus, Employment And Traditional Agency). Modern (Recruitment Books, Niche Recruitments, Internet Recruitment, Service Recruitment, Website and Job, Search Engine, Social Recruiting and Candidate Paid Recruiters). • **Technique of Recruitment**-Traditional Vs Modern Recruitment • **Evaluation of Recruitment**-Outsourcing Programme
2	**Selection**
	• **Selection**-Concept of Selection, Criteria for Selection, Process, Advertisement and Application (Blank Format). • **Screening**-Pre and Post Criteria for Selection, Steps of Selection • **Interviewing**-Types and Guidelines for Interviewer & Interviewee, Types of Selection Tests, Effective Interviewing Techniques. • **Selection Hurdles** and Ways to Overcome Them
3	**Induction**
	• **Induction-**Concept, Types-Formal /Informal, Advantages of Induction ,How to make Induction Effective • **Orientation & On boarding**-Programme and Types, Process. • **Socialisation**-Types-Anticipatory, Encounter, Setting in, Socialisation Tactics • **Current trends** in Recruitment and Selection Strategies– with respect to Service, Finance, I.T., Law And Media Industry
4	**Soft Skills**
	• Preparing Bio-data and C.V. • Social and Soft Skills – Group Discussion &Personal Interview, Video and Tele Conferencing Skills, • Presentation and Negotiation Skills, Aesthetic Skills, • Etiquettes-Different Types and Quitting Techniques. • Exit Interview-Meaning, importance.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group C. Human Resource Electives

2. Motivation & Leadership

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Motivation -I	12
2	Motivation-II	15
3	Leadership-I	17
4	Leadership-II	16
	Total	**60**

Objectives

SN	Objectives
1	To gain knowledge of the leadership strategies for motivating people and changing organizations
2	To study how leaders facilitate group development and problem solving and work through problems and issues as well as transcend differences
3	To acquaint the students about practical approaches to Motivation and Leadership & its application in the Indian context

Sr. No.	Modules / Units
1	**Motivation-I**
	• Concept of motivation, Importance, Tools of Motivation. • Theory Z, Equity theory. • Process Theories-Vroom's Expectancy Theory, Valency-Four drive model.
2	**Motivation-II**
	• East v/s West, motivating workers (in context to Indian workers) • The Indian scene – basic differences. • Work –Life balance – concept, differences, generation and tips on work life balance.
3	**Leadership-I**
	• Leadership– Meaning, Traits and Motives of an Effective Leader, Styles of Leadership. • Theories –Trait Theory, Behavioural Theory, Path Goal Theory. • Transactional v/s Transformational leaders. • Strategic leaders– meaning, qualities. • Charismatic Leaders– meaning of charisma, Qualities, characteristics, types of charismatic leaders (socialized, personalized, office-holder, personal, divine)
4	**Leadership-II**
	• Great leaders, their style, activities and skills (Ratan Tata, Narayan Murthy, Dhirubhai Ambani, Bill Gates, Mark Zuckerberg, Donald Trump) • Characteristics of creative leaders and organization methods to enhance creativity (Andrew Dubrein). • Contemporary issues in leadership–Leadership roles, team leadership, mentoring, self leadership, online leadership, finding and creating effective leader.

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Elective Courses (EC)

Group C. Human Resource Electives

3. Employees Relations & Welfare

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Employee Relations and Collective Bargaining	15
2	Overview of Employee Welfare	15
3	Welfare and Work Environment Management	15
4	Workers Participation and Employee Grievance	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the nature and importance of employee relations in an organization
2	To understand the importance of collective bargaining and Workers participation
3	To understand the causes and effects of employee grievances as well as the procedure to solve the same

Sr. No.	Modules / Units
1	**Overview of Employee Relations and Collective Bargaining**
	• **Employee Relations** - Meaning, Scope, Elements of Employee Relations, Role of HR in Employee Relations • **Employee Relation Policies** – Meaning and Scope. • **Ways to Improve Employee Relations** • **Collective Bargaining** – Meaning, Characteristics, Need and Importance, Classification of collective bargaining - Distributive bargaining, Integrative bargaining, Attitudinal structuring and Intra-organizational bargaining; Principles of Collective Bargaining, Process, Causes for Failure of Collective Bargaining, Conditions for Successful Collective Bargaining • **Collective Bargaining Strategies** - Parallel or Pattern Bargaining, Multi-employer or Coalition Bargaining, Multi-unit or Coordinated Bargaining, and Single-unit Bargaining • **Current Trends** in Collective Bargaining
2	**Overview of Employee Welfare**
	• Meaning, Need for Employee Welfare, Principles of Employee/ Labour Welfare, Scope for Employee/ Labour Welfare in India, Types of Welfare Services – Individual and Group. • **Historical Development of Employee/ Labour Welfare in India** – Pre and Post-Independence, Employee/ Labour Welfare Practices in India • **Approaches to Employee/ Labour Welfare** – Paternalistic, Atomistic, Mechanistic, Humanistic approach • **Theories of Employee Welfare**–Policing Theory, Religion Theory, Philanthropic Theory, Trusteeship Theory, Public Relations Theory, Functional Theory • **Administration of Welfare Facilities** – Welfare Policy, Organisation of Welfare, Assessment of Effectiveness.
3	**Welfare and Work Environment Management**
	• **Agencies for Labour Welfare** – Central Government, State Government, Employers, Trade Union • **Women Welfare** - Meaning, Need for women welfare, Provision of Factories Act as applicable for women welfare • **Responsibility of Employers towards labour welfare** • **Work Environment Management** – Meaning, Need for healthy work environment, measures for providing healthy work, Fatigue at work – Meaning, Causes and Symptoms of Fatigue, Boredom at Workplace – Meaning, Hazards at Workplace – Meaning, Types of Hazards – Physical and Social, Hazard Management – Meaning and Process, Hazard Audit - Concept • **Accidents and Safety Issues at Workplace** – Safety, Safety Culture
4	**Workers Participation and Employee Grievance**
	• **Workers Participation in Management** – Concept, Pre-requisites, forms & levels of participation, Benefit of Workers Participation in Management, Importance of employee stock option plans as a method of participation. • **Employee Grievance** – Meaning, Features, Causes and Effects of Employee Grievances, Employee Grievance Handling Procedure, Effective Ways of Handling Grievance • Role of Industrial Relations Manager in Promoting & Establishing Peaceful Employee Relations

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Elective Courses (EC)

Group C. Human Resource Electives

4. Organisation Behaviour & HRM

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Organisational Behaviour I	12
2	Organisational Behaviour II	13
3	Human Resource Management-I	17
4	Human Resource Management-II	18
	Total	**60**

Objectives

SN	Objectives
1	The objective of this course is to familiarize the student with the fundamental aspects of Various issues associated with Human Resource Management as a whole.
2	The course aims to give a comprehensive overview of Organization Behaviour as a separate area of management.
3	To introduce the basic concepts, functions and processes & create an awareness of the role, functions and functioning of Human Resource Management & OB.

Sr. No.	Modules / Units
1	**Organisational Behaviour-I**
	• Introduction to Organizational Behaviour-Concept, definitions, Evolution of OB • Importance of Organizational Behaviour-Cross Cultural Dynamics, Creating Ethical Organizational Culture& Climate • Individual and Group Behaviour-OB models–Autocratic, Custodial, Supportive, Collegial & SOBC in context with Indian OB • Human Relations and Organizational Behaviour
2	**Organisational Behaviour-II**
	• Managing Communication: Conflict management techniques. • Time management strategies. • Learning Organization and Organizational Design • Rewards and Punishments-Termination, layoffs, Attrition, Retrenchment, Separations, Downsizing
3	**Human Resource Management-I**
	• HRM-Meaning, objectives, scope and functions • HRP-Definition, objectives, importance, factors affecting HRP, Process of HRP, Strategies of HRM , Global HR Strategies • HRD-Concept ,meaning, objectives, HRD functions
4	**Human Resource Management-II**
	• Performance Appraisal: concept, process, methods and problems, KRA'S • Compensation-concept, components of Pay Structure, Wage and salary administration, Incentives and Employee benefits. • Career planning-concept of career Planning, Career stages and carrier planning

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2. Ability Enhancement Courses (AEC)
2A.Ability Enhancement Compulsory Course

3. Information Technology in Business Management-I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to IT Support in Management	15
2	Office Automation using MS-Office	15
3	Email, Internet and its Applications	15
4	E-Security	15
	Total	**60**

Objectives

SN	Objectives
1	To learn basic concepts of Information Technology, its support and role in Management, for managers
2	Module II comprises of practical hands on training required for office automation. It is expected to have practical sessions of latest MS-Office software
3	To understand basic concepts of Email, Internet and websites, domains and security therein
4	To recognize security aspects of IT in business, highlighting electronic transactions, advanced security features

Sr. No.	Modules / Units
1	**Introduction to IT Support in Management**
	• **Information Technology concepts** Concept of Data, Information and Knowledge Concept of Database • **Introduction to Information Systems and its major components**. Types and Levels of Information systems. Main types of IT Support systems Computer based Information Systems (CBIS) ▪ Types of CBIS - brief descriptions and their interrelationships/hierarchies ▪ Office Automation System(OAS) ▪ Transaction Processing System(TPS) ▪ Management Information System(MIS) ▪ Decision Support Systems (DSS) ▪ Executive Information System(EIS) ▪ Knowledge based system, Expert system • **Success and Failure of Information Technology.** Failures of Nike and AT&T • **IT Development Trends**. Major areas of IT Applications in Management • **Concept of Digital Economy and Digital Organization**. • **IT Resources** Open Source Software - Concept and Applications. Study of Different Operating Systems. (Windows / Linux/ DOS)
2	**Office Automation using MS Office**
	• **Learn Word:** Creating/Saving of Document Editing and Formatting Features Designing a title page, Preparing Index, Use of SmartArt Cross Reference, Bookmark and Hyperlink. Mail Merge Feature. • **Spreadsheet application (e.g. MS-Excel/openoffice.org)** Creating/Saving and editing spreadsheets Drawing charts. Using Basic Functions: text, math & trig, statistical, date & time, database, financial, logical Using Advanced Functions : Use of VLookup/HLookup Data analysis – sorting data, filtering data (AutoFilter , Advanced Filter), data validation, what-if analysis (using data tables/scenarios), creating sub-totals and grand totals, pivot table/chart, goal seek/solver, • **Presentation Software** Creating a presentation with minimum 20 slides with a script. Presenting in different views, Inserting Pictures, Videos, Creating animation effects on them Slide Transitions, Timed Presentations Rehearsal of presentation

Sr. No.	Modules / Units
3	**Email, Internet and its Applications**
	• **Introduction to Email** Writing professional emails Creating digitally signed documents. • **Use of Outlook** : Configuring Outlook, Creating and Managing profile in outlook, Sending and Receiving Emails through outlook Emailing the merged documents. Introduction to Bulk Email software • **Internet** Understanding Internet Technology Concepts of Internet, Intranet, Extranet Networking Basics, Different types of networks. Concepts (Hubs, Bridges, Routers, IP addresses) Study of LAN, MAN, WAN • **DNS Basics**. Domain Name Registration, Hosting Basics. • **Emergence of E-commerce and M-Commerce** Concept of E-commerce and M-Commerce Definition of E-commerce and M-Commerce Business models of e-commerce: models based on transaction party (B2B, B2C,B2G, C2B, C2C, E-Governance) Models based on revenue models, Electronics Funds Transfer, Electronic Data Interchange.
4	**E-Security Systems**
	• **Threats to Computer systems and control measures**. Types of threats- Virus, hacking, phishing, spyware, spam, physical threats (fire, flood, earthquake, vandalism) Threat Management • **IT Risk** Definition, Measuring IT Risk, Risk Mitigation and Management • **Information Systems Security** • **Security on the internet** Network and website security risks Website Hacking and Issues therein. Security and Email • **E-Business Risk Management Issues** Firewall concept and component, Benefits of Firewall • **Understanding and defining Enterprise wide security framework** • **Information Security Environment in India with respect to real Time Application in Business** Types of Real Time Systems, Distinction between Real Time, On – line and Batch Processing System. Real Time Applications viz. Railway / Airway / Hotel Reservation System, ATMs, EDI Transactions - definition, advantages, examples;E-Cash, Security requirements for Safe E-Payments Security measures in International and Cross Border financial transactions • **Threat Hunting Software**

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester III with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course –III
Environmental Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Environmental Concepts	12
2	Environment degradation	11
3	Sustainability and role of business	11
4	Innovations in business- an environmental Perspective	11
	Total	**45**

Sr. No.	Modules / Units
1	**Environmental Concepts:**
	• **Environment:** Definition and composition, Lithosphere, Atmosphere, Hydrosphere, Biosphere • **Biogeochemical cycles** - Concept and water cycle • Ecosystem & Ecology; Food chain, food web & Energy flow pyramid • **Resources:** Meaning, classification(Renewable & non-renewable), types & Exploitation of Natural resources in sustainable manner
2	**Environment degradation**
	• **Degradation**-Meaning and causes, degradation of land, forest and agricultural land and its remedies • **Pollution** – meaning, types, causes and remedies (land, air, water and others) • **Global warming**: meaning, causes and effects. • **Disaster Management**: meaning, disaster management cycle. • **Waste Management**: Definition and types -solid waste management anthropogenic waste, e-waste & biomedical waste (consumerism as a cause of waste)
3	**Sustainability and role of business**
	• Sustainability: Definition, importance and Environment Conservation. • Environmental clearance for establishing and operating Industries in India. • EIA, Environmental auditing, ISO 14001 • Salient features of Water Act, Air Act and Wildlife Protection Act. • Carbon bank & Kyoto protocol
4	**Innovations in business- an environmental perspective**
	Non-Conventional energy sources- Wind, Bio-fuel, Solar, Tidal and Nuclear Energy. Innovative Business Models: Eco-tourism, Green marketing, Organic farming, Eco-friendly packaging, Waste management projects for profits ,other business projects for greener future

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester III with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

Foundation Course- Contemporary Issues- III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Human Rights Provisions, Violations and Redressal	12
2	Dealing With Environmental Concerns	11
3	Science and Technology I	11
4	Soft Skills for Effective Interpersonal Communication	11
	Total	**45**

Sr. No.	Modules / Units
1	**Human Rights Violations and Redressal**
	A. Scheduled Castes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **B.** Scheduled tribes- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **C.** Women- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **D.** Children- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(2 Lectures)** **E.** People with Disabilities, Minorities, and the Elderly population- Constitutional and legal rights, Forms of violations, Redressal mechanisms. **(4 Lectures)**
2	**Dealing With Environmental Concerns**
	A. Concept of Disaster and general effects of Disasters on human life- physical, psychological, economic and social effects. **(3 Lectures)** **B.** Some locally relevant case studies of environmental disasters. **(2 Lectures)** **C.** Dealing with Disasters - Factors to be considered in Prevention, Mitigation (Relief and Rehabilitation) and disaster Preparedness. **(3 Lectures)** **D.** Human Rights issues in addressing disasters- issues related to compensation, equitable and fair distribution of relief and humanitarian approach to resettlement and rehabilitation. **(3 Lectures)**
3	**Science and Technology – I**
	A. Development of Science- the ancient cultures, the Classical era, the Middle Ages, the Renaissance, the Age of Reason and Enlightenment. **(3 Lectures)** **B. Nature of science**- its principles and characteristics; Science as empirical, practical, theoretical, validated knowledge. **(2 Lectures)** **C. Science and Superstition**- the role of science in exploding myths, blind beliefs and prejudices; Science and scientific temper- scientific temper as a fundamental duty of the Indian citizen. **(3 Lectures)** **D. Science in everyday life**- technology, its meaning and role in development; Interrelation and distinction between science and technology. **(3 Lectures)**
4	**Soft Skills for Effective Interpersonal Communication**
	Part A **(4 Lectures)** I) Effective Listening - Importance and Features. II) Verbal and Non-Verbal Communication; Public-Speaking and Presentation Skills. III) Barriers to Effective Communication; Importance of Self-Awareness and Body Language. **Part B** **(4 Lectures)** I) Formal and Informal Communication - Purpose and Types. II) Writing Formal Applications, Statement of Purpose (SOP) and Resume. III) Preparing for Group Discussions, Interviews and Presentations. **Part C** **(3 Lectures)** I) Leadership Skills and Self-Improvement - Characteristics of Effective Leadership. II) Styles of Leadership and Team-Building.

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3. Bhatnagar Mamta and Bhatnagar Nitin, *Effective Communication and Soft Skills*, Pearson India, New Delhi, 2011.
4. G Subba Rao, *Writing Skills for Civil Services Examination,* Access Publishing, New Delhi, 2014
5. Kaushal, Rachana, *Women and Human Rights in India*, Kaveri Books, New Delhi, 2000.
6. Mohapatra, Gaur Krishna Das, *Environmental Ecology*, Vikas, Noida, 2008.
7. Motilal, Shashi, and Nanda, Bijoy Lakshmi, *Human Rights: Gender and Environment*, Allied Publishers, New Delhi, 2007.
8. Murthy, D. B. N., *Disaster Management: Text and Case Studies*, Deep and Deep Publications, New Delhi, 2013.
9. Parsuraman, S., and Unnikrishnan, ed., *India Disasters Report II*, Oxford, New Delhi, 2013
10. Reza, B. K., *Disaster Management*, Global Publications, New Delhi, 2010.
11. Sathe, Satyaranjan P., *Judicial Activism in India*, Oxford University Press, New Delhi, 2003.
12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
13. Thorpe, Edgar, *General Studies Paper I Volume V*, Pearson, New Delhi, 2017.

Projects / Assignments (for Internal Assessment)

i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.

ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.

iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.

iv. Students can work in groups of not more than 8 per topic.

v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75 **DURATION: 150 MINUTES**

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	**i.** Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules. **ii.** Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester **iii.** In all 8 Questions will be asked out of which 5 have to be attempted.	**a)** Total marks: 15 **b)** For 1 A, there will be 3 marks for each sub-question. **c)** For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester III with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course in NSS - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Value System & Gender sensitivity	12
2	Disaster preparedness & Disaster management	10
3	Health, hygiene & Diseases	13
4	Environment & Energy conservation	10
	Total	**45**

Sr. No.	Modules / Units
1	**Value System & Gender sensitivity**
	UNIT - I – Value System Meaning of value, Types of values- human values and social responsibilities- Indian value system- the concepts and its features **UNIT - II - Gender sensitivity and woman empowerment** Concept of gender- causes behind gender related problems- measures Meaning of woman empowerment- schemes for woman empowerment in India
2	**Disaster preparedness & Disaster management**
	UNIT - I - Basics of Disaster preparedness Disaster- its meaning and types Disaster preparedness- its meaning and methods **UNIT - II - Disaster management** Disaster management- concept- disaster cycle - role of technology in disaster response- role of as first responder – the study of 'Avhan' Model
3	**Health, hygiene & Diseases**
	UNIT - I - Health and hygiene Concept of complete health and maintenance of hygiene **UNIT - II - Diseases and disorders- preventive campaigning** Diseases and disorders- preventive campaigning in Malaria, Tuberculosis, Dengue, Cancer, HIV/AIDS, Diabetes
4	**Environment & Energy conservation**
	UNIT - I Environment and Environment enrichment program Environment- meaning, features , issues, conservation of natural resources and sustainability in environment **UNIT - II Energy and Energy conservation program** Energy- the concept, features- conventional and non- conventional energy Energy conservation- the meaning and importance

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester III with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course in NCC - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	National Integration & Awareness	10
2	Drill: Foot Drill	10
3	Adventure Training and Environment Awareness and Conservation	05
4	Personality Development and Leadership	10
5	Specialized subject (ARMY)	10
	Total	**45**

Sr. No.	Modules / Units
1	**National Integration & Awareness**
	Desired outcome: The students will display sense of patriotism, secular values and shall be transformed into motivated youth who will contribute towards nation building through national unity and social cohesion. The students shall enrich themselves about the history of our beloved country and will look forward for the solutions based on strengths to the challenges to the country for its development. • Freedom Struggle and nationalist movement in India. • National interests, Objectives, Threats and Opportunities. • Problems/ Challenges of National Integration. • Unity in Diversity
2	**Drill: Foot Drill**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, turnout, develop the quality of immediate and implicit obedience of orders, with good reflexes. • Side pace, pace forward and to the rear • Turning on the march and whiling • Saluting on the march • Marking time, forward march and halt in quick time • Changing step • Formation of squad and squad drill
3	**Adventure Training, Environment Awareness and Conservation**
3A	**Adventure Training**
	Desired outcome: The students will overcome fear & inculcate within them the sense of adventure, sportsmanship, espirit-d-corp and develop confidence, courage, determination, diligence and quest for excellence. • Any Two such as – Obstacle course, Slithering, Trekking, Cycling, Rock Climbing, Para Sailing, Sailing, Scuba Diving etc.
3B	**Environment Awareness and Conservation**
	Desired outcome: The student will be made aware of the modern techniques of waste management and pollution control. • Waste management • Pollution control, water, Air, Noise and Soil
4	**Personality Development and Leadership**
	Desired outcome: The student will inculcate officer like qualities with desired ability to take right decisions. • Time management • Effect of Leadership with historical examples • Interview Skills • Conflict Motives- Resolution

Sr. No.	Modules / Units
5	**Specialized Subject: Army Or Navy Or Air**
	<u>Army</u> **Desired outcome:** It will acquaint, expose & provide knowledge about Army/ Navy/ Air force and to acquire information about expanse of Armed Forces ,service subjects and important battles **A. Armed Force** • Task and Role of Fighting Arms • Modes of Entry to Army • Honors and Awards **B. Introduction to Infantry and weapons and equipments** • Characteristics of 5.56mm INSAS Rifle, Ammunition, Fire power, Stripping, Assembling and Cleaning • Organization of Infantry Battalion. **C. Military history** • Study of battles of Indo-Pak War 1965,1971 and Kargil • War Movies **D. Communication** • Characteristics of Walkie-Talkies • Basic RT Procedure • Latest trends and Development (Multi Media, Video Conferencing, IT) ***OR*** **<u>Navy</u>** **A. Naval orientation and service subjects** • Organization of Ship- Introduction on Onboard Organization • Naval Customs and Traditions • Mode of Entry into Indian Navy • Branches of the Navy and their functions • Naval Campaign (Battle of Atlantic, Pearl Harbour, Falkland War/Fleet Review/ PFR/ IFR)s **B. Ship and Boat Modelling** • Types of Models • Introduction of Ship Model- Competition Types of Model Prepare in NSC and RDC • Care and handling of power-tools used- maintenance and purpose of tools

Sr. No.	Modules / Units
	C. Search and Rescue • Role of Indian Coast Guard related to SAR **D. Swimming** • Floating and Breathing Techniques- Precautions while Swimming ***OR*** **AIR** **A. General Service Knowledge** • Organization Of Air Force • Branches of the IAF. **B. Principles of Flight** • Venturi Effect • Aerofoil • Forces on an Aircraft • Lift and Drag **C. Airmanship** • ATC/RT Procedures • Aviation Medicine **D. Aero- Engines** • Types of Engines • Piston Engines • Jet Engines • Turboprop Engines

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester III with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course in Physical Education - III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Nutrition	10
2	Evaluation of Health, Fitness and Wellness	10
3	Prevention and Care of Exercise Injuries	10
4	Sports Training	15
	Total	**45**

Sr. No.	Modules / Units
1	**Overview of Nutrition**
	• Introduction to nutrition & its principles • Role of Nutrition in promotion of health • Dietary Guidelines for Good Health • Regulation of water in body and factors influencing body temperature.
2	**Evaluation of Health, Fitness and Wellness**
	• Meaning & Concept of holistic health • Evaluating Personal health-basic parameters • Evaluating Fitness Activities – Walking & Jogging • Myths &mis-conceptions of Personal fitness
3	**Prevention and Care of Exercise Injuries**
	• Types of Exercise Injuries • First Aid- Importance & application in Exercise Injuries • Management of Soft tissues injuries • Management of bone injuries
4	**Sports Training**
	• Definition, aims & objectives of Sports training • Importance of Sports training • Principles of Sports training • Drug abuse & its effects

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III
With Effect from the Academic Year 2017-2018

3. Core Courses (CC)

5.Business Planning & Entrepreneurial Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Foundations of Entrepreneurship Development	15
2	Types & Classification Of Entrepreneurs	15
3	Entrepreneur Project Development & Business Plan	15
4	Venture Development	15
	Total	**60**

Objectives

SN	Objectives
1	Entrepreneurship is one of the major focus areas of the discipline of Management. This course introduces Entrepreneurship to budding managers.
2	To develop entrepreneurs &to prepare students to take the responsibility of full line of management function of a company with special reference to SME sector.

Sr. No.	Modules / Units
1	**Foundations of Entrepreneurship Development:**
	• **Foundations of Entrepreneurship Development:** Concept and Need of Entrepreneurship Development Definition of Entrepreneur, Entrepreneurship, Importance and significance of growth of entrepreneurial activities Characteristics and qualities of entrepreneur • **Theories of Entrepreneurship**: Innovation Theory by Schumpeter &Imitating Theory of High Achievement by McClelland X-Efficiency Theory by Leibenstein Theory of Profit by Knight Theory of Social change by Everett Hagen • **External Influences on Entrepreneurship Development**: Socio-Cultural, Political, Economical, Personal. Role of Entrepreneurial culture in Entrepreneurship Development.
2	**Types & Classification Of Entrepreneurs**
	• Intrapreneur –Concept and Development of Intrapreneurship • Women Entrepreneur – concept, development and problems faced by Women Entrepreneurs, Development of Women Entrepreneurs with reference to Self Help Group • Social entrepreneurship–concept, development of Social entrepreneurship in India. Importance and Social responsibility of NGO's. • Entrepreneurial development Program (EDP)– concept, factor influencing EDP. Option available to Entrepreneur. (Ancillarisation, BPO, Franchise, M&A)
3	**Entrepreneur Project Development &Business Plan**
	• Innovation, Invention, Creativity, Business Idea, Opportunities through change. • Idea generation– Sources-Development of product /idea, • Environmental scanning and SWOT analysis • Creating Entrepreneurial Venture-Entrepreneurship Development Cycle • Business Planning Process-The business plan as an Entrepreneurial tool, scope and value of Business plan. • Elements of Business Plan, Objectives, Market and Feasibility Analysis, Marketing, Finance, Organization &Management, Ownership, • Critical Risk Contingencies of the proposal, Scheduling and milestones.
4	**Venture Development**
	• Steps involved in starting of Venture • Institutional support to an Entrepreneur • Venture funding, requirements of Capital (Fixed and working) Sources of finance, problem of Venture set-up and prospects • Marketing: Methods, Channel of Marketing, Marketing Institutions and Assistance. • New trends in entrepreneurship

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

3. Core Courses (CC)

6. Accounting for Managerial Decisions

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Analysis and Interpretation of Financial statements	15
2	Ratio analysis and Interpretation	15
3	Cash flow statement	15
4	Working capital	15
	Total	**60**

Objectives

SN	Objectives
1	To acquaint management learners with basic accounting fundamentals.
2	To develop financial analysis skills among learners.
3	The course aims at explaining the core concepts of business finance and its importance in managing a business

Sr. No.	Modules / Units
1	**Analysis and Interpretation of Financial statements**
	• Study of balance sheet of limited companies. Study of Manufacturing, Trading, Profit and Loss A/c of Limited Companies • Vertical Form of Balance Sheet and Profit & Loss A/c-Trend Analysis, Comparative Statement &Common Size.
2	**Ratio analysis and Interpretation**
	• **Ratio analysis and Interpretation**(based on vertical form of financial statements)including conventional and functional classification restricted to: • **Balance sheet ratios**: Current ratio, Liquid Ratio, Stock Working capital ratio, Proprietory ratio, Debt Equity Ratio, Capital Gearing Ratio. • **Revenue statement ratios:** Gross profit ratio**,** Expenses ratio, Operating ratio, Net profit ratio, Net Operating Profit Ratio, Stock turnover Ratio, Debtors Turnover , Creditors Turnover Ratio • **Combined ratios:** Return on capital Employed (including Long term borrowings), Return on Proprietors fund (Shareholder fund and Preference Capital), Return on Equity Capital, Dividend Payout Ratio, Debt Service Ratio, • **Different modes of expressing ratios**:-Rate, Ratio, Percentage, Number. Limitations of the use of Ratios.
3	**Cash flow statement**
	Preparation of cash flow statement(AccountingStandard-3(revised)
4	**Working capital**
	• **Working capital-**Concept, Estimation of requirements in case of Trading & Manufacturing Organizations. • **Receivables management-**Meaning &Importance, Credit Policy Variables, methods of Credit Evaluation(Traditional and Numerical- Credit Scoring); Monitoring the Debtors Techniques [DSO, Ageing Schedule]

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with Effect from the Academic Year 2017-2018

3. Core Courses (CC)

7. Strategic Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	12
2	Strategy Formulation	16
3	Strategic Implementation	18
4	Strategic Evaluation & Control	14
	Total	**60**

Objectives

SN	Objectives
1	The objective of this course is to learn the management policies and strategies at every Level to develop conceptual skills in this area as well as their application in the corporate world.
2	The focus is to critically examine the management of the entire enterprise from the Top Management view points.
3	This course deals with corporate level Policy & Strategy formulation areas. This course aims to developing conceptual skills in this area as well as their application in the corporate world.

Sr. No.	Modules / Units
1	**Introduction**
	• **Business Policy**-Meaning, Nature, Importance • **Strategy**-Meaning, Definition • **Strategic Management**-Meaning, Definition, Importance, Strategic management • Process & Levels of Strategy and Concept and importance of Strategic Business Units (SBU's) • **Strategic Intent**-Mission, Vision, Goals, Objective, Plans
2	**Strategy Formulation**
	• Environment Analysis and Scanning(SWOT) • Corporate Level Strategy (Stability, Growth, Retrenchment, Integration and Internationalization) • Business Level Strategy(Cost Leadership, Differentiation, Focus) • Functional Level Strategy(R&D, HR, Finance, Marketing, Production)
3	**Strategic Implementation**
	• Models of Strategy making. • Strategic Analysis& Choices &Implementation: BCG Matrix, GE 9Cell, Porter5 Forces, 7S Frame Work • Implementation: Meaning, Steps and implementation at Project, Process, Structural ,Behavioural ,Functional level.
4	**Strategic Evaluation & Control**
	Strategic Evaluation & Control– Meaning, Steps of Evaluation & Techniques of Control Synergy: Concept , Types , evaluation of Synergy. Synergy as a Component of Strategy & its Relevance. Change Management– Elementary Concept

Bachelor of Management Studies (BMS) Programme

Under Choice Based Credit, Grading and Semester System

Course Structure

(To be implemented from Academic Year- 2017-2018)

Semester IV

No. of Courses	Semester IV	Credits
1	***Elective Courses (EC)***	
1& 2	*Any one group of courses from the following list of the courses	**06**
2	***Ability Enhancement Courses (AEC)***	
2A	***Ability Enhancement Compulsory Course (AECC)***	
3	Information Technology in Business Management-II	**03**
2B	*****Skill Enhancement Courses (SEC)***	
4	Any one course from the following list of the courses	**02**
3	***Core Courses (CC)***	
5	Business Economics-II	**03**
6	Business Research Methods	**03**
7	Production & Total Quality Management	**03**
	Total Credits	**20**

*****List of Skill Enhancement Courses (SEC) for Semester IV (Any One)***	
1	Foundation Course (Ethics & Governance)- IV
2	Foundation Course- Contemporary Issues- IV
3	Foundation Course in NSS - IV
4	Foundation Course in NCC - IV
5	Foundation Course in Physical Education - IV

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

1. Financial Institutions & Markets

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Financial System in India	16
2	Financial Regulators & Institutions in India (detail discussion on their role and functions)	16
3	Financial Markets (In Details)	16
4	Managing Financial Systems Design	12
	Total	**60**

Objectives

SN	Objectives
1	The Course aims at providing the students basic knowledge about the structure, role and functioning of financial institutions and markets in the financial system in India.
2	To inculcate understanding relating to managing of financial system

Sr. No.	Modules / Units
1	**Financial System in India**
	• **Financial System Theoretical Settings** – Meaning, Importance, Functions of financial system, Indian financial system from financial neutrality to financial activism and from financial volatility to financial stability. Role of government in Financial development , Phases of Indian financial system since independence (State Domination – 1947-1990, Financial sector reforms 1991 till Financial sector Legislative Reforms Commission 2013) (Only an Overview) Monitoring Framework for financial Conglomerates, • **Structure of Indian financial system** – Financial Institutions (Banking & Non-Banking), Financial Markets (Organized and Unorganized) Financial Assets/Instruments, Financial Services(Fund based & Free Based) – (In details) • **Microfinance** - Conceptual Framework – Origin, Definitions, Advantages, Barriers, Microfinance Models in India
2	**Financial Regulators & Institutions in India (detail discussion on their role and functions)**
	• **Financial Regulators** – Ministry of Finance (Dept of DEA, Expenditure ,Revenue, financial services and disinvestment) RBI- Changing role of RBI in the financial sector, global crisis and RBI, Ministry of Corporate Affairs, SEBI, Pension Fund Regulatory and Development Authority, IRDA. • **Financial Institutions**- Role, Classification, Role of Commercial banks, IFCI, IDBI, Industrial Credit and Investment Corporation of India, SFC, Investment institutions in India (LIC, GIC) NBFC services provided by NBFC. • **Specialized Financial Institutions** – EXIM, NABARD, SIDBI, NHB, SIDC, SME Rating agency of India Ltd, IIFCL, IWRFC (Their role, functions and area of concerns)
3	**Financial Markets (In Details)**
	• **Indian Money Market** – Meaning, Features, Functions, Importance, Defects, Participants, Components (Organized and Unorganized) (in details) and Reforms • **Indian Capital Market** - Meaning, Features, Functions, Importance, Participants, Instruments, Reforms in Primary and Secondary Market, Stock Indices, NSE, BSE, ADR and GDR • **Introduction of Commodity and Derivative Markets** • **Insurance and Mutual funds** – An introduction
4	**Managing Financial Systems Design**
	• **Financial System Design** – Meaning, Stakeholder Lender Conflict, Manager Stock holder conflict, Conflict Resolution and Financial System Design, Bank oriented systems and Market oriented systems its advantages and drawbacks, Dimensions of well-functioning financial systems • **At global level** – Financial system designs of Developed countries (Japan, Germany , UK and USA) (Brief Summary) • **Case studies** relating to disinvestments polices of PSU in India, Global crises and failures in market systems around world

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV with Effect from the Academic Year 2017-2018

Elective Courses (EC)

Group A. Finance Electives

2. Auditing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Auditing	15
2	Audit Planning, Procedures and Documentation	15
3	Auditing Techniques and Internal Audit Introduction	15
4	Auditing Techniques: Vouching &Verification	15
	Total	**60**

Objectives

SN	Objectives
1	To enable students get acquaint with the various concepts of auditing.
2	To ensure students understand and practice the various techniques of auditing while managing their finances

Sr. No.	Modules / Units
1	**Introduction to Auditing**
	• **Basics** – Financial Statements, Users of Information, Definition of Auditing, Objectives of Auditing – Primary and Secondary, Expression of opinion, Detection of Frauds and Errors, Inherent limitations of Audit. Difference between Accounting and Auditing, Investigation and Auditing. • **Errors & Frauds** – Definitions, Reasons and Circumstances, Types of Error – Commission, Omission, Compensating error. Types of frauds, Risk of fraud and Error in Audit, Auditors Duties and Responsibilities in case of fraud • **Principles of Audit** – Integrity, Objectivity, Independence, Skills, Competence, Work performed by others, Documentation, Planning, Audi Evidence, Accounting System and Internal Control, Audit Conclusions and Reporting • **Types of Audit** – Meaning, Advantages, Disadvantages of Balance sheet Audit, Interim Audit, Continuous Audit, Concurrent Audit and Annual Audit
2	**Audit Planning, Procedures and Documentation**
	• **Audit Planning** – Meaning, Objectives, Factors to be considered, Sources of obtaining information, Discussion with Client, Overall Audit Approach. • **Audit Program** – Meaning, Factors, Advantages and Disadvantages, Overcoming Disadvantages, Methods of Work , Instruction before commencing Work, Overall Audit Approach • **Audit Working Papers** - Meaning, importance, Factors determining Form and Contents, Main Functions / Importance, Features, Contents of Permanent Audit File, Temporary Audit File, Ownership, Custody, Access of Other Parties to Audit Working Papers, Auditors Lien on Working Papers, Auditors Lien on Client's Books • **Audit Notebook** – Meaning, structure, Contents, General Information, Current Information, Importance
3	**Auditing Techniques and Internal Audit Introduction**
	• **Test Check** - Test Checking Vs Routing Checking, test Check meaning, features, factors to be considered, when Test Checks can be used, advantages disadvantages precautions. • **Audit Sampling** - Audit Sampling, meaning, purpose, factors in determining sample size -Sampling Risk, Tolerable Error and expected error, methods of selecting Sample Items Evaluation of Sample Results auditors Liability in conducting audit based on Sample • **Internal Control** - Meaning and purpose, review of internal control, advantages, auditors duties, review of internal control, Inherent Limitations of Internal control, internal control samples for sales and debtors, purchases and creditors, wages and salaries. Internal Checks Vs Internal Control, Internal Checks Vs Test Checks • **Internal Audit** - Meaning, basic principles of establishing Internal audit, objectives, evaluation of internal Audit by statutory auditor, usefulness of Internal Audit, Internal Audit Vs External Audit,, Internal Checks Vs Internal Audit

Sr. No.	Modules / Units
4	**Auditing Techniques: Vouching &Verification**
	• **Audit of Income** - Cash Sales, Sales on Approval, Consignment Sales, Sales Returns Recovery of Bad Debts written off, Rental Receipts, Interest and Dividends Received Royalties Received • **Audit of Expenditure** - Purchases, Purchase Returns, Salaries and Wages, Rent, Insurance Premium, Telephone expense Postage and Courier, Petty Cash Expenses, Travelling Commission Advertisement, Interest Expense • **Audit of Assets Book Debts / Debtors, Stocks** -Auditors General Duties; Patterns, Dies and Loose Tools, Spare Parts, Empties and Containers Quoted Investments and Unquoted Investment Trade Marks / Copyrights Patents Know-How Plant and Machinery Land and Buildings Furniture and Fixtures • **Audit of Liabilities** - Outstanding Expenses, Bills Payable Secured loans Unsecured Loans, Contingent Liabilities

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Elective Courses (EC)

Group A. Finance Electives

3. Strategic Cost Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Strategic Cost Management(Only Theory)	20
2	Activity Based Costing	20
3	Strategic Cost Management performance assessment (Only theory)	08
4	Variance Analysis & Responsibility Accounting (Practical Problems)	12
	Total	**60**

Objectives

SN	Objectives
1	Learners should develop skills of analysis, evaluation and synthesis in cost and management accounting
2	The subject covers the complex modern industrial organizations within which the various facets of decision-making and controlling operations take place.

Sr. No.	Modules / Units
1	**Introduction to Strategic Cost Management(Only Theory)**
	• **Strategic Cost Management (SCM):** Concept and Philosophy-Objectives of SCM-Environmental influences on cost management practices, Key elements in SCM-Different aspects of Strategic Cost Management: Value Analysis & Value Engineering, Wastage Control, Disposal Management, Business Process Re-engineering, Total Quality Management, Total Productive Maintenance, Energy Audit, Control of Total Distribution Cost & Supply Cost, Cost Reduction & Product Life Cycle Costing(An Overview)
2	**Activity Based Costing**
	• **Activity Based Management and Activity Based Budgeting**: Concept, rationale, issues, limitations. Design and Implementation of Activity Based Costing (**Practical Problems on ABC**), Life Cycle Costing, Kaizen Costing, Back Flush Costing. Evaluation criterion; Return on Cash Systems; Transfer Pricing and Divisional Performance. Transfer Pricing in International Business, Marginal Costing and Managerial Decision Mix (Practical Problems)
3	**Strategic Cost Management performance assessment (Only theory)**
	• Cost Audit & Management Audit under companies Act, with reference to strategic assessment of cost & managerial performance- Strategic Cost-Benefit Analysis of different business restructuring propositions-Entrepreneurial approach to cost Management, with reference to core competencies, strategic advantages & long-term perspective of cost Management. Six Sigma, Learning Curve, Praise Analysis and Simulation
4	**Variance Analysis & Responsibility Accounting (Practical Problems)**
	• **Standard Costing** (Material, Labour, Overhead, Sales & Profit) • **Responsibility Accounting** –Introduction, Types & Evaluation of Profit Centre and Investment Centre

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Elective Courses (EC)

Group A. Finance Electives

4. Corporate Restructuring

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Corporate Restructuring – Introduction and Concepts (Only Theory)	15
2	Accounting of Internal Reconstruction (Practical and theory)	15
3	Accounting of External Reconstruction (Amalgamation/ Mergers/ Takeovers and Absorption)(Practical and theory)	15
4	Impact of Reorganization on the Company - An Introduction (Only Theory)	15
	Total	**60**

Objectives

SN	Objectives
1	To impart knowledge relating to legal, accounting and practical implementation of corporate restructuring.
2	The subject covers the complex facets of corporate restructuring process

Sr. No.	Modules / Units
1	**Corporate Restructuring – Introduction and Concepts (Only Theory)**
	• Corporate Restructuring - Historical Background, Meaning of Corporate Restructuring, Corporate Restructuring as a Business Strategy, Need and Scope of Corporate Restructuring. • Planning, Formulation and Execution of Various Restructuring Strategies, Important Aspects to be considered while Planning or Implementing Corporate Restructuring Strategies. • Forms of Restructuring - Merger, Demerger, Reverse merger , Disinvestment , Takeover/acquisition, Joint Venture (JV), Strategic Alliance, Franchising and Slump sale
2	**Accounting of Internal Reconstruction (Practical and theory)**
	• Need for reconstruction and Company Law provisions, Distinction between internal and external reconstructions • Methods including alteration of share capital, variation of share-holder rights, sub division, consolidation, surrender and reissue/cancellation, reduction of share capital, with relevant legal provisions and accounting treatments for same.
3	**Accounting of External Reconstruction (Amalgamation/ Mergers/ Takeovers and Absorption)(Practical and theory)**
	• In the nature of merger and purchase with corresponding accounting treatments of pooling of interests and purchase methods respectively • Computation and meaning of purchase consideration and Problems based on purchase method of accounting only.
4	**Impact of Reorganization on the Company - An Introduction (Only Theory)**
	• Change in the Internal Aspects on Reorganization – Change of Name and Logo, Revised Organization Chart, Communication, Employee Compensation, Benefits and Welfare Activities, Aligning Company Policies, Aligning Accounting and Internal Database Management Systems, Re-Visiting Internal Processes and Re-Allocation of People • Change in External Aspects on Reorganization - Engagement with Statutory Authorities, Revised ISO Certification and Similar Other Certifications, Revisiting past Government approvals, decisions and other contracts. • Impact of Reorganization - Gain or Loss to Stakeholders, Implementation of Objectives, Integration of Businesses and Operations, Post Merger Success and Valuation and Impact on Human and Cultural Aspects.

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Elective Courses (EC)

Group B. Marketing Electives

1. Integrated Marketing Communication

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Integrated Marketing Communication	15
2	Elements of IMC – I	15
3	Elements of IMC – II	15
4	Evaluation & Ethics in Marketing Communication	15
	Total	**60**

Objectives

SN	Objectives
1	To equip the students with knowledge about the nature, purpose and complex construction in the planning and execution of an effective Integrated Marketing Communication (IMC) program.
2	To understand the various tools of IMC and the importance of co-ordinating them for an effective marketing communication program.

Sr. No.	Modules / Units
1	**Introduction to Integrated Marketing Communication**
	• Meaning, Features of IMC, Evolution of IMC, Reasons for Growth of IMC. • Promotional Tools for IMC, IMC planning process, Role of IMC in Marketing • Communication process, Traditional and alternative Response Hierarchy Models • Establishing objectives and Budgeting: Determining Promotional Objectives, Sales vs Communication Objectives, DAGMAR, Problems in setting objectives, setting objectives for the IMC Program.
2	**Elements of IMC – I**
	• **Advertising** – Features, Role of Advertising in IMC, Advantages and Disadvantages, Types of Advertising, Types of Media used for advertising. • **Sales promotion** – Scope, role of Sales Promotion as IMC tool, Reasons for the growth, Advantages and Disadvantages, Types of Sales Promotion, objectives of consumer and trade promotion, strategies of consumer promotion and trade promotion, sales promotion campaign, evaluation of Sales Promotion campaign.
3	**Elements of IMC – II**
	• **Direct Marketing** - Role of direct marketing in IMC, Objectives of Direct Marketing, Components for Direct Marketing, Tools of Direct Marketing – direct mail, catalogues, direct response media, internet, telemarketing, alternative media evaluation of effectiveness of direct marketing • **Public Relations and Publicity** – Introduction, Role of PR in IMC, Advantages and Disadvantages, Types of PR, Tools of PR ,Managing PR – Planning, implementation, evaluation and Research, Publicity, Sponsorship – definition, Essentials of good sponsorship, event sponsorship, cause sponsorship • **Personal Selling** – Features, Role of Personal Selling in IMC, advantages and disadvantages of Personal Selling, Selling process, Importance of Personal Selling
4	**Evaluation & Ethics in Marketing Communication**
	• **Evaluating an Integrated Marketing program** – Evaluation process of IMC – Message Evaluations, Advertising tracking research – copy testing – emotional reaction test, cognitive Neuro science – online evaluation, Behavioural Evaluation – sales and response rate, POPAI, Toll free numbers, QR codes and facebook likes, response cards, Internet responses, redemption rate Test Markets – competitive responses, scanner data, Purchase simulationtests • **Ethics and Marketing communication** – stereotyping, targeting vulnerable customers, offensive brand messages – legal issues – Commercial free speech, misleading claims, puffery, fraud, questionable B2B practices • **Current Trends in IMC** – Internet & IMC, Advertising on internet, PR through Internet Banner, Sales promotion on Internet, direct marketing on internet.

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Elective Courses (EC)

Group B. Marketing Electives

2. Rural Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Rural Market	15
3	Rural Marketing Mix	15
4	Rural Marketing Strategies	15
	Total	**60**

Objectives

SN	Objectives
1	The objective of this course is to explore the students to the Agriculture and Rural Marketing environment so that they can understand consumer's and marketing characteristics of the same for understanding and contributing to the emerging challenges in the upcoming global economic scenario.

Sr. No.	Modules / Units
1	**Introduction**
	• Introduction to Rural Market, Definition &Scope of Rural Marketing. • Rural Market in India-Size & Scope, Rural development as a core area, Efforts put for Rural development by government (A brief Overview). • Emerging Profile of Rural Markets in India, • Problems of rural market. • Constraints in Rural Marketing and Strategies to overcome constraints
2	**Rural Market**
	• **Rural Consumer Vs Urban Consumers**– a comparison. • Characteristics of Rural Consumers. • **Rural Market Environment:** a)Demographics– Population, Occupation Pattern, Literacy Level; b)Economic Factors-Income Generation, Expenditure Pattern, Rural Demand and Consumption Pattern, Rural Market Index; Land Use Pattern, c)Rural Infrastructure -Rural Housing, Electrification, Roads • **Rural Consumer Behaviour:** meaning, Factors affecting Rural Consumer Behaviour-Social factors, Cultural factors, Technological factors, Lifestyle, Personality.
3	**Rural Marketing Mix**
	• Relevance of Marketing mix for Rural market/Consumers. • Product Strategies, Rural Product Categories-FMCGs, Consumer Durables, Agriculture Goods &Services; Importance of Branding, Packaging and Labelling. • Nature of Competition in Rural Markets, the problem of Fake Brands • Pricing Strategies & objectives • Promotional Strategies. Segmentation, Targeting & Positioning for rural market.
4	**Rural Marketing Strategies**
	• **Distribution Strategies for Rural consumers.** Channels of Distribution- HAATS, Mandis, Public Distribution System, Co-operative society, Distribution Models of FMCG, Companies HUL, ITC etc. Distribution networks, Ideal distribution model for rural markets (Case study based) • **Communication Strategy.** Challenges in Rural Communication, Developing Effective Communication, Determining Communication Objectives, Designing the Message, Selecting the Communication Channels. Creating Advertisements for Rural Audiences. Rural Media- Mass media, Non-Conventional Media, Personalized media;

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Elective Courses (EC)

Group B. Marketing Electives

3. Event Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Events	15
2	Segmenting, Targeting and Positioning of Events and Concept of Product in Events	15
3	Concept of Pricing and Promotion in Events	15
4	Trends and Challenges in Event Marketing	15
	Total	**60**

Objectives

SN	Objectives
1	To understand basic concepts of Event Marketing.
2	To impart knowledge to learners about categories of Events.
3	To understand segmenting, targeting and positioning in the context of Event Marketing.
4	To familiarize learners with trends and challenges in Event Marketing.

Sr. No.	Modules / Units
1	**Introduction to Events**
	• Definition and Meaning of Event Marketing ; The Evolution of Event Marketing, Advantages of Event Marketing, 5 C's of Events- Conceptualization, costing, canvassing, customization, carrying-out; Event Designing; Reach; **Interaction**-Interaction Points, Direct Interaction, Indirect Interaction, Interaction Catalysts or Enablers. • Importance of Events as a Marketing Communication Tool; Events as a Marketing Tool: The Varied Marketing Needs Addressed by Events: Brand Building, Focus on Target Market, Implementation of Marketing Plan, Marketing Research, Relationship Building, Creating opportunities for better deals with different media, Events and their Economic implications. • Concept of Event Creativity, Key Elements of Events: Event Infrastructure; Customer Groups; Clients; Event Organizers; Venue; Media
2	**Segmenting, Targeting and Positioning of Events and Concept of Product in Events**
	• Concept of Market in Events; Segmentation and targeting of the Market for events; Positioning of events-Event Property. • Concept of Product in Events: Benefit Levels-Core, generic, expected, augmented; Categories of Events: Competitive Events, Artistic Expression, Cultural Celebrations, Exhibition Events, Charitable Events ,Special Business Events, Retail Events. • Event Variations- Time Frame Based, Concept Based, Artist Based, Client Industry Based
3	**Concept of Pricing and Promotion in Events**
	• Risk Rating, Setting Pricing Objectives, Understanding local legislations and tax laws, Feedback about events from the market, skills required for negotiating the best price, validation against pricing objectives, pricing decisions, Event Charges: Percentage of the total Event Cost, Flat Fee, Package Price, Hourly Rate. • Networking Components: Print Media, Radio, Television, Internet, Outdoor Media, Direct Marketing, Sales Promotion, Public Relations, Merchandising, In-venue Publicity. • Event Sponsorship: Concept of Sponsorship, Sponsorship in a communication context, Synergy between sponsor and Event, Identifying Potential sponsors, Impact Measurement, Practical Sponsor Incentivization, In-Kind Sponsorship.
4	**Trends and Challenges in Event Marketing**
	• e-event marketing, Virtual Events, Societal Event Marketing, Green Event, Cause-Related Event Marketing, Sports Event Marketing. • Safety and Security of Event • Event Crisis Management • Growth of Event Industry in India • Career in Event Marketing

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Elective Courses (EC)

Group B. Marketing Electives

4. Tourism Marketing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Tourism Marketing	15
2	Tourism Market Segmentation & Product Mix of Tourism Marketing	15
3	Concept of Pricing, Place, Promotion and Expanded marketing mix for tourism marketing	15
4	Global tourism, tourism organizations and Challenges for Indian Tourism Industry	15
	Total	**60**

Objectives

SN	Objectives
1	To understand basic concepts and strategies of Tourism Marketing.
2	To impart knowledge to learners about types of tourism.
3	To understand segmentation and Marketing mix in the context of Tourism Marketing.
4	To familiarize learners with trends and challenges in Tourism Marketing.

Sr. No.	Modules / Units
1	**Introduction to Tourism Marketing**
	• Meaning of Tourism & Tourist, Features of Tourism, Purpose of Tourism, Adverse Effects of Tourism, Factors Influencing growth of Tourism, Classification of Tourism; Types of Tourism: Health, adventure, rural, cultural, religious, eco-Tourism, wedding Tourism, cruise Tourism. • **Tourism Marketing** Meaning, Objectives of Tourism Marketing, Importance of Tourism Marketing, Problems of Tourism Marketing. • **Phases of Tourism**: Economic Approach, Environmental Approach, Cost Benefit Approach. • **Tourism Planning**: Process, Study of market, Levels of tourism planning, Organization of a tour. Tour Operators and Travel Agents: functions, types, distribution network, Travel agency operations, Travel Organization-Individual and group, travel itinerary. Travel Formalities and Documentation.
2	**Tourism Market Segmentation & Product Mix of Tourism Marketing**
	• **Tourism Market Segmentation:** Meaning, Need for Market Segmentation in Tourism Importance of Market Segmentation in Tourism Bases for Segmentation in Tourism Tourist Typology: Cohens Typology, Plog's Typology • **4 'A's of Tourism** Attraction: Meaning, Typology of Attraction, Natural, Artificial, Cultural, Social, Managed Attraction for Tourist, Peter's Inventory of Tourist Accommodation: Meaning, Typology of Accommodation Accessibility: Meaning, Transportation System for Tourism, Surface Transport, Railways and its contribution to tourism, Sea & Waterways, Airways Amenities: Meaning, Amenities & Facilities at the destination. • **Marketing Strategy**: Hard v/s Soft Tourism Strategy. • **Product Mix of Tourism Marketing**: Meaning, Tourism Destination Life Cycle, Factors for tourism destination selection, launching a new tourism product, Tourism Product and Package Tour, Itinerary meaning, Types of Itinerary, Drawing a Itinerary for Tourist, Reservation meaning, Sources of reservation, Modes of Reservation, Ticketing Procedure
3	**Concept of Pricing, Place, Promotion and Expanded marketing mix for tourism marketing**
	• **Price:** Meaning, Factors Influencing Tourism Pricing, Tourism Pricing Objectives, Tourism Pricing Policies • **Place:** Meaning, Factors Influencing Tourism Distribution, Tourism Distribution System, Middlemen in Tourism Industry, Functions of Middlemen, Travel Guide Meaning, Essential of an ideal travel guide. • **Promotion:** Tourism Advertising, Tourism Publicity, Tourism Public Relation, Tourism Sales promotion Technique, Personal Selling in Tourism, Skills required for Selling Tourism Product, Electronics Channel of Tourism • **People:** Moment of Truth in Tourism, Employee as an element of people mix, Internal Marketing, Objectives of Internal Marketing, Internal marketing Process. • **Process:** Meaning, Factors to be considered while designing the service process, Tourism Service Blueprinting: Meaning, Steps, Benefits of Blueprinting • **Physical Evidence** for Tourism

Sr. No.	Modules / Units
4	**Global Tourism, Tourism Organizations and Challenges for Indian Tourism Industry**
	• **Global Tourism Market**: Overview of Tourism Market of America, Mauritius, Asia Pacific, Thailand, Vietnam, China, Singapore, Middle East and Gulf, UK and other European Countries. • **Status of tourism in developing countries**. • **India as a Tourist Destination**: A conceptual framework, Destination Image, Building Brand India; Incredible India Campaign • **Challenges** for Indian Tourism Industry • **Tourism Organizations**: World Trade Organization (WTO), International Civil Aviation Organization (ICAO), International Air Transport Association (IATA), Pacific Asia Travel Association (PATA), Universal Federation of Travel Agents Association (UFTAA), Travel Agents Association of India (TAAI), Indian Association of Tour Operators (IATO), Ministry of Tourism, Government of India, India Tourism Development Corporation.

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Elective Courses (EC)

Group C. Human Resource Electives

1. Human Resource Planning and Information System

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Human Resource Planning (HRP)	15
2	Job Analysis, Recruitment and Selection	15
3	HRP Practitioner, Aspects of HRP and Evaluation	15
4	Human Resource Information Systems	15
	Total	**60**

Objectives

SN	Objectives
1	To Understand the Concept and Process of HRP
2	To Understand Ways of matching Job Requirements and Human Resource Availability
3	To Explore the concept of Strategic HRP
4	To Understand the applications of HRIS

Sr. No.	Modules / Units
1	**Overview of Human Resource Planning (HRP)**
	a) Overview of Human Resource Planning (HRP): **Human Resource Planning–**Meaning, Features, Scope, Approaches, Levels of HRP, Types, Tools, Activities for HRP, Requirements for Effective HR Planning. **Process of HRP-** Steps in HRP, HR Demand Forecasting–Factors, Techniques – (Concepts Only) Managerial Judgement, Ratio Trend Analysis, Regression Analysis, Work Study Technique, Delphi Technique. HR Supply Forecasting– Factors, Techniques – (Concepts Only) Skills Inventories, Succession Plans, Replacement Charts, Staffing Tables. • Barriers in Effective Implementation of HRP and Ways to Overcome Them. • **Strategic Human Resource Planning –**Meaning and Objectives. • Link between Strategic Planning and HRP through Technology. • **HR Policy –**Meaning, Importance. • **HR Programme-**Meaning and Contents.
2	**Job Analysis, Recruitment and Selection**
	a) Job Analysis, Recruitment and Selection: • **Job Analysis-**Meaning, Features, Advantages. • **Job Design:** Concept, Issues. • **Job Redesign –**Meaning, Process, Benefits. **Matching Human Resource Requirement and Availability through:** Retention- Meaning, Strategies, Resourcing- Meaning, Types. Flexibility – Flexible work practices, Downsizing- Meaning, Reasons, Layoff – Meaning, Reasons. • **Recruitment -** Meaning and Factors affecting Recruitment, Ethical Issues in Recruitment and Selection. • **Employee Selection Tests:** Meaning, Advantages and Limitations. • **Human Resource Audit:** Meaning, Need, Objectives, Process, Areas.
3	**HRP Practitioner, Aspects of HRP and Evaluation**
	a) HRP Practitioner, Aspects of HRP and Evaluation: • **HRP Practitioner:** Meaning, Role. • **HRP Management Process:** ▪ Establish HRP Department Goals and Objectives ▪ Creating HRP Department Structure ▪ Staffing the HRP Department ▪ Issuing Orders ▪ Resolving Conflicts ▪ Communicating ▪ Planning for Needed Resources ▪ Dealing with Power and Politics -Meaning and Types of Power • HRP as Tool to Enhance Organisational Productivity • Impact of Globalisation on HRP.

	• **Aspects of HRP :** Performance Management, Career Management, Management Training and Development, Multi Skill Development • **Return on Investment in HRP-** Meaning and Importance. • **HRP Evaluation**- Meaning, Need, Process, Issues to be considered during HRP Evaluation. • **Selected Strategic Options and HRP Implications:** Restructuring and its Impact on HRP, Mergers and Acquisitions and its Impact on HRP, Outsourcing and its Impact on HRP.
4	**Human Resource Information Systems**
	• Human Resource Information Systems: • **Data Information Needs for HR Manager** – Contents and Usage of Data. • **HRIS-**Meaning, Features, Evolution, Objectives, Essentials, Components, Functions, Steps in designing of HRIS, HRIS Subsystems, Mechanisms of HRIS, Benefits, Limitations, Barriers in Effective Implementation of HRIS. • Security Issues in Human Resource Information Systems. • HRIS for HRP • Trends in HRIS

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Elective Courses (EC)

Group C. Human Resource Electives

2. Training & Development in HRM

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Training	15
2	Overview of development	15
3	Concept of Management development	15
4	Performance measurement, Talent management & Knowledge management	15
	Total	**60**

Objectives

SN	Objectives
1	This paper is not pure academic oriented but practice based. It has been designed, keeping in view the needs of the organizations. Successful managerial performance depends on the individual's ability to observe, interpret the issues and modify his approach and behaviour. All organizations need to pay adequate attention to equip their employees. Rapid progress in technology has changed not only in the physical facilities but also in the abstract qualities required of the men who are using them. This paper will attempt to orient the students to tailor themselves to meet the specific needs of the organizations in training and development activities.

Sr. No.	Modules / Units
1	**Overview of Training**
	• Overview of training– concept, scope, importance, objectives, features, need and assessment of training. • Process of Training–Steps in Training, identification of Job Competencies, criteria for identifying Training Needs (Person Analysis, Task Analysis, Organisation Analysis), Types–On the Job &Off the Job Method. • Assessment of Training Needs, Methods & Process of Needs Assessment. • Criteria &designing-Implementation– an effective training program.
2	**Overview of Development**
	• Overview of development– concept, scope, importance & need and features, Human Performance Improvement • Counselling techniques with reference to development employees, society and organization. • Career development– Career development cycle, model for planned self development, succession planning.
3	**Concept of Management Development**
	• Concept of Management Development. • Process of MDP. • Programs &methods, importance, evaluating a MDP.
4	**Performance measurement, Talent management & Knowledge management**
	• Performance measurements– Appraisals, pitfalls &ethics of appraisal. • Talent management –Introduction ,Measuring Talent Management, Integration & future of TM, Global TM &knowledge management— OVERVIEW -Introduction: History, Concepts, • Knowledge Management: Definitions and the Antecedents of KM Information Management to Knowledge Management , Knowledge Management: What Is and What Is Not?, Three stages of KM, KM Life Cycle

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Elective Courses (EC)

Group C. Human Resource Electives

3. Change Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	15
2	Impact of Change	15
3	Resistance to Change	15
4	Effective Implementation of Change	15
	Total	**60**

Objectives

SN	Objectives
1	The objective of this paper is to prepare students as organizational change facilitators using the knowledge and techniques of behavioural science.

Sr. No.	Modules / Units
1	**Introduction**
	• Introduction &levels of change. Importance, imperatives of change, Forces of change. Causes-social, economic, technological and organizational. • Organizational culture& change. • Types & Models of change –Kurt Lewin's change model, Action research, Expanded Process Model., A.J. Leavitts model.
2	**Impact of Change**
	• Change & its implementation.– individual change: concept, need, importance & risk of not having individual perspective. Team Change –concept, need, importance & limitation • Change & its impact– Resistance to change & sources-sources of individual resistance, sources of organizational resistance
3	**Resistance to Change**
	• Overcoming Resistance to change – Manifestations of resistance, Six box model • Minimizing RTC. • OD Interventions to overcome change-meaning and importance, Team intervention, Role analysis Technique, Coaching &mentoring, T-group, Job expectations technique, Behaviour modification, Managing role stress.
4	**Effective implementation of change**
	• Effective implementation of change–change agents and effective change programs. • Systematic approach to change, client & consultant relationship • Classic skills for leaders • Case study on smart change leaders, caselets on Action research.

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Elective Courses (EC)

Group C. Human Resource Electives

4. Conflict & Negotiation

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Overview of Conflict	15
2	Conflict Management	15
3	Overview of Negotiation	15
4	Managing Negotiations, Ethics in Negotiation and 3D Negotiation	15
	Total	**60**

Objectives

SN	Objectives
1	To understand the nature of conflicts, their causes and outcomes
2	To study the aspects of conflict management and how to handle them effectively
3	To get insight into negotiations and negotiation process
4	To understand the role of third party negotiation and skills for effective negotiation

Sr. No.	Modules / Units
1	**Overview of Conflict**
	• Meaning of Conflict, Nature, Transitions in Conflict Thought – Traditional View, Human Relations View, Interactionist View. Functional and Dysfunctional Conflict, Levels of Conflicts, Process of Conflicts. • Meaning of Industrial/ Organizational Conflict, Causes, Benefits and Limitations of Conflicts to the Organization. • **Conflict Outcomes** - win-lose, lose-lose, compromise, win-win. • **Five belief domains of Conflicts** – Superiority, Injustice, Vulnerability, Distrust, Helplessness
2	**Conflict Management**
	• Meaning of Conflict management, Need and Importance of Conflict management, Conflict Resolution Strategies - Competing, Accommodating, Avoiding, Compromising, Collaborative. Strategies for resolving conflicts at – Intra-personal, Inter-personal, Intra-group and Inter group levels. • **Prevention of Industrial Conflicts** – Labour welfare officer, Tripartite and Bipartite Bodies, Standing Orders, Grievance Procedure, Collective Bargaining. • **Settlement of Conflicts** – Investigation, Mediator, Conciliation, Voluntary arbitration, compulsory arbitration, labour courts, industrial tribunals, national tribunals
3	**Overview of Negotiation**
	• **Negotiation** - Meaning, Importance of Negotiation, Process, Factors/ Elements affecting negotiation, Challenges for an Effective Negotiation • Role of Communication, Personality and Emotions in Negotiation. • Distributive and Integrative Negotiation (concepts) • **Cross-Cultural Negotiation** – Meaning, Factors influencing cross-cultural negotiations, Ways to resolve Cross Cultural negotiation. • **Types of Negotiations** in Corporates/ Work Place – Day to Day, Employer – Employee, Negotiation between Colleagues, Commercial Negotiation, Legal Negotiations • **International Negotiations** - Meaning, Factors affecting negotiation
4	**Managing Negotiations, Ethics in Negotiation and 3D Negotiation**
	• **Third Party Negotiation** 1. Mediation - Meaning, Role of Mediator 2. Arbitration – Meaning, Role of Arbitrator 3. Conciliation – Meaning, Role of Conciliator 4. Consultation – Meaning, Role of Consultant • **Skills for Effective Negotiation** • **Negotiation as an Approach to Manage Conflicts**. • **Ethics in Negotiation** – Meaning, Need, Ethically Ambiguous Negotiation Tactics. • **Culture and Negotiation** – Meaning, Influence of culture on negotiations • **3D Negotiation** – Meaning, The 3 Dimensions for successful negotiations

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)
2A.Ability Enhancement Compulsory Course

3. Information Technology in Business Management-II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Management Information system	15
2	ERP/E-SCM/E-CRM	15
3	Introduction to databases and data warehouse	15
4	Outsourcing	15
	Total	**60**

Objectives

SN	Objectives
1	To understand managerial decision-making and to develop perceptive of major functional area of MIS
2	To provide conceptual study of Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management, Key issues in implementation. This module provides understanding about emerging MIS technologies like ERP, CRM, SCM and trends in enterprise applications.
3	To learn and understand relationship between database management and data warehouse approaches , the requirements and applications of data warehouse
4	To learn outsourcing concepts. BPO/KPO industries, their structures , Cloud computing

Sr. No.	Modules / Units
1	**Management Information System**
	• **Overview of MIS** Definition, Characteristics • **Subsystems of MIS** (Activity and Functional subsystems) • **Structure of MIS** • **Reasons for failure of MIS**. • **Understanding Major Functional Systems** Marketing & Sales Systems Finance & Accounting Systems Manufacturing & Production Systems Human Resource Systems Inventory Systems • **Sub systems, description and organizational levels** • **Decision support system** Definition Relationship with MIS • **Evolution of DSS, Characteristics, classification, objectives, components, applications of DSS**
2	**ERP/E-SCM/E-CRM**
	• **Concepts of ERP** • **Architecture of ERP** Generic modules of ERP • **Applications of ERP** • **ERP Implementation concepts** ERP lifecycle • **Concept of XRP** (extended ERP) • **Features of commercial ERP software** Study of SAP, Oracle Apps, MS Dynamics NAV, Peoplesoft • **Concept of e-CRM** E-CRM Solutions and its advantages, How technology helps? • **CRM Capabilities and customer Life cycle** Privacy Issues and CRM • **Data Mining and CRM** CRM and workflow Automation • **Concept of E-SCM** Strategic advantages, benefits E-SCM Components and Chain Architecture • **Major Trends in e-SCM** • **Case studies ERP/SCM/CRM**

Sr. No.	Modules / Units
3	**Introduction to Data base and Data warehouse**
	• **Introduction to DBMS** Meaning of DBMS, Need for using DBMS. Concepts of tables, records, attributes, keys, integrity constraints, schema architecture, data independence. • **Data Warehousing and Data Mining** Concepts of Data warehousing, Importance of data warehouse for an organization Characteristics of Data warehouse Functions of Data warehouse Data warehouse architecture Business use of data warehouse Standard Reports and queries • **Data Mining** The scope and the techniques used • **Business Applications of Data warehousing and Data mining**
4	**Outsourcing**
	• **Introduction to Outsourcing** Meaning of Outsourcing, Need for outsourcing Scope of Outsourcing. Outsourcing : IT and Business Processes • **Business Process Outsourcing (BPO)** Introduction • **BPO Vendors** How does BPO Work? BPO Service scope Benefits of BPO BPO and IT Services Project Management approach in BPO BPO and IT-enabled services • **BPO Business Model** Strategy for Business Process Outsourcing Process of BPO ITO Vs BPO • **BPO to KPO** Meaning of KPO KPO vs BPO KPO : Opportunity and Scope KPO challenges KPO Indian Scenario • **Outsourcing in Cloud Environment** Cloud computing offerings • **Traditional Outsourcing Vs. Cloud Computing**

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course –IV
Ethics & Governance

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Ethics and Business Ethics	12
2	Ethics in Marketing, Finance and HRM	11
3	Corporate Governance	11
4	Corporate Social Responsibility (CSR)	11
	Total	**45**

Objectives

SN	Objectives
1	To understand significance of ethics and ethical practices in businesses which are indispensible for progress of a country
2	To learn the applicability of ethics in functional areas like marketing, finance and human resource management
3	To understand the emerging need and growing importance of good governance and CSR by organisations
4	To study the ethical business practices, CSR and Corporate Governance practiced by various organisations

Sr. No.	Modules / Units
1	**Introduction to Ethics and Business Ethics**
	• **Ethics:** Concept of Ethics, Evolution of Ethics, Nature of Ethics- Personal, Professional, Managerial Importance of Ethics, Objectives, Scope, Types – Transactional, Participatory and Recognition • **Business Ethics**: Meaning, Objectives, Purpose and Scope of Business Ethics Towards Society and Stakeholders, Role of Government in Ensuring Business Ethics Principles of Business Ethics, 3 Cs of Business Ethics – Compliance, Contribution and Consequences Myths about Business Ethics Ethical Performance in Businesses in India
2	**Ethics in Marketing, Finance and HRM**
	• **Ethics in Marketing**: Ethical issues in Marketing Mix, Unethical Marketing Practices in India, Ethical Dilemmas in Marketing, Ethics in Advertising and Types of Unethical Advertisements • **Ethics In Finance**: Scope of Ethics in Financial Services, Ethics of a Financial Manager – Legal Issues, Balancing Act and Whistle Blower, Ethics in Taxation, Corporate Crime - White Collar Crime and Organised Crime, Major Corporate Scams in India, Role of SEBI in Ensuring Corporate Governance, Cadbury Committee Report, 1992 • **Ethics in Human Resource Management:** Importance of Workplace Ethics, Guidelines to Promote Workplace Ethics, Importance of Employee Code of Conduct, Ethical Leadership
3	**Corporate Governance**
	• Concept, History of Corporate Governance in India, Need for Corporate Governance • Significance of Ethics in Corporate Governance, Principles of Corporate Governance, Benefits of Good Governance, Issues in Corporate Governance • Theories- Agency Theory, Shareholder Theory, Stakeholder Theory and Stewardship Theory • Corporate Governance in India, Emerging Trends in Corporate Governance, Models of Corporate Governance, Insider Trading
4	**Corporate Social Responsibility (CSR)**
	• Meaning of CSR, Evolution of CSR, Types of Social Responsibility • Aspects of CSR- Responsibility, Accountability, Sustainability and Social Contract • Need for CSR • CSR Principles and Strategies • Issues in CSR • Social Accounting • Tata Group's CSR Rating Framework • Sachar Committee Report on CSR • Ethical Issues in International Business Practices • Recent Guidelines in CSR • Society's Changing Expectations of Business With Respect to Globalisation • Future of CSR

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

Foundation Course- Contemporary Issues- IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Significant, Contemporary Rights of Citizens	12
2	Approaches to understanding Ecology	11
3	Science and Technology –II	11
4	Introduction to Competitive Exams	11
	Total	**45**

Sr. No.	Modules / Units
1	**Significant, Contemporary Rights of Citizens**
	A. Rights of Consumers-Violations of consumer rights and important provisions of the Consumer Protection Act, 2016; Other important laws to protect consumers; Consumer courts and consumer movements. **(3 Lectures)** **B. Right to Information**- Genesis and relation with transparency and accountability; important provisions of the Right to Information Act, 2005; some success stories. **(3 Lectures)** **C. Protection of Citizens'/Public Interest**-Public Interest Litigation, need and procedure to file a PIL; some landmark cases. **(3 Lectures)** **D. Citizens' Charters, Public Service Guarantee Acts. (3 Lectures)**
2	**Approaches to understanding Ecology**
	A. Understanding approaches to ecology- Anthropocentrism, Biocentrism and Eco centrism, Ecofeminism and Deep Ecology. **(3 Lectures)** **B. Environmental Principles-1**: the sustainability principle; the polluter pays principle; the precautionary principle. **(4 Lectures)** **C. Environmental Principles-2**: the equity principle; human rights principles; the participation principle. **(4 Lectures)**
3	**Science and Technology –II**
	Part A:Some Significant Modern Technologies, Features and Applications (7 Lectures) i. **Laser Technology**- Light Amplification by Stimulated Emission of Radiation; use of laser in remote sensing, GIS/GPS mapping, medical use. ii. **Satellite Technology**- various uses in satellite navigation systems, GPS, and imprecise climate and weather analyses. iii. **Information and Communication Technology**- convergence of various technologies like satellite, computer and digital in the information revolution of today's society. iv. **Biotechnology and Genetic engineering**- applied biology and uses in medicine, pharmaceuticals and agriculture; genetically modified plant, animal and human life. v. **Nanotechnology**- definition: the study, control and application of phenomena and materials at length scales below 100 nm; uses in medicine, military intelligence and consumer products. **Part B:Issues of Control, Access and Misuse of Technology. (4 Lectures)**

Sr. No.	Modules / Units
4	**Introduction to Competitive Exams**
	Part A. Basic information on Competitive Examinations- the pattern, eligibility criteria and local centres: **i.** Examinations conducted for entry into professional courses - Graduate Record Examinations (GRE), Graduate Management Admission Test GMAT), Common Admission Test (CAT) and Scholastic Aptitude Test (SAT). **ii.** Examinations conducted for entry into jobs by Union Public Service Commission, Staff Selection Commission (SSC), State Public Service Commissions, Banking and Insurance sectors, and the National and State Eligibility Tests (NET / SET) for entry into teaching profession. **Part B. Soft skills required for competitive examinations- (7 Lectures)** **i.** Information on areas tested: Quantitative Ability, Data Interpretation, Verbal Ability and Logical Reasoning, Creativity and Lateral Thinking **ii.** Motivation: Concept, Theories and Types of Motivation **iii.** Goal-Setting: Types of Goals, SMART Goals, Stephen Covey's concept of human endowment **iv.** Time Management: Effective Strategies for Time Management **v.** Writing Skills: Paragraph Writing, Report Writing, Filing an application under the RTI Act, Consumer Grievance Letter.

References

1. Asthana, D. K., and Asthana, Meera, *Environmental Problems and Solutions*, S. Chand, New Delhi, 2012.
2. Bajpai, Asha, *Child Rights in India*, Oxford University Press, New Delhi, 2010.
3. Bhatnagar Mamta and Bhatnagar Nitin, *Effective Communication and Soft Skills*, Pearson India, New Delhi, 2011.
4. G Subba Rao, *Writing Skills for Civil Services Examination,* Access Publishing, New Delhi, 2014
5. Kaushal, Rachana, *Women and Human Rights in India*, Kaveri Books, New Delhi, 2000.
6. Mohapatra, Gaur Krishna Das, *Environmental Ecology*, Vikas, Noida, 2008.
7. Motilal, Shashi, and Nanda, Bijoy Lakshmi, *Human Rights: Gender and Environment*, Allied Publishers, New Delhi, 2007.
8. Murthy, D. B. N., *Disaster Management: Text and Case Studies*, Deep and Deep Publications, New Delhi, 2013.
9. Parsuraman, S., and Unnikrishnan, ed., *India Disasters Report II*, Oxford, New Delhi, 2013
10. Reza, B. K., *Disaster Management*, Global Publications, New Delhi, 2010.
11. Sathe, Satyaranjan P., *Judicial Activism in India*, Oxford University Press, New Delhi, 2003.
12. Singh, Ashok Kumar, *Science and Technology for Civil Service Examination*, Tata McGraw Hill, New Delhi, 2012.
13. Thorpe, Edgar, *General Studies Paper I Volume V*, Pearson, New Delhi, 2017.

Projects / Assignments (for Internal Assessment)

i. Projects/Assignments should be drawn for the component on Internal Assessment from the topics in **Module 1 to Module 4**.

ii. Students should be given a list of possible topics - at least 3 from each Module at the beginning of the semester.

iii. The Project/Assignment can take the form of Street-Plays / Power-Point Presentations / Poster Exhibitions and similar other modes of presentation appropriate to the topic.

iv. Students can work in groups of not more than 8 per topic.

v. Students must submit a hard / soft copy of the Project / Assignment before appearing for the semester end examination.

QUESTION PAPER PATTERN (Semester III)

The Question Paper Pattern for Semester End Examination shall be as follows:

TOTAL MARKS: 75 **DURATION: 150 MINUTES**

QUESTION NUMBER	DESCRIPTION	MARKS ASSIGNED
1	**i.** Question 1 A will be asked on the meaning / definition of concepts / terms from all Modules. **ii.** Question 1 B will be asked on the topic of the Project / Assignment done by the student during the Semester **iii.** In all 8 Questions will be asked out of which 5 have to be attempted.	**a)** Total marks: 15 **b)** For 1 A, there will be 3 marks for each sub-question. **c)** For 1 B there will be 15 marks without any break-up.
2	Descriptive Question with internal option (A or B) on Module 1	15
3	Descriptive Question with internal option (A or B) on Module 2	15
4	Descriptive Question with internal option (A or B) on Module 3	15
5	Descriptive Question with internal option (A or B) on Module 4	15

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course in NSS - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Entrepreneurship Development	10
2	Rural Resource Mobilization	10
3	Ideal village & stake of GOS and NGO	13
4	Institutional Social Responsibility and modes of Awareness	12
	Total	**45**

Sr. No.	Modules / Units
1	**Entrepreneurship Development**
	UNIT - I Entrepreneurship development Entrepreneurship development- its meaning and schemes Government and self-employment schemes for Entrepreneurship development **UNIT - II - Cottage Industry** Cottage Industry- its meaning, its role in development process Marketing of cottage products and outlets
2	**Rural Resource Mobilization**
	UNIT - I - Rural resource mobilization- A case study of eco-village, eco-tourism, agro-tourism **UNIT - II - Micro financing with special reference to self-help groups**
3	**Ideal village & stake of GOS and NGO**
	UNIT - I - Ideal village Ideal village- the concept Gandhian Concept of Ideal village Case studies on Ideal village **UNIT - II - Government Organisations(GOs) and Non-Government Organisations (NGOs)** The concept and functioning
4	**Institutional Social Responsibility and modes of Awareness**
	UNIT - I - Institutional Social Responsibilities Concept and functioning- case study of adapted village **UNIT - II - Modes of awareness through fine Arts Skills** Basics of performing Arts as tool for social awareness, street play, creative dance, patriotic song, folk songs and folk dance. Rangoli, posters, flip charts, placards, etc**.**

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course in NCC - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Disaster Management, Social Awareness and Community Development	10
2	Health and Hygiene	10
3	Drill with Arms	05
4	Weapon Training	10
5	Specialized Subject: Army Or Navy Or Air	10
	Total	**45**

Sr. No.	Modules / Units
1	**Disaster Management, Social Awareness and Community Development**
	Disaster Management: **Desired outcome:** The student shall gain basic information about civil defence organisation / NDMA & shall provide assistance to civil administration in various types of emergencies during natural / manmade disasters • Fire Services & Fire fighting • Assistance during Natural / Other Calamities: Flood / Cyclone/ Earth Quake/ Accident etc. **Social Awareness and Community Development:** **Desired outcome:** The student shall have an understanding about social evils and shall inculcate sense of whistle blowing against such evils and ways to eradicate such evils. • NGOs: Role & Contribution • Drug Abuse & Trafficking • Corruption • Social Evil viz. Dowry/ Female Foeticide/Child Abuse & trafficking etc. • Traffic Control Org. &Anti drunken Driving
2	**Health and Hygiene**
	Desired outcome: The student shall be fully aware about personal health and hygiene lead a healthy life style and foster habits of restraint and self awareness. • Hygiene and Sanitation (Personal and Food Hygiene) • Basics of Home Nursing & First-Aid in common medical emergencies • Wound & Fractures
3	**Drill with Arms**
	Desired outcome: The students will demonstrate the sense of discipline, improve bearing, smartness, and turnout, and develop the quality of immediate and implicit obedience of orders, with good reflexes. • Getting on Parade with Rifle and Dressing at the Order • Dismissing and Falling Out • General Salute, Salami Shastra • Squad Drill • Short/Long tail from the order and vice-versa • Examine Arms
4	**Weapon Training**
	Desired outcome: The student shall have basic knowledge of weapons and their use and handling. • The lying position, Holding and Aiming- I • Trigger control and firing a shot • Range procedure and safety precautions • Theory of Group and Snap Shooting • Short range firing, Aiming- II -Alteration of sight

Sr. No.	Modules / Units
5	**Specialized Subject: Army Or Navy Or Air**
	Army **Desired outcome:** The training shall instill patriotism, commitment and passion to serve the nation motivating the youth to join the defence forces. It will also acquaint, expose & provide basic knowledge about armed, naval and air-force subjects **A. Map reading** • Setting a Map, finding North and own position • Map to ground, Ground to Map • Point to Point March **B. Field Craft and Battle Craft** • Observation, Camouflage and Concealment • Field Signals • Types of Knots and Lashing **C. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)** ***OR*** **Navy** **A. Naval Communication** • Semaphore ▪ Phonetic Alphabets ▪ Radio Telephony Procedure ▪ Wearing of National Flag, Ensign and Admiral's Flag. **B. Seamanship** • **Anchor work** ▪ Types of Anchor, Purpose and Holding ground • **Boat work** ▪ Demonstrate Rigging a whaler and enterprise boat- Parts of Sail and Sailing Terms ▪ Instructions in Enterprise Class Board including theory of Sailing, Elementary Sailing Tools ▪ Types of Power Boats Used in the Navy and their uses, Knowledge of Anchoring, Securing and Towing a Boat C. **Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)**

Sr. No.	Modules / Units
	OR **Air** **A. Air frames** • Fuselage • Main and Tail Plain **B. Instruments** • Introduction to RADAR **C. Aero modelling** • Flying/ Building of Aero models **D. Introduction to advanced weapons and role of technology (To be covered by the guest lecturers)**

Revised Syllabus of Courses of Bachelor of Management Studies (BMS)Programme at Semester IV with Effect from the Academic Year 2017-2018

2. Ability Enhancement Courses (AEC)

2B. Skill Enhancement Courses (SEC)

4. Foundation Course in Physical Education - IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Stress Management	10
2	Awards, Scholarship & Government Schemes	10
3	Yoga Education	10
4	Exercise Scheduling/Prescription	15
	Total	**45**

Sr. No.	Modules / Units
1	**Stress Management**
	• Meaning & concept of Stress • Causes of Stress • Managing Stress • Coping Strategies
2	**Awards, Scholarship & Government Schemes**
	• State & National level Sports Awards • State Sports Policy & Scholarship Schemes • National Sports Policy & Scholarship Schemes • Prominent Sports Personalities
3	**Yoga Education**
	• Differences between Yogic Exercises & non- Yogic exercises • Contribution of Yoga to Sports • Principles of Asanas & Bandha • Misconceptions about Yoga
4	**Exercise Scheduling/Prescription**
	• Daily Routine Prescription. • Understanding Activity level & Calorie requirement. • Adherence & Motivation for exercise. • Impact of Lifestyle on Health

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV
With Effect from the Academic Year 2017-2018

3. Core Courses (CC)

5.Business Economics- II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Macroeconomic Data and Theory	15
2	Money, Inflation and Monetary Policy	15
3	Constituents of Fiscal Policy	15
4	Open Economy : Theory and Issues of International Trade	15
	Total	**60**

Sr. No.	Modules / Units
1	**Introduction to Macroeconomic Data and Theory**
	• **Macroeconomics:** Meaning, Scope and Importance. • **Circular flow of aggregate income and expenditure**: closed and open economy models • **The Measurement of national product:** Meaning and Importance - conventional and Green GNP and NNP concepts - Relationship between National Income and Economic Welfare. • **Short run economic fluctuations :** Features and Phases of Trade Cycles • **The Keynesian Principle of Effective Demand:** Aggregate Demand and Aggregate Supply - Consumption Function - Investment function - effects of Investment Multiplier on Changes in Income and Output
2	**Money, Inflation and Monetary Policy**
	• **Money Supply:** Determinants of Money Supply - Factors influencing Velocity of Circulation of Money • **Demand for Money :** Classical and Keynesian approaches and Keynes' liquidity preference theory of interest • **Money and prices** : Quantity theory of money - Fisher's equation of exchange - Cambridge cash balance approach • **Inflation:** Demand Pull Inflation and Cost Push Inflation - Effects of Inflation- Nature of inflation in a developing economy. • **Monetary policy :**Meaning, objectives and instruments, inflation targeting
3	**Constituents of Fiscal Policy**
	• **Role of a Government** to provide Public goods- Principles of Sound and Functional Finance • **Fiscal Policy:** Meaning, Objectives - Contra cyclical Fiscal Policy and Discretionary Fiscal Policy • **Instruments of Fiscal policy :** Canons of taxation - Factors influencing incidence of taxation - Effects of taxation Significance of Public Expenditure **-** Social security contributions- Low Income Support and Social Insurance Programmes - Public Debt - Types, Public Debt and Fiscal Solvency, Burden of debt finance • **Union budget** -Structure- Deficit concepts**-**Fiscal Responsibility and Budget Management Act.
4	**Open Economy : Theory and Issues of International Trade**
	• **The basis of international trade :**Ricardo's Theory of comparative cost advantage - The Heckscher – Ohlin theory of factor endowments- terms of trade - meaning and types Factors determining terms of trade - Gains from trade - Free trade versus protection • **Foreign Investment :** Foreign Portfolio investment- Benefits of Portfolio capital flows- Foreign Direct Investment - Merits of Foreign Direct Investment - Role of Multinational corporations • **Balance of Payments:** Structure -Types of Disequilibrium - Measures to correct disequilibrium in BOP. • **Foreign Exchange and foreign exchange market** : Spot and Forward rate of Exchange - Hedging, Speculation and Arbitrage -Fixed and Flexible exchange rates- Managed flexibility

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV with Effect from the Academic Year 2017-2018

3. Core Courses (CC)

6. Business Research Methods

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to business research methods	18
2	Data collection and Processing	14
3	Data analysis and Interpretation	16
4	Advanced techniques in Report Writing	12
	Total	**60**

Objectives

SN	Objectives
1	The course is designed to inculcate the analytical abilities and research skills among the students.
2	The course intends to give hands on experience and learning in Business Research.

Sr. No.	Modules / Units
1	**Introduction to business research methods**
	• Meaning and objectives of research • Types of research– a)Pure, Basic and Fundamental b) Applied, c)Empirical d) Scientific & Social e)Historical f) Exploratory g) Descriptive h)Causal • Concepts in Research: Variables, Qualitative and Quantitative Research • Stages in research process. • Characteristics of Good Research • Hypothesis-Meaning, Nature, Significance, Types of Hypothesis, Sources. • Research design– Meaning, Definition, Need and Importance, Steps in research design, Essentials of a good research design, Areas / Scope of research design and Types-Descriptive, Exploratory and causal. • Sampling– a) meaning of sample and sampling, b) methods of sampling-i)Non Probability Sampling– Convenient, Judgment, Quota, Snow ball ii) Probability– Simple Random, Stratified, Cluster, Multi Stage.
2	**Data collection and Processing**
	• Types of data and sources-Primary and Secondary data sources • Methods of collection of primary data a) Observation- i)structured and unstructured, ii) disguised and undisguised, iii)mechanical observations (use of gadgets) b) Experimental i)Field ii) Laboratory c) Interview – i) Personal Interview ii)focused group, iii) in- depth interviews - Method, d) Survey– Telephonic survey, Mail, E-mail, Internet survey, Social media, and Media listening. e) Survey instrument– i) Questionnaire designing. f) Types of questions– i) structured/ close ended and ii) unstructured/ open ended, iii) Dicotomous, iv) Multiple Choice Questions. f) Scaling techniques-i) Likert scale, ii) Semantic Differential scale
3	**Data analysis and Interpretation**
	• Processing of data– i) Editing- field and office editing, ii)coding– meaning and essentials, iii) tabulation – note • Analysis of data-Meaning, Purpose, types. • Interpretation of data-Essentials, importance and Significance of processing data • Multivariate analysis– concept only • Testing of hypothesis– concept and problems– i)chi square test, ii) Zandt-test (for large and small sample)
4	**Advanced techniques in Report Writing**
	• Report writing – i) Meaning , importance, functions of reports, essential of a good report, content of report , steps in writing a report, types of reports, Footnotes and Bibliography • Ethics and research • Objectivity, Confidentiality and anonymity in Research • Plagiarism

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV with Effect from the Academic Year 2017-2018

3. Core Courses (CC)

7. Production & Total Quality Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Production Management	14
2	Materials Management	16
3	Basics Of Productivity & TQM	16
4	Quality Improvement Strategies & Certifications	14
	Total	**60**

Objectives

SN	Objectives
1	To acquaint learners with the basic management decisions with respect to production and quality management
2	To make the learners understand the designing aspect of production systems
3	To enable the learners apply what they have learnt theoretically.

Sr. No.	Modules / Units
1	**Production Management**
	Production Management • Objectives, Components–Manufacturing systems: Intermittent and Continuous Production Systems. • Product Development, Classification and Product Design. • Plant location &Plant layout– Objectives, Principles of good product layout, types of layout. • Importance of purchase management.
2	**Materials Management**
	• **Materials Management**: Concept, Objectives and importance of materials management Various types of Material Handling Systems. • **Inventory Management:** Importance–Inventory Control Techniques ABC, VED, FSN, GOLF, XYZ, SOS, HML. EOQ: Assumptions limitations &advantages of Economic Order Quantity, Simple numerical on EOQ , Lead Time, Reorder Level, Safety Stock.
3	**Basics Of Productivity &TQM**
	• **Basics Of Productivity &TQM:** Concepts of Productivity, modes of calculating productivity. Importance Of Quality Management, factors affecting quality; TQM– concept and importance, Cost of Quality, Philosophies and Approaches To Quality: Edward Deming, J. Juran , Kaizen , P. Crosby's philosophy. • **Product & Service Quality Dimensions, SERVQUAL** Characteristics of Quality, Quality Assurance, Quality Circle : Objectives Of Quality Circles, Ishikawa Fish Bone, Applications in Organizations. Simple numerical on productivity
4	**Quality Improvement Strategies &Certifications**
	• **Quality Improvement Strategies &Certifications:** Lean Thinking, Kepner Tregor Methodology of problem solving, Sigma features, Enablers, Goals, DMAIC/DMADV. TAGUCHI'S QUALITYENGINEERING,ISO 9000,ISO 1400, QS9000. Malcolm Baldrige National Quality Award(MBNQA), Deming's Application Prize.

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III with effect from the Academic Year 2017-2018

Reference Books

Reference Books

Basics of Financial Services

1. Khan M.Y., Indian Financial System, Tata McGrew Hill Publishing Company
2. Varshney P.N. & Mittal MN, Financial System, Sultan Chand & Co
3. A. Avadhani , Marketing of Financial Services-
4. Bhole L. M: Financial Markets and Institutions; Tata McGraw-Hill Publishing Company, New Delhi.
5. Chandra Prasanna: Financial Management: Theory and Practice; Tata McGraw Hill, New Delhi.
6. Gupta Suraj B: Monetary Economics; S. Chand and Co., New Delhi.

Introduction to Cost Accounting

1. Cost Accounting-Principles and Practice; Arora M.N: Vikas, New Delhi.
2. Cost Accounting; Jain S.P. and Narang K.L: Kalyani New Delhi.
3. Principles of Management Accounting; Anthony Robert, Reece, et at: Richard D. Irwin Inc. Illinois.
4. Cost Accounting - A Managerial Emphasis; Prentice-Hall of India, Horngren, Charles, Foster and Datar: New Delhi

Equity and Debt Market

1. Allen, Larry (1750-2000). The Global Financial System.
2. Ian H. Giddy (1994). Global Financial Markets. Houghton Mifflin.
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2. Labour Management relations in India – K.M. Subramanian
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2. Microsoft Office Professional 2013 Step by Step
   By Beth Melton, Mark Dodge, Echo Swinford, Andrew Couch
3. Tata McGraw Hill Joseph, P.T. : E-commerce An Indian Perspective (Ch-13,Ch-14)
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Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester IV with effect from the Academic Year 2017-2018

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3. Vasant Desai, Indian Financial Systems, Himalaya Publishers
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5. Meir Khan, Financial Institutions and Markets, Oxford Press
6. Financial Markets and Institutions-Dr. S. Gurusamy,Tata McGraw Hill.
7. The Indian Financial System-Dr. Bharti Pathak, Pearson.
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Auditing

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2. Taxmann – Auditing
3. Dr.SMeenakumari – Fundamentals of Auditing
4. Baldev Sachdeva&Jagwant Singh Pardeep Kumar – Auditing theory & Practice.

Strategic Cost Management

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2. Ray : Mergers and Acquisitions Strategy, Valuation and Integration, PH
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3. Employee Training And Development - Raymond Noe
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Change Management

1. Organisational Development by French and Bell
2. An experiential approach to O.D. by Harvey and Brown
3. Consultants and Consulting Styles by Dharani Sinha P.
4. Kavita Singh- Organization change
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Conflict & Negotiation

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2. B. D. Singh - Negotiation Made Simple (Excel Books, 1st Ed.)

Information Technology in Business Management-II

1. Information Technology for Management, 6TH ED (With CD)
   By Efraim Turban, Dorothy Leidner, Ephraim Mclean, James Wetherbe (Ch1, Ch2)
2. Microsoft Office Professional 2013 Step by Step
   By Beth Melton, Mark Dodge, Echo Swinford, Andrew Couch
3. Tata McGraw Hill Joseph, P.T. : E-commerce An Indian Perspective (Ch-13,Ch-14)
4. Computer Viruses and Related Threats: A Management Guide (Ch-2, Ch-3) By John P. Wack, Lisa J. Carnahan
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6. Electronic Commerce - Technologies & Applications.
   Bharat, Bhaskar
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Foundation Course –IV- Ethics & Governance

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3. Joseph DesJardins, An Introduction to Business Ethics, Tata McGraw Hill, 2nd Edition
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6. S.K. Mandal, Ethics is Business and Corporate Governance, McGraw Hill, 2010
7. Laura Pincus Hartman, Perspectives in Business Ethics, McGraw Hill International Editions, 1998

Business Research Methods

1. Research for Marketing Decisions Paul E. Green, Donald S. Tull
2. Marketing Research- Text and Cases Harper W. Boyd Jr. , Ralph Westfall.
3. Research methodology in Social sciences, O.R.Krishnaswamy, Himalaya Publication
4. Business Research Methods, Donald R Cooper, Pamela Schindler, Tata McGraw Hill
5. Marketing research and applied orientation, Naresh K Malhotra, Pearson
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Production & Total Quality Management

1. Production and Operations Management: R. Paneerselvam
2. Production (Operations) Management: L.C. Jhamb
3. K. Ashwathappa and K .Shridhar Bhatt ; Production and Operations management
4. Productivity Management: Concepts and Techniques, Sawhney S.C., Tata McGraw Hill
5. Srinivas Gondhalekar and Uday Salunkhe, “Productivity Techniques”, Himalaya Publishing House
6. Gerard Leone and Richard D. Rahn, “Productivity Techniques”, Jaico Book House
7. John S. Oakland, “TQM: Text with Cases”, Butterworth-Heinemann
8. David J. Sumanth, “Total Productivity Management (TPmgt): A systematic and quantitative approach to compete in quality, price and time”, St. Lucie Press

Revised Syllabus of Courses of Bachelor of Management Studies (BMS) Programme at Semester III and IV with effect from the Academic Year 2017-2018

Scheme of Evaluation

The performance of the learners will be evaluated in two Components. One component will be the Internal Assessment component carrying 25% marks and the second component will be the Semester-wise End Examination component carrying 75% marks. The allocation of marks for the Internal Assessment and Semester End Examinations will be as shown below:-

A) Internal Assessment: 25 %

Question Paper Pattern
(Internal Assessment- Courses without Practical Courses)

Sr. No.	Particular	Marks
1	**One class test (20 Marks)**	
	Match the Column/ Fill in the Blanks/ Multiple Choice Questions ***(½ Mark each)***	05 Marks
	Answer in One or Two Lines (Concept based Questions) ***(01 Mark each)***	05 Marks
	Answer in Brief (Attempt Any Two of the Three) ***(05 Marks each)***	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

Question Paper Pattern
(Internal Assessment- Courses with Practical Courses)

Sr. No.	Particular	Marks
1	**Semester End Practical Examination (20 Marks)**	
	Journal	05 Marks
	Viva	05 Marks
	Laboratory Work	10 Marks
2	Active participation in routine class instructional deliveries and overall conduct as a responsible learner, mannerism and articulation and exhibit of leadership qualities in organizing related academic activities articulation and exhibit of leadership qualities in organizing related academic activities	05 Marks

B) Semester End Examination: 75 %

i) Duration: The examination shall be of 2 ½ Hours duration

ii) Theory question paper pattern

- There shall be five questions each of 15 marks.
- All questions shall be compulsory with internal choice within the questions.
- Question may be subdivided into sub-questions a, b, c… and the allocation of marks depends on the weightage of the topic.
  (Detail question paper pattern has been given separately)

Passing Standard

The learners to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learners shall obtain minimum of 40% marks (i.e. 10 out of 25) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 30 Out of 75) separately, to pass the course and minimum of Grade E to pass a particular semester A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

Question Paper Pattern

(Practical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question ***OR*** Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:

Practical question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks. If the topic demands, instead of practical questions, appropriate theory question may be asked.

Question Paper Pattern
(Theoretical Courses)

Maximum Marks: 75

Questions to be set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question ***OR*** Full Length Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions ***OR*** Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note:
Theory question of 15 marks may be divided into two sub questions of 7/8 and 10/5 Marks.

University of Mumbai

NAAC ACCREDITED

BACHELOR OF COMMERCE (B.COM)

SEMESTER – III & IV

DISCIPLINE RELATED ELECTIVE (DRE) COURSES

COMMERCE PAPER III & IV

Choice Based Credit System

To be implemented from AY 2017 - 2018

Revised Syllabus of courses of S. Y. B.ComProgramme
with effect from the Academic Year 2017-2018

COMMERCE –III (MANAGEMENT: FUNCTIONS AND CHALLENGES)

SEMESTER - III

Course Objectives:

- **To make the learners aware about conceptual knowledge and evolution of Management.**
- **To familiarize the learners with the functions in Management.**

Sr. No.	Modules	No. of Lectures
1	**Introduction To Management**	11
2	**Planning & Decision Making**	10
3	**Organising**	12
4	**Directing And Controlling**	12
	Total	**45**

Sr. No.	Modules
1	**Introduction To Management (11)**
	• **Management**- Concept, Nature, Functions, Managerial Skills & Competencies • **Evolution of Management Thoughts** Classical Approach: Scientific Management – F.W.Taylor'sContribution Classical Organisation Theory: HenriFayol's Principles Neo Classical: Human Relations Approach – EltonMayo'sHawthorne experiments • **Modern Management Approach**-PeterDrucker's Dimensions of Management, Indian Management Thoughts: Origin & Significance of Indian Ethos to Management.
2	**Planning & Decision Making (10)**
	• **Planning** - Steps, Importance, Components, Coordination – Importance • **M.B.O** -Process, Advantages, Management By Exception- Advantages; Management Information System- Concept, Components • **Decision Making** - Techniques, Essentials of a Sound Decision Making, Impact of Technology on Decision Making.
3	**Organising (12)**
	• **Organising**-Steps, Organisation Structures – Features ofLine & Staff Organisation, Matrix Organisation , Virtual Organisation, Formalv/s Informal Organisation. • **Departmentation** -Meaning -Bases,Span of Management- Factors Influencing Span of Management, Tall and Flat Organisation. • **Delegation of Authority**- Process, Barriers to Delegation, Principles of Effective Delegation. Decentralisation:Factors Influencing Decentralisation, Centralization v/s Decentralisation
4	**Directing And Controlling (12)**
	• **Motivation** – Concept, Importance, Influencing factors. Importance of Communication, Barriers to effective Communication • **Leadership-** Concept,Functions, Styles, Qualities of a good leader. • **Controlling** – Concept, Steps, Essentials of good control system, Techniques of Controlling -PERT, CPM, Budgetary Control, Management Audit.

SEMESTER – III REFERENCE BOOKS:

REFERENCES
1. Management Today Principles& Practice- Gene Burton, ManabThakur, Tata McGraw-Hill,PublishingCo.Ltd. 2. Management – JamesA.F.Stoner, Prentice Hall, Inc .U.S.A. 3. Management : Global Prospective –Heinz Weihrich& Harold Koontz, Tata McGraw- Hill, Publishing Co.Ltd. 4. Essential of Database Management Systems -AlexisLeon ,MathewsLeon Vijay Nicole, Imprints Pvt Ltd. 5. Management –Task ,Resp, Practices – PetaDruche “willian Heinemann LTD.

Revised Syllabus of courses of S. Y. B.ComProgramme
with effect from the Academic Year 2017-2018

SEMESTER– IV

Commerce – IV (Management: Production & Finance)

Course Objectives: -

1. To acquaint the learners with the basic concepts of Production Management, Inventory Management &Quality Management.
2. To provide basic knowledge about Indian Financial Systems.
3. To update the learners with the recent trends in Finance.

Sr. No.	Modules	No. of Lectures
1	**Production & Inventory Management**	11
2	**Quality Management**	10
3	**Indian Financial System**	12
4	**Recent Trends In Finance**	12
	Total	**45**

Sr. No.	Modules
1	**PRODUCTION & INVENTORY MANAGEMENT(11)**
	• **Production Management**: Objectives, Scope Production Planning &Control : Steps, Importance • **Production Systems**: Concept, Types - Continuous and Intermittent. Productivity: Concept, Factors Influencing Productivity, Measures for improving Productivity. • **Inventory Management**- Objectives, Inventory Control- Techniques. Scientific Inventory Control System - Importance
2	**QUALITY MANAGEMENT(10)**
	• Introduction to Quality: Dimensions of Quality, Cost of Quality: Types – Internal Failure Cost, External Failure Cost, Appraisal Cost, Prevention Cost, Quality Circle: Features. • Quality Management Tools: TQM – Importance, Six Sigma – Process, ISO 9000 – Certification Procedure, Kaizen – Process • Service Quality Management: Importance, SERVQUAL Model,Measures to improve service quality.
3	**INDIAN FINANCIAL SYSTEM (12)**
	• Indian Financial Market: Structure, Primary Market – IPO Procedure Dematerialisation: Process, Role of Depositories : NSDL and CDSL • SEBI: Functions of SEBI, Investors protection measures of SEBI. Stock Exchange – Functions, Speculators. • Credit Rating: Advantages, Credit Rating Agencies in India - CRISIL, CARE, and ICRA.
4	**RECENT TRENDS IN FINANCE (12)**
	• Mutual Funds- Advantages and Limitations, Types, Factors responsible for growth of mutual funds – Systematic Investment Plan. • Commodity Market: Categories, Derivatives Market: Types, Participants, Types of Derivative Instruments. • Start-up Ventures –Concept, Sources of Funding, Micro Finance – Importance, Role of Self Help Groups.

SEMESTER – IV REFERENCE BOOKS:

REFERENCES
1. Production and Operations Management –ProfL.C.Jhamb, Event Publishing House. 2. Production Planning & Control- ProfL.C.Jhamb, Event Publishing House 3. Production & Operation Management (Text & Cases)- K.Ashwathappa&G.Sudeshana Reddy, Himalaya Publication. 4. Launching New Ventues : An EnterpreneurialApproach-KathleenR.Allen, Cengage Learning 5. Essentials of Inventory Management-MaxMuller,Amacon Publishes 6. Indian Financial System—BharathiPathiak, Pearson Publication 7. Financial Institutions and Markets : Structure Growth& Innovations – L.M.Bhole , Jitendra Mahakad, Tata McGraw Hill. 8.The IndianFinancial System and Financial Market Operator-VasantDesai, Himalaya Publishing 9. Indian Financial System – M.Y.Khan, Tata McGraw –Hill 10.Production and Operations Management –Anandkumar Sharma, Anmol Publication 11. Mutual Funds in India: Emerging Issues-NaliniPravaTripathy, Excel Books New Delhi. 12. Start up Stand up: A step by stepguide to Growing your Business,NandiniVaidyanathan, Jaico Publishing House,Mumbai 13. A Trades Guide to Indian Commodities Market-Vijay L. Bhambwani, Network 18 Publication Ltd.

PAPER PATTERN

COMMERCE PAPER III & IV

SEMESTER - III & IV

W.E.F. 2017-2018

Q.1 Multiple Choice Questions

(A) Select the most appropriate answer from the option given below 10

(Any Ten out of Twelve)

(B) State whether the following statements are True or False 10

(Any Ten out of Twelve)

Q.2 Answer **Any Two** of the following **Out of Three** questions - Module - I 15

a.

b.

c.

Q.3 Answer **Any Two** of the following **Out of Three** questions - Module - II 15

a.

b.

c.

Q.4 Answer **Any Two** of the following **Out of Three** questions - Module - III 15

a.

b.

c.

Q.5 Answer **Any Two** of the following **Out of Three** questions - Module - IV 15

a.

b.

c.

Q.6 Write notes on **Any Four out of Six** 20

(2)

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No. UG/107 of 2017

CIRCULAR:-

A reference is invited to the Syllabi relating to the B.Sc. degree course, **vide** this office Circular No. UG/42 of 2016-17, dated 5th August , 2016 and the Principals of the affiliated Colleges in Science are hereby informed that the recommendation made by Ad-hoc-Board of Studies in Computer Science at its meeting held on 5/5/2017 has been accepted by the Academic Council at its meeting held on 11.5.2017 **vide** item No. 4.210 and that in accordance therewith, in revised syllabus as per the Credit Based Semester and Grading System for S.Y.B.Sc Computer Science (Sem III & IV) which is available on the University's website (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2016-17.

25/7/17

MUMBAI – 400 032 REGISTRAR
27th July, 2017

To,

The Principal of the affiliated Colleges in Science and the Head of Recognized Institutions concerned.

A.C/4.210/11.05.2017

No. UG/107-A of 2017 MUMBAI-400 032 27th July, 2017

Copy forwarded with compliments for information to :-

1) The Co-ordinator, Faculty of Science,
2) The Offg. Director of Board of Examinations and Evaluation,
3) The Chairperson, Board of Studies in Botany,
4) The Director of Board of Studies Development,
5) The Professor-cum-Director, Institute of Distance and Open Learning.
6) The Co-Ordinator, University Computerization Centre.

25/7/17

REGISTRAR

....PTO

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UNIVERSITY OF MUMBAI

Syllabus for SemIII& IV
Program: B.Sc.
Course: Computer Science

(Credit Based Semester and Grading System with effect from the academic year **2017-2018**)

Preamble

The revised and restructured curriculum for the Three-year integrated course is systematically designed considering the current industry needs in terms of skills sets demanded under new technological environment. It also endeavours to align the programme structure and course curriculum with student aspirations and corporate expectations. The proposed curriculum is more contextual, industry affable and suitable to cater the needs of society and nation in present day context.

Second year of this course is about studying core computer science subjects. Theory of Computation course provides understanding of grammar, syntax and other elements of modern language designs. It also covers developing capabilities to design formulations of computing models and its applications in diverse areas.

The course in Operating System satisfies the need of understanding the structure and functioning of system. Programming holds key indispensable position in any curriculum of Computer Science. It is essential for the learners to know how to use object oriented paradigms. There is also one dedicated course Android Developer Fundamentals as a skill enhancement catering to modern day needs of Mobile platforms and applications. The syllabus has Database Systems courses in previous semesters. The course in Database Management Systems is its continuation in third semester. The course has objectives to develop understanding of concepts and techniques for data management along with covers concepts of database at advance level.

The course of Combinatorics and Graph Theory in third semester and the course of Linear Algebra in fourth semester take the previous courses in Mathematics. Graph theory is rapidly moving into the mainstream mainly because of its applications in diverse fields which include can further open new opportunities in the areas of genomics, communications networks and coding theory, algorithms and computations and operations research.

Introducing one of the upcoming concepts Physical Computing and IoT programming will definitely open future area as Embedded Engineer, involvement in IoT projects, Robotics and many more. The RasPi is a popular platform as it offers a complete Linux server in a tiny platform for a very low cost and custom-built hardware with minimum complex hardware builds which is easier for projects in education domain.

S.Y.B.Sc. (Semester III and IV)
Computer Science Syllabus
Credit Based Semester and Grading System
To be implemented from the Academic year 2017-2018

SEMESTER III			
Course	**TOPICS**	**Credits**	**L / Week**
USCS301	Theory of Computation	2	3
USCS302	Core JAVA	2	3
USCS303	Operating System	2	3
USCS304	Database Management Systems	2	3
USCS305	Combinatorics and Graph Theory	2	3
USCS306	Physical Computing and IoT Programming	2	3
USCS307	Skill Enhancement: Web Programming	2	3
USCSP301	USCS302+USCS303+USCS304	3	9
USCSP302	USCS305+USCS306+USCS307	3	9

SEMESTER IV			
Course	**TOPICS**	**Credits**	**L / Week**
USCS401	Fundamentals of Algorithms	2	3
USCS402	Advanced JAVA	2	3
USCS403	Computer Networks	2	3
USCS404	Software Engineering	2	3
USCS405	Linear Algebra using Python	2	3
USCS406	.NET Technologies	2	3
USCS407	Skill Enhancement: Android Developer Fundamentals	2	3
USCSP401	USCS401+ USCS402+ USCS403	3	9
USCSP402	USCS405+ USCS406+ USCS407	3	9

SEMESTER III

THEORY

<table>
<tr><td>Course:
USCS301</td><td colspan="2">TOPICS (Credits : 02 Lectures/Week:03)
Theory of Computation</td></tr>
<tr><td colspan="3">Objectives:
To provide the comprehensive insight into theory of computation by understanding grammar, languages and other elements of modern language design. Also to develop capabilities to design and develop formulations for computing models and identify its applications in diverse areas.
Expected Learning Outcomes:
1. Understand Grammar and Languages
2. Learn about Automata theory and its application in Language Design
3. Learn about Turing Machines and Pushdown Automata
4. Understand Linear Bound Automata and its applications</td></tr>
<tr><td>Unit I</td><td>Automata Theory: Defining Automaton, Finite Automaton, Transitios and Its properties, Acceptability by Finite Automaton, Nondeterministic Finite State Machines, DFA and NDFA equivalence, Mealy and Moore Machines, Minimizing Automata.
Formal Languges: Defining Grammar, Derivations, Languges generated by Grammar, Comsky Classification of Grammar and Languages, Recursive Enumerable Sets, Operations on Languages, Languages and Automata</td><td>15L</td></tr>
<tr><td>Unit II</td><td>Regular Sets and Regular Grammar: Regular Grammar, Regular Expressions, Finite automata and Regular Expressions, Pumping Lemma and its Applications, Closure Properties, Regular Sets and Regular Grammar
Context Free Languages: Context-free Languages, Derivation Tree, Ambiguity of Grammar, CFG simplification, Normal Forms, Pumping Lemma for CFG
Pushdown Automata: Definitions, Acceptance by PDA, PDA and CFG</td><td>15L</td></tr>
</table>

Unit III	**Linear Bound Automata:** The Linear Bound Automata Model, Linear Bound Automata and Languages. **Turing Machines:** Turing Machine Definition, Representations, Acceptability by Turing Machines, Designing and Description of Turing Machines, Turing Machine Construction, Variants of Turing Machine, **Undecidability:** The Church-Turing thesis, Universal Turing Machine, Halting Problem, Introduction to Unsolvable Problems	**15L**

Tutorials :

1. Problems on generating languages for given simple grammar
2. Problems on DFA and NDFA equivalence
3. Problems on generating Regular Expressions
4. Problems on drawing transition state diagrams for Regular Expressions
5. Problems on Regular Sets and Regular Grammar
6. Problems on Ambiguity of Grammar
7. Problems on working with PDA
8. Problems on working with Turing Machines
9. Problems on generating derivation trees
10. Problems on Linear Bound Automata/Universal Turing Machine

Textbook(s):

1) Theory of Computer Science, K. L. P Mishra, Chandrasekharan, PHI,3rd Edition
2) Introduction to Computer Theory, Daniel Cohen, Wiley,2nd Edition
3) Introductory Theory of Computer Science, E.V. Krishnamurthy,Affiliated East-West Press.

Additional Reference(s):

1) Theory of Computation, Kavi Mahesh, Wiley India
2) Elements of The Theory of Computation, Lewis, Papadimitriou, PHI
3) Introduction to Languages and the Theory of Computation, John E Martin, McGraw-Hill Education
4) Introduction to Theory of Computation, Michel Sipser, Thomson

Course: USCS302	TOPICS (Credits : 02 Lectures/Week:03) Core Java	
Objectives: The objective of this course is to teach the learner how to use Object Oriented paradigm to develop code and understand the concepts of Core Java and to cover-up with the pre-requisites of Core java. **Expected Learning Outcomes:** 1. Object oriented programming concepts using Java. 2. Knowledge of input, its processing and getting suitable output. 3. Understand, design, implement and evaluate classes and applets. 4. Knowledge and implementation of AWT package.		
Unit I	**The Java Language:** Features of Java, Java programming format, Java Tokens, Java Statements, Java Data Types, Typecasting, Arrays **OOPS**: Introduction, Class, Object, Static Keywords, Constructors, this Key Word, Inheritance, super Key Word, Polymorphism (overloading and overriding), Abstraction, Encapsulation, Abstract Classes, Interfaces **String Manipulations**: String, String Buffer, String Tokenizer **Packages:** Introduction to predefined packages (java.lang, java.util, java.io, java.sql, java.swing), User Defined Packages, Access specifiers	**15L**
Unit II	**Exception Handling:** Introduction, Pre-Defined Exceptions, Try-Catch-Finally, Throws, throw, User Defined Exception examples **Multithreading:** Thread Creations, Thread Life Cycle, Life Cycle Methods, Synchronization, Wait() notify() notify all() methods **I/O Streams:** Introduction, Byte-oriented streams, Character- oriented streams, File, Random access File, Serialization **Networking:** Introduction, Socket, Server socket, Client –Server Communication	**15L**
	Wrapper Classes: Introduction, Byte, Short, Integer, Long, Float, Double, Character, Boolean classes **Collection Framework**: Introduction, util Package interfaces, List, Set, Map, List interface & its classes, Set interface & its classes, Map interface & its classes	

Unit III	**Inner Classes**: Introduction, Member inner class, Static inner class, Local inner class, Anonymous inner class **AWT:** Introduction, Components, Event-Delegation-Model, Listeners, Layouts, Individual components Label, Button, CheckBox, Radio Button, Choice, List, Menu, Text Field, Text Area	**15L**

Textbook(s):

1) Herbert Schildt, Java The Complete Reference, Ninth Edition, McGraw-Hill Education, 2014

Additional Reference(s):

1) E. Balagurusamy, Programming with Java, Tata McGraw-Hill Education India, 2014
2) Programming in JAVA, 2nd Ed, Sachin Malhotra & Saurabh Choudhary, Oxford Press
3) The Java Tutorials: http://docs.oracle.com/javase/tutorial/

Course: **USCS303**	**TOPICS (Credits : 02 Lectures/Week:03)** **Operating System**	

Objectives:

Learners must understand proper working of operating system. To provide a sound understanding of Computer operating system, its structures, functioning and algorithms.

Expected Learning Outcomes:

1. To provide a understanding of operating system, its structures and functioning
2. Develop and master understanding of algorithms used by operating systems for various purposes.

Unit I	**Introduction and Operating-Systems Structures:** Definition of Operating system, Operating System's role, Operating-System Operations, Functions of Operating System, Computing Environments **Operating-System Structures:** Operating-System Services, User and Operating-System Interface, System Calls, Types of System Calls, Operating-System Structure **Processes**: Process Concept, Process Scheduling, Operations on Processes, Interprocess Communication	**15L**

	Threads: Overview, Multicore Programming, Multithreading Models	
Unit II	**Process Synchronization:** General structure of a typical process, race condition, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors **CPU Scheduling:** Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, SRTF, Priority, RR, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling), Thread Scheduling **Deadlocks:** System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock	**15L**
Unit III	**Main Memory:** Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table **Virtual Memory:** Background, Demand Paging, Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing **Mass-Storage Structure:** Overview, Disk Structure, Disk Scheduling, Disk Management **File-System Interface:** File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing **File-System Implementation:** File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management	**15L**

Textbook(s):

1. Abraham Silberschatz, Peter Galvin, Greg Gagne, Operating System Concepts, Wiley,8th Edition

Additional Reference(s):

1. Achyut S. Godbole, Atul Kahate, Operating Systems, Tata McGraw Hill
2. Naresh Chauhan, Principles of Operating Systems, Oxford Press
3. Andrew S Tanenbaum, Herbert Bos, Modern Operating Systems, 4e Fourth Edition, Pearson Education, 2016

Course: USCS304	TOPICS (Credits : 02 Lectures/Week:03) Database Management Systems	
Objectives: To develop understanding of concepts and techniques for data management and learn about widely used systems for implementation and usage. **Expected Learning Outcomes:** 1. Master concepts of stored procedure and triggers and its use. 2. Learn about using PL/SQL for data management 3. Understand concepts and implementations of transaction management and crash recovery		
Unit I	**Stored Procedures:** Types and benefits of stored procedures, creating stored procedures, executing stored procedures, altering stored procedures, viewing stored procedures. **Triggers:** Concept of triggers, Implementing triggers – creating triggers, Insert, delete, and update triggers, nested triggers, viewing, deleting and modifying triggers, and enforcing data integrity through triggers. **Sequences**: creating sequences, referencing, altering and dropping a sequence. **File Organization and Indexing:** Cluster, Primary and secondary indexing, Index data structure: hash and Tree based indexing, Comparison of file organization: cost model, Heap files, sorted files, clustered files. Creating, dropping and maintaining indexes.	**15L**
	Fundamentals of PL/SQL: Defining variables and constants, PL/SQL expressions and comparisons: Logical Operators, Boolean Expressions, CASE Expressions Handling, Null Values in Comparisons and Conditional Statements, PL/SQL Datatypes: Number Types, Character Types, Boolean Type, Datetime and Interval Types.	

Unit II	**Overview of PL/SQL Control Structures:** Conditional Control: IF and CASE Statements, IF-THEN Statement, IF-THEN-ELSE Statement, IFTHEN-ELSIF Statement, CASE Statement, Iterative Control: LOOP and EXIT Statements, WHILE-LOOP, FOR-LOOP, Sequential Control: GOTO and NULL Statements	**15L**
Unit III	**Transaction Management:** ACID Properties, Serializability, Two-phase Commit Protocol, Concurrency Control, Lock Management, Lost Update Problem, Inconsistent Read Problem , Read-Write Locks, Deadlocks Handling, Two Phase Locking protocol. **DCL Statements:** Defining a transaction, Making Changes Permanent with COMMIT, Undoing Changes with ROLLBACK, Undoing Partial Changes with SAVEPOINT and ROLLBACK **Crash Recovery:** ARIES algorithm. The log based recovery, recovery related structures like transaction and dirty page table, Write-ahead log protocol, check points, recovery from a system crash, Redo and Undo phases.	**15L**

Textbook(s):

1) Ramakrishnam, Gehrke, Database Management Systems, Bayross, McGraw-Hill,3rd Edition
2) Abraham Silberschatz, Henry F. Korth,S. Sudarshan , Database System Concepts, 6th Edition
3) Ivan Bayross, "SQL,PL/SQL -The Programming language of Oracle", B.P.B. Publications

Additional Reference(s):

1) Ramez Elmasri & Shamkant B.Navathe, Fundamentals of Database Systems, Pearson Education
2) Robert Sheldon, Geoff Moes, Begning MySQL, Wrox Press.
3) Joel Murach, Murach's MySQL, Murach

Course: USCS305	TOPICS (Credits : 02 Lectures/Week: 03) Combinatorics and Graph Theory	

Objectives:

To give the learner a broad exposure of combinatorial Mathematics through applications especially the Computer Science applications.

Expected Learning Outcomes:

1. Appreciate beauty of combinatorics and how combinatorial problems naturally arise in many settings.
2. Understand the combinatorial features in real world situations and Computer Science applications.
3. Apply combinatorial and graph theoretical concepts to understand Computer Science concepts and apply them to solve problems

Unit I	**Introduction to Combinatorics:** Enumeration, Combinatorics and Graph Theory/ Number Theory/Geometry and Optimization, Sudoku Puzzles. Strings, Sets, and Binomial Coefficients: Strings- A First Look, Combinations, Combinatorial, The Ubiquitous Nature of Binomial Coefficients, The Binomial, Multinomial Coefficients. Induction: Introduction, The Positive Integers are Well Ordered, The Meaning of Statements, Binomial Coefficients Revisited, Solving Combinatorial Problems Recursively, Mathematical Induction, and Inductive Definitions Proofs by Induction. Strong Induction	**15L**
Unit II	**Graph Theory:** Basic Notation and Terminology, Multigraphs: Loops and Multiple Edges, Eulerian and Hamiltonian Graphs, Graph Coloring, Planar Counting, Labeled Trees, A Digression into Complexity Theory. Applying Probability to Combinatorics, Small Ramsey Numbers, Estimating Ramsey Numbers, Applying Probability to Ramsey Theory, Ramsey's Theorem The Probabilistic Method	**15L**
Unit III	**Network Flows:** Basic Notation and Terminology, Flows and Cuts, Augmenting Paths, The Ford-Fulkerson Labeling Algorithm,	**15L**

	A Concrete Example, Integer Solutions of Linear Programming Problems. Combinatorial Applications of Network Flows: Introduction, Matching in Bipartite Graphs, Chain partitioning, Pólya's Enumeration Theorem: Coloring the Vertices of a Square.	

Textbook(s):

1) Applied Combinatorics, Mitchel T. Keller and William T. Trotter, 2016, http://www.rellek.net/appcomb.

Additional Reference(s):

1) Applied Combinatorics, sixth.edition, Alan Tucker, Wiley; (2016)
2) Graph Theory and Combinatorics, Ralph P. Grimaldi, Pearson Education; Fifth edition (2012)
3) Combinatorics and Graph Theory, John Harris, Jeffry L. Hirst, Springer(2010).
4) Graph Theory: Modeling, Applications and Algorithms, Agnarsson, Pearson Education India (2008).

Course:	**TOPICS (Credits : 02 Lectures/Week:03)**
USCS306	**Physical Computing and IoT Programming**

Objectives:

To learn about SoC architectures; Learn how Raspberry Pi. Learn to program Raspberry Pi. Implementation of internet of Things and Protocols.

Expected Learning Outcomes:

1. Enable learners to understand System On Chip Architectures.
2. Introduction and preparing Raspberry Pi with hardware and installation.
3. Learn physical interfaces and electronics of Raspberry Pi and program them using practical's
4. Learn how to make consumer grade IoT safe and secure with proper use of protocols.

Unit I	**SoC and Raspberry Pi** **System on Chip:** What is System on chip? Structure of System on Chip. **SoC products:** FPGA**,** GPU, APU, Compute Units. **ARM 8 Architecture:** SoC on ARM 8. ARM 8 Architecture Introduction **Introduction to Raspberry Pi:** Introduction to Raspberry Pi, Raspberry Pi Hardware, Preparing your raspberry Pi. **Raspberry Pi Boot:** Learn how this small SoC boots without BIOS. Configuring boot sequences and hardware.	**15L**
Unit II	**Programming Raspberry Pi** **Raspberry Pi and Linux:** About Raspbian, Linux Commands, Configuring Raspberry Pi with Linux Commands **Programing interfaces:** Introduction to Node.js, Python. **Raspberry Pi Interfaces:** UART, GPIO, I2C, SPI **Useful Implementations:** Cross Compilation, Pulse Width Modulation, SPI for Camera.	**15L**
Unit III	**Introduction to IoT:** What is IoT? IoT examples, Simple IoT LED Program. **IoT and Protocols** **IoT Security:** HTTP, UPnp, CoAP, MQTT, XMPP**.** **IoT Service as a Platform:** Clayster, Thinger.io, SenseIoT, carriots and Node RED. **IoT Security and Interoperability:** Risks, Modes of Attacks, Tools for Security and Interoperability.	**15L**

Textbook(s):

1) Learning Internet of Things, Peter Waher, Packt Publishing(2015)
2) Mastering the Raspberry Pi, Warren Gay, Apress(2014)

Additional Reference(s):

1) Abusing the Internet of Things, Nitesh Dhanjani, O'Reilly

Course: USCS307	TOPICS (Credits : 02 Lectures/Week: 03) Web Programming	

Objectives:

To provide insight into emerging technologies to design and develop state of - the art web applications using client-side scripting, server-side scripting, and database connectivity.

Expected Learning Outcomes:

1. To design valid, well-formed, scalable, and meaningful pages using emerging technologies.
2. Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites
3. To develop and implement client-side and server-side scripting language programs.
4. To develop and implement Database Driven Websites.
5. Design and apply XML to create a markup language for data and document centric applications.

Unit I	**HTML5:** Fundamental Elements of HTML, Formatting Text in HTML, Organizing Text in HTML, Links and URLs in HTML, Tables in HTML, Images on a Web Page, Image Formats, Image Maps, Colors, FORMs in HTML, Interactive Elements, Working with Multimedia - Audio and Video File Formats, HTML elements for inserting Audio / Video on a web page **CSS:** Understanding the Syntax of CSS, CSS Selectors, Inserting CSS in an HTML Document, CSS properties to work with background of a Page, CSS properties to work with Fonts and Text Styles, CSS properties for positioning an element	**15L**
Unit II	**JavaScript:** Using JavaScript in an HTML Document, Programming Fundamentals of JavaScript – Variables, Operators, Control Flow Statements, Popup Boxes, Functions – Defining and Invoking a Function, Defining Function arguments, Defining a Return Statement, Calling Functions with Timer, JavaScript Objects - String, RegExp, Math, Date, Browser Objects - Window, Navigator, History, Location, Document, Cookies, Document Object Model, Form Validation using JavaScript **XML:** Comparing XML with HTML, Advantages and Disadvantages of XML,	**15L**

	Structure of an XML Document, XML Entity References, DTD, XSLT: XSLT Elements and Attributes - xsl:template, xsl:apply-templates, xsl:import, xsl:call-template, xsl:include, xsl:element, xsl:attribute, e xsl:attribute-set, xsl:value-of	
Unit III	**AJAX:** AJAX Web Application Model, How AJAX Works, XMLHttpRequest Object – Properties and Methods, Handling asynchronous requests using AJAX **PHP:** Variables and Operators, Program Flow, Arrays, Working with Files and Directories, Working with Databases, Working with Cookies, Sessions and Headers **Introduction to jQuery:** Fundamentals, Selectors, methods to access HTML attributes, methods for traversing, manipulators, events, effects	**15L**

Text Book(s):

1) HTML 5 Black Book, Covers CSS 3, JavaScript, XML, XHTML, AJAX, PHP and jQuery, 2ed, Dreamtech Press
2) Web Programming and Interactive Technologies, scriptDemics, StarEdu Solutions India.
3) PHP: A Beginners Guide, Vikram Vaswani, TMH

Additional Reference(s):

1) HTML, XHTML, and CSS Bible Fifth Edition, Steven M. Schafer, WILEY
2) Learn to Master HTML 5, scriptDemics, StarEdu Solutions Pvt Ltd.
3) Learning PHP, MySQL, JavaScript, CSS & HTML5, Robin Nixon, O'Reilly
4) PHP, MySQL, JavaScript & HTML5 All-in-one for Dummies, Steve Suehring, Janet Valade Wiley

Suggested List of Practical- SEMESTER III

Course: **USCSP301**	**(Credits : 03 Lectures/Week: 09) USCS302+ USCS303+USCS304**	

USCS302: Core JAVA

1. Accept integer values for a, b and c which are coefficients of quadratic equation. Find the solution of quadratic equation.
2. Accept two n x m matrices. Write a Java program to find addition of these matrices.
3. Accept n strings. Sort names in ascending order.
4. Create a package: Animals. In package animals create interface Animal with suitable behaviors. Implement the interface Animal in the same package animals.
5. Demonstrate Java inheritance using extends keyword.
6. Demonstrate method overloading and method overriding in Java.
7. Demonstrate creating your own exception in Java.
8. Using various swing components design Java application to accept a student's resume. (Design form)
9. Write a Java List example and demonstrate methods of Java List interface.
10. Design simple calculator GUI application using AWT components.

USCS303: Operating System

Practical can be implemented either in JAVA or any other programming language.

1. **Process Communication**:
   (i) Give solution to the producer–consumer problem using shared memory.
   (ii) Give solution to the producer–consumer problem using message passing.
   (iii) One form of communication in a Client–Server Systems environment is Remote method invocation (RMI). RMI is a Java feature similar to RPCs. RMI allows a thread to invoke a method on a remote object. Objects are considered remote if they reside in a different Java virtual machine (JVM). Demonstrate RMI program for adding/subtracting/multiplying/dividing two numbers.
2. **Threads**:
   (i) The Java version of a multithreaded program that determines the summation of a

non-negative integer. The Summation class implements the Runnable interface. Thread creation is performed by creating an object instance of the Thread class and passing the constructor a Runnable object.

(ii) Write a multithreaded Java program that outputs prime numbers. This program should work as follows: The user will run the program and will enter a number on the command line. The program will then create a separate thread that outputs all the prime numbers less than or equal to the number entered by the user.

(iii) The Fibonacci sequence is the series of numbers 0, 1, 1, 2, 3, 5. 8, ... Formally, it can be expressed as: $fib_0 = 0$, $fib_1 = 1$, $fib_n = fib_{n-1} + fib_{n-2}$ Write a multithreaded program that generates the Fibonacci sequence using either the Java,

3. **Synchronization**:

(i) Give Java solution to Bounded buffer problem.

(ii) Give solution to the readers–writers problem using Java synchronization.

(iii) The Sleeping-Barber Problem: A barber shop consists of awaiting room with *n* chairs and a barber room with one barber chair. If there are no customers to be served, the barber goes to sleep. If a customer enters the barbershop and all chairs are occupied, then the customer leaves the shop. If the barber is busy but chairs are available, then the customer sits in one of the free chairs. If the barber is asleep, the customer wakes up the barber. Write a program to coordinate the barber and the customers using Java synchronization.

4. Implement FCFS scheduling algorithm in Java.
5. Implement SJF (with no preemption) scheduling algorithm in Java
6. Implement RR scheduling algorithm in Java
7. Write a Java program that implements the banker's algorithm
8. Write a Java program that implements the FIFO page-replacement algorithm.
9. Write a Java program that implements the LRU page-replacement algorithm.
10. Design a File System in Java.

USCS304: Database Management Systems

1. Creating and working with Insert/Update/Delete Trigger using Before/After clause.
2. Writing PL/SQL Blocks with basic programming constructs by including following:
   a. Sequential Statements b. unconstrained loop
3. Sequences:
   a. Creating simple Sequences with clauses like START WITH, INCREMENT BY, MAXVALUE, MINVALUE, CYCLE | NOCYCLE, CACHE | NOCACHE, ORDER | NOORECER.
   b. Creating and using Sequences for tables.
4. Writing PL/SQL Blocks with basic programming constructs by including following:
   a. If...then...Else, IF...ELSIF...ELSE... END IF
   b. Case statement
5. Writing PL/SQL Blocks with basic programming constructs for following Iterative Structure:
   a. While-loop Statements
   b. For-loop Statements.
6. Writing PL/SQL Blocks with basic programming constructs by including a GoTO to jump out of a loop and NULL as a statement inside IF
7. Writing Procedures in PL/SQL Block
   a. Create an empty procedure, replace a procedure and call procedure
   b. Create a stored procedure and call it
   c. Define procedure to insert data
   d. A forward declaration of procedure
8. Writing Functions in PL/SQL Block.
   a. Define and call a function
   b. Define and use function in select clause,
   c. Call function in dbms_output.put_line
   d. Recursive function
   e. Count Employee from a function and return value back
   f. Call function and store the return value to a variable
9. Writing a recursive Functions in PL/SQL Block
10. Study of transactions and locks

Course: USCSP302	(Credits : 03 Lectures/Week: 09) USCS305+ USCS306+USCS307	

USCS305: Combinatorics and Graph Theory

1. Solving problems on strings, sets and binomial coefficients.
2. Solving problems using induction.
3. Solving problems on Eulerian and Hamiltonian graphs.
4. Solving problems on Chromatic number and coloring
5. Solving problems using Kruskal's Algorithm
6. Solving problems using Prim's Algorithm
7. Solving problems using Dijkstra's Algorithm
8. Solving problems of finding augmenting paths in network flows.
9. Solving problems on network flows using Ford-Fulkerson Labeling Algorithm
10. Solving problems on posets and their associated networks.

USCS306: Physical Computing and IoT Programming

1. Preparing Raspberry Pi: Hardware preparation and Installation
2. Linux Commands: Exploring the Raspbian
3. GPIO: Light the LED with Python
4. GPIO: LED Grid Module: Program the 8X8 Grid with Different Formulas
5. SPI: Camera Connection and capturing Images using SPI
6. Real Time Clock display using PWM.
7. Stepper Motor Control: PWM to manage stepper motor speed.
8. Node RED: Connect LED to Internet of Things
9. Stack of Raspberry Pi for better Computing and analysis
10. Create a simple Web server using Raspberry Pi

USCS307: Web Programming

1. Design a webpage that makes use of
   a. Document Structure Tags b. Various Text Formatting Tags
   c. List Tags d. Image and Image Maps
2. Design a webpage that makes use of
   a. Table tags b. Form Tags (forms with various form elements)

c. Navigation across multiple pages d. Embedded Multimedia elements

3. Design a webpage that make use of Cascading Style Sheets with
   a. CSS properties to change the background of a Page
   b. CSS properties to change Fonts and Text Styles
   c. CSS properties for positioning an element
4. Write JavaScript code for
   a. Performing various mathematical operations such as calculating factorial / finding Fibonacci Series / Displaying Prime Numbers in a given range / Evaluating Expressions / Calculating reverse of a number
   b. Validating the various Form Elements
5. Write JavaScript code for
   a. Demonstrating different JavaScript Objects such as String, RegExp, Math, Date
   b. Demonstrating different JavaScript Objects such as Window, Navigator, History, Location, Document,
   c. Storing and Retrieving Cookies
6. Create a XML file with Internal / External DTD and display it using
   a. CSS b. XSL
7. Design a webpage to handle asynchronous requests using AJAX on
   a. Mouseover b. button click
8. Write PHP scripts for
   a. Retrieving data from HTML forms
   b. Performing certain mathematical operations such as calculating factorial / finding Fibonacci Series / Displaying Prime Numbers in a given range / Evaluating Expressions / Calculating reverse of a number
   c. Working with Arrays
   d. Working with Files (Reading / Writing)
9. Write PHP scripts for
   a. Working with Databases (Storing Records / Reprieving Records and Display them)
   b. Storing and Retrieving Cookies
   c. Storing and Retrieving Sessions
10. Design a webpage with some jQuery animation effects.

SEMESTER IV

THEORY

Course: **USCS401**	**TOPICS (Credits : 02 Lectures/Week:03)** **Fundamentals of Algorithms**	
Objectives: 1. To understand basic principles of algorithm design and why algorithm analysis is important 2. To understand how to implement algorithms in Python 3. To understand how to transform new problems into algorithmic problems with efficient solutions 4. To understand algorithm design techniques for solving different problems **Expected Learning Outcomes:** 1. Understand the concepts of algorithms for designing good program 2. Implement algorithms using Python		
Unit I	Introduction to algorithm, Why to analysis algorithm, Running time analysis, How to Compare Algorithms, Rate of Growth, Commonly Used Rates of Growth, Types of Analysis, Asymptotic Notation, Big-O Notation, Omega-Ω Notation, Theta-Θ Notation, Asymptotic Analysis, Properties of Notations, Commonly used Logarithms and Summations, Performance characteristics of algorithms, Master Theorem for Divide and Conquer, Divide and Conquer Master Theorem: Problems & Solutions, Master Theorem for Subtract and Conquer Recurrences, Method of Guessing and Confirming	**15L**
Unit II	Tree algorithms: What is a Tree? Glossary, Binary Trees, Types of Binary Trees, Properties of Binary Trees, Binary Tree Traversals, Generic Trees (N-ary Trees), Threaded Binary Tree Traversals, Expression Trees, Binary Search Trees (BSTs), Balanced Binary Search Trees, AVL (Adelson-Velskii and Landis) Trees Graph Algorithms: Introduction, Glossary, Applications of Graphs, Graph Representation, Graph Traversals, Topological Sort, Shortest Path Algorithms, Minimal Spanning Tree	**15L**

	Selection Algorithms: What are Selection Algorithms? Selection by Sorting, Partition-based Selection Algorithm, Linear Selection Algorithm - Median of Medians Algorithm, Finding the K Smallest Elements in Sorted Order	
Unit III	Algorithms Design Techniques: Introduction, Classification, Classification by Implementation Method, Classification by Design Method Greedy Algorithms: Introduction, Greedy Strategy, Elements of Greedy Algorithms, Advantages and Disadvantages of Greedy Method, Greedy Applications, Understanding Greedy Technique Divide and Conquer Algorithms: Introduction, What is Divide and Conquer Strategy? Divide and Conquer Visualization, Understanding Divide and Conquer, Advantages of Divide and Conquer, Disadvantages of Divide and Conquer, Master Theorem, Divide and Conquer Applications Dynamic Programming: Introduction, What is Dynamic Programming Strategy? Properties of Dynamic Programming Strategy, Problems which can be solved using Dynamic Programming, Dynamic Programming Approaches, Examples of Dynamic Programming Algorithms, Understanding Dynamic Programming, Longest Common Subsequence	**15L**

Textbook(s):

1. Data Structure and Algorithmic Thinking with Python, Narasimha Karumanchi , CareerMonk Publications, 2016
2. Introduction to Algorithm, Thomas H Cormen, PHI

Additional References(s):

1. Data Structures and Algorithms in Python, Michael T. Goodrich, Roberto Tamassia, Michael H. Goldwasser, 2016, Wiley
2. Fundamentals of Computer Algorithms, Sartaj Sahni and Sanguthevar Rajasekaran Ellis Horowitz, Universities Press

Course: USCS402	TOPICS (Credits : 02 Lectures/Week: 03) Advanced Java	
Objectives: Explore advanced topic of Java programming for solving problems. **Expected Learning Outcomes:** 1) Understand the concepts related to Java Technology 2) Explore and understand use of Java Server Programming		
Unit I	**Swing:** Need for swing components, Difference between AWT and swing, Components hierarchy, Panes, Swing components: Jlabel, JTextField and JPasswordField, JTextAres, JButton, JCheckBox, JRadioButton, JComboBox and JList **JDBC:** Introduction, JDBC Architecture, Types of Drivers, Statement, ResultSet, Read Only ResultSet, Updatable ResultSet, Forward Only ResultSet, Scrollable ResultSet, PreparedStatement, Connection Modes, SavePoint, Batch Updations, CallableStatement, BLOB & CLOB	**15L**
Unit II	**Servlets:** Introduction, Web application Architecture, Http Protocol & Http Methods, Web Server & Web Container, Servlet Interface, GenericServlet, HttpServlet, Servlet Life Cycle, ServletConfig, ServletContext, Servlet Communication, Session Tracking Mechanisms **JSP:** Introduction, JSP LifeCycle, JSP Implicit Objects & Scopes, JSP Directives, JSP Scripting Elements, JSP Actions: Standard actions and customized actions,	**15L**
Unit III	**Java Beans:** Introduction, JavaBeans Properties, Examples **Struts 2:** Basic MVC Architecture, Struts 2 framework features, Struts 2 MVC pattern, Request life cycle, Examples, Configuration Files, Actions, Interceptors, Results & Result Types, Value Stack/OGNL **JSON:** Overview, Syntax, DataTypes, Objects, Schema, Comparison with XML, JSON with Java	**15L**

Textbook(s):

1) Cay S. Horstmann, Gary Cornell, Core Java™ 2: Volume II–Advanced Features Prentice Hall PTR,9th Edition
2) Herbert Schildt, Java2: The Complete Reference, Tata McGraw-Hill,5th Edition
3) Joe Wigglesworth and Paula McMillan, Java Programming: Advanced Topics, Thomson Course Technology (SPD) ,3rd Edition

Additional Reference(s)*:*

1) Advanced Java Programming, Uttam K. Roy, Oxford University Press
2) *The Java Tutorials: http://docs.oracle.com/javase/tutorial/)*
3) The Java Tutorials of Sun Microsystems Inc

Course: **USCS403**	**TOPICS (Credits :02 Lectures/Week:03)** **Computer Networks**	
Objectives: In this era of Information, its computation and its exchange techniques, Learner should be able to conceptualize and understand the framework and working of communication networks. And on completion, will be able to have a firm grip over this very important segment of Internet. **Expected Learning Outcome**s : 1. Learner will be able to understand the concepts of networking, which are important for them to be known as a '*networking professionals*'. 2. Useful to proceed with industrial requirements and International vendor certifications.		
Unit I	**Introduction Network Models:** Introduction to data communication, Components, Data Representation, Data Flow, Networks, Network Criteria, Physical Structures, Network types, Local Area Network, Wide Area Network, Switching, The Internet, Accessing the Internet, standards and administration Internet Standards. Network Models, Protocol layering, Scenarios, Principles of Protocol Layering, Logical Connections, TCP/IP Protocol Suite, Layered Architecture, Layers in	**15L**

	the TCP/IP Protocol Suite, Encapsulation and Decapsulation, Addressing, Multiplexing and Demultiplexing. Detailed introduction to Physical Layer, Detailed introduction to Data-Link Layer, Detailed introduction to Network Layer, Detailed introduction to Transport Layer, Detailed introduction to Application Layer. Data and Signals, Analog and Digital Data, Analog and Digital Signals, Sine Wave Phase, Wavelength, Time and Frequency Domains, Composite Signals, Bandwidth, Digital Signal, Bit Rate, Bit Length, Transmission of Digital Signals, Transmission Impairments, Attenuation, Distortion, Noise, Data Rate Limits, Performance, Bandwidth, Throughput, Latency (Delay)	
Unit II	**Introduction to Physical Layer and Data-Link Layer:** Digital Transmission digital-to-digital conversion, Line Coding, Line Coding Schemes, analog-to-digital conversion, Pulse Code Modulation (PCM), Transmission Modes, Parallel Transmission, Serial Transmission. Analog Transmission, digital-to-analog Conversion, Aspects of Digital-to-Analog Conversion, Amplitude Shift Keying, Frequency Shift Keying, Phase Shift Keying, analog-to-analog Conversion, Amplitude Modulation (AM), Frequency Modulation (FM), Phase Modulation (PM), Multiplexing, Frequency-Division Multiplexing, Wavelength-Division Multiplexing, Time-Division Multiplexing. Transmission Media, Guided Media, Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable. Switching, Three Methods of Switching , Circuit Switched Networks, Packet Switching, Introduction to Data-Link Layer, Nodes and Links, Services, Two Sub-layers, Three Types of addresses, Address Resolution Protocol (ARP). Error Detection and Correction, introduction, Types of Errors, Redundancy, Detection versus Correction,	**15L**
Unit III	**Network layer, Transport Layer** Media Access Control (MAC), random access, CSMA, CSMA/CD, CSMA/CA, controlled access, Reservation, Polling, Token Passing, channelization, FDMA, TDMA, CDMA. Connecting Devices and Virtual LANs, connecting devices, Hubs, Link-Layer	**15L**

	Switches, Routers, Introduction to Network Layer, network layer services, Packetizing, Routing and Forwarding, Other Services, IPv4 addresses, Address Space, Classful Addressing. Unicast Routing, General Idea, Least-Cost Routing, Routing Algorithms, Distance-Vector Routing, Link-State Routing, Path-Vector Routing, Introduction to Transport Layer, Transport-Layer Services, Connectionless and Connection-Oriented Protocols. Transport-Layer Protocols, Service, Port Numbers, User Datagram Protocol, User Datagram, UDP Services, UDP Applications, Transmission Control Protocol, TCP Services, TCP Features, Segment.	

Textbook(s):

1) Data Communications and Networking, Behrouz A. Forouzan, Fifth Edition, TMH, 2013.
2) Computer Network, Andrew S. Tanenbaum, David J. Wetherall, Fifth Edition, Pearson Education, 2011.

Additional Reference(s)*:*

1) Computer Network, Bhushan Trivedi, Oxford University Press
2) Data and Computer Communication, William Stallings, PHI

Course: **USCS404**	**TOPICS (Credits : 02 Lectures/Week: 03)** **Software Engineering**	
Unit I	**Introduction:** The Nature of Software, Software Engineering, The Software Process, Generic Process Model, The Waterfall Model, Incremental Process Models, Evolutionary Process Models, Concurrent Models, Component-Based Development, The Unified Process Phases, Agile Development- Agility, Agile Process, Extreme Programming **Requirement Analysis and System Modeling:** Requirements Engineering, Eliciting Requirements, SRS Validation, Components of	**15L**

	SRS, Characteristics of SRS , Object-oriented design using the UML - Class diagram, Object diagram, Use case diagram, Sequence diagram, Collaboration diagram, State chart diagram, Activity diagram, Component diagram, Deployment diagram	
Unit II	**System Design:** System/Software Design, Architectural Design, Low-Level Design Coupling and Cohesion, Functional-Oriented Versus The Object-Oriented Approach, Design Specifications, Verification for Design, Monitoring and Control for Design **Software Measurement and Metrics:** Product Metrics – Measures, Metrics, and Indicators, Function-Based Metrics, Metrics for Object-Oriented Design, Operation-Oriented Metrics, User Interface Design Metrics, Metrics for Source Code, Halstead Metrics Applied to Testing, Metrics for Maintenance, Cyclomatic Complexity, Software Measurement - Size-Oriented, Function-Oriented Metrics, Metrics for Software Quality **Software Project Management: Estimation** in Project Planning Process –Software Scope And Feasibility, Resource Estimation, Empirical Estimation Models – COCOMO II, Estimation for Agile Development, The Make/Buy Decision, **Project Scheduling** - Basic Principles, Relationship Between People and Effort, Effort Distribution, Time-Line Charts	**15L**
Unit III	**Risk Management** - Software Risks, Risk Identification, Risk Projection and Risk Refinement, RMMM Plan **Software Quality Assurance:** Elements of SQA, SQA Tasks, Goals, and Metrics, Formal Approaches to SQA, Six Sigma, Software Reliability, The ISO 9000 Quality Standards, Capability Maturity Model **Software Testing :** Verification and Validation, Introduction to Testing, Testing Principles, Testing Objectives, Test Oracles, Levels of Testing, White-Box Testing/Structural Testing, Functional/Black-Box Testing, Test Plan, Test-Case Design	**15L**

Text book(s):

1) Software Engineering, A Practitioner's Approach, Roger S, Pressman.(2014)

Additional Reference(s):

1) Software Engineering, Ian Sommerville, Pearson Education
2) Software Engineering: Principles and Practices",Deepak Jain,OXFORD University Press,
3) Fundamentals of Software Engineering, Fourth Edition, Rajib Mall, PHI
4) Software Engineering: Principles and Practices, Hans Van Vliet, John Wiley & Sons
5) A Concise Introduction to Software Engineering, Pankaj Jalote, Springer

Course: **USCS405**	**TOPICS (Credits : 02 Lectures/Week: 03)** **Linear Algebra using Python**	
Objectives: To offer the learner the relevant linear algebra concepts through computer science applications. **Expected Learning Outcomes**: 1. Appreciate the relevance of linear algebra in the field of computer science. 2. Understand the concepts through program implementation 3. Instill a computational thinking while learning linear algebra.		
Unit I	**Field**: Introduction to complex numbers, numbers in Python , Abstracting over fields, Playing with GF(2), Vector Space: Vectors are functions, Vector addition, Scalar-vector multiplication, Combining vector addition and scalar multiplication, Dictionary-based representations of vectors, Dot-product, Solving a triangular system of linear equations. Linear combination, Span, The geometry of sets of vectors, Vector spaces, Linear systems, homogeneous and otherwise	**15L**
Unit II	**Matrix**: Matrices as vectors, Transpose, Matrix-vector and vector-matrix multiplication in terms of linear combinations, Matrix-vector multiplication in terms of dot-products, Null space, Computing sparse matrix-vector product, Linear functions, Matrix-matrix multiplication, Inner product and outer product,	**15L**

	From function inverse to matrix inverse **Basis**: Coordinate systems, Two greedy algorithms for finding a set of generators, Minimum Spanning Forest and GF(2), Linear dependence, Basis , Unique representation, Change of basis, first look, Computational problems involving finding a basis Dimension: Dimension and rank, Direct sum, Dimension and linear functions, The annihilator	
Unit III	**Gaussian elimination**: Echelon form, Gaussian elimination over GF(2), Solving a matrix-vector equation using Gaussian elimination, Finding a basis for the null space, Factoring integers, **Inner Product**: The inner product for vectors over the reals, Orthogonality, **Orthogonalization**: Projection orthogonal to multiple vectors, Projecting orthogonal to mutually orthogonal vectors, Building an orthogonal set of generators, Orthogonal complement, Eigenvector: Modeling discrete dynamic processes, Diagonalization of the Fibonacci matrix, Eigenvalues and eigenvectors, Coordinate representation in terms of eigenvectors, The Internet worm, Existence of eigenvalues, Markov chains, Modeling a web surfer: PageRank.	**15L**

Textbook(s):

1) Coding the Matrix Linear Algebra through Applications to Computer Science Edition 1, PHILIP N. KLEIN, Newtonian Press (2013)

Additional References*:*

1) Linear Algebra and Probability for Computer Science Applications, Ernest Davis, A K Peters/CRC Press (2012).
2) Linear Algebra and Its Applications, Gilbert Strang, Cengage Learning, 4th Edition (2007).
3) Linear Algebra and Its Applications, David C Lay, Pearson Education India; 3rd Edition (2002)

Course: USCS406	TOPICS (Credits : 02 Lectures/Week: 03) .Net Technologies	
Objectives: To explore .NET technologies for designing and developing dynamic, interactive and responsive web applications. **Expected Learning Outcomes:** 1. Understand the .NET framework 2. Develop a proficiency in the C# programming language 3. Proficiently develop ASP.NET web applications using C# 4. Use ADO.NET for data persistence in a web application		
Unit I	**The .NET Framework:**.NET Languages, Common Language Runtime, .NET Class Library **C# Language Basics:** Comments, Variables and Data Types, Variable Operations, Object-Based Manipulation, Conditional Logic, Loops, Methods, Classes, Value Types and Reference Types, Namespaces and Assemblies, Inheritance, Static Members, Casting Objects, Partial Classes **ASP.NET:** Creating Websites, Anatomy of a Web Form - Page Directive, Doctype, Writing Code - Code-Behind Class, Adding Event Handlers, Anatomy of an ASP.NET Application - ASP.NET File Types, ASP.NET Web Folders, **HTML Server Controls** - View State, HTML Control Classes, HTML Control Events, HtmlControl Base Class, HtmlContainerControl Class, HtmlInputControl Class, Page Class, global.asax File, web.config File	**15L**
Unit II	**Web Controls:** Web Control Classes, WebControl Base Class, List Controls, Table Controls, Web Control Events and AutoPostBack, Page Life Cycle **State Management:** ViewState, Cross-Page Posting, Query String, Cookies, Session State, Configuring Session State, Application State **Validation:** Validation Controls, Server-Side Validation, Client-Side Validation, HTML5 Validation, Manual Validation, Validation with Regular Expressions **Rich Controls:** Calendar Control, AdRotator Control, MultiView Control **Themes and Master Pages:** How Themes Work, Applying a Simple Theme,	**15L**

	Handling Theme Conflicts, Simple Master Page and Content Page, Connecting Master pages and Content Pages, Master Page with Multiple Content Regions, Master Pages and Relative Paths **Website Navigation:** Site Maps, URL Mapping and Routing, SiteMapPath Control, TreeView Control, Menu Control	
Unit III	**ADO.NET:** Data Provider Model, Direct Data Access - Creating a Connection, Select Command, DataReader, Disconnected Data Access **Data Binding**: Introduction, Single-Value Data Binding, Repeated-Value Data Binding, Data Source Controls – SqlDataSource **Data Controls:** GridView, DetailsView, FormView **Working with XML:** XML Classes – XMLTextWriter, XMLTextReader **Caching:** When to Use Caching, Output Caching, Data Caching **LINQ:** Understanding LINQ, LINQ Basics, **ASP.NET AJAX:** ScriptManager, Partial Refreshes, Progress Notification, Timed Refreshes	**15L**

Textbook(s):

1) Beginning ASP.NET 4.5 in C#, Matthew MacDonald, Apress(2012)

Additional Reference(s):

1) The Complete Reference ASP .NET, MacDonald, Tata McGraw Hill
2) Beginning ASP.NET 4 in C# and VB Imar Spanajaars, WROX

Course: **USCS407**	**TOPICS (Credits : 02 Lectures/Week: 03)** **Android Developer Fundamentals**	

Objectives:

To provide the comprehensive insight into developing applications running on smart mobile devices and demonstrate programming skills for managing task on mobile. To provide systematic approach for studying definition, methods and its applications for Mobile-App development.

Expected Learning Outcomes:

1) Understand the requirements of Mobile programming environment.
2) Learn about basic methods, tools and techniques for developing Apps
3) Explore and practice App development on Android Platform
4) Develop working prototypes of working systems for various uses in daily lives.

Unit I	What is Android? Obtaining the required tools, creating first android app, understanding the components of screen, adapting display orientation, action bar, Activities and Intents, Activity Lifecycle and Saving State, Basic Views: TextView, Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, and RadioGroup Views, ProgressBar View, AutoCompleteTextView, TimePicker View, DatePicker View, ListView View, Spinner View	**15L**
Unit II	User Input Controls, Menus, Screen Navigation, RecyclerView, Drawables, Themes and Styles, Material design, Providing resources for adaptive layouts, AsyncTask and AsyncTaskLoader, Connecting to the Internet, Broadcast receivers, Services, Notifications, Alarm managers, Transferring data efficiently	**15L**
Unit III	Data - saving, retrieving, and loading: Overview to storing data, Shared preferences, SQLite primer, store data using SQLite database, ContentProviders, loaders to load and display data, Permissions, performance and security, Firebase and AdMob, Publish your app	**15L**

Textbook(s):

1) "Beginning Android 4 Application Development", Wei-Meng Lee, March 2012, WROX.

Additional Reference(s):

1) https://developers.google.com/training/courses/android-fundamentals
2) https://www.gitbook.com/book/google-developer-training/android-developer-fundamentals-course-practicals/details

Suggested List of Practical – SEMESTER IV

Course: **USCSP401**	**(Credits : 03 Lectures/Week:09) USCS401+ USCS402+USCS403**	

USCS401: Fundamentals of Algorithms

1. Write Python program to perform matrix multiplication. Discuss the complexity of algorithm used.
2. Write Python program to sort n names using Quick sort algorithm. Discuss the complexity of algorithm used.
3. Write Python program to sort n numbers using Merge sort algorithm. Discuss the complexity of algorithm used.
4. Write Python program for inserting an element into binary tree.
5. Write Python program for deleting an element (assuming data is given) from binary tree.
6. Write Python program for checking whether a given graph G has simple path from source s to destination d. Assume the graph G is represented using adjacent matrix.
7. Write Python program for finding the smallest and largest elements in an array A of size n using Selection algorithm. Discuss Time complexity.
8. Write Python program for finding the second largest element in an array A of size n using Tournament Method. Discuss Time complexity.
9. Write Python program for implementing Huffman Coding Algorithm. Discuss the complexity of algorithm.
10. Write Python program for implementing Strassen's Matrix multiplication using Divide and Conquer method. Discuss the complexity of algorithm.

USCS402: Advanced JAVA

1. Develop the presentation layer of Library Management software application with suitable menus.
2. Design suitable database for Library Management System.
3. Develop business logic layer for Library Management System.
4. Develop Java application to store image in a database as well as retrieve image from database.

5. Write a Java application to demonstrate servlet life cycle.
6. Design database for student administration. Develop servlet(s) to perform CRUD operations.
7. Create Employees table in EMP database. Perform select, insert, update, and delete operations on Employee table using JSP.
8. Write a Student class with three properties. The useBean action declares a JavaBean for use in a JSP. Write Java application to access JavaBeans Properties.
9. Design application using Struts2. Application must accept user name and greet user when command button is pressed.
10. Write Java application to encoding and decoding JSON in Java.

USCS403: Computer Networks

1. Understanding the working of NIC cards, Ethernet/Fast Ethernet/Gigabit Ethernet.
2. Crimping of Twisted-Pair Cable with RJ45connector for Straight-Through, Cross-Over, Roll-Over.
3. To understand their respective role in networks/internet.
4. Problem solving with IPv4, which will include concept of Classful addressing. (supportive Hint: use Cisco Binary Game)
5. Using, linux-terminal or Windows-cmd, execute following networking commands and note the output: *ping, traceroute, netstat, arp, ipconfig.*
6. Using **Packet Tracer**, create a basic network of two computers using appropriate network wire.
7. Using **Packet Tracer**, connect multiple (min.6) computers using layer 2 switch.
8. Using **Packet Tracer**, connect a network in triangular shape with three layer two switches and every switch will have four computer. Verify their connectivity with each other.
9. Using **Packet Tracer**, create a wireless network of multiple PCs using appropriate access point.
10. Using **Wireshark**, network analyzer, set the filter for ICMP, TCP, HTTP, UDP, FTP and perform respective protocol transactions to show/prove that the network analyzer is working.

Course: USCSP402	(Credits : 03 Lectures/Week:09) USCS405+ USCS406+ USCS407	

USCS405: Linear Algebra using Python

1. Write a program which demonstrates the following:
    - Addition of two complex numbers
    - Displaying the conjugate of a complex number
    - Plotting a set of complex numbers
    - Creating a new plot by rotating the given number by a degree 90, 180, 270 degrees and also by scaling by a number a=1/2, a=1/3, a=2 etc.
2. Write a program to do the following:
    - Enter a vector u as a n-list
    - Enter another vector v as a n-list
    - Find the vector au+bv for different values of a and b
    - Find the dot product of u and v
3. Write a program to do the following:
    - Enter two distinct faces as vectors u and v.
    - Find a new face as a linear combination of u and v i.e. au+bv for a and b in R.
    - Find the average face of the original faces.
4. Write a program to do the following:
    - Enter an r by c matrix M (r and c being positive integers)
    - Display M in matrix format
    - Display the rows and columns of the matrix M
    - Find the scalar multiplication of M for a given scalar.
    - Find the transpose of the matrix M.
5. Write a program to do the following:
    - Find the vector –matrix multiplication of a r by c matrix M with an c-vector u.
    - Find the matrix-matrix product of M with a c by p matrix N.
6. Write a program to enter a matrix and check if it is invertible. If the inverse exists, find the inverse.
7. Write a program to convert a matrix into its row echelon form.

8. Write a program to do the following:
    - Enter a positive number N and find numbers a and b such that $a^2 - b^2 = N$
    - Find the gcd of two numbers using Euclid's algorithm.
9. Write a program to do the following:
    - Enter a vector b and find the projection of b orthogonal to a given vector u.
    - Find the projection of b orthogonal to a set of given vectors
10. Write a program to enter a given matrix and an eigen value of the same. Find its eigen vector.

USCS406: .NET Technologies

1. Write C# programs for understanding C# basics involving
    a. Variables and Data Types b. Object-Based Manipulation
    c. Conditional Logic d. Loops e. Methods
2. Write C# programs for Object oriented concepts of C# such as:
    a. Program using classes b. Constructor and Function Overloading
    c. Inheritance d. Namespaces
3. Design ASP.NET Pages with
    a. Server controls.
    b. Web controls and demonstrate the use of AutoPostBack
    c. Rich Controls (Calendar / Ad Rotator)
4. Design ASP.NET Pages for State Management using
    a. Cookies b. Session State c. Application State
5. Perform the following activities
    a. Design ASP.NET page and perform validation using various Validation Controls
    b. Design an APS.NET master web page and use it other (at least 2-3) content pages.
    c. Design ASP.NET Pages with various Navigation Controls
6. Performing ADO.NET data access in ASP.NET for
    a. Simple Data Binding b. Repeated Value Data Binding
7. Design ASP.NET application for Interacting (Reading / Writing) with XML documents
8. Design ASP.NET Pages for Performance improvement using Caching
9. Design ASP.NET application to query a Database using LINQ
10. Design and use AJAX based ASP.NET pages.

USCS407:Android Developer Fundamentals

1. Install Android Studio and Run Hello World Program.
2. Create an android app with Interactive User Interface using Layouts.
3. Create an android app that demonstrates working with TextView Elements.
4. Create an android app that demonstrates Activity Lifecycle and Instance State.
5. Create an android app that demonstrates the use of Keyboards, Input Controls, Alerts, and Pickers.
6. Create an android app that demonstrates the use of an Options Menu.
7. Create an android app that demonstrate Screen Navigation Using the App Bar and Tabs.
8. Create an android app to Connect to the Internet and use BroadcastReceiver.
9. Create an android app to show Notifications and Alarm manager.
10. Create an android app to save user data in a database and use of different queries.

Evaluation Scheme

I. Internal Exam - 25 Marks

(i) Test – 20 Marks

20 marks Test – Duration 40 mins
It will be conducted either using any open source learning management system like Moodle (Modular object-oriented dynamic learning environment)

OR

A test based on an equivalent online course on the contents of the concerned course (subject) offered by or build using MOOC (Massive Open Online Course) platform.

(ii) 5 Marks – Active participation in routine class instructional deliveries
Overall conduct as a responsible student, manners, skill in articulation, leadership qualities demonstrated through organizing co-curricular activities, etc.

II. External Exam– 75 Marks

III. Practical Exam – 50 Marks

- Each course carry 50 Marks : 40 marks + 05 marks (journal) + 05 marks (viva)
- Minimum 75 % practical from each paper are required to be completed and written in the journal**.**

(Certified Journal is compulsory for appearing at the time of Practical Exam)

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Academic Council 11/05/2017
Item No: 4.233

UNIVERSITY OF MUMBAI

Syllabus for S.Y.B.Sc.

Programme: B.Sc.

Course: Information Technology

with effect from the academic year

2017 – 2018

Semester – 3			
Course Code	**Course Type**	**Course Title**	**Credits**
USIT301	Skill Enhancement Course	Python Programming	2
USIT302	Core Subject	Data Structures	2
USIT303	Core Subject	Computer Networks	2
USIT304	Core Subject	Database Management Systems	2
USIT305	Core Subject	Applied Mathematics	2
USIT3P1	Skill Enhancement Course Practical	Python Programming Practical	2
USIT3P2	Core Subject Practical	Data Structures Practical	2
USIT3P3	Core Subject Practical	Computer Networks Practical	2
USIT3P4	Core Subject Practical	Database Management Systems Practical	2
USIT3P5	Core Subject Practical	Mobile Programming Practical	2
		Total Credits	**20**

Semester – 4			
Course Code	**Course Type**	**Course Title**	**Credits**
USIT401	Skill Enhancement Course	Core Java	2
USIT402	Core Subject	Introduction to Embedded Systems	2
USIT403	Core Subject	Computer Oriented Statistical Techniques	2
USIT404	Core Subject	Software Engineering	2
USIT405	Core Subject	Computer Graphics and Animation	2
USIT4P1	Skill Enhancement Course Practical	Core Java Practical	2
USIT4P2	Core Subject Practical	Introduction to Embedded Systems Practical	2
USIT4P3	Core Subject Practical	Computer Oriented Statistical Techniques Practical	2
USIT4P4	Core Subject Practical	Software Engineering Practical	2
USIT4P5	Core Subject Practical	Computer Graphics and Animation Practical	2
		Total Credits	**20**

SEMESTER III

B. Sc. (Information Technology)		Semester – III	
Course Name: Python Programming		**Course Code: USIT301**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction:** The Python Programming Language,History, features, Installing Python, Running Python program, Debugging : Syntax Errors, Runtime Errors, Semantic Errors,Experimental Debugging, Formal and Natural Languages, The Difference Between Brackets, Braces, and Parentheses, **Variables and Expressions**Values and Types, Variables, Variable Names and Keywords, Type conversion,Operators and Operands, Expressions, Interactive Mode and Script Mode, Order of Operations. **Conditional Statements:** if, if-else, nested if –else **Looping**: for, while, nested loops **Control statements:** Terminating loops, skipping specific conditions	**12**
II	**Functions:** Function Calls, Type Conversion Functions, Math Functions, Composition, Adding New Functions, Definitions and Uses, Flow of Execution, Parameters and Arguments, Variables and Parameters Are Local, Stack Diagrams, Fruitful Functions and Void Functions, Why Functions?Importing with from, Return Values, Incremental Development, Composition, Boolean Functions, More Recursion, Leap of Faith, Checking Types **Strings:** A String Is a Sequence, Traversal with a for Loop, String Slices, Strings Are Immutable, Searching, Looping and Counting, String Methods, The in Operator, String Comparison, String Operations.	**12**
III	**Lists:** Values and Accessing Elements, Lists are mutable, traversing a List, Deleting elements from List, Built-in List Operators, Concatenation, Repetition, `In` Operator, Built-in List functions and methods **Tuples and Dictionaries**: Tuples, Accessing values in Tuples, Tuple Assignment, Tuples as return values, Variable-length argument tuples, Basic tuples operations, Concatenation, Repetition, `in` Operator, Iteration, Built-in Tuple Functions Creating a Dictionary, Accessing Values in a dictionary, Updating Dictionary, Deleting Elements from Dictionary, Properties of Dictionary keys, Operations in Dictionary, Built-In Dictionary Functions, Built-in Dictionary Methods **Files:** Text Files, The File Object Attributes, Directories **Exceptions:** Built-in Exceptions, Handling Exceptions, Exception	**12**

	with Arguments, User-defined Exceptions	
IV	**Regular Expressions –** Concept of regular expression, various types of regular expressions, using match function. **Classes and Objects:** Overview of OOP (Object Oriented Programming), Class Definition, Creating Objects, Instances as Arguments, Instances as return values, Built-in Class Attributes, Inheritance, Method Overriding, Data Encapsulation, Data Hiding **Multithreaded Programming:** Thread Module, creating a thread, synchronizing threads, multithreaded priority queue **Modules:** Importing module, Creating and exploring modules, Math module, Random module, Time module	**12**
V	**Creating the GUI Form and Adding Widgets:** **Widgets:** Button, Canvas,Checkbutton, Entry, Frame, Label, Listbox, Menubutton, Menu, Message, Radiobutton, Scale, Scrollbar, text, Toplevel, Spinbox, PanedWindow, LabelFrame, tkMessagebox. Handling Standard attributes and Properties of Widgets. **Layout Management:** Designing GUI applications with proper Layout Management features. **Look and Feel Customization**:Enhancing Look and Feel of GUI using different appearances of widgets. **Storing Data in Our MySQL Database via Our GUI :**Connecting to a MySQL database from Python, Configuring the MySQL connection, Designing the Python GUI database, Using the INSERT command, Using the UPDATE command, Using the DELETE command, Storing and retrieving data from MySQL database.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Think Python	Allen Downey	O'Reilly	1st	2012
2.	An Introduction to Computer Science using Python 3	JasonMontojo, Jennifer Campbell, Paul Gries	SPD	1st	2014
3.	Python GUI Programming Cookbook	Burkhard A. Meier	Packt		2015
4.	Introduction to Problem Solving with Python	E. Balagurusamy	TMH	1st	2016
5.	Murach's Python programming	Joel Murach, Michael Urban	SPD	1st	2017
6.	Object-oriented Programming in Python	Michael H. Goldwasser, David Letscher	Pearson Prentice Hall	1st	2008
7.	Exploring Python	Budd	TMH	1st	2016

B. Sc. (Information Technology)	**Semester – III**

Course Name: Data Structures		Course Code: USIT302	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	**Introduction:** Data and Information, Data Structure, Classification of Data Structures, Primitive Data Types, Abstract Data Types, Data structure vs. File Organization, Operations on Data Structure, Algorithm, Importance of Algorithm Analysis, Complexity of an Algorithm, Asymptotic Analysis and Notations, Big O Notation, Big Omega Notation, Big Theta Notation, Rate of Growth and Big O Notation. **Array**:Introduction, One Dimensional Array, Memory Representation of One Dimensional Array, Traversing, Insertion, Deletion, Searching, Sorting, Merging of Arrays, Multidimensional Arrays, Memory Representation of Two Dimensional Arrays, General Multi-Dimensional Arrays, Sparse Arrays, SparseMatrix, Memory Representation of Special kind of Matrices, Advantages and Limitations of Arrays.	**12**
II	**Linked List:** Linked List, One-way Linked List, Traversal of Linked List, Searching, Memory Allocation and De-allocation, Insertion in Linked List, Deletion from Linked List, Copying a List into Other List, Merging Two Linked Lists, Splitting a List into Two Lists, Reversing One way linked List, Circular Linked List, Applications of Circular Linked List, Two way Linked List, Traversing a Two way Linked List, Searching in a Two way linked List, Insertion of an element in Two way Linked List, Deleting a node from Two way Linked List, Header Linked List, Applications of the Linked list, Representation of Polynomials, Storage of Sparse Arrays, Implementing other Data Structures.	**12**
III	**Stack**: Introduction, Operations on the Stack Memory Representation of Stack, Array Representation of Stack, Applications of Stack, Evaluation of Arithmetic Expression, Matching Parenthesis, infix and postfix operations, Recursion**.** **Queue:** Introduction, Queue, Operations on the Queue, Memory Representation of Queue, Array representation of queue, Linked List Representation of Queue, Circular Queue,Some special kinds of queues, Deque,Priority Queue, Application of Priority Queue, Applications of Queues.	**12**
IV	**Sorting and Searching Techniques** Bubble, Selection, Insertion, Merge Sort. Searching: Sequential,	**12**

	Binary, Indexed Sequential Searches, Binary Search. **Tree:**Tree,Binary Tree, Properties of Binary Tree, Memory Representation of Binary Tree, Operations Performed on Binary Tree,Reconstruction of Binary Tree from its Traversals, Huffman Algorithm, Binary Search Tree, Operations on Binary Search Tree, Heap, Memory Representation of Heap, Operation on Heap, Heap Sort. **Advanced Tree Structures:**Red Black Tree, Operations Performed on Red Black Tree, AVL Tree, Operations performed on AVL Tree, 2-3 Tree, B-Tree.	
V	**Hashing Techniques** Hash function, Address calculation techniques, Common hashing functions Collision resolution, Linear probing, Quadratic,Double hashing, Buckethashing, Deletion and rehashing **Graph**: Introduction, Graph, Graph Terminology, Memory Representation of Graph, Adjacency Matrix Representation of Graph, Adjacency List or Linked Representation of Graph, Operations Performed on Graph, GraphTraversal, Applications of the Graph, Reachability, Shortest Path Problems, Spanning Trees.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	A Simplified Approach to Data Structures	Lalit Goyal, Vishal Goyal, Pawan Kumar	SPD	1st	2014
2.	An Introduction to Data Structure with Applications	Jean – Paul Tremblay and Paul Sorenson	Tata MacGraw Hill	2nd	2007
3.	Data Structure and Algorithm	Maria Rukadikar	SPD	1st	2017
4.	Schaum's Outlines Data structure	Seymour Lipschutz	Tata McGraw Hill	2nd	2005
5.	Data structure – A Pseudocode Approach with C	AM Tanenbaum, Y Langsamand MJ Augustein	Prentice Hall India	2nd	2006
6.	Data structure andAlgorithm Analysis in C	Weiss, Mark Allen	Addison Wesley	1st	2006

B. Sc. (Information Technology)		Semester – III	
Course Name: Computer Networks		**Course Code: USIT303**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction:** Data communications, networks, network types, Internet history,standards and administration. **Network Models:**Protocol layering, TCP/IP protocol suite, The OSI model. **Introduction to Physical layer:**Data and signals, periodic analog signals, digital signals, transmission impairment, data rate limits, performance. **Digital and Analog transmission:** Digital-to-digital conversion, analog-to-digital conversion, transmission modes, digital-to-analog conversion, analog-to-analog conversion.	**12**
II	**Bandwidth Utilization: Multiplexing and SpectrumSpreading:** Multiplexing, Spread Spectrum **Transmission media:**Guided Media**,** Unguided Media **Switching:** Introduction, circuit switched networks, packet switching, structure of a switch. **Introduction to the Data Link Layer:**Link layer addressing, Data Link Layer Design Issues, Error detection and correction, block coding, cyclic codes, checksum, forward error correction, error correcting codes, error detecting codes.	**12**
III	**Data Link Control:** DLC services, data link layer protocols, HDLC, Point-to-point protocol. **Media Access Control**: Random access, controlled access, channelization, Wired LANs – Ethernet Protocol, standard ethernet, fast ethernet, gigabit ethernet, 10 gigabit ethernet, **Wireless LANs:** Introduction, IEEE 802.11 project, Bluetooth, WiMAX, Cellular telephony, Satellite networks. **Connecting devices and Virtual LANs.**	**12**
IV	**Introduction to the Network Layer**: Network layer services, packet switching, network layer performance, IPv4 addressing, forwarding of IP packets, Internet Protocol, ICMPv4, Mobile IP **Unicast Routing:**Introduction, routing algorithms, unicast routing protocols. **Next generation IP:** IPv6 addressing, IPv6 protocol, ICMPv6 protocol, transition from IPv4 to IPv6.	**12**
V	**Introduction to the Transport Layer**: Introduction, Transport layer protocols (Simple protocol, Stop-and-wait protocol, Go-Back-n protocol, Selective repeat protocol, Bidirectional protocols), Transport	**12**

	layer services, User datagram protocol, Transmission control protocol, **Standard Client0Server Protocols:**World wide-web and HTTP, FTP, Electronic mail, Telnet, Secured Shell, Domain name system.	

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Data Communication and Networking	Behrouz A. Forouzan	Tata McGraw Hill	Fifth Edition	2013
2.	TCP/IP Protocol Suite	Behrouz A. Forouzan	Tata McGraw Hill	Fourth Edition	2010
3.	Computer Networks	Andrew Tanenbaum	Pearson	Fifth	2013

Course Name: Database Management Systems		Course Code: USIT304	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	**Introduction to Databases and Transactions** What is database system, purpose of database system, view of data, relationaldatabases, database architecture, transaction management **Data Models** The importance of data models, Basic building blocks, Business rules, The evolutionof data models, Degrees of data abstraction. **Database Design,ER Diagram and Unified Modeling Language** Database design and ER Model:overview, ERModel, Constraints, ERDiagrams, ERDIssues, weak entity sets, Codd's rules, Relational Schemas, Introduction to UML	12
II	**Relational database model:** Logical view of data, keys, integrity rules, Relational Database design: features of good relational database design, atomic domain and Normalization (1NF, 2NF, 3NF, BCNF). **Relational Algebra and Calculus** Relational algebra: introduction, Selection and projection, set operations, renaming,Joins, Division, syntax, semantics. Operators, grouping and ungrouping,relationalcomparison. **Calculus:** Tuple relational calculus, Domain relational Calculus, calculus vsalgebra,computational capabilities	12
III	**Constraints, Views and SQL** Constraints, types of constrains, Integrity constraints, Views: Introduction to views, data independence, security, updates on views,comparison between tables and views SQL: data definition, aggregate function, Null Values, nested sub queries, Joined relations. Triggers.	12
IV	**Transaction management and Concurrency** Control Transaction management: ACID properties, serializability and concurrency control, Lock based concurrency control (2PL, Deadlocks),Time stamping methods, optimistic methods, database recovery management.	12
V	**PL-SQL**: Beginning with PL / SQL,Identifiers and Keywords, Operators, Expressions, Sequences,Control Structures, Cursors and Transaction,Collections and composite data types, Procedures and Functions, Exceptions Handling,Packages,With Clause and Hierarchical Retrieval,Triggers.	12

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Database System and Concepts	A Silberschatz, H Korth, S Sudarshan	McGraw-Hill	Fifth Edition	
2.	Database Systems	RobCoronel	Cengage Learning	Twelfth Edition	
3.	Programming with PL/SQL for Beginners	H.Dand, R.Patil and T. Sambare	X –Team	First	2011
4.	Introduction to Database System	C.J.Date	Pearson	First	2003

B. Sc. (Information Technology)		Semester – III	
Course Name: Applied Mathematics		**Course Code: USIT305**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Matrices:** Inverse of a matrix, Properties of matrices, Elementary Transformation, Rank of Matrix, Echelon or Normal Matrix, Inverse of matrix, Linear equations, Linear dependence and linear independence of vectors, Linear transformation, Characteristics roots and characteristics vectors, Properties of characteristic vectors, Caley-Hamilton Theorem, Similarity of matrices, Reduction of matrix to a diagonal matrix which has elements as characteristics values. **Complex Numbers:** Complex number, Equality of complex numbers, Graphical representation of complex number(Argand's Diagram), Polar form of complex numbers, Polar form of x+iy for different signs of x,y, Exponential form of complex numbers, Mathematical operation with complex numbers and their representation on Argand's Diagram, Circular functions of complex angles, Definition of hyperbolic function, Relations between circular and hyperbolic functions, Inverse hyperbolic functions, Differentiation and Integration, Graphs of the hyperbolic functions, Logarithms of complex quality, j(=i)as an operator(Electrical circuits)	**12**
II	**Equation of the first order and of the first degree:** Separation of variables, Equations homogeneous in x and y, Non-homogeneous linear equations, Exact differential Equation, Integrating Factor, Linear Equation and equation reducible to this form, Method of substitution. **Differential equation of the first order of a degree higher than the first:** Introduction, Solvable for p (or the method of factors), Solve for y, Solve for x, Clairaut's form of the equation, Methods of Substitution, Method of Substitution. **Linear Differential Equations with Constant Coefficients:**Introduction, The Differential Operator, Linear Differential Equation f(D) y = 0, Different cases depending on the nature of the root of the equation f(D) = 0, Linear differential equation f(D) y = X, The complimentary Function, The inverse operator 1/f(D) and the symbolic expiration for the particular integral 1/f(D) X; the general methods, Particular integral : Short methods, Particular integral : Other methods, Differential equations reducible to the linear differential equations with constant coefficients.	**12**
III	**The Laplace Transform:** Introduction, Definition of the Laplace Transform, Table of Elementary Laplace Transforms, Theorems on	**12**

	Important Properties of Laplace Transformation, First Shifting Theorem, Second Shifting Theorem, The Convolution Theorem, Laplace Transform of an Integral, Laplace Transform of Derivatives, **Inverse Laplace Transform:** Shifting Theorem, Partial fraction Methods, Use of Convolution Theorem, Solution of Ordinary Linear Differential Equations with Constant Coefficients, Solution of Simultaneous Ordinary Differential Equations, Laplace Transformation of Special Function, Periodic Functions, Heaviside Unit Step Function, Dirac-delta Function(Unit Impulse Function),	
IV	**Multiple Integrals:** Double Integral, Change of the order of the integration, Double integral in polar co-ordinates, Triple integrals. **Applications of integration:** Areas, Volumes of solids.	**12**
V	**Beta and Gamma Functions –** Definitions**,**Properties and Problems. Duplication formula. **Differentiation Under the Integral Sign** **Error Functions**	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	A text book of Applied Mathematics Vol I	P. N. Wartikar and J. N. Wartikar	Pune VidyathiGraha		
2.	Applied Mathematics II	P. N. Wartikar and J. N. Wartikar	Pune VidyathiGraha		
3.	Higher Engineering Mathematics	Dr. B. S. Grewal	Khanna Publications		

B. Sc. (Information Technology)		Semester – III	
Course Name: Python Programming Practical		**Course Code: USIT3P1**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	**Write the program for the following:**
a.	Create a program that asks the user to enter their name and their age. Print out a message addressed to them that tells them the year that they will turn 100 years old.
b.	Enter the number from the user and depending on whether the number is even or odd, print out an appropriate message to the user.
c.	Write a program to generate the Fibonacci series.
d.	Write a function that reverses the user defined value.
e.	Write a function to check the input value is Armstrong and also write the function for Palindrome.
f.	Write a recursive function to print the factorial for a given number.
2.	**Write the program for the following:**
a.	Write a function that takes a character (i.e. a string of length 1) and returns True if it is a vowel, False otherwise.
b.	Define a function that computes the *length* of a given list or string.

c.	Define a *procedure*`histogram()` that takes a list of integers and prints a histogram to the screen. For example, `histogram([4, 9, 7])` should print the following:
	
	`****`
	`*********`
	`*******`

3.	**Write the program for the following:**
a.	A *pangram* is a sentence that contains all the letters of the English alphabet at least once, for example: *The quick brown fox jumps over the lazy dog*. Your task here is to write a function to check a sentence to see if it is a pangram or not.
b.	Take a list, say for example this one: `a=[1,1,2,3,5,8,13,21,34,55,89]` and write a program that prints out all the elements of the list that are less than 5.

4.	**Write the program for the following:**
a.	Write a program that takes two lists and returns True if they have at least one common member.
b.	Write a Python program to print a specified list after removing the 0th, 2nd, 4th and 5th elements.
c.	Write a Python program to clone or copy a list
5.	**Write the program for the following:**
a.	Write a Python script to sort (ascending and descending) a dictionary by value.
b.	Write a Python script to concatenate following dictionaries to create a new one. Sample Dictionary : dic1={1:10, 2:20} dic2={3:30, 4:40} dic3={5:50,6:60} Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}
c.	Write a Python program to sum all the items in a dictionary.
6.	**Write the program for the following:**
a.	Write a Python program to read an entire text file.
b.	Write a Python program to append text to a file and display the text.
c.	Write a Python program to read last n lines of a file.
7.	**Write the program for the following:**
a.	Design a class that store the information of student and display the same
b.	Implement the concept of inheritance using python
c.	Create a class called `Numbers`, which has a single class attribute called `MULTIPLIER`, and a constructor which takes the parameters `x` and `y` (these should all be numbers). i. Write a method called `add` which returns the sum of the attributes `x` and `y`. ii. Write a class method called multiply, which takes a single number parameter a and returns the product of a and MULTIPLIER. iii. Write a static method called subtract, which takes two number parameters, b and c, and returns b - c. iv. Write a method called value which returns a tuple containing the values of x and y. Make this method into a property, and write a setter and a deleter for manipulating the values of `x` and `y`.
8.	**Write the program for the following:**
a.	Open a new file in IDLE (“New Window” in the “File” menu) and save it as geometry.py in the directory where you keep the files you create for this course. Then copy the functions you wrote for calculating volumes and areas in the “Control Flow and Functions” exercise into this file and save it. Now open a new file and save it in the same directory. You should now be able

	to importyour own module like this: `importgeometry` Try and add `print dir(geometry)` to the file and run it. Now write a function pointyShapeVolume(x, y, squareBase) that calculates the volume of a square pyramid if squareBase is True and of a right circular cone if squareBase is False. x is the length of an edge on a square if squareBase is True and the radius of a circle when squareBase is False. y is the height of the object. First use squareBase to distinguish the cases. Use the circleArea and squareArea from the geometry module to calculate the base areas.
b.	Write a program to implement exception handling.
9.	**Write the program for the following:**
a.	Try to configure the widget with various options like: bg=”red”, family=”times”, size=18
b.	Try to change the widget type and configuration options to experiment with other widget types like Message, Button, Entry, Checkbutton, Radiobutton, Scale etc.
10.	**Design the database applications for the following:**
a.	Design a simple database application that stores the records and retrieve the same.
b.	Design a database application to search the specified record from the database.
c.	Design a database application to that allows the user to add, delete and modify the records.

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Think Python	Allen Downey	O’Reilly	1st	2012
2.	An Introduction to Computer Science using Python 3	JasonMontojo, Jennifer Campbell, Paul Gries	SPD	1st	2014

B. Sc. (Information Technology)		Semester – III	
Course Name: Data Structures Practical		**Course Code: USIT3P2**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	**Implement the following:**
a.	Write a program to store the elements in 1-D array and perform the operations like searching, sorting and reversing the elements. [Menu Driven]
b.	Read the two arrays from the user and merge them and display the elements in sorted order.[Menu Driven]
c.	Write a program to perform the Matrix addition, Multiplication and Transpose Operation. [Menu Driven]
2.	**Implement the following for Linked List:**
a.	Write a program to create a single linked list and display the node elements in reverse order.
b.	Write a program to search the elements in the linked list and display the same
c.	Write a program to create double linked list and sort the elements in the linked list.
3.	**Implement the following for Stack:**
a.	Write a program to implement the concept of Stack with Push, Pop, Display and Exit operations.
b.	Write a program to convert an infix expression to postfix and prefix conversion.
c.	Write a program to implement Tower of Hanoi problem.
4.	**Implement the following for Queue:**
a.	Write a program to implement the concept of Queue with Insert, Delete, Display and Exit operations.
b.	Write a program to implement the concept of Circular Queue
c.	Write a program to implement the concept of Deque.
5.	**Implement the following sorting techniques:**
a.	Write a program to implement bubble sort.
b.	Write a program to implement selection sort.
c.	Write a program to implement insertion sort.
6.	**Implement the following data structure techniques:**
a.	Write a program to implement merge sort.
b.	Write a program to search the element using sequential search.

c.	Write a program to search the element using binary search.
7.	**Implement the following data structure techniques:**
a.	Write a program to create the tree and display the elements.
b.	Write a program to construct the binary tree.
c.	Write a program for inorder, postorder and preorder traversal of tree
8.	**Implement the following data structure techniques:**
a.	Write a program to insert the element into maximum heap.
b.	Write a program to insert the element into minimum heap.
9.	**Implement the following data structure techniques:**
a.	Write a program to implement the collision technique.
b.	Write a program to implement the concept of linear probing.
10.	**Implement the following data structure techniques:**
a.	Write a program to generate the adjacency matrix.
b.	Write a program for shortest path diagram.

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Data Structures and Algorithms Using Python	RanceNecaise	Wiley	First	2016
2.	Data Structures Using C and C++	Langsam,Augenstein, Tanenbaum	Pearson	First	2015

B. Sc. (Information Technology)		Semester – III	
Course Name:Computer Networks		**Course Code: USIT3P3**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	**IPv4 Addressing and Subnetting** a) Given an IP address and network mask, determine other information about the IP addresssuch as: • Network address • Network broadcast address • Total number of host bits • Number of hosts b) Given an IP address and network mask, determine other information about the IP addresssuch as: • The subnet address of this subnet • The broadcast address of this subnet • The range of host addresses for this subnet • The maximum number of subnets for this subnet mask • The number of hosts for each subnet • The number of subnet bits • The number of this subnet
2.	Use of ping and tracert / traceroute, ipconfig / ifconfig, route and arp utilities.
3.	Configure IP static routing.
4.	Configure IP routing using RIP.
5.	Configuring Simple OSPF.
6.	Configuring DHCP server and client.
7.	Create virtual PC based network using virtualization software and virtual NIC.
8.	Configuring DNS Server and client.
9.	Configuring OSPF with multiple areas.
10.	Use of Wireshark to scan and check the packet information of following protocols • HTTP • ICMP • TCP • SMTP • POP3

B. Sc. (Information Technology)		Semester – III	
Course Name: Database Management System		**Course Code: USIT3P4**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

List of Practical	
1.	**SQL Statements – 1**
a.	Writing Basic SQL SELECT Statements
b.	Restricting and Sorting Data
c.	Single-Row Functions
2.	**SQL Statements – 2**
a.	Displaying Data from Multiple Tables
b.	Aggregating Data Using Group Functions
c.	Subqueries
3.	**Manipulating Data**
a.	Using INSERT statement
b.	Using DELETE statement
c.	Using UPDATE statement
4.	**Creating and Managing Tables**
a.	Creating and Managing Tables
b.	Including Constraints
5.	**Creating and Managing other database objects**
a.	Creating Views
b.	Other Database Objects
c.	Controlling User Access
6.	**Using SET operators, Date/Time Functions, GROUP BY clause (advanced features) and advanced subqueries**
a.	Using SET Operators
b.	Datetime Functions
c.	Enhancements to the GROUP BY Clause
d.	Advanced Subqueries
7.	**PL/SQL Basics**
a.	Declaring Variables
b.	Writing Executable Statements
c.	Interacting with the Oracle Server

d.	Writing Control Structures
8.	**Composite data types, cursors and exceptions.**
a.	Working with Composite Data Types
b.	Writing Explicit Cursors
c.	Handling Exceptions
9.	**Procedures and Functions**
a.	Creating Procedures
b.	Creating Functions
c.	Managing Subprograms
d.	Creating Packages
10.	**Creating Database Triggers**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Database System and Concepts	A Silberschatz, H Korth, S Sudarshan	McGraw-Hill	Fifth Edition	
2.	Programming with PL/SQL for Beginners	H.Dand , R.Patil and T. Sambare	X –Team	First	2011
3.	PL/SQL Programming	Ivan Bayross	BPB	First	2010

B. Sc. (Information Technology)		Semester – III	
Course Name: Mobile Programming		**Course Code: USIT3P5**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**--**

The practical's will be based on HTML5, CSS, CORDOVA and PhoneGAP API. (Android will be introduced later after they learn Java)

List of Practical	
	Setting up CORDOVA, PhoneGAP Project and environment.
1.	• Creating and building simple "Hello World" App using Cordova • Adding and Using Buttons • Adding and Using Event Listeners
2.	• Creating and Using Functions • Using Events • Handlingand Using Back Button
3.	• Installingand Using Plugins • Installingand Using Battery Plugin • Installingand Using Camera Plugin
4.	• Installingand Using Contacts Plugin • Installingand Using Device Plugin • Installingand Using Accelerometer Plugin
5.	• Install and Using Device Orientation plugin • Install and Using Device Orientation plugin • Create and Using Prompt Function
6.	• Installingand Using File Plugin • Installingand Using File Transfer Plugin • Using Download and Upload functions
7.	• Installingand Using Globalization Plugin • Installingand Using Media Plugin • Installingand Using Media Capture Plugin
8.	• Installingand Using Network Information Plugin

	• Installingand Using Splash Screen Plugin • Installingand Using Vibration Plugin
9.	• Developing Single Page Apps • Developing Multipage Apps • Storing Data Locally in a Cordova App
10.	• Use of sqlite plugin with PhoneGap / apache Cordova • Using Sqlite read/write and search • Populating Cordova SQLite storage with the JQuery API

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Apache Cordova 4 Programming	John M. Wargo	Addison-Wesley Professional	1st	2015
2.	Apache Cordova in Action	Raymond Camden	Manning Publications	1st	2015
3.	PhoneGap By Example	Andrey Kovalenko	PACKT Publishing	1st	2015

SEMESTER IV

B. Sc. (Information Technology)		Semester – IV	
Course Name: Core Java		**Course Code: USIT401**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction:**History, architecture and its components,Java Class File, Java Runtime Environment, The Java Virtual Machine, JVM Components, The Java API, java platform, java development kit, Lambda Expressions, Methods References, Type Annotations, Method Parameter Reflection, setting the path environment variable, Java Compiler And Interpreter, java programs, java applications, main(), public, static, void, string[] args, statements, white space, case sensitivity, identifiers, keywords, comments, braces and code blocks, variables, variable name **Data types:** primitive data types, Object Reference Types, Strings, Auto boxing, operators and properties of operators, Arithmetic operators, assignment operators, increment and decrement operator, relational operator, logical operator, bitwise operator, conditional operator.	**12**
II	**Control Flow Statements:** The If…Else If…Else Statement, The Switch…Case Statement **Iterations:** The While Loop, The Do … While Loop, The For Loop, The Foreach Loop, Labeled Statements, The Break And Continue Statements, The Return Statement **Classes:** Types of Classes, Scope Rules, Access Modifier, Instantiating Objects From A Class, Initializing The Class Object And Its Attributes, Class Methods, Accessing A Method, Method Returning A Value, Method's Arguments, Method Overloading, Variable Arguments [Varargs], Constructors, this Instance, super Instance, Characteristics Of Members Of A Class, constants, this instance, static fields of a class, static methods of a class, garbage collection.	**12**
III	**Inheritance:** Derived Class Objects, Inheritance and Access Control, Default Base Class Constructors, this and super keywords. Abstract Classes And Interfaces, Abstract Classes, Abstract Methods, Interfaces, What Is An Interface? How Is An Interface Different From An Abstract Class?, Multiple Inheritance, Default Implementation, Adding New Functionality, Method Implementation, Classes V/s	**12**

	Interfaces, Defining An Interface, Implementing Interfaces. **Packages:** Creating Packages, Default Package, Importing Packages, Using A Package.	
IV	**Enumerations,Arrays:** Two Dimensional Arrays, Multi-Dimensional Arrays, Vectors, Adding Elements To A Vector, Accessing Vector Elements, Searching For Elements In A Vector, Working With The Size of The Vector. **Multithreading:** the thread control methods, thread life cycle, the main thread, creating a thread, extending the thread class. **Exceptions:** Catching Java Exceptions, Catching Run-Time Exceptions, Handling Multiple Exceptions, The finally Clause, The throws Clause **Byte streams:** reading console input, writing console output, reading file, writing file, writing binary data, reading binary data, getting started with character streams, writing file, reading file	**12**
V	**Event Handling:** Delegation Event Model, Events, Event classes, Event listener interfaces, Using delegation event model, adapter classes and inner classes. **Abstract Window Toolkit:** Window Fundamentals, Component, Container, Panel, Window, Frame, Canvas.Components – Labels, Buttons, Check Boxes, Radio Buttons, Choice Menus, Text Fields, Text, Scrolling List, Scrollbars, Panels, Frames **Layouts:** Flow Layout, Grid Layout, Border Layout, Card Layout.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Core Java 8 for Beginners	Vaishali Shah, Sharnam Shah	SPD	1st	2015
2.	Java: The Complete Reference	Herbert Schildt	McGraw Hill	9th	2014
3.	Murach's beginning Java with Net Beans	Joel Murach , Michael Urban	SPD	1st	2016
4.	Core Java, Volume I: Fundamentals	Hortsman	Pearson	9th	2013
5.	Core Java, Volume II: Advanced Features	Gary Cornell and Hortsman	Pearson	8th	2008
6.	Core Java: An Integrated Approach	R. Nageswara Rao	DreamTech	1st	2008

B. Sc. (Information Technology)		Semester – IV	
Course Name: Introduction to Embedded Systems		**Course Code: USIT402**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction:** Embedded Systems and general purpose computersystems, history, classifications, applications and purpose ofembedded systems **Core of embedded systems:** microprocessors and microcontrollers,RISC and CISC controllers, Big endian and Little endian processors,Application specific ICs, Programmable logic devices, COTS, sensors and actuators, communication interface, embedded firmware, other system components. **Characteristics and quality attributes of embedded systems:** Characteristics, operational and non-operational quality attributes.	**12**
II	**Embedded Systems – Application and Domain Specific:**Application specific – washing machine, domain specific - automotive. **Embedded Hardware:** Memory map, i/o map, interrupt map, processor family, external peripherals, memory – RAM , ROM, types of RAM and ROM, memory testing, CRC ,Flash memory. **Peripherals:** Control and Status Registers, Device Driver, Timer Driver - Watchdog Timers.	**12**
III	**The 8051 Microcontrollers:**Microcontrollers and Embedded processors, Overview of 8051 family.8051 Microcontroller hardware, Input/output pins, Ports, and Circuits, External Memory. **8051 Programming in C:** Data Types and time delay in 8051 C, I/O Programming, Logic operations, Data conversion Programs.	**12**
IV	**Designing Embedded System with 8051 Microcontroller:**Factors to be considered in selecting a controller, why 8051 Microcontroller, Designing with 8051. **Programming embedded systems:** structure of embedded program, infinite loop, compiling, linking and debugging.	**12**
V	**Real Time Operating System (RTOS):**Operating system basics, types of operating systems, Real-Time Characteristics, Selection Process of an RTOS. **Design and Development:** Embedded system developmentEnvironment – IDE, types of file generated on cross	**12**

	compilation, disassembler/ de-compiler, simulator, emulator and debugging, embedded product development life-cycle, trends in embedded industry.	

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Programming Embedded Systems in C and C++	Michael Barr	O'Reilly	First	1999
2.	Introduction to embedded systems	Shibu K V	Tata Mcgraw-Hill	First	2012
3.	The 8051 Microcontroller and Embedded Systems	Muhammad Ali Mazidi	Pearson	Second	2011
4.	Embedded Systems	Rajkamal	Tata Mcgraw-Hill		

B. Sc. (Information Technology)		Semester – IV	
Course Name: Computer Oriented Statistical Techniques		**Course Code: USIT403**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**The Mean, Median, Mode, and Other Measures of Central Tendency**: Index, or Subscript, Notation, Summation Notation, Averages, or Measures of Central Tendency ,The Arithmetic Mean , The Weighted Arithmetic Mean ,Properties of the Arithmetic Mean ,The Arithmetic Mean Computed from Grouped Data ,The Median ,The Mode, The Empirical Relation Between the Mean, Median, and Mode, The Geometric Mean G, The Harmonic Mean H ,The Relation Between the Arithmetic, Geometric, and Harmonic Means, The Root Mean Square, Quartiles, Deciles, and Percentiles,Software and Measures of Central Tendency. **The Standard Deviation and Other Measures of Dispersion**: Dispersion, or Variation,The Range, The Mean Deviation, The Semi-Interquartile Range,The 10–90 Percentile Range, The Standard Deviation, The Variance, Short Methods for Computing the Standard Deviation,Properties of the Standard Deviation,Charlie's Check, Sheppard's Correction for Variance, Empirical Relations Between Measures of Dispersion, Absolute and Relative Dispersion; Coefficient of Variation,Standardized Variable; Standard Scores, Software and Measures of Dispersion. **Introduction to R:** Basic syntax, data types, variables, operators, control statements, R-functions, R –Vectors, R – lists, R Arrays.	**12**
II	**Moments, Skewness, and Kurtosis** :Moments , Moments for Grouped Data ,Relations Between Moments , Computation of Moments for Grouped Data, Charlie's Check and Sheppard's Corrections, Moments in Dimensionless Form, Skewness, Kurtosis, Population Moments, Skewness, and Kurtosis, Software Computation of Skewness and Kurtosis. **Elementary Probability Theory**: Definitions of Probability, Conditional Probability; Independent and Dependent Events, Mutually Exclusive Events, Probability Distributions, Mathematical Expectation,Relation Between Population, Sample Mean, and	**12**

	Variance, Combinatorial Analysis, Combinations, Stirling's Approximation to n!,Relation of Probability to Point Set Theory, Euler or Venn Diagrams and Probability. **Elementary Sampling Theory** : Sampling Theory, Random Samples and Random Numbers, Sampling With and Without Replacement, Sampling Distributions, Sampling Distribution of Means, Sampling Distribution of Proportions, Sampling Distributions of Diff erences and Sums, Standard Errors, Software Demonstration of Elementary Sampling Theory.	
III	**Statistical Estimation Theory**: Estimation of Parameters, Unbiased Estimates, Efficient Estimates, Point Estimates and Interval Estimates; Their Reliability, Confidence-Interval Estimates of Population Parameters, Probable Error. **Statistical Decision Theory:** Statistical Decisions, Statistical Hypotheses, Tests of Hypotheses and Significance, or Decision Rules,Type I and Type II Errors, Level of Significance, Tests Involving Normal Distributions, Two-Tailed and One-Tailed Tests, Special Tests,Operating-Characteristic Curves; the Power of a Test, p-Values for Hypotheses Tests, Control Charts, Tests Involving Sample Diff erences, Tests Involving Binomial Distributions. **Statistics in R:** mean, median, mode, Normal Distribution , Binomial Distribution, Frequency Distribution in R.	**12**
IV	**Small Sampling Theory**: Small Samples, Student's t Distribution, Confidence Intervals, Tests of Hypotheses and Significance, The Chi-Square Distribution, Confidence Intervals for Sigma , Degrees of Freedom, The F Distribution. **The Chi-Square Test**: Observed and Theoretical Frequencies, Definition of chi-square, Significance Tests, The Chi-Square Test for Goodness of Fit, Contingency Tables, Yates' Correction for Continuity, Simple Formulas for Computing chi-square, Coefficient of Contingency, Correlation of Attributes, Additive Property of chi-square.	**12**
V	**Curve Fitting and the Method of Least Squares:** Relationship Between Variables, Curve Fitting, Equations of Approximating Curves,Freehand Method of Curve Fitting, The Straight Line, The Method of Least Squares,The Least-Squares Line, Nonlinear Relationships, The Least-Squares Parabola, Regression, Applications to Time Series, Problems Involving More Than Two Variables. **Correlation Theory:** Correlation and Regression, Linear Correlation,Measures of Correlation, The Least-Squares Regression Lines, Standard Error of Estimate, Explained and Unexplained Variation, Coefficient of Correlation, Remarks Concerning the Correlation Coefficient, Product-Moment Formula for the Linear Correlation Coefficient, Short Computational Formulas, Regression Lines and the Linear Correlation Coefficient, Correlation of Time Series, Correlation of Attributes, Sampling Theory of Correlation,	**12**

	Sampling Theory of Regression.	

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	STATISTICS	Murray R. Spiegel, Larry J. Stephens.	McGRAW – HILL ITERNATIONAL	FOURTH	
2.	A Practical Approach using R	R.B. Patil, H.J. Dand and R. Bhavsar	SPD	1st	2017
3.	FUNDAMENTAL OF MATHEMATICAL STATISTICS	S.C. GUPTA and V.K. KAPOOR	SULTAN CHAND and SONS	ELEVENTH REVISED	2011
4.	MATHEMATICAL STATISTICS	J.N. KAPUR and H.C. SAXENA	S. CHAND	TWENTIETH REVISED	2005

B. Sc. (Information Technology)		Semester – IV	
Course Name: Software Engineering		**Course Code: USIT404**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction:** What is software engineering? Software Development Life Cycle, Requirements Analysis, Software Design, Coding, Testing, Maintenance etc. **Software Requirements:** Functional and Non-functional requirements, User Requirements, System Requirements, Interface Specification, Documentation of the software requirements. **Software Processes:** Process and Project, Component Software Processes. **Software Development Process Models.** • Waterfall Model. • Prototyping. • Iterative Development. • Rational Unified Process. • The RAD Model • Time boxing Model. **Agile software development**: Agile methods, Plan-driven and agile development, Extreme programming, Agile project management, Scaling agile methods.	**12**
II	**Socio-technical system:**Essential characteristics of socio technical systems, Emergent System Properties, Systems Engineering, Components of system such as organization, people and computers, Dealing Legacy Systems. **Critical system:** Types of critical system, A simple safety critical system, Dependability of a system, Availability and Reliability, Safety and Security of Software systems. **Requirements Engineering Processes:** Feasibility study, Requirementselicitation and analysis, Requirements Validations, Requirements Management.	**12**

	System Models: Models and its types, Context Models, Behavioural Models, Data Models, Object Models, Structured Methods.	
III	**Architectural Design:** Architectural Design Decisions, System Organisation, Modular Decomposition Styles, Control Styles, Reference Architectures. **User Interface Design:** Need of UI design, Design issues, The UI design Process, User analysis, User Interface Prototyping, Interface Evaluation. **Project Management** Software Project Management, Management activities, Project Planning, Project Scheduling, Risk Management. **Quality Management:** Process and Product Quality, Quality assurance and Standards, Quality Planning, Quality Control, Software Measurement and Metrics.	**12**
IV	**Verification and Validation:** Planning Verification and Validation, Software Inspections, Automated Static Analysis, Verification and Formal Methods. **Software Testing:** System Testing, Component Testing, Test Case Design, Test Automation. **Software Measurement**: Size-Oriented Metrics, Function-Oriented Metrics, Extended Function Point Metrics **Software Cost Estimation:**Software Productivity, Estimation Techniques, Algorithmic Cost Modelling, Project Duration and Staffing	**12**
V	**Process Improvement:** Process and product quality, Process Classification, Process Measurement, Process Analysis and Modeling, Process Change, The CMMI Process Improvement Framework. **Service Oriented Software Engineering:** Services as reusable components, Service Engineering, Software Development with Services. **Software reuse:** The reuse landscape, Application frameworks, Software product lines, COTS product reuse. **Distributed software engineering**: Distributed systems issues, Client–server computing, Architectural patterns for distributed systems, Software as a service	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Software Engineering, edition,	Ian Somerville	Pearson Education.	Ninth	
2.	Software Engineering	Pankaj Jalote	Narosa Publication		
3.	Software engineering, a practitioner's approach	Roger Pressman	Tata Mcgraw-hill	Seventh	

4.	Software Engineering principles and practice	WS Jawadekar	Tata Mcgraw-hill		
5.	Software Engineering-A Concise Study	S.A Kelkar	PHI India.		
6.	Software Engineering Concept and Applications	SubhajitDatta	Oxford Higher Education		
7.	Software Design	D.Budgen	Pearson education	2nd	
8.	Software Engineering	KL James	PHI	EEE	2009

B. Sc. (Information Technology)		Semester – IV	
Course Name: Computer Graphics and Animation		**Course Code: USIT405**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction to Computer Graphics:** Overview of Computer Graphics, Computer Graphics Application and Software, Description of some graphics devices, Input Devices for Operator Interaction, Active and Passive Graphics Devices, Display Technologies, Storage Tube Graphics Displays, Calligraphic Refresh Graphics Displays, Raster Refresh (Raster-Scan) Graphics Displays, Cathode Ray Tube Basics, Color CRT Raster Scan Basics, Video Basics, The Video Controller, Random-Scan Display Processor, LCD displays. **Scan conversion** – Digital Differential Analyzer (DDA) algorithm, Bresenhams' Line drawing algorithm.Bresenhams' method of Circle drawing, Midpoint Circle Algorithm, Midpoint Ellipse Algorithm, Mid-point criteria, Problems of Aliasing, end-point ordering and clipping lines, Scan Converting Circles, Clipping Lines algorithms– Cyrus-Beck, Cohen-Sutherland and Liang-Barsky, Clipping Polygons, problem with multiple components.	**12**
II	**Two-Dimensional Transformations:** Transformations and Matrices, Transformation Conventions, 2D Transformations, Homogeneous Coordinates and Matrix Representation of 2D Transformations, Translations and Homogeneous Coordinates, Rotation, Reflection, Scaling, Combined Transformation, Transformation of Points, Transformation of The Unit Square, Solid Body Transformations, Rotation About an Arbitrary Point, Reflection through an Arbitrary Line, A Geometric Interpretation of Homogeneous Coordinates, The Window-to-Viewport Transformations. **Three-Dimensional Transformations:** Three-Dimensional Scaling, Three-Dimensional Shearing, Three-Dimensional Rotation, Three-Dimensional Reflection, Three-Dimensional Translation, Multiple Transformation, Rotation about an Arbitrary Axis in Space, Reflection through an Arbitrary Plane, Matrix Representation of 3D Transformations, Composition of 3D	**12**

	Transformations, Affine and Perspective Geometry, Perspective Transformations, Techniques for Generating Perspective Views, Vanishing Points, the Perspective Geometry and camera models, Orthographic Projections, Axonometric Projections, Oblique Projections, View volumes for projections.	
III	**Viewing in 3D** Stages in 3D viewing, Canonical View Volume (CVV), Specifying an Arbitrary 3D View, Examples of 3D Viewing, The Mathematics of Planar Geometric Projections, Combined transformation matrices for projections and viewing, Coordinate Systems and matrices, camera model and viewing pyramid. **Light:**Radiometry,Transport,Equation,Photometry **Color:**Colorimetry,ColorSpaces,ChromaticAdaptation, Color Appearance	**12**
IV	**Visible-Surface Determination:** Techniques for efficient Visible-Surface Algorithms, Categories of algorithms, Back face removal, The z-Buffer Algorithm, Scan-line method, Painter's algorithms (depth sorting), Area sub-division method, BSP trees, Visible-Surface Ray Tracing, comparison of the methods. **Plane Curves and Surfaces:** Curve Representation, Nonparametric Curves, Parametric Curves, Parametric Representation of a Circle, Parametric Representation of an Ellipse, Parametric Representation of a Parabola, Parametric Representation of a Hyperbola, Representation of Space Curves, Cubic Splines, , Bezier Curves, B-spline Curves, B-spline Curve Fit, B-spline Curve Subdivision, Parametric Cubic Curves, Quadric Surfaces. Bezier Surfaces.	**12**
V	**Computer Animation:** Principles of Animation, Key framing, Deformations, Character Animation, Physics-Based Animation, Procedural Techniques, Groups of Objects. **Image Manipulation and Storage:** What is an Image? Digital image file formats, Image compression standard – JPEG, Image Processing - Digital image enhancement, contrast stretching, Histogram Equalization, smoothing and median Filtering.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Computer Graphics - Principles and Practice	J. D. Foley, A. Van Dam, S. K. Feiner and J. F. Hughes	Pearson	2nd	
2.	Steve Marschner, Peter Shirley	Fundamentals of Computer Graphics	CRC press	4th	2016
3.	Computer Graphics	Hearn, Baker	Pearson	2nd	

4.	Principles of Interactive Computer Graphics	William M. Newman and Robert F. Sproull	TMH	2nd	
5.	Mathematical Elements for CG	D. F. Rogers, J. A. Adams	TMH	2nd	

B. Sc. (Information Technology)		**Semester –IV**	
Course Name: Core Java Practical		**Course Code: USIT4P1**	
Periods per week **1 Period is 50 minutes**	**Lectures per week**	**3**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**

List of Practical	
1.	**Java Basics**
a.	Write a Java program that takes a number as input and prints its multiplication table upto 10.
b.	Write a Java program to display the following pattern. ***** **** *** ** *
c.	Write a Java program to print the area and perimeter of a circle.
2.	**Use of Operators**
a.	Write a Java program to add two binary numbers.
b.	Write a Java program to convert a decimal number to binary number and vice versa.
c.	Write a Java program to reverse a string.
3.	**Java Data Types**
a.	Write a Java program to count the letters, spaces, numbers and other characters of an input string.
b.	Implement a Java function that calculates the sum of digits for a given char array consisting of the digits '0' to '9'. The function should return the digit sum as a long value.
c.	Find the smallest and largest element from the array
4.	**Methods and Constructors**
a.	Designed a class SortData that contains the method asec() and desc().
b.	Designed a class that demonstrates the use of constructor and destructor.
c.	Write a java program to demonstrate the implementation of abstract class.

5.	**Inheritance**
a.	Write a java program to implement single level inheritance.
b.	Write a java program to implement method overriding
c.	Write a java program to implement multiple inheritance.
6.	**Packages and Arrays**
a.	Create a package, Add the necessary classes and import the package in java class.
b.	Write a java program to add two matrices and print the resultant matrix.
c.	Write a java program for multiplying two matrices and print the product for the same.
7.	**Vectors and Multithreading**
a.	Write a java program to implement the vectors.
b.	Write a java program to implement thread life cycle.
c.	Write a java program to implement multithreading.
8.	**File Handling**
a.	Write a java program to open a file and display the contents in the console window.
b.	Write a java program to copy the contents from one file to other file.
c.	Write a java program to read the student data from user and store it in the file.
9.	**GUI and Exception Handling**
a.	Design a AWT program to print the factorial for an input value.
b.	Design an AWT programto perform various string operations like reverse string, string concatenation etc.
c.	Write a java program to implement exception handling.
10.	**GUI Programming.**
a.	Design an AWT application that contains the interface to add student information and display the same.
b.	Design a calculator based on AWT application.
c.	Design an AWT application to generate result marks sheet.

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Core Java 8 for Beginners	Vaishali Shah, Sharnam Shah	SPD	1st	2015
2.	Java: The Complete Reference	Herbert Schildt	McGraw Hill	9th	2014
3.	Murach's beginning Java with Net Beans	Joel Murach , Michael Urban	SPD	1st	2016

4.	Core Java, Volume I: Fundamentals	Hortsman	Pearson	9th	2013
5.	Core Java, Volume II: Advanced Features	Gary Cornell and Hortsman	Pearson	8th	2008
6.	Core Java: An Integrated Approach	R. Nageswara Rao	DreamTech	1st	2008

B. Sc. (Information Technology)		**Semester – IV**	
Course Name: Introduction to Embedded Systems Practical		**Course Code: USIT4P2**	
Periods per week **1 Period is 50 minutes**	**Lectures per week**	**3**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**

List of Practical	
1.	Design and develop a reprogrammable embedded computer using 8051 microcontrollers and to show the following aspects. a. Programming b. Execution c. Debugging
2. A	Configure timer control registers of 8051 and develop a program to generate given time delay.
B	To demonstrate use of general purpose port i.e. Input/ output port of two controllers for data transfer between them.
3. A	Port I / O: Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's
B	To interface 8 LEDs at Input-output port and create different patterns.
C	To demonstrate timer working in timer mode and blink LED without using any loop delay routine.
4. A	Serial I / O: Configure 8051 serial port for asynchronous serial communication with serial port of PC exchange text messages to PC and display on PC screen. Signify end of message by carriage return.
B	To demonstrate interfacing of seven-segment LED display and generate counting from 0 to 99 with fixed time delay.
C	Interface 8051 with D/A converter and generate square wave of given frequency on oscilloscope.
5. A	Interface 8051 with D/A converter and generate triangular wave of given frequency on oscilloscope.

B	Using D/A converter generate sine wave on oscilloscope with the help of lookup table stored in data area of 8051.
6.	Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise or counter clock wise direction.
7.	Generate traffic signal.
8.	Implement Temperature controller.
9.	Implement Elevator control.
10.	**Using FlashMagic**
A	To demonstrate the procedure for flash programming for reprogrammable embedded system board using FlashMagic
B	To demonstrate the procedure and connections for multiple controllers programming of same type of controller with same source code in one go, using flash magic.

B. Sc. (Information Technology)		Semester – IV	
Course Name: Computer Oriented Statistical Techniques Practical		**Course Code: USIT4P3**	
Periods per week **1 Period is 50 minutes**	**Lectures per week**	**3**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**

List of Practical	
1.	Using R execute the basic commands, array, list and frames.
2.	Create a Matrix using R and Perform the operations addition, inverse, transpose and multiplication operations.
3.	Using R Execute the statistical functions:mean, median, mode, quartiles, range, inter quartile range histogram
4.	Using R import the data from Excel / .CSV file and Perform the above functions.
5.	Using R import the data from Excel / .CSV file and Calculate the standard deviation, variance, co-variance.
6.	Using R import the data from Excel / .CSV file and draw the skewness.
7.	Import the data from Excel / .CSV and perform the hypothetical testing.
8.	Import the data from Excel / .CSV and perform the Chi-squared Test.
9.	Using R perform the binomial and normal distribution on the data.
10.	Perform the Linear Regression using R.
11.	Compute the Least squares means using R.
12.	Compute the Linear Least Square Regression

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	A Practical Approach to R Tool	R.B. Patil, H.J. Dand and R. Dahake	SPD	First	2011
2.	STATISTICS	Murray R. Spiegel, Larry J. Stephens.	McGRAW –HILL INTERNATIONAL	FOURTH	2006

B. Sc. (Information Technology)		**Semester – IV**	
Course Name: Software Engineering		**Course Code: USIT4P4**	
Periods per week **1 Period is 50 minutes**	**Lectures per week**	**3**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**

List of Practical (To be executed using Star UML or any similar software)	
1.	Study and implementation of class diagrams.
2.	Study and implementation of Use Case Diagrams.
3.	Study and implementation of Entity Relationship Diagrams.
4.	Study and implementation of Sequence Diagrams.
5.	Study and implementation of State Transition Diagrams.
6.	Study and implementation of Data Flow Diagrams.
7.	Study and implementation of Collaboration Diagrams.
8.	Study and implementation of Activity Diagrams.
9.	Study and implementation of Component Diagrams.
10.	Study and implementation of Deployment Diagrams.

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
3.	Object - Oriented Modeling and Design	Michael Blaha, James Rumbaugh	Pearson		2011

4.	Learning UML 2. 0	Kim Hamilton, Russ Miles	O'Reilly Media		2006
5.	The unified modeling language user guide	Grady Booch, James Rumbaugh, Ivar Jacobson	Addison-Wesley		2005
6.	UML A Beginners Guide	Jason T. Roff	McGraw Hill Professional		2003

B. Sc. (Information Technology)		**Semester – IV**	
Course Name: Computer Graphics and Animation		**Course Code: USIT4P5**	
Periods per week **1 Period is 50 minutes**	**Lectures per week**	**3**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**

List of Practical	
1.	**Solve the following:**
a.	Study and enlist the basic functions used for graphics in C / C++ / Python language. Give anexample for each of them.
b.	Draw a co-ordinate axis at the center of the screen.
2.	**Solve the following:**
a.	Divide your screen into four region, draw circle, rectangle, ellipse and half ellipse in each region with appropriate message.
b.	Draw a simple hut on the screen.
3.	**Draw the following basic shapes in the center of the screen :**
	i. Circle ii. Rectangle iii. Square iv. Concentric Circles v. Ellipse vi. Line
4.	**Solve the following:**
a.	Develop the program for DDA Line drawing algorithm.
b.	Develop the program forBresenham's Line drawing algorithm.
5.	**Solve the following:**
a.	Develop the program for the mid-point circle drawing algorithm.
b.	Develop the program for the mid-point ellipse drawing algorithm.
6.	**Solve the following:**
a.	Write a program to implement 2D scaling.
b.	Write a program to perform 2D translation

7.	**Solve the following:**
a.	Perform 2D Rotation on a given object.
b.	Program to create a house like figure and perform the following operations. i.Scaling about the origin followed by translation. ii. Scaling with reference to an arbitrary point. iii. Reflect about the line y = mx + c.
8.	**Solve the following:**
a.	Write a program to implement Cohen-Sutherland clipping.
b.	Write a program to implement Liang - Barsky Line Clipping Algorithm
9.	**Solve the following:**
a.	Write a program to fill a circle using Flood Fill Algorithm.
b.	Write a program to fill a circle using Boundary Fill Algorithm.
10.	**Solve the following:**
a.	Develop a simple text screen saver using graphics functions.
b.	Perform smiling face animation using graphic functions.
c.	Draw the moving car on the screen.

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Computer Graphics - Principles and Practice	J. D. Foley, A. Van Dam, S. K. Feiner and J. F. Hughes	Pearson Education	Second Edition	
2.	Steve Marschner, Peter Shirley	Fundamentals of Computer Graphics	CRC press	Fourth Edition	2016
3.	Computer Graphics	Hearn, Baker	Pearson Education	Second	
4.	Principles of Interactive Computer Graphics	William M. Newman and Robert F. Sproull	Tata McGraw Hill	Second	

BACHELOR OF COMMERCE
SYLLABUS FOR B.COM DEGREE PROGRAM UNDER CBCS w.e.f. 2017-18

B.COM. (GENERAL) COURSE STRUCTURE

SEMESTER I

CATEGORY	PAPER
CC 1	General Management
CC 2	Financial Accounting
CC 3	Micro Economics
CC 4	Commercial Arithmetic I
AECC 1	Spoken English
AECC 2	Environmental Studies I
GE 1	Computer Application I/ Geography/
	Commerce -
	(From the list of approved Commerce electives for Sem I)
	/Any other GE

SEMESTER II

CATEGORY	PAPER
CC 5	Introduction to Marketing
CC 6	Financial Statement Analysis & Interpretation
CC 7	Managerial Economics
CC 8	Commercial Arithmetic II
AECC 3	Business Communication
AECC 4	Environmental Studies II
GE 2	Computer Application/ Geography/
	Commerce -
	(From the list of approved Commerce electives for Sem II)
	/Any other GE

SEMESTER III

CATEGORY	PAPER
CC 9	Business Finance
CC 10	Fundamentals of Cost Accounting
CC 11	Entrepreneurship Development
SEC 1	Business Laws (With practical component)
	/Any other
GE 3	Business Statistics /
	Commerce
	(From the list of approved Commerce electives for Sem III)
	Any other GE
GE 4	Economics of Resources / Any other

SEMESTER IV

CATEGORY	PAPER
CC 12	Fundamentals of Investment
CC 13	Income Tax
CC 14	Accounting for Service Organizations
SEC 2	Companies Act and IPR Laws
	(With practical component)/Any other
GE 5	Business Statistics /
	Commerce
	(From the list of approved Commerce electives for Sem IV)
	Any other
GE 6	Indian Economy/ Any other

SEMESTER V

CATEGORY	PAPER
CC 15	Industrial Management
CC 16	Indian Monetary & Financial System
DSE 1	COMMERCE- Accounting Major I – Income Tax, Service Tax and Goa Value Added Tax OR Cost Accounting Major I – Cost Accounting I OR Business Management Major I – International Marketing Management OR Banking & Financial Services Major I – Modern Banking Operations & Service
DSE 2	COMMERCE- Accounting Major II – Auditing OR Cost Accounting Major II – Cost Accounting II OR Business Management Major II - Retail Management Strategies OR Banking & Financial Services Major II - Bank Management

SEMESTER VI

CATEGORY	PAPER
CC 17	Human Resource Management
CC 18	International Economics
DSE 5	COMMERCE- Accounting Major V – Advanced Company Accounts OR Cost Accounting Major V- Advanced Cost Accounting OR Business Management Major V - Financial Management II OR Banking & Financial Services Major V – Law and Practice of Banking I
DSE 8	COMMERCE (PROJECT)

B.COM
SEMESTER I
General Management (CC 1)
(100 Marks – 60 Lectures)

Objective: To acquaint students with the important aspects of management.

Unit I Introduction to management (25 Marks-15 Lectures)

Meaning, features and importance of management. Management and Administration, levels of management, functional areas of management – Materials, Production, Personnel, Purchase, Finance, Sales & Marketing (an overview)

Modern approaches to management - Quantitative, Systems, Contingency approach (an overview) Japanese, American, European Styles of management.

Unit II Decision Making (25 marks-15 Lectures)

Meaning, features, advantages of effective decision making.

Types of Managerial Decisions, Steps in decision making process,

Guidelines for effective decision making, Difficulty in effective decision making,

Rationality and decision making- Meaning, Benefits and Limitations,

Creativity in Decision Making- Meaning, Features, Steps and how to introduce creativity in decision making.

Unit III Managing Change and Conflict Management (25 marks-15 Lectures)

Meaning, Features, Reasons for Change, Change process,

Resistance to Change, Factors effecting Resistance to Change (Individual and Organisational)

Overcoming Resistance to Change.

Organisational Conflicts- Individual Conflicts and Inter group Conflicts.

Conflict Management - meaning and process.

Unit IV Emerging areas in Management (25 marks-15 Lectures)

Green Management – Concept and Importance.

Stress Management- Meaning, Types, Causes and Measures taken.

Supply Chain Management- Meaning, Process.

Logistics Management- Meaning, Features.

References:

1) Hannagan, Tim. *Management Concepts and Practices*. Macmillan India Ltd.
2) Prasad, L.M. *Principles and Practice of Management*. Sultan Chand and Sons.
3) Mamoria, C.B. *Personnel Management*. Himalaya Publishing House.

4) Vasishth, Neeru. *Principles of Management*. Taxmann.
5) Robbins, Stephen and Coulter, Mary. *Management*.
6) Saeed, Khawja Amjad. *Pearson Management cases* (Second Ed). Excel books.
7) Mittal, Sachin., Keshari, Praghya et al. *Managing Businesses Excellence through Vision, Values and Vibrant practices*. Excel books.
8) Kumar, Dipak. & Bhatacharya. *Human Resource Management* (Third Ed). Excel books.
9) P. L. Rao. *Organisation Communication*. Excel books.

B.COM
SEMESTER I
Financial Accounting (CC 2)
(100 Marks – 60 Lectures)

Objectives:

- **To acquaint the students on the practical aspects of single entry and depreciation accounting.**
- **To familiarize the students with advanced accounting procedures for equity and preference shares**

Unit I Single Entry (20 Marks – 12 Lectures)

Meaning, features, advantages, limitations, difference between single entry system and double entry system. Computation of profit or loss under Singe entry system–under Conversion Method. Preparation of Total Debtors Account, Total Creditors Account, Bills Receivable Account, Bills Payable Account, Trading and Profit &Loss Account and Balance Sheet.

Unit II Depreciation Accounting (20 Marks – 14 Lectures)

Meaning, causes, need for providing depreciation, AS 6, Methods of depreciation.
Methods of depreciation for practical problems:

a) Change in Method of depreciation (from Straight Line Method to Reducing Balance Method or vice-versa)
b) Sinking Fund Method
c) Insurance Policy Method

Methods for depreciation for theory only:

a) Annuity Method
b) Machine Hour Rate Method
c) Service Hour Method
d) Depletion Method
e) Revaluation Method
f) Sum of Digits Method

Unit III : Issue and Buy-Back of Equity Shares (40 marks, 22 Lectures)

(a) Issue of Shares: Meaning, Kinds of Shares, terms of issues, SEBI guidelines of issue of shares, accounting entries, issue of shares at par and at premium. Under subscription, Oversubscription, pro rata allotment. Calls in arrears, calls in advance, and interest on calls in advance. Forfeiture and re-issue of forfeited shares. Issue of bonus shares and right shares, Book building process (Only theory)

(b) Buy-Back of Equity Shares

Company Law/ Legal Provisions and SEBI guide lines (including related restrictions, power, Notice of the meeting, transfer to capital redemption reserve account and prohibitions of buy back and financial assistance), Compliance of conditions including sources, maximum limits. Accounting for buy back of shares.

Unit IV: Redemption of Preference shares (20 marks, 12 Lectures)

Company Law / Legal Provisions for redemption of preference shares in Companies Act. Sources of redemption including divisible profits and proceeds of fresh issue of shares. Redemption of shares at Par and Premium. Capital Redemption Reserve Account, Bonus issue. Journal entries and the relevant items in the balance sheet

References:

1. Jain, & Narang. *Advanced Accountancy.* New Delhi: Kalyani Publishers.
2. Mukherjee, A., & Hanif, M. (2002). *Modern Accountancy* (Vol. II). New Delhi: Tata McGraw Hill.
3. Raman, A. *Advanced Accountancy.* New Delhi: Himalaya Publishing House.
4. Shukla, M. C., & Grewal, T. S. *Advanced Accounts.* New Delhi: S. Chand & Co .
5. Tulsian, P. C. *Accountancy.* New Delhi: S. Chand & Co.
6. Vinayakam, N., & Charumati, B. *Financial Accounting.* New Delhi: S. Chand.

Guidelines for Question Paper

- One question each from Unit I, Unit II, Unit III and Unit IV.
- One additional question from Unit II and Unit III each.

B.COM.
SEMESTER I
Micro Economics (CC 3)
(100 Marks , 60 Lectures)

Objectives:

1. To acquaint the students with the concepts of microeconomics dealing with Consumer demand and consumer behaviour.
2. To make the student understand the supply side of the market through the production and cost behaviour of firms.
3. To make the student understand different types of market and levels of competition prevailing in the market
4. To familiarize the students with different types of market imperfections and strategies adopted by firms in the imperfect market.

Unit I Demand and Consumer Behaviour (20 Marks, 10 Lectures)

Demand Analysis, Elasticity of demand: price, income and cross. Concepts of revenue: marginal and Average. Revenue under conditions of Perfect and imperfect competition, Consumer Behaviour: Indifference curve analysis of consumer behaviour; Consumer's equilibrium (necessary and sufficient conditions). Price elasticity and price consumption curve, income consumption curve and Engel curve, price change and income and substitution effect.

Unit II Production and Cost (25 Marks, 15 Lectures)

Supply Analysis, Production isoquants, marginal rate of technical substitution, economic region of production, optimal combination of resources, the expansion path, isoclines, returns to scale using isoquants. Cost of Production: Social and private costs of production, long run and short run costs of production. Economies and diseconomies of scale and the shape to the long run average cost. Learning curve and economies of scope.

Unit III Perfect Competition and Monopoly (30Marks, 20 Lectures)

Perfect competition: Assumptions. Equilibrium of the firm and the industry in the short and the long runs, including industry's long run supply curve. Measuring producer surplus under perfect competition. Demand - supply analysis including impact of taxes and subsidy.

Monopoly: Monopoly short run and long run equilibrium. Shifts is demand curve and the absence of the supply curve. Measurement of monopoly power and the rule of thumb for pricing.Horizontal and vertical integration of firms.Degrees of price discrimination.

Unit IV Imperfect Competition (25 Marks, 15 Lectures)

Monopolistic Competition and Oligopoly: Monopolistic competition price and output decision-equilibrium. Monopolistic Competition and economic efficiency, Oligopoly and Interdependence – Cournot's duopoly model, Stackelberg model, kinked demand model.Prisoner's dilemma, collusive oligopoly – price-leadership model – dominant firm, cartels, sales maximization.

References:

1. Pindyck, R.S., D. L. Rubinfeld and P. L. Mehta; Microeconomics, Pearson Education.
2. N. Gregory mankiw, Principles of Micro Economics, Cengage Learning
3. Maddala G.S. and E. Miller; Microeconomics: Theory and Applications, McGraw-Hill Education.
4. Salvatore, D. Schaum's Outline: Microeconomic Theory, McGraw-Hill, Education.
5. H.L. Ahuja, Advanced Economic Theory: Microeconomic Analysis (English) 20th Edition, S Chand Publications.
5. Case and Fair, Principles of Micro Economics, Pearson Education
6. Koutsiyannis, Modern Micro Economic Theory.
7. C Snyder, Microeconomic Theory: Basic Principles and Extensions, Cengage Learning
8. Bilas, Richard A., Microeconomics Theory: A Graphical Analysis, McGraw-Hill Education.
9. Paul A Samuelson, William D Nordhaus, Microeconomics, McGraw-Hill Education.
10. AmitSachdeva, Micro Economics, KusumLata Publishers

B.COM.
SEMESTER I
Commercial Arithmetics – I (CC 4)
(100 marks - 60 Lectures)

Objectives:

- **To provide basic knowledge of mathematics and its applications in the field of commerce and industry.**
- **To acquaint the students with wide ranging applications of mathematical techniques to commerce, economics and practical situations.**

Unit I Mathematical Logic and Set Theory

(a) Mathematical Logic (10marks - 7 Lectures)

- Logical Statement, Truth value.
- Compound Statement, Negation, Conjunction, Disjunction
- Conditional and Bi-conditional statement
- Truth tables
- Logical equivalence
- Tautology and Contradiction
- Argument, Validity of an argument (using truth table for 2 statements only)

(b) Set Theory (10marks - 6 Lectures)

- Quadratic equation, Solution of general quadratic equation $ax^2 + bx + c = 0$
- Sets: Definition, Representation of sets
- Types of sets: Finite and infinite sets, null sets, singleton set, examples
- Venn diagrams
- Subset, Complement of a set, Union, Intersection and Difference of sets, Power sets
- De Morgan's Law, Verification by examples and Venn diagrams
- Number of elements of a set, Results involving number of sets (upto three sets) and problems based on these results

Unit II Permutations and Combinations (20marks - 15 Lectures)

- Fundamental Principle – examples
- Factorial notation
- Definition of Permutation
- Number of permutations of *n* different things taken *r* at a time
- Permutations with repetition
- Definition of Combination
- Number of combinations of *n* different things taken *r* at a time (no proof for results)

Unit II Progressions and Mathematics of Finance

(a) Progressions (20marks - 10 Lectures)

- Arithmetic Progression (A.P.)
- Definition of A.P.
- Formula for nth term of an A.P.
- Sum of the first n terms of an A.P.
- Business applications of A.P.
- Geometric Progression (G.P.)
- Definition of G.P.
- Formula for nth term of a G.P.
- Sum of the first n terms of a G.P.
- Business applications of G.P.

(b) Mathematics of Finance (25marks - 12 Lectures)

- Simple Interest
- Compound Interest – compounded annually, six monthly, quarterly, monthly and daily
- Nominal and Effective rate of interest
- Present and future value
- Ordinary annuity, Present value of ordinary annuity
- EMI using Interest on reducing balance and Flat Interest rate

Unit IV Determinants and Matrices (15marks - 10 Lectures)

- Determinant - Meaning , Order Minor , Co-factor, Expansion (Order 2 and 3)
- Cramer's Rule
- Matrices - Definition, Notation, Types of matrices
- Algebra of Matrices – Negative, Transpose, Equality, Addition and Subtraction, Scalar multiplication, Matrix multiplication.
- Applications to Business Problems

B.COM.
SEMESTER I
Spoken English (AECC 1)
(100 Marks, 60 Lectures)

Objectives:

1. **To listen to, understand and convey information**
2. **To listen to and respond appropriately to the contributions of others**
3. **To understand, order and present facts, ideas and opinions**
4. **To articulate experience and express what is thought, felt and imagined**
5. **To communicate clearly and fluently**
6. **To use grammatically correct language**
7. **To use register appropriate to audience and context.**

Learning Outcomes

By the end of the term the student should be able to:

1. Describe a visual or an object
2. Explain and give cause and effect
3. Narrate an experience with descriptive detail
4. Provide relevant information
5. Use alternatives to slang
6. Take an active part in group discussion
7. Elicit and show respect for the views of others
8. Disagree, argue and use persuasive speech in appropriate language

Equipment

Essential

1) An LCD projector in every classroom
2) A Laptop with Internet Facility
3) Wi-fi Broadband. Colleges which do not have this must provide a Dongle at least to the teacher

Optional

4) A large screen SMART TV
5) HD Video Camera (with Hard Disk)
6) Home Theatre
7) The library or AV room has to be updated by purchase of books with CD-Roms and on - line training facilities some of which are listed at the end of this syllabus.
8) A language laboratory, if possible, so that students can use the interactive software and CD-Roms to practice on their own and access online training.
9) Voice Recorders (Cenix costs around Rs 2500 and can record for over 4 hrs...file size small...record speeches/conversation for self evaluation...)
10) External Hard Disks (for massive data storage)
11) A Smart Board

Topics to be covered

- Pronunciation and Enunciation :(Vowels and Consonants and their types) Diction, intonation, phrasing, pausing, emphasis, stress, inflection.
- Grammar, vocabulary and alternatives to slang
- Conversation skills: eg. interviews, chat show 'host-guest' situation
- Presentation skills
- Discussion skills: leading and participating.
- Active listening skills
- Asking and answering questions
- Requests and explanations
- Persuasion and Negotiation
- Expressing opinions
- Giving and getting advice
- Cross - cultural communication

There are also skills of

- ---

Summary

- ---

Chairing

- ---

Sustained explanation

- ---

Keeping to task

Methods

Topics to be taught using interactive teaching and the workshop method.
It is a good idea to ask students to make a list of the different purposes for talk. Some of these purposes are to:
explain describe narrate

explore	analyse	imagine
discuss	argue	persuade

We synthesize in discussion and argument, evaluate in exploring and persuasion and create in narration and imagining.

A note on listening

The whole point of speaking and listening is that it should be interactive. Person A speaks, Person B listens, understands, considers and answers: 'This is so, isn't it….' - Yes, but….'. Perhaps we should call these skills **'Listening - Thinking - Speaking'.** This is the process by which things get done, by which people think through a problem and find a solution.

Some listening is passive. It looks as if it is to some purpose, but the listener may be thinking, "If I look as if I am attentive, then perhaps nobody will challenge me to speak.' It's better than looking dreamily round the room or talking to oneself, but it does not prove anything about the quality of listening. That can only be done if the listener makes a response, such as:

- summing up previous contributions and moving the discussion on;
- answering points from a speaker;
- supporting speakers who have lost the drift of their arguments;
- revisiting what has already been said, but in other words;
- acting as note-taker and clarifying what has been written;
- asking questions after a talk/ video clip/movie/documentary and engaging in a discussion.

Hence if there is no listening, there is no speaking. A student giving a talk must engage in conversation with his listeners at the end. (except perhaps at the end of term exams.) However, questions alone may not reveal a high level of listening.

The list given above includes some challenging listening and speaking skills. It follows that **reading aloud may not be counted as a speaking and listening activity,** although the talk that might precede a reading is valid. It also follows that reading from a script or speaking from memory is not speaking and listening either.

Starting from the beginning: Do my students need practice in speaking and listening? They have enough to talk already!

Maybe so, but there is a difference between informal talk and sustained task completion. Try using some of these exercises just to be sure of the levels you are dealing with in a class. You are looking for clarity, confidence, a minimum of preparation and talking strictly without notes.

1. Give directions from college to……..wherever.
2. Telephone someone to say that you cannot make an appointment and ask for another date.
3. Go to a shop and explain that an article they repaired still doesn't work.

4. Explain a particular function on a computer to a novice.
5. Entertain a visitor to the college for five minutes until the principal is free.
6. Explain to you teacher/Principal why you did something extremely silly, and apologise.
7. Give a two - minute talk to the class and answer questions.
8. Bring an article into school and persuade someone to but it.

(Check these activities 1 to 8 against the list of objectives and learning outcomes to see what sorts of practice they give. What levels of ability might each activity demonstrate? Remember that any one activity may be applied to several skills and may touch on others).

The secret of speaking and listening, or listening - thinking - and speaking, is to do plenty of it.
If you teach informally you would have better control of the situation when no one is at the back or the front and there is no opportunity to hide behind the furniture. If students understand that talk is an essential part of English, they will probably settle down to the activity more easily.

Often group work could be incorporated by dividing the class into groups of about 5-7 so that nobody is discouraged from speaking.

Effective speaking and listening in small groups - teacher circulates, gives occasional prompts but doesn't normally join in. Body language must indicate respect and interest and students then become confident in our presence.

Occasional use of Indianisms are fine as long as they are not very frequent and do not hamper good communication, and are in fact, only used to enhance effective communication. If asked the student is expected to know the alternate phrase in formal/standard English.

Eg. "…….and the tu - tu mei - mei has already begun". - Barkha Dutt on NDTV. i.e ".....and the blame game has already begun".

Process Talk - Process talk is a timed and disciplined period of discussion, monitored by the teacher. Through process talk students learn about topics and their linguistic skills are challenged as they do not speak from notes. The actual aim of process talk is that it is a stepping stone to writing and therefore cannot be assessed. However, it is an invaluable tool for practice in spoken English. Though much of the talk may be halting or disjointed, some students will make their best contributions under these conditions. The bigger the class more may opt out, but the active, sustained participation of a few may be a good way to introduce the Spoken English course at the beginning of the term. The teacher should sum up what has happened at the end of the class. E.g. The topic is 'Elephants'. A video is shown first - National Geographic. (A video contains a vast amount of information and it is unlikely that students remember the same bits.) Then a search engine presented three interesting and informative sites on the internet:

a) www.pbs.org/wnet/nature/elephants - it was accessible, easy to navigate and provided a number of resources. These included: 'life of the elephant', 'tale of the trunk' and 'poaching problems'. There was a long list of links and a bibliography.
b) Another good site was www.elephants.com - an article on how elephants began, with a link to global news and an up-to-date series of news links.
c) www.nczooeletrack.org/diary/loomis-diary/index.html was less immediately useful, but offered a worthwhile and entertaining series of diary entries.

Debates and Group Discussions

You may wish to have students respond to worldwide or local matters that are controversial. In the first session, they could amass arguments for and against and decide where they stand individually. This could lead to a mini debate which could be presented to the class by one of the groups. The issues could be those currently being discussed in the newspapers or magazines. Local issues are often good to use since they may provoke more argument and are often easier to understand. If they touch on moral issues, the argument will be better.

Here are three workshop examples that have worked. The first two are set in Bombay, the last one in Goa.

* A young girl was refused an essential kidney operation because she had taken drugs. The story was in the newspapers. Participants read the article to discover the reasons for the decision and discuss the practical and moral issues.
* A student was expelled from school because of a long and unruly hairstyle which was against the school rules. His influential parents were very angry and spoke to the press. Participants discussed the actions of the school and whether they were necessary. (In recent times we have read of so many cases of children being meted out physical punishment at the hands of teachers in other states. Students would have definite opinions about this and will be eager to talk on the subject.)
* There was a shocking case of senseless bad driving which killed a popular young man. Participants discussed their reactions and the problems of young drivers who have recently passed their tests.

Examples of **Group talk**

Media 1 Students analyse and evaluate the reporting of an incident or issue in more than one newspaper.(e.g.Navhind & Herald; Times Of India & The Indian Express or The Hindu) they examine the factual reporting, the extent to which the news is made dramatic, sad or happy, the differences in language, the headlines, the amount of detail given, and so on
End result : analytical / critical

Media 2 Students plan and design a sales campaign for an item such as crocodile meat, a currently unfashionable garment, or a new type of mobile phone. They decide on how it is to be marketed, the consumers to be targeted, the message by which it will be sold, the content of commercials and the design of the newspaper and magazine ads. There is an oral report to the

class with a layout of visuals or audio-visual plan is they wish. There is an oral presentation to the class.
End result : informative / persuasive

Problem solving Students decide on a group of people, for example, the blind or the arthritic, whom they could help by designing some object that would make some daily jobs easier. Students could actually ask the blind or the arthritic. Institutions that care for such people are often happy to talk to students who care. Egs: gardening tools for the blind and easy to use door handles for the arthritic. Students could discuss, formulate a proposal, design and present their ideas.
End result : Informative / explanatory

Brainstorming This can be used to apply the mind to any problem. The rule is that no suggestion however silly is to be rejected.

Role Plays Students are given five minutes to look at a card explaining a role - play situation and think about what they are going to say. The situations are imaginary but perfectly normal and natural situations. Students play their own age and are not expected to act. They are not expected to deal with unrealistic problems! Although it is a role play the student does not necessarily have to pretend to be someone else though the teacher probably will. For instance, the teacher might play the role of a parent and the student's task could be to try to persuade mom/dad to sanction a large sum of money so that he/she could go on a holiday with friends.

Solo work A valid part of a varied programme of speaking and listening. Careers today may depend on the ability to stand up to train a group of new workers, to give a presentation in front of managers, or to persuade customers to buy gimmicky machines. Sometimes there are prestigious public - speaking or debating competitions entered by perhaps a few of your students. Use the opportunity to train in front of the whole class. Ask the class for feedback. Some students speak with interest and enthusiasm about their work/experiences/hobbies/holidays and perhaps the English department is the best place for debriefing. It is also a good exercise to get students to reteach a lesson they have recently had in another subject, or a new lesson in History or Psychology or……any subject. It gives the others an opportunity to ask questions. Beware: the rest of the class may sometimes know the lesson better than their 'teachers'. You can substitute the word 'presentation' for talk. Students can learn to use the overhead projector or computerised presentation techniques. Presentations can be given in pairs.

Problems during group work:

- The time problem is helped if you accept that most speaking and listening is not solo work but is done in pairs and small groups.
- Noise - 'By all means do speaking and listening, but I don't want to hear a sound!'
- Not everyone is involved.
- Some groups not working well - pecking order.
- Some groups - briefest of answers.
- Unkindness to others whose comments they regard as silly.

Solutions

- THERE WILL ALWAYS BE NOISE.
- Tactfully ensure that the loudest and busiest are not always in charge. Talk to the most active about a possible role in encouraging and bringing out the shy members of the group.
- Keep topics open - never closed. Put someone who is adept at opening a discussion into a group to help others.
- Ensure that it is understood that everyone should be respected for what they say. You can argue but not so the original speaker feels a fool. BE TOUGH ON THIS.

Material the teacher carries **into the class room** should be gleaned from :

- Newspapers
- Documentaries (either shown to the class or seen at home and discussed)
- Video clippings (eg: Language in use , Cambridge ELT 4 VCD's)
- Events - news or cultural (eg: Carnival, Shigmo, festivals, election campaigns, sports, current affairs
- NDTV/ BBC - issues discussed on ' Hard Talk', 'We The People', 'The Big Fight'……
- Films and cinema

Testing and Evaluation

The whole course will be evaluated on the basis of 2 ISAs of 10 marks each

Role play:	10 marks	(6 Hours)
Group Discussions/ Debate:	10 marks	(6 Hours)

SEE Model

I) An Individual Oral Presentation……..(40 Marks)……24 Hours

- candidates will be examined on the following criteria
  - content - 10 marks
  - fluency - 10 marks
  - vocabulary - 10 marks
  - structure - 10 marks
- within each criteria, point descriptors will be clearly agreed upon.
- setting up and use of all aids, if any should be strictly within the time allotted.

II) Pair-Based Activity……20 marks……12 Hours

Candidates will be examined on the following criteria:

Listening skills – 5 marks

Clarity of expression – 5 marks

Responses to partner – 5 marks

Language – 5 marks

III) Group Activity…….. 20 marks……12 Hours

Candidates will be examined on the following criteria:

Leadership qualities – 5 marks

Clarity of expression – 5 marks

Suggesting new ideas – 5 marks

Listening skills– 5 marks

Grade Descriptions for Group Activity (to assist the teacher)

Mark Band 1 **17-20 marks**	Can argue ideas and opinions in persuasive detail without dominating the rest of the group; adept at acting as group leader; usefully refers back to previous points; always looking to suggest new approaches and to move forward; listens sympathetically and considers the views of others fully.
Mark Band 2 **13-16 marks**	Can argue ideas and opinions soundly but may at times overshadow other members of the group; is capable of leading the group but with only partial assurance; refers back to previous points soundly but not entirely successfully; recognises the need to suggest new approaches but implements this only partially; listens with a degree of sympathy for others views but has a tendency to interrupt at times.
Mark Band 3 **9-12 marks**	Frequent but generally brief contributions are made; generally accepts a position of group member rather than facilitator/leader; makes occasional reference to previous points; may help to support new approaches but rarely initiates them; listens carefully and responds briefly but appropriately to others.
Mark Band 4 **5-8 marks**	Brief and infrequent contributions are made; plays a limited part in the group; cannot utilise previous points; follows the general drift of the discussion but struggles to support new approaches; listens inconsistently

	and may even drift away from the discussion
Mark Band 5 **1-4 marks**	Makes only one or two contributions or may offer mostly inappropriate contributions; **plays no real role** in group membership; is largely ignorant of previous points; does not offer support for new approaches; may appear to listen but shows little evidence of listening.
Mark Band 6 **0 marks**	Fails to meet the above criteria.

Grade Descriptions for Pair-based Activity (20 marks)
For this task, marks for each category (Speaking, Listening) should be arrived at.

Speaking – 15 marks	**Listening- 5 marks**		
Mark Band I **13- 15 marks**	Extends the subject matter and elicits responses from the listener; speaks on equal terms with the listener. Employs a wide range of language devices accurately and sometimes eloquently	**Mark Band I** **4.5- 5 marks**	Responds fully to questions and develops prompts; deals confidently and sometimes enthusiastically with alterations in the direction of the conversation.
Mark Band II **10- 12 marks**	Subject matter is organised and expressed competently; attempts to speak on equal terms with the listener but with a varying degree of success. Employs a good range of language devices soundly	**Mark Band II** **3.5 -4 marks**	Responds appropriately and in **some detail to questions and** prompts; deals appropriately with most of the alterations in the directions of the conversation.
Mark Band III **7- 9 marks**	Deals with the subject matter adequately; the listener is generally but not always prominent. Language devices are used safely.	**Mark Band III** **2.5 - 3 marks**	Responds to questions adequately **but deals less effectively with** prompts; alterations in the direction of the conversation are occasionally dealt with.
Mark Band IV **4 - 6 marks**	There is evidence of some sequencing of ideas relating to the subject matter but only inconsistently so; accepts that the listener is in full control of the	**Mark Band IV** **1.5 - 2 marks**	Provides limited response to the questions and struggles with developing prompts; tends to maintain the direction of the conversation.

	conversation. Limited employment of language devices with some inaccuracy.		
Mark Band V **1 - 3 marks**	Simple facts and ideas are expressed with generally unsuccessful attempts at organisation; is barely capable of engaging in a two-way conversation. Not able to employ language devices or devices employed with serious error.	**Mark Band V** **1 mark**	Responds simply or is unable to respond to questions or prompts; cannot recognise alterations in the direction of the conversation.
Mark Band VI **0 marks**	Fails to meet the above criteria.	**Mark Band VI** **0 marks**	Fails to meet the above criteria.

Individual Activity – 40 marks

Mark	**Content & Structure [out of 20]**	**Vocabulary [out of 10]**	**Fluency [out of 10]**
15 - 19 **&** **9-10**	The student demonstrates ability to use a variety of structures accurately and consistently. There may be errors when sophistication is attempted, but the examiner is convinced that the student is confidently in control of the structures used. Full & well organised content.	The student shows enough command of vocabulary to respond with some precision. Shades of meaning are achieved and some sophisticated information/ ideas are communicated. There will be only the occasional misuse of vocabulary.	The student shows sustained ability to maintain a conversation and to contribute at some length. The student can respond to change in direction of the conversation and perhaps initiate new topics. Pronunciation and intonation are appropriate, with only the occasional slip.
16 - 18 **&** **7 - 8**	There may be mostly simple structures, but some more complex sentences will be attempted successfully. There will be some errors but these will not impede communication. Sound use of content.	The student has a sufficient range of vocabulary to convey information and ideas but there is lack of precision. Vocabulary is not wide or varied.	The student responds relevantly to questions and at a length which makes frequent prompting unnecessary. Stress and intonation patterns are generally accurate. Little effort is required by the listener.
13 – 15	The student will be uneasy	Vocabulary conveys	The student makes a real

& **5-6**	and error-prone when venturing beyond simple structures. However, simple accuracy will often be achieved and communication will be maintained. Adequate use of content.	simple ideas and information clearly but lacks precision. There is some searching for words and hesitation when going beyond simplicity.	attempt to respond to questions. S/he may need frequent prompting and will tend to offer one sentence at a time, but keeps conversation going. Some noticeable inaccuracy of stress and intonation, but unlikely to impede communication.
10 – 12 **&** **3-4**	Responses will usually be single words or very simple sentences -with errors. Error will tend to blur but not obscure communication. Content is thin or inconsistently used.	Vocabulary will sometimes be inadequate to convey even simple ideas and there will be frequent pauses.	Responses tend to be brief and widely spaced. The candidate has to be encouraged to go beyond the single word response. Stress and intonation inaccuracy causes some communication difficulty, but candidate can usually be understood by a sympathetic listener.
5 – 9 **&** **1-2**	Single word responses will be the norm and attempts at structured sentences will rarely achieve communication. However, some attempt at a response will be made at points during the interview. Content is mostly undeveloped and/ or very thin.	Enough English words are known to convey occasional snippets of information, but conversation will be very limited and confused.	Responses are so brief and imprecise that little is communicated. Use of single words is the norm, and there will be long gaps. Stress and intonation patterns cause difficulty for even the most sympathetic listener. Repetition is necessary to achieve communication.
0 -5 **&** **0**	Completely limited/no attempt at a response.	Completely limited/no attempt at a response.	No response/inaccuracy of stress and intonation prevents communication even after several repetitions.

In the world of work, a high percentage of communication is by talk, and people are known by the way they use talk to carry out their duties with efficiency, tact or persuasion.
Soon it will be normal to write by speaking into a machine which then prints what we say. It is a brave new world and it is through highly developed speaking skills that we shall be empowered to meet it.

LIST OF BOOKS
ENGLISH VOCABULARY, PRONUNCIATION AND GRAMMAR

English Pronunciation in Use ***Hancock***
(Book+ 4 Audio Cassettes Pack) …… 0- 521-54772-5
or
(Book+ 4 Audio CD's Pack) …….. 0-52154771-7

Better English Pronunciation O' Connor
(Book + Cassettes Set) ……. 0 – 521-78964 – 8

Murphy's English Grammar Raymond Murphy
(Book + CD ROM) …… 0 – 521 – 61663-8
Cambridge Language In Use series ……. Set of 4 VCD's
Cambridge English Pronouncing Dictionary, 16th edition by Daniel Jones (Book with CD ROM) ……. 0 – 521-60062-6

All of the above can be ordered from Foundation Books Pvt.Ltd. CAMBRIDGE UNIV PRESS. www.foundationbooksindia.com (Their books/colleges catalogue has an exhaustive list of books in English Grammar, Pronunciation, Vocabulary, Remedial work, writing speaking, listening)

Plot No. 80 Service Industries, Shirvane, Sector – 1, Nerul, Navi Mumbai-400706.
Tel: 27709172,27713810. Fax: 27709173. email: cupbang@cupind.com

Online Resource – The homepage of NATE (National Assocation Of Teaching English) while a national British association, has many resources which are in effect international.
Series
English Writing Frames – Copiable books and accompanying CD-ROM'S to support weaker and middle ability students. Could be used in used in conjunction with any language/Communication skills course. A systematic resource, with step – by- step practical exercises and photocopiable frames to practice with.

English Writing Frames: Genre by Neild, J (edition 2000) This is available as a book and disk pack ISBN: 184136975
English Writing Frames: Style and Purpose by Neild, J (edition 2000) - also book and disk pack ISBN: 1841636983 Published by Folens Publishing Limited, Unit 20, Apex Business Centre, Boscombe Road, Dunstable, Bedfordshire, LU5 4RL ,U.K www.folens .com

Heinemann English Programme- a thematically arranged four part series. Teacher resource files accompany the set.
Authors : Seely, J & Kitshen, D ISBN: 0435103520
0435103547
0435103563
0435103466
Publisher: Heinemann, Harcourt Education Ltd, Halley Court, Jordan Hill, Oxford, OX2 8EJ, U.K. www.heinemann.co.uk

Speaking and listening by Jones, R -with accompanying cassette ISBN: 0719546699
Publisher : John Murray, Hodder Murray, 338 Euston Road, London, NW1 3BH UK.
www.johnmurray.co.uk
New Hodder English

This is a series of three books. Teachers can find a variety of accessible material to simulate speaking and listening activities as well as writing.

New Hodder English – by Hackman, S; Scott, P & Howe, A (edition 2001)

1. ISBN 034077536X
2. ISBN 0340775378
3. ISBN 0340775386

Publisher Hodder & Stoughton Education, Hodder Deadline, 338 Euston Road, London, NW1 3bh, UK
www.hodderheadline.co.uk

Speaking English Effectively ***by Krishna Mohan and N. P. Singh***
Macmillan India Ltd ISBN: 0333925521

Cambridge UNIV PRESS - – Language In Use
Set of 3 graded VCD's- BEGINNER, PRE-INTERMEDIATE, INTERMEDIATE-
On Line Training and Practice Clarity Language Consultants Ltd
UK Office : PO Box 625, Godalming, GU7 1ZR, UK
Tel: + 44 (0) 8451305627
Fax: + 44 (0) 8451305647
HK Office : PO Box 1763, Sai Kung, Hong Kong
Tel: +852 27911787
Fax: + 852 27916484

Young India Films
1 – F, Lakshmi Bhawan, 609, Mount Road, Chennai – 600006
email: yif@vsnl.com
www.younindiafilms.com
Tel: +044 28295693, 28294160
28293640
Fax: + 044 28292065, 28295303
Mob : 0981022551, 09841056109

Examples of Questions for the ISA and SEE.

I **Role Play -** topics to be given 10 minutes before the commencement of the exam.

1) The Student's role: Your friend
Your role : Yourself

Your Task: You have very strong views about how animals should be treated, which are very different from your friend's. You are in a fast food café. You friend has walked in carrying a brand - new expensive snake - skin handbag/ leather coat and has ordered a double beef burger. You are wearing jute sandals and are carrying a cloth bag and have ordered a veg burger.

OR

2) The Student's Role: A new neighbour who has three very noisy and naughty children.
Your Role: The owner of a house in a quiet street.

Your Task: You are having very real problems with your neighbour. You cannot concentrate during the day on things you want to do and your neighbour's noisy children sleep very late at night keeping you awake. You are working in your garden and a ball came over the fence and hit you on the head. The children started yelling and screaming for you to throw the ball back. Instead you go over to see their parent to discuss the whole matter.

OR

3) Choose any one topic that you are passionate about:
- A book you have read recently
- A film or play you have seen recently that affected you a great deal
- A member of your family, singer, actor, scientist, historical figure who fascinates you
- Travel
- Football or cricket
- Fashion
- School

- College
- Mobile phones

I **Debate/ GD -** Groups of 5 through lots for GD

Groups of six for debate.

1) The Government of Goa should ban on all kinds of plastic bags.

OR

2) Fees charged for college education must be increased so that students of higher education can be provided better facilities, innovative courses and quality teachers.

Pair based activity

Allow students to choose their partners.

1) You in an interviewer - interviewee situation on a popular FM Radio Station. The guest speaker is an aerobics instructor and a keep- fit fanatic who is 62 years old. The interviewer agrees on the wisdom of an active life and a sensible diet but is himself/herself fond of junk food and likes nothing better than staying in bed as late as possible.

OR

2) Have a discussion on hobbies with a new boy/girl who has just joined your college , with whom you are try to make friends.

II - Individual talk/ Presentation

Topics to be displayed on the notice board well in advance of the exam.

Exam to be conducted before the commencement of the written papers. (similar to the manner in which science practicals are conducted.)

Topics (should be such that there is possibility of using audio visual aids/ mounted boards/slides/charts/ maps/graphs **if** the candidate wishes to do so.)

The image of Goa in advertising.
Festivals of India
Folk media of Goa
Indian Mythology
Flora and Fauna of Goa

Computer Application – I

For B.Com. SEMESTER I

GE 1

COURSE CODE : BCOM112	COURSE TITLE : Information Technology(Fundamentals) - I	
Total Marks : 100	Total Credits : 04	Total Contact Hours : 60

Course prerequisites : None

Course objectives : Understand the fundamentals of Information Technology and provide insights into dominant IT Applications and emerging IT Technologies.

Course contents :

Unit		Topic		Weightage	
	Title		**Content**	**Hours**	**Marks %**
	Introduction		Data and Information: Data - Definition, Types of Data, Data Representation, Number system(Decimal & Binary), Coding Schemes(ASCII and UNICODE).	3	30
			Information: Definition, Difference between Data & information, Prerequisites, Information Technology : Definition and components, Need for Information Technology and its advantages.	2	
		C	Role of Information Technology : Business, Education, Manufacturing, Public Sector, Media, Defense Services, and Publication.	2	
		D	Software: Relationship between Hardware and Software, Categories of Software - Examples,	4	

			Operating System - Definition & functions, Examples , Freeware and Open source software- Examples.		
		E	Careers in IT Industry: Analyst, Administrator, Designer, Business process outsourcing, Programmers, Technical Writing etc…	1	
		F	Use of IT in Education and Research: Data analysis, Heterogeneous storage, e-Library, Google Scholar.	3	
		G	Social and Ethical issues in IT: Computer Ethics, Intellectual property rights , Plagiarism , fair use , software licensing , Piracy.	3	
			Student Activity: Explore Data analysis, what-if-analysis and visualization in Excel		
	Multimedia Essentials	A	Introduction: Definition, Components of Multimedia, Uses of Multimedia.	3	25
		B	Multimedia applications: Entertainment, Education, Business, Training, Virtual reality.	2	
		C	**Text -** Fonts & Faces, Using Text in Multimedia, File formats **Images:** Still Images – bitmaps & vectors , image file formats, **Sound:** Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats, **Video:** How video works, Video file formats, **Animation:** Principle of animations, animation techniques, animation file formats.	7	
		D	Making Multimedia: Stages of a multimedia project, Requirements to make good multimedia, Multimedia software and Authoring tools.	4	
			Student Activity: 1. Use any image editing tool such as (GIMP, Inkspace) to design the cover page of Book. 2. Use any two Mp3 tracks of your choice to create a unique composition that is significantly different from either of the original tracks. You are free to experiment. 3. Make a Movie on a given topic with the help Windows Movie Maker.		
	E-Commerce	A	Introduction: Definition, Advantages and disadvantages of transacting online.	2	25
		B	E-commerce Business models: Introduction , key elements of a business model and	4	

			categorizing major E-commerce business models.		
		C	E-payment System: Models and methods of e–payments (Debit Card, Credit Card, Smart Cards, e-money), Payment gateways, Risks involved in e-payments.	4	
		D	Online Banking: Meaning, Concepts, Importance, Electronic Fund Transfer, Automated Clearing House.	3	
		E	M-Commerce : Definition, Services, Advantages & Disadvantages.	1	
			Student Activity : Implement a case study on any popular e-commerce website. Include following details: Introduction to the company, Overview of the products and services available, Basic elements of the company business model - Target market/audience, Revenue model, Competitive environment, Competitive advantage analysis:, Product Promotion Strategies, Financial results if available		
IV	**Overview of Emerging IT Technologies**	A	Cloud Computing: Definition, Examples Types of Cloud Computing – LasS, SasS, PasS, Deployment Models – Private, Public, Community & Hybrid cloud, Advantages and Disadvantages of Cloud Computing.	3	20
		B	Mobile Computing(MC): Definition, Aspects of MC – User Mobility, Device Portability, Applications of MC	2	
		C	Big Data:	4	

			Definition, 4Vs + V, Big data Opportunity: - Financial services, Retail, Advertising and Public relations, Manufacturing Big Data Process, Risks and challenges of Big Data.		
		D	Analytics: Definition, Business Intelligence, Data Mining - Association rule learning, Classification, Cluster Analysis, Regression.	3	
			Student Activity: Create a web form to collect and collate data (usually done for registrations etc..) using Google cloud service.		

Note:

1. IT paper shall carry 04 credits, with no credit for Lab component.
2. There shall be a theory examination of 100 Marks (Internal Assessment – 20 Marks; End Semester Examination – 80 Marks of 2 hrs. duration)
3. There shall be four Theory lectures per week of 1 hour duration per Theory class.

References:

1. Introduction to Information Technology – ITL Education Solutions Limited –Pearson Education

2. Computer fundamentals fourth edition by Pradeep K. Sinha and Priti Sinha BPB publications
3. Information Technology -The breaking wave by Dennis Curtin Tata McGraw-hill edition
4. Frontiers of Electronic Commerce Ravi Kalakota & Andrew B Whinston, Pearson Education.
5. Multimedia in practice, technology & applications, Judith Jeff Coate, PHI
6. Multimedia making it work, Tay Vaughan, 3rd edition, Tata McGraw-Hill
7. Multimedia: Computing, Communications Applications, Ralf Steinmetz and Klara Naharstedt, Pearson.
8. E-Commerce, Kenneth C. Laudon and Carlo Guercio Traver, Pearson Education.
9. E-commerce: Strategy, Technology and Applications ,David Whiteley, , McGraw Hill Education
10. Cloud Computing, http://www.dialogic.com/~/media/products/docs/whitepapers/12023-cloud-computing-wp.pdf

Practical Assignments for Computer Application – I Lab

For B.Com. SEMESTER I

GE 1

COURSE CODE : BCOM112	COURSE TITLE : Information Technology(Fundamentals) – I Lab	
Total Marks : -	Total Credits : -	Total Contact Hours : 30

Course prerequisites : None

Course objectives : To equip students with the healthy practices and efficient use of information technology services , tools and modern devices.

Course contents :

Unit		Topic		Requirements	Weightage
	Title	**#**	**Content**		**Hours**
	Introduction	1	**Operating System Basic** • Installation of Operating System (Demonstration only) • Demonstrate features of any MS Windows based OS and any of the Linux flavor • Add Devices(Printer,Audio,Video drivers)	Operating system such as: • MS Windows 7/8 or • Free and Open source Operating system such as Ubuntu, Mint etc… Appropriate Device Drivers	**2 hours**

		2	**Applications of IT and Unicode** • Check up sites of E-governance (calculate income tax, find voter id details • Enable computer to support regional language, add Keyboard, Use onscreen keyboard, install phonetic keyboard, type in regional language using Unicode	Internet & Internet Browser	**2 hours**
	Multimedia **Essentials**	3	**Word** • Basic features, Formatting, use of Multimedia content in word file, Mail merge, Spell Check, Thesaurus, Security, Page Setup etc…	Word editor such as: • MS Word or • Free Libreoffice Writer	**2 hours**
		4	**Powerpoint** • Creating slides, Formatting, sorting, • Animation, Slide master	Presentation tool such as: • MS Powerpoint or • Free Libreoffice Impress	**2 hours**
		5	**Excel – Data operations** • Use Excel to prepare personal budget for the first quarter of given financial year. Use appropriate charts to provide visual analysis of income and expenditure. • Create a file in Excel that describes a grading system for a class.	Calculation tool such as: • MS Excel or • Free Libreoffice Calc	**2 hours**
		6	**Excel – Data & Financial operations** • Use Excel to perform profit and loss statement, Balance Sheet & Assets for the given data. Make use of separate worksheets for each profit and loss statement, Balance Sheet & Assets. Make use of Financial functions(for example to calculate the depreciation of asset item)		**2 hours**
		7	**Excel – What-if- Analysis**		**2 hours**

			• Excel Use excel to perform, what if analysis of the any given data and provide appropriate visualization of the data analysis		
		8	**Image Manipulation** • Use any image editing tool such as (GIMP, Inkspace) to design the cover page of Book.	Tools such as: • Photoshop/ Coredraw • GIMP, Inkspace	**2 hours**
		9	**Audio Manipulation** • Use any two Mp3 tracks of your choice to create a unique two minute composition that is significantly different from either of the original tracks. You are free to experiment.	Tools such as: • Audacity	**2 hours**
		10	**Video Manipulation** • Make a Movie on a given topic with the help Windows Movie Maker.	Tools such as: • Windows Movie Maker	**2 hours**
	E-Commerce	11	**Online Purchase** • Attempt to purchase a product online from any E-Commerce Site. Proceed till payment gateway. Check digital certificates (such as ebay.in and amazon.com) • Write a review of an E-Commerce Site visited include: Site description, Site Design, ease in navigation, process for purchasing items, security, privacy, compare with competitors, customer service, best features of site etc..	Internet & Internet Browser	**2 hours**
		12	**E-Commerce Web Portal Case Study** An Ecommerce site case study, Include • Target market/audience: who uses this service? • Revenue model: where does the money come from? • Competitive environment: who else	Internet & Internet Browser	**2 hours**

			is competing in this market, or who might enter the market and threaten this company's position? • Competitive advantage analysis: how is your case company attempting to gain an advantage: competing on cost? differentiation? • How are they promoting their products in the marketplace? • How have they been doing - financial results if available?		
IV	**Overview of Emerging IT Technologies**	13	**Advanced web search and translation & Transliteration services** Web search, image search Seach only for pages that contain (ALL the search terms contain the exact phrase you type, contain at least one of the words you type, do NOT contain any of the words you type,written in a certain language, created in a certain file format like ppt, pdf, rtf, doc, xls) Advanced search operators: Include search ("+" search), synonym search, OR search, Domain search, Num range search, other advanced search features (Google, Local language, Technology Search, Date, Occurrences, Domains, Safe search) Use Online translators and transliteration services	Internet & Internet Browser	**2 hours**
		14	**Multiuser Google docs** Create documents, spreadsheets and presentations online Share and collaborate in real time Safely store and organize your work Control who can see your documents	Internet & Internet Browser	**2 hours**
		15	**Cloud Computing** Create web form to collect and collate data (usually done for registrations etc) using Google cloud service	Internet & Internet Browser	**2 hours**

Note:

1. IT lab Component shall carry no credit.
2. There shall be altogether 15 Lab sessions of 2 hours duration per batch of 20 Students.

Information Technology – I (Theory)

B.Com. SEMESTER I

GE 1

Unit wise Marks Distribution

Sem I	Marks Allotted	Sem II	Marks Allotted
Unit I	20-28	Unit I	20-28
Unit II	16-24	Unit II	16-24
Unit III	16-24	Unit III	16-24
Unit IV	16-24	Unit IV	16-24

Question Paper Pattern

Maximum Marks: 80			
Q. 1	Answer the following questions (Any Four/5)	4 * 2 = 08 Marks	4 questions – 3 from Unit I & 1 from Unit IV
Q. 2	Answer the following questions (Any Four/5)	4 * 2 = 08 Marks	4 questions – 2 each from every Unit II & Unit III
Q. 3	Answer the questions (Any 4/5)	4 * 4 = 16 Marks	4 questions –From unit I
Q. 4	Answer the questions (Any 4/5)	4 * 4 = 16 Marks	4 questions –From unit II
Q. 5	Answer the questions (Any 4/5)	4 * 4 = 16 Marks	4 questions –From unit III
Q. 6	Answer the questions (Any 4/5)	4 * 4 = 16 Marks	4 questions –From unit IV

B.COM
SEMESTER II
Introduction to Marketing (CC 5)
(100 Marks- 60 Lectures)

Objective: To develop an understanding of the marketing environment and relevant decisions.

Unit I Introduction to marketing (25 Marks 15 Lectures)

Market concepts-- place concept, area concept demand concept.
Kinds of goods—convenience goods, shopping goods speciality goods.
Marketing concepts - product concept, selling concept, marketing concept, societal marketing concept. Scope of marketing - goods, services, events, organisations etc.

Unit II Marketing Environment and Segmentation (25 Marks 15 Lectures)

Marketing Environment- concept, major environmental forces.
Market segmentation- concept, Bases for segmenting markets.
Consumer behaviour and marketing research
Consumer buying behaviour, factors influencing consumer buyer behaviour.
Marketing research and its importance.

Unit III Marketing decisions (25 Marks 15 Lectures)

Marketing mix decisions-product, price, promotion and physical distribution (in brief).
Sales force management-selection, training, compensation. Areas in physical distribution- Order processing, Inventory, Warehousing and Transportation. Global marketing- Alternative marketing entry strategies.

Unit IV Trends in Marketing (25 Marks 15 Lectures)

Consumerism and need for consumer protection. Social aspects of marketing—social responsibility of marketing, ecological and ethical aspects of marketing. Marketing of Services and its scope.
Direct marketing—Catalog marketing, Kiosk marketing, Telemarketing and On-Line marketing.

References:

1) Kotler, Philip. *Marketing Management.* Prentice Hall.
2) Kotler, P., Keller, K.L. Koshy, A. & Jha. M. (2009). *Marketing Management: A South Asian Perspective*. (Thirteenth Ed). Pearson Education, New Delhi.
3) Gandhi, J.C. *Marketing a Managerial Introduction.* Tata McGraw Hill.
4) Maheshwari, R.P., Jindal, Lokesh, (2011). *Marketing Management Theory and Practice*.
5) Sherlekar, S.A. *Marketing Management*. Himalaya Publishing House.
6) Saxena, Rajan. *Marketing Management*.
7) Ramaswamy & Kumari Nama. *Marketing Management*.

B.COM
SEMESTER II
Financial Statement Analysis & Interpretation (CC 6)
(100 Marks – 60 Lectures)

Course objectives
To develop skills in students to analyze and interpret financial statements from viewpoint of liquidity, solvency, profitability and cash flow of entities and apply the same for decision making.

Unit I Company Final Accounts (Elementary Level) (20 Marks, 15 Lectures)
Preparation of " Statement of Profit and Loss account" and " Balance sheet" as per Schedule III of the Companies Act 2013.

Unit II Nature and Techniques of Financial statement analysis (40 Marks, 18 Lectures)
Nature and Component of Financial Statement, Meaning and Need for Financial Statement Analysis, Traditional & Modern approaches to Financial Statement Analysis, Parties interested in Financial Statement Analysis. Techniques of Financial Statement Analysis**:**

a) Common-size statement analysis
   Meaning, preparation, interpretation, uses, merits and demerits
b) Comparative statement analysis (restricted to 2 years for intra-company and 2 companies for inter-company problems)
   Meaning, preparation, interpretation, uses, merits and demerits
c) Trend analysis
   Meaning, determination, interpretation uses, merits and demerits
   Practical problems to include preparation of Profit & Loss Statement and Balance Sheet as per Schedule III of Companies Act 2013 from the Trial Balance given and prepare common size or Comparative statement.

Unit III Ratio Analysis and Economic Value Added Analysis (20 Marks, 15 Lectures)
(a) Ratio analysis
Meaning, Objectives, Nature of Ratio analysis, Importance & Limitations of ratio analysis, Classification of Ratios - Balance Sheet ratios, Income statement ratios, and Combined ratios, Computation, Analysis and Interpretation of important ratios for measuring – Liquidity, Solvency, Capital Structure, Profitability and Managerial Effectiveness. Overview of ratio analysis in service organization.

(b) Economic Value added (EVA)
Evolution of EVA concept, EVA concept, Market value added, Calculating EVA: The conceptual issues, calculating Net operating profit after tax (NOPAT), Capital employed (CE), weighted average cost of capital (WAC), Importance of EVA, Advantages of EVA, Limitations of EVA

Unit IV Cash Flow Statement (20 Marks, 12 Lectures)

Meaning, Objectives of Cash Flow Statement, Non-cash transactions, Activity classification, Cash and cash equivalents, Direct and indirect method, Preparation and presentation of Cash Flow Statement as per indirect method and IND AS 7

References:

1. Bhirud, S., & Naphade, B. *Management Accounting.* Pune: Diamond Publications.

2. Gupta, S., & Sharma, R. *Financial Management.* New Delhi: Kalyani Publishers.

3. Jain, & Narang. *Advanced Accountancy.* New Delhi: Kalyani Publishers.

4. Madegowda, J. *Management Accounting.* New Delhi: Himalaya Publishing House.

5. Mukherjee, A., & Hanif, M. (2002). *Modern Accountancy* (Vol. II). New Delhi: Tata McGraw Hill.

6. Raman, A. *Advanced Accountancy.* New Delhi: Himalaya Publishing House.

7. Shukla, M. C., & Grewal, T. S. *Advanced Accounts.* New Delhi: S. Chand & Co .

8. Shukla, M., Grewal, T., & Gupta, S. *Advanced Accounts.* New Delhi: S. Chand & Co.

9. Tulsian, P. C. *Accountancy.* New Delhi: S. Chand & Co.

Journals for Study and Reference:

1. The Chartered Accountant: The Institute of Chartered Accountants of India
2. The Management Accountant: The Institute of Cost Accountants of India
3. The Accounting World : ICFAI Hyderabad

Guidelines for setting Question Paper

1. The question paper shall have total of 6 questions of 20 marks each
2. Four questions of 20 marks each to be answered
3. Question No. 1 to be compulsory (should be a practical question)
4. A question may be sub-divided if necessary
5. One question each from Unit I, Unit II, Unit III and Unit IV
6. Two questions each to be asked on unit II and unit III

B.COM.
SEMESTER II
Managerial Economics (CC 7)
(100 Marks, 60 Lectures)

Objective: The basic objective of this course is to familiarize the students with the approach, concepts and advanced techniques of managerial economics that are applied in business decision making.

Unit I Pricing Decisions (20 Marks, 12 Lectures)

a) **Pricing Methods and Strategies** – Cost based pricing(cost plus, marginal cost & target return pricing), Competition based pricing(penetration, entry deterring and going rate pricing), Product life cycle based pricing(price skimming, packaging, perceived value, loss leader pricing), Cyclical pricing (rigid and flexible pricing),Multi-product pricing, Peak load pricing, Sealed bid pricing, Retail pricing, Administered pricing, Export pricing, International price discrimination, Dumping and transfer pricing.

b) **General considerations and objectives of pricing policy** – Price elasticity of demand and pricing – price forecasting.

Unit II Profit Analysis (20 Marks, 12 Lectures)

a) **Profit**

Meaning, Different concepts, nature, kinds and role of profit; profit policy, profit limiting factors

b) **Break Even Analysis**

Meaning, assumptions, uses, limitations, application, break even chart and calculation of Break-Even Quantity and Break-Even Sales, contribution margin, safety margin, targeted sales volume and expected profits; Profit-volume (P/V)analysis -meaning, chart, assumptions and measurement (Numerical Problems to be included) Profit forecasting: meaning and methods

Unit III Capital Budgeting (30 Marks, 18 Lectures)

a) **Capital budgeting**

Meaning; Nature; Process; Significance; Factors influencing investment decisions; Approaches to determine size of capital budget; Types of projects; steps in capital project evaluation; Methods of project evaluation with numerical problems (Payback period, Average rate of return (ARR), Net Present Value (NPV), Profitability Index(PI) and Internal Rate of Return (IRR) methods); Social cost-benefit analysis (concept, objectives, steps involved and evaluation)

b) **Cost of capital**

Sources of funds for long-term financing; cost of debt, cost of preference share capital, cost of equity capital, cost of retained earnings – the weighted cost of capital (numerical problems to be included)

Unit IV Decision and Risk Analysis in Business (30 Marks , 18 Lectures)

a) Business Decision making – certainty , risk and uncertainty, sources of business risk, steps involved in analysis of risky decisions, risk premiums, risk adjustment

b) Risk and Investment Proposals – measures of incorporating risk(expected value and standard deviation), methods to decide selection of project (the finite-horizon, risk adjusted discount rate, certainty equivalent and decision tree analysis method)

Decisions under uncertainty - Game Theory (Assumptions, Structure, Significance, Limitations and Strategies) – Pure Strategy, Nash Equilibrium, Prisoners' Dilemma, and Applications of Game Theory in Economics. (Numerical problems to be included).

References :

1. Ahuja. H. L. *'Advanced Economic Theory (microeconomic Analysis)'* S. Chand Limited, New Delhi .
2. Geetika, Ghosh. P. & Roy Choudhury. P. *'Managerial Economics'* Tata McGraw Hill Education Pvt Ltd, New Delhi.
3. Indira Gandhi National Open University: School of Management: Managerial Economics- MS/9
4. Mehta, P.L. *'Managerial Economics'*, Sultan Chand & Sons, Educational Publishers, New Delhi.
5. Mithani.D.M. *'Managerial Economics (Theory & Application)'* Himalaya Publishing House,New Delhi.
6. Mukherjee Sampat, *'Business and Managerial Economics'*, New Central Book Agency (P) Ltd., Calcutta.
7. Samuelson, Paul A and Nordhaus, W.P., 'Economics', McGraw Hill, New York.
8. Varshney R.L. & Maheshwari. K.L., *'Managerial Economics'* Sultan Chand & Sons, Educational Publishers, New Delhi.

B.COM.
SEMESTER II
Commercial Arithmetic – II (CC 8)
(100 marks - 60 Lectures)

Unit I The Straight Line **(25marks - 12 hours)**

- Rectangular Cartesian Co-ordinate System
- Distance formula, Section formula (Simple problems only)
- Slope and intercepts of a straight line
- Equations of lines parallel to the axes.
- Equations of lines in slope point form, two point form, slope intercept form, two intercept form
- General equation of a line, Parallel and perpendicular lines
- Intersection of lines
- Graphs of linear equations and inequalities
- Graphical solution of Linear Programming Problems with two variables only

Unit 2 Calculus I

(a) Relations and Functions **(5marks - 4 Lectures)**

- Ordered pair
- Cartesian product
- Relation, Function – Domain, Co-domain, Range.

(b) Limits and Continuity **(5marks - 4 Lectures)**

- Definition
- Operations of finding limits
- Algebra of limits
- Concept of continuity and examples

(c) Derivatives and their Applications **(25 marks - 12 Lectures)**

- Concept of derivatives
- Standard forms
- Algebra of derivatives
- Derivatives of composite functions
- Higher order derivatives
- Applications – Total revenue function, Total cost function, Elasticity of demand and supply
- Increasing and decreasing function/sign of derivative (economic applications)
- Maxima and Minima (economic applications)

Unit III Calculus II

(a) Integration and its Applications **(15marks - 12 Lectures)**

- Definition
- Standard forms x^n, e^x, a^x, $1/x$

- Integral of f(x) + g(x) and kf(x)
- Integral of $(ax+b)^n$, e^{ax+b}, k^{ax+b}, 1/ax+b
- Applications – Total revenue function, Total cost function
- Definite integration
- Area under a curve (formula only)
- Consumer's Surplus and Producer's Surplus

(b) Partial Derivatives (5marks - 4 Lectures)

- Definition
- Partial derivatives of first and second order
- Economic applications: Demand function, Utility function, Production function

Unit IV Commercial Mathematics (20marks - 12 Lectures)

- Ratio
- Proportion
- Percentage
- Discount – Trade Discount, Cash discount, Discount and profit.

References

1. Joshi N. and Chitale S.G., *A New Approach To Mathematical Techniques* , Sheth Publishers
2. Vaidya M.L., Deshpande A.V., Kumtha A.P., *Elementary Business Mathematics*, Vipul Prakashan
3. DikshitAmarnath, Jain Jinendra Kumar, *Business Mathematics*, Himalaya Publishing House
4. GoelAjayand GoelAlka, *Mathematics and Statistics*, Taxmann Allied Services
5. Vaidya M.V., KumthaA. P., *Business Mathematics*, Vipul Prakashan
6. ShahS., *Business Mathematics(for ICWAI International Course),* New Central Book Agency.
7. Abranches, M.E, *Mathematical Techniques*, Gracias Print Arts.

B.COM.
SEMESTER II
Business Communication (AECC 3)
(Modern Communication Skills)
(100 Marks - 60 Lectures)

Course Objectives:

Communication skills have emerged as the most powerful set of skills to possess for accelerating one's career trajectory and for enhancing the quality of life of people in modern times. In a competitive world where efficiency and effectiveness do matter, it is imperative that students learn these skills.

This Course of Modern Business Skills in Business Communication integrates spoken, written, visual and written communication situations and strategies - the way communication actually occurs in a dynamic workplace. Some of the course objectives are:

- **To increase students confidence and ability to communicate orally while using technology.**
- **To improve collaboration and communication skills of students.**
- **To enhance multimedia literacy skills of students.**
- **To build relationships and establish their online social presence.**

UNIT 1: Digital Storytelling [DST] (40 Marks - 23 Lectures)

(Creation of a Digital Story: Workshops for students in small batches of where the basics and software skills needed for DST are imparted; Students are then to individually create a DST and present the same in class)

UNIT 2: Individual Speeches (Impact/ Oratory) and Presentations

(a) Individual Speeches - Pathos / Logos / Ethos / Overcoming Fear / Formulae for Speeches / People (Body Language) / Voice Skills / Audience **(10 Marks - 6 Lectures)**

(b) Creating and Making Individual Presentations - Using Software like Powerpoint / Prezi On-line Zooming Editor / Mind-Mapping Software / Incorporating principles of Zen / Slido:ology / Duarte **(10 Marks - 15 Lectures)**

UNIT 3: Electronic and Web Communications: (20 Marks – 5 Lectures)

a) Using Social Media for Communication [for contributing to a FACEBOOK Group or mailing list created by the teacher for the purpose. This group can be on any topic which helps to improve communication skills.] **(5 Marks)**

b) Creating & Using a Blog or Free Web site **(10 Marks)**

c) Using cell-phones, laptops and other means for e-mail and instant messaging for Business; etiquette involved **(5 Marks)**

UNIT 4 Conducting Effective Meetings (20 Marks - 11 Hours)

(Pedagogy: Role Play - Groups of 6-10 students to conduct a meeting)

Chairpersonship, Protocol (Brief insights into Robert's Rules of Order), Benefits, Notice, Agenda, Drafting Minutes (Discussions /Resolutions)

[10 marks for participation in a Meeting. 5 marks for drafting the Notice and the Agenda for the Meeting. 5 marks for writing the Minutes of the Meeting. The meetings where the students are to be judged can be ones which are organized for the purpose of discussing topics given by the teacher.]

Requirements:

(Essential)

1) An LCD projector in every classroom
2) A Laptop for Facilitator (Desirable)
3) Computers for students
4) Broadband Facility
5) A large screen SMART TV / SMARTBOARD
6) HD Video Camera (with Hard Disk)
7) Home Theatre
8) Software: Pinnacle / Cyberlink / U-lead Video Studio / Buzan's Mind-Mapping / Business-in-a-Box
9)Language Lab / other relevant software as decided by the concerned teacher
10) External Hard Disks
11) A Smart Board

Assessment and Pedagogy:

Continuous Internal Assessment in the proportion to the marks assigned in the syllabus: 100 marks. The teacher may devise appropriate exercises to test the student's skills.

Suggestion: ISA 1 (Individual Speeches)
ISA 2 (Individual Presentations)

References:

1. Digital Storytelling: Guide for Educators, Midge Frazel, International Society for Technology in Education, 2010 ISBN 9781564842596
2. How to Win Friends and Influence People, Dale Carnegie, Pocket Books, 2010 ed.
3. Making Presentations, Tim Hindle, Dorling Kindersley Publishers, 1999 ed. Say it with Presentations, Gene Zelazny, Tata McGraw-Hill Education (2004).
4. Presentation Zen: Simple Ideas on Presentation Design and Delivery (2 nd Edition) (Voices that Matter) Garr Reynolds. 2011
5. Slide:ology: The Art and Science of Creating Great Presentations, Nancy Duarte, 2008. ISBN 0596522347
6. Social Media Marketing for Dummies, Shiv Singh, Stephanie Diamond, Wiley, 2007. ISBN 9781118236307.

Robert's Rules of Order, Robert Henry M., Createspace, 2010, ISBN 978145380715.

Syllabus for Computer Application - II for B.Com. SEMESTER II

GE 2

COURSE CODE : BCOM212	COURSE TITLE : Information Technology(Cyber Security) - II	
Total Marks : 100	Total Credits : 04	Total Contact Hours : 60

Course prerequisites : Information Technology I

Course objectives : To understand the basics of cyber space and accompanying cyber threats and provide the foundation for preparing, detecting and protecting against cyber threats and challenges.

Course contents :

Unit		Topic		Weightage	
	Title		Content	Hours	Marks %
	Basics of Computer Networking		Computer Networking Basics: Definition, Need , Advantages & Disadvantages.	1	30
		B	Transmission Media: Wired & Wireless.	3	
		C	Networking Devices: Repeater, Switch, Router, Gateway.	2	
		D	Network Topology: Bus, Star and mesh – advantages & disadvantages of each.	2	
		E	Types of network: PAN,LAN, MAN, WAN, internet .	2	
		F	IP Addressing : Static Vs Dynamic IP addresses, Public Vs Private IP addresses.	2	

		G	Internet: Basic terms -web page, website, URL, HTTP & HTTPS, ISP, web server, web browser, Cyber Space ,hyperlinks, hypertext, download and upload, online and offline.	2	
		H	Internet applications: WWW, search engine, DNS, Electronic mail(e-mail), File transfer Protocol(FTP), Internet telephony, Video conferencing, Blogs, E-commerce.	2	
		I	Social Networking: Basics, Types of social networking sites –General, Multimedia, Professional, Educational, Importance of Social Networking.	3	
		J	Security in Social networking: Safety tips for socializing (In General & w.r.t. Facebook) Reporting any security breach.	1	
			Student Activity: Analyze the facebook account and report the different safety features provided by facebook for the safety of the users.		
	Cyber Threats	A	Basics: Definition - Cyber Threats , Cyber Attack, Cyber Crime Cyber Attackers – Hackers, Hactivists, Rogue Insiders, States/Nations etc…	2	20
		B	Types of Cyber Attacks: 1. Device compromise 2. Service disruption 3. Data Exfilteration 4. Advance Persistent Threat(APT)	2	
		C	Cyber Attack Artifacts: Viruses, Worms, Trojan Horse, Botnet, Denial of Service (DoS,DDoS), Social Engineering - Phishing, Zero Day Attack, Cyber Stalking, E-Mail Spoofing, Pharming, Cyber Warfare, Cyber Espionage, Cyber Vandalism	4	
		D	Vulnerabilities and Countermeasures: Causes of each cyber-attacks type, Countermeasures to tackle each Cyber Attack artifacts.	4	
			Student Activity: Provide report of any cyber threat(s) faced by		

			you/friends/any other and list the causes and steps taken to counter such attack.		
	Security in Cyber Shopping	A	Online Shopping: Basics – Privacy, Sensitive Personal Information, Advantages & Disadvantages of Online Shopping.	2	25
			Privacy Issues: Cookies and online tracking, Sharing Information when Shopping Online, Password Protection, Privacy Policies.	2	
		B	Problems associated with online shopping: Data Pharming, Hijackers, Spoofing, Online Fraud.	3	
		C	Safety measures in online Shopping: Encryption of Data Authentication (SSL, Digital Signature, Certificates, Hashing) Security Tokens. Steps to safeguard online shopping security and privacy.	5	
		D	Payments Methods: Different payment methods in online transactions, Safety practices, Best payment method(s).	2	
		D	**Student Activity** – Consider any two online shopping sites and compare their features(Products, usability, policy to attract customers, payment methods, safety practices etc…)		
IV	**Cyber Laws**	A	Information Technology Act(ITA) 2000 : Definition and Terminology - Internet Governance, E-Record,	3	25

	and Cyber Forensic		E-Contract, E-Forms, Adjudicating Officer, Affixing Digital signature, Certifying Authority, Sections - Section 43, Section 65.		
		B	Information Technology (Amendment)(ITAA) Act 2008: Terminology - Communication Devices, Electronic Signature, Sections : Section 66 , Section 67, Section 69.	3	
		C	Provisions/Laws related to e-commerce, Issues not covered under ITA & ITAA, Reporting cyber-crimes.	2	
		D	Digital Evidence: Definition, Categories of Evidence, Types of Evidence, Admissibility of Evidence, Forensic Examination Standards.	2	
		E	Forensic Investigation Steps: Evidence Collection, Preserving Digital Evidence – Special Considerations, Recovering Digital Evidence, Documenting Evidence, Documenting Evidence Analysis.	4	
			Student Activity: Make use of any Forensics investigation tools such as		

			winhex and carry following tasks: Cloning and imaging of removable device, Examination of the complete directory structure, calculate hash ,Identification of pictures embedded in documents etc.)	

Note:

1. IT paper shall carry 04 credits, with no credit for lab component.
2. There shall be a theory examination of 100 Marks (Internal Assessment – 20 Marks; End Semester Examination – 80 Marks of 2 hrs. duration)
3. There shall be four theory lectures per week of 1 hour duration per theory class.

References:

1. Introduction to Information Technology – ITL Education Solutions Limited –Pearson Education
2. Data Communications and Networking Tata McGraw Hill Edition B. A. Forouzan
3. Rick Lehtinen and G.T. Gangemi, Computer Security Basics, O'Reillly Media, Inc.; 2nd edition, 2006
4. Wall, David, (2007). Cybercrime: The Transformation of Crime in the Information Age. Polity Publishing
5. Michael Cross, Scene of the Cyber Crime, Syngress Publishing, Elsevier Publishing, 2nd Edition, ISBN 13: 978-1-59749-276-8
6. Chander, Harish, Cyber Laws and IT Protection, ISBN: 978-81-203-4570-6, PHI Learning
7. Facebook, https://www.facebook.com
8. Cyber Laws, http://deity.gov.in/content/cyber-laws
9. X-Ways Forensics ,https://www.x-ways.net/winhex/index-m.html
10. Online Shopping Safety, http://www.trendmicro.com/vinfo/us/security/news/cybercrime-and-digital-threats/eight-ways-to-ensure-a-safe-online-shopping-experience
11. www.cert.org
12. www.nist.gov

Practical Assignments for Computer Application – II Lab for

B.Com. SEMESTER II

GE 2

COURSE CODE : BCOM212	COURSE TITLE : Information Technology(Cyber Security) – II Lab	
Total Marks :	Total Credits :	Total Contact Hours : 30

Course prerequisites : None

Course objectives : To understand the basics of cyber space and accompanying cyber threats and provide the foundation for preparing, detecting and protecting against cyber threats and challenges.

Practical Assignments:

Unit		Topic		Requirements	Weightage
	Title	**#**	**Content**		**Hours**
	Basics of Computer Networking	1	**Networking Basics** • Connecting to Network • Sharing directories • Connecting to shares • Set up a common storage	Networked Devices	**2 hours**
		2	**Advanced Networking** • Identify IP address, ping • Set up a basic firewall • Set up a security level • Setup free online backup	Networked Devices & internet & Web Browser	**2 hours**

		3	**Web browser security, Internet Connectivity & Tracing .** • Configure the web browser for optimized performance and security. • Identify the IP address of the remote website. • Find the public IP address of your device and your ISP. • Find the upload and Download speed. • Use Trace Email Analyzer to get the sender's IP address and track the source.	internet , Web Browser and online Trace Email Analyzer	**2 hours**
		4	**Social Networking & Facebook** • Analyze the facebook account and report the different safety features provided by facebook for the safety of the users.	Internet & Internet Browser	**2 hours**
	Cyber Threats	5	**Virus Threat** • Analyze any system infected with cyber threat list the causes and steps needs to be taken to counter such attack. • Find the techniques viruses use to evade Antivirus Software.	Any Antivirus/ Malware detection tool	**2 hours**
		6	**Spyware - Infection, Collection, Detection, and Eradication** • How spyware infects devices. • Define the indicators of a spyware infection. • Explore how anti-spyware software detects spyware. • Download and install any anti-spyware software on a computer.	Any Antispyware tool	**2 hours**

		7	**Steganography and Steganalysis** **Steganography** • Hide text messages in images with simple commands. • Hide encrypted text messages in images with 4t HIT Lite. • Hide encrypted files in images with JPEG Hide and Seek (JPHS). **Steganalysis** • Given two images, determine which image contains hidden information using tools such as Steganographic studio.	Use following software tools: • 4t HIT Mail Privacy Lite, • JPEG Hide and Seek (JPHS), • Steganographic studio	**2 hours**
		8	**Password Security** • Measure brute force and dictionary cracking times for passwords of varying length and complexity with Proactive Password Auditor (PPA) • Define the characteristics of a strong password. • Study the relationship between password strength and cracking time. • Calculate the total number of unique passwords given password length and number of subunits (letters, digits, or symbols).	Use following software tool: Proactive Password Auditor (PPA)	**2 hours**
		9	**Defense in Depth - Overall Steps for Cyber security of a device(Laptop/Mobile)**		**2 hours**

	Security in Cyber Shopping	10	**Privacy Protection through Cryptography** • Use tools such as Gnu Privacy Guard (GPG) to encrypt, decrypt, sign, and verify files.	Use following software tool: Gnu Privacy Guard (GPG)	**2 hours**
		11	**Security & Privacy** • Download and install Best Free Keylogger (BFK). • Log a computer's keystrokes using BFK. • Research methods to defend against keyloggers. • Explore the ethics of using keyloggers.	Use following software tool: Best Free Keylogger (BFK).	**2 hours**
		12	**Online Shopping** • Consider any two online shopping sites and compare their features(Products, usability, policy to attract customers, payment methods, safety practices etc…)	Internet & Internet Browser	**2 hours**
		13	**Online Banking** • Consider any online banking sites Find the features(Banking services, financial transactions, security practices etc…)	Internet & Internet Browser	**2 hours**
IV	**Cyber Laws and**	14	**Digital Evidence** • Make use of any Forensics investigation tools such as winhex and carry following tasks: • Cloning and imaging of removable device, Examination of the	Use following software tools: • Winhex	**2 hours**

	Cyber Forensic		complete directory structure, calculate hash ,Compare hash after minor file modification etc...)		
		15	**Forensic Investigation Steps** • Make use of any Forensics investigation tools such as winhex and carry detailed forensic investigation steps and prepare the report. Include: • Evidence Collection, • Preserving Digital Evidence – Special Considerations, • Recovering Digital Evidence, • Documenting Evidence, • Documenting Evidence Analysis.	Use following software tools: • Winhex	2

Note:

1. IT lab Component shall carry no credit.
2. There shall be altogether 15 Lab sessions of 2 hours duration per batch of 20 Students.

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SEMESTER III

Business Finance (CC 9)

(100 Marks, 60 Lectures)

UNIT I: Nature and Objectives of Business Finance (25 Marks 15 Lectures)
Meaning of business finance, business finance v/s corporate finance, role of business finance in an organization, principles of business finance, meaning of financial planning, steps in financial planning, significance of financial planning, essential features of a good financial plan, types of financial plan.

UNIT II: Classification of Capital (25 Marks-15 Lectures)
Meaning of Capital, Classification of capital, factors determining capital requirements, meaning, features and sources of fixed capital, factors determining fixed capital requirements, importance of adequate fixed capital; meaning, features and sources of working capital, Factors determining working capital requirements, significance of adequate Working capital, types of working capital

UNIT III: Capitalisation (25 Marks-15 Lectures)
Meaning of capitalization, Theories of capitalization, Cost theory v/s Earnings theory, overcapitalization and under capitalization, meaning, causes, effects and remedies; overcapitalization v/s under capitalization; balanced capitalization, meaning and importance

UNIT IV: Capital Structure (25 Marks–15 Lectures)
Concept of capital structure, Meaning and importance of capital structure, factors affecting capital structure, concept of financial structure, capital gearing, meaning, types and advantages, trading on equity, meaning, types and advantages and limitations.

References:

Books

1. Sharma, R.K. & Gupta, Shashi., K. *Business Organisation and Management*
2. Srivastava, R.M. *Essentials of Business Finance*, Himalaya Publishing House, Kalyani Publications.
3. Singh, Preeti. Investment Management. Himalaya Publishing House
4. Kale, N.G. *Business Organisation.* Manisha Publications.
5. Sontakki C.N., *Business Organisation*, Seth Publishers
6. Gordon, E. & Natarajan, K. Financial Markets and Institutions, Himalaya Publishing House.
7. Sadak, H. *Mutual Funds in India*, Response Books, Sage Publications.

B.COM
SEMESTER III
Fundamentals of Cost Accounting (CC10)
(100 Marks, 60 Lectures)

Objective: To familiarize students to elements and methods of cost accounting

Unit I Introduction to Cost Accounting (10 Marks, 6 Lectures)
Concept of cost, Costing, Cost accounting, Objectives, Importance of cost accounting, Cost unit, Cost centre, Classification of cost, Distinction between cost accounting and financial accounting.

Unit II Unit costing (30 Marks, 18 Lectures)
Accounting and control of Waste, Scrap, Spoilage and Defective works Cost sheet and Estimated cost sheet .

Unit III Contract costing (30 Marks , 18 Lectures)
Introduction to relevant Accounting Standard, preparation of contract account for one year, more than one year and contract account with balance sheet.

Unit IV Process costing (30 Marks, 18 Lectures)
Features and application of Process Costing, Elements of Production Cost, Accounting for normal loss, abnormal loss, scrap and abnormal gain. Joint – products and by – products.

References:

1. Jain S. P and K.L. Narang- *Cost Accounting Principles and practice* – Kalyani Publishers, Ludhiana.
2. Bhar, B.K. *Cost Accounting- Methods & Problems ,* Academic Publishers Calcutta 700073.
3. Kishore R. *Cost Accounting*- Taxmann Allied Service Pvt.Ltd.New Delhi.
4. Iyenger, S. P. *Cost Accounting*. S. chand& Co. New Delhi
5. Khana, B. S. & J. M. Pandey- *Practical costing.* S. Chand & Co. New Delhi
6. Khan, M. Y. & P.K. Jain- *Theory and Problems of Management and Cost Accounting*- Tata McGraw Hill Publishing co. Ltd. New Delhi
7. Lal, J. *Cost Accounting.* Tata McGraw –Hill Publishing co. Ltd. New Delhi
8. Nigam, B. & J.C. Jain. *Cost Accounting Principles & Practice.* Prentice- Hall of India Pvt. Ltd., New Delhi

B. COM
SEMESTER III
Entrepreneurship Development (CC 11)
(100 Marks- 60 Lectures)

OBJECTIVE: To motivate the students to be self employed. From the syllabus they will get theoretical knowledge on how to start an enterprise of their own. Practical knowledge can be obtained through assignments like writing a project report to obtain finance or interviewing existing entrepreneurs.

UNIT I Introduction (40 Marks-24 Lectures)

a) Definition and concept of entrepreneur
Qualities, Skills and Functions of entrepreneur
b)Origin and development of entrepreneurship.
Theories of entrepreneurship
Role of entrepreneur in economic development
Entrepreneur V/s Intrapreneur, features of Intrapreneurs.
Types of entrepreneurs
Recent trends-sociopreneur, edupreneur, ecopreneur, and agropreneur
Women entrepreneurs. Self Help Groups.

UNIT II Identification of Business Opportunities (20Marks-12 lectures)
SWOT analysis
Environment scanning-meaning and benefits
Factors considered for environment scanning- socio-cultural, economic, technical, demographic, legal and political, geographical and international factors.
Sources and steps involved in identification of business opportunities.
Market research- meaning, need for market research, techniques in market research- field survey techniques, test marketing, Delphi technique, desk research ,observation method and experiment method.

UNIT III Project formulation (20 Marks-12 lectures)
Meaning and concept of project formulation
Stages in project formulation
a)Elements of project formulation-feasibility analysis, techno-economic analysis, project design and network analysis, input analysis, financial analysis.
b)Project Appraisal-concept and features, methods of appraisal-break even analysis, cost benefit analysis, social cost benefit analysis and profitability analysis.
c)Project Selection-meaning,
Factors to be considered for project selection-rawmaterials, credit facilities, market forces, competition, government policy, incentives and subsidies, labour force, capital requirements, infrastructure, profitability .
d)Project report-meaning importance and contents of project report.

UNIT IV Innovation in Entrepreneurship (20 Marks-12 lectures)

Purposeful innovation-unexpected success/failure, process, need, change in demography, industry and market structure, incongruities, change in perception, new knowledge

Principles of purposeful innovation

Incubation Centres-meaning, services and role of incubation centres, study of incubation centres in Goa.

References:

1. Desai, Vasant. *Dynamics of Entrepreneurship Development*
2. Drucker, Peter. *Innovation and Entrepreneurship-Practice and Principles*
3. Mascarenhas, Romeo. *Entrepreneurship Management.* Vipul Prakashan
4. Paul, Jose; Kumar, Ajith. *Entrepreneurship Development and Management.* Himalaya publishing house
5. Khanka, S.S. *Entrepreneurial Development.* Sultan Chand publication
6. Gordon, Natarajan. *Entrepreneurship Development.* Himalaya publishing house
7. Gupta, C.B., Srinivasan *Entrepreneurial Development.* Sultan Chand
8. Pednekar, Achut P. *Entrepreneurship Management.* Himalaya publishing house

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SEMESTER III
Business Laws (SEC 1)
(100 Marks, 60 Lectures)

Objective: To impart basic knowledge of the important business legislations.

Unit 1: The Indian Contract Act, 1872 (30 Marks, 24 Lectures)

a) General principles of contract

i) Contract – meaning, characteristics and kinds
ii) Essentials of a valid contract - Offer and acceptance, consideration, contractual capacity, free consent, legality of objects.
iii) Void agreements
iv) Discharge of a contract – modes of discharge, breach and remedies against breach of contract.
v) Contingent contracts
vi) Quasi - contracts

b) Specific Contracts

i) Contract of Indemnity and Guarantee – meaning, rights and duties of surety,
ii) Contract of Bailment – meaning, rights and duties of Bailor & Bailee
iii) Contract of Agency – meaning, modes of creation of agency, rights & duties of Agent & Principal

Unit II: The Sale of Goods Act, 1930 (20 Marks, 12 Lectures)

i) Contract of sale, meaning and difference between sale and agreement to sell.
ii) Conditions and warranties
iii) Transfer of ownership in goods including sale by a non-owner
iv) Performance of contract of sale
v) Unpaid seller – meaning, rights of an unpaid seller against the goods and the buyer.

Unit III: Arbitration and Conciliation Act, 1996 (25 Marks, 12 Lectures)

i) Introduction
ii) Arbitration
iii) Arbitration Agreement
iv) Arbitral Tribunal and arbitral procedure
v) Jurisdiction of Arbitral Tribunal
vi) Conduct of Arbitral proceedings
vii) Making of Arbitral Award
viii) Termination of Arbitral Proceedings
ix) Conciliation – meaning,
x) Procedure for commencement of proceedings,
xi) Appointment of conciliator,
xii) Conciliation procedure

xii) Role of conciliator,
xiii) Termination of conciliation proceedings
xiv) Status of settlement by conciliator

Unit 4: The Negotiable Instruments Act 1881 (25 Marks, 12 Lectures)

i) Meaning, Characteristics, and Types of Negotiable Instruments: Promissory Note, Bill of Exchange, Cheque
ii) Holder and Holder in Due Course, Privileges of Holder in Due Course.
iii) Negotiation: Types of Endorsements
iv) Crossing of Cheque
v) Bouncing of Cheque

Suggested Readings:

1. M.C. Kuchhal, and Vivek Kuchhal, Business Law, Vikas Publishing House, New Delhi.
2. Avtar Singh, Business Law, Eastern Book Company, Lucknow.
3. Ravinder Kumar, Legal Aspects of Business, Cengage Learning
4. SN Maheshwari and SK Maheshwari, Business Law, National Publishing House, New Delhi.
5. Aggarwal S K, Business Law, Galgotia Publishers Company, New Delhi.
6. Bhushan Kumar Goyal and Jain Kinneri, Business Laws, International Book House
7. Sushma Arora, Business Laws, Taxmann Pulications.
8. Akhileshwar Pathak, Legal Aspects of Business, McGraw Hill Education, 6th ed.
9. P C Tulsian and Bharat Tulsian, Business Law, McGraw Hill Education
10. Sharma, J.P. and Sunaina Kanojia, Business Laws, Ane Books Pvt. Ltd., New Delhi.
11. Business Law *for Management* - by K.R.Bulchandani
12. Business Law - by Prof. Manohar R. Wadhwani
13. Business Law – by S.S. Gulshan, G.K. Kapoor
14. A textbook of Business Law – by P.P.S. Gogna
15. Arbitration and Alternative Dispute Resolution - by Dr. N.V.Paranjape
16. Law of Arbitration and Conciliation - by Dr. Avtar Singh

Note: Latest edition of text books may be used.

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SEMESTER III
Business Statistics– I (GE 3)
(100 Marks - 60 Lectures)

Unit I Data Analysis (15 Lectures -24 marks)

Introduction:Meaning and definition of Statistics,function,scope and limitation of Statistics, Basic Statistical concepts: Population, sample, variate, attribute, parameter and Statistic.

Types of data-Primary and secondary data, Sources and methods of collecting data, classification-univariate frequency distribution and questionnaire design.

Graphs and diagrams-Frequency polygon,frequency curve and ogives, Simple, multiple, subdivided bar diagram, pie chart.

Unit II Summarisation Measures (24 Lectures -40 marks)

Measures of Central Tendency: Meaning, objectives and requirement of a good measure of central tendency, Arithmetic Mean,Mode and Median(with & without grouping),Harmonic Mean(ungrouped data), Quartiles, deciles and percentiles.

Measures of Dispersion: Meaning,objectives and requirement of a good measure of dispersion,absolute and relative measure, Range,quartile deviation, mean deviation,standard deviation, Coefficient of range, , Coefficient of quartile deviation, , Coefficient of mean deviation, Coefficient of variation, Skewness- Karl Pearson's and Bowley's measure and coefficient of Skewness.

Unit III Index Numbers (13 Lectures -18 marks)

Meaning,types, uses and limitations of index numbers, Methods of constructing price and quantity Index numbers by weighted and unweighted methods, Weighted aggregative-Laspeyre's, Paasche's , Fishers and Value index numbers,Weighted average of price relatives, fixed base,chain base,shifting of base, deflating and splicing of Index numbers, cost of living Index numbers.

Unit IV Analysis of Time series (8 Lectures -18 marks)

Components andmodels of Time series, Measurement of trend-semi averages, moving averages, freehand and least square method(linear and non linear).

References:

1. Gupta S.P.,*Statistical Methods*, Sultan Chand & sons.
2. Gupta C.B., *Fundamentals of Statistics*, Himalaya Publishing House.
3. Shah, R.J., *Statistical Methods*.
4. Mazumdar Neeta, *Statistical Techniques*, RajhaunsVitaran.

B.COM
SEMESTER III
Economics of Resources (GE 4)
(100 Marks, 60 Lectures)

Objectives:

1.To familiarize the students with concepts and issues in the realm environmental economics and sustainable development.

2. To introduce the students to economics of resources and their use against the background of growing global concerns over the future of the world economy due to the rapid depletion of natural resources

3. To help the students understand the significance of the management of environment and resources for business.

4. To introduce the students to the economics of human resource development

Unit I Economics of the Environment (25 Marks, 15Lectures)

Environmental Economics- definition and meaning; linkages between economy and environment, relevance of environmental economics for business, trade-off between conventional economic output and environmental quality (what is the trade-off, why it occurs, what can be done).Economic efficiency and markets-meaning of economic efficiency and social efficiency, relation between markets and economic and social efficiency, external costs, private and social cost, external benefits, externalities and market failure, over-use of open-access resources. The market approach to environmental problems- internalization of external cost, pollution charges, environmental subsidies, carbon credits(meaning of each, how they work through the market mechanism) Environmental Impact Assessment (EIA) of projects- meaning, benefits.

Unit II Economics of Resources (20 Marks, 12 Lectures)

Definition of resource, classification, meaning and importance of each, Economic development and resource use- optimist and pessimist models- their major conclusions, Sustainable development- definition and meaning.

Unit III Economics of Energy and Water (25 Marks, 15 Lectures)

Economics of energy: meaning of energy; Energy and economic growth, criticality of energy as a resource, energy security, dependence on imports, inflation; Energy availability at the global and national levels, demand-supply gaps, implications, measures to reduce the gap; energy pricing in India; energy audit- meaning, importance; current energy scenario in India .

Economics of water: Economic importance of water; Demand for water- domestic and commercial (industry, agriculture); Global water scarcity; Water scarcity in India- extent, causes, attempted solution; Pricing of water -importance, water pricing in India; Challenges in the water sector-scarcity, sharing of water, pollution, groundwater issues, pricing, water quality…..; National Water Policy- proposed measures to meet challenges.

Unit IV Human Resource Economics (30 Marks ,18 Lectures)

Human resource development- role of education and health in human resource development; Link between education and economic growth and development (productivity, earnings, family size, family health, improved standards of living, adoption of new technology…); benefits of education-direct, indirect, private and social benefits; education as a merit good; expenditure on education in India and its composition (primary, secondary and higher education; public and private).

Link between health and economic growth and development (productivity, earnings, money saved can be spent elsewhere, saving and capital formation, better educational performance of children, smaller families….); determinants of health (income and social status, education, physical environment, health services…) ; health status indicators in India- birth rate, death rate, life expectancy, mortality (infant, child and maternal mortality rates), morbidity; recent trends in health status in India; economic dimension of healthcare - demand and supply of health care; challenges to public health in India; financing of health services - private and public expenditure on health; health insurance.

References:

1. Field, Barry. C. & Field, M. K. 2002. Environmental Economics: An Introduction. McGraw Hill, Singapore.
2. Field, Barry. C. 2001. Natural Resource Economics: An Introduction. McGraw Hill, Singapore.
3. Bhattacharya, R.N. 2001. Environmental Economics: An Indian Perspective. Oxford University Press, New Delhi.
4. Bromley, D. W. 1986. Natural Resource Economics, Policy problems and Contemporary Analysis. Kluwer, Boston.ed.
5. Dorfman, M. R. 1972. Economics of the Environment. W.W. Norton & Co. New York.
6. Dutt, R. and Sundharam, K.P.M. (most recent edition). Indian Economy. Sultan Chand and Co. New Delhi.
7. Hanley, N., J. F. Shogren& B. White. 2001. Environmental Economics in Theory and Practice. Macmillan. London.
8. Hartwick, J. M. &Olewiler, N.D. 1998.The Economics of Natural Resource Use. Harper & Row, Mass., USA. 2nd ed.
9. Hussen, A. 2004. Principles of Environmental Economics. Routledge. London.
10. Karpagam, M. 2001. Environmental Economics. Sterling Publishers. New Delhi.
11. Merret, S. 1997. Introduction to the Economics of Water Resources: An International Perspective. UCL Press.
12. Perman, R. Ma, Y., McGilvray, J. and Common, M. 2003. Natural Resource and Environmental Economics. Pearson Education Ltd.3rd ed.
13. Shankar, U. 2001. Environmental Economics. Oxford University Press. New Delhi.ed.
14. Singh, K. 1994. Managing Common Pool Resources: Principles and Case Studies. Oxford University Press. New Delhi.
15. Singh,K. &Shishodia, A. 2007. Environmental Economics: Theory and Applications. Sage. New Delhi.
16. Thompson, D. 2003. The Economics of Environmental Protection. Winthrop Publishers. Cambridge, Mass.

17. Tietenberg T. H. 1994. EnvironmentalEconomics& Policy. Harper Collins. New York.
18. Tietenberg T. H.2006. Environmental and Natural Resource Economics.Addison- Wesley. New York.7th ed.
19. WHO. 2001. Macroeconomics ad Health: Investing in Health for Economic Development, Report of the Commission on Macroeconomics and Health, WHO.
20. http://www.who.int/macrohealth/action/sintesis 15novingles.pdf
21. Winpenny, J. 1994. Managing Water as an Economic Resource, Routledge
22. The Hindu. Survey of Environment: Various issues.
23. World Resources Institute: World Resources, Annual Reports, Other publications.

Useful websites:

World Water Council: http://www.worldwater council.org

Water Resources Ministry: http:// wrmin.nic.in

World Health Organization: http:// www. who.int

B.COM
SEMESTER IV
Fundamentals of Investment (CC 12)
(100 Marks, 60 Lectures)

Objective: To familiarize the students with different investment alternatives, introduce them to the framework of their analysis and valuation and highlight the role of investor protection.

Unit I Investment Environment (30 Marks, 20 Lectures)

The investment decision process, Types of Investments – Commodities, Real Estate and Financial Assets (Equity, Mutual funds, Debt), the Indian securities market, the market participants (Stock exchanges, Stock brokers, Clearing House, Depositories, Depository Participants, FIIs, Domestic institutional investors, Individual investors), Online and offline trading in securities, security market indices, sources of financial information, Concept of return and risk, Impact of Taxes and Inflation on returns.

Unit II Analysis of Equity and Debt Instruments (30 Marks, 20 Lectures)

(a) Fixed Income Securities

Bond features, types of bonds, estimating bond yields, Bond Pricing, types of bond risks, default risk and credit rating, Bond market indices.

(b) **Approaches to Equity Analysis**

Introduction to Fundamental Analysis, Technical Analysis, dividend capitalisation models, and price-earnings multiple approach to equity valuation, Intrinsic value, Price to Book value ratio.

Unit III Portfolio Analysis and Financial Derivatives (20 Marks, 10 Lectures)

Portfolio and Diversification, Portfolio Risk and Return; Mutual Funds; Introduction to Financial Derivatives; Financial Derivatives Markets in India

Unit IV: Investor Protection (20 Marks, 10 Lectures)

Role of SEBI and stock exchanges in investor protection; Investor grievances and their redressal system, insider trading, investor awareness and activism.

References:

1. Jones, C.P. Investments Analysis and Management, Wiley, 8th ed.
2. Chandra, Prasanna. Investment Analysis and Portfolio Management. McGraw Hill Education
3. Rustogi, R.P. Fundamentals of Investment. Sultan Chand & Sons, New Delhi.
4. Vohra N.D. & Bagri B.R., Futures and Options, McGraw Hill Education
5. Mayo. An Introduction to Investment. Cengage Learning.

B.COM
SEMESTER IV
Income Tax (Direct Tax) (CC 13)

Marks: 100 **Lectures: 60**

Learning Objective: To provide basic knowledge of concepts, principles and provisions of Income-tax Act, 1961 and the relevant Rules

Unit I : **INTRODUCTION** **(20-25marks, 12 lectures)**

a) BASIC CONCEPTS*:*

Income-u/s 2(24), Person -u/s 2(31), Assessee- u/s 2(7), Assessment- u/s 2(8), Assessment Year- u/s 2(9), Previous Year- u/s 3, Business- u/s 2(13), Company -u/s 2(17), Gross Total Income u/s. 80 (B) (5), Permanent Account Number (PAN)-u/s 139A*.*

b) SCOPE OF INCOME & RESIDENTIAL STATUS**:**

Scope of Total Income u/s 5.

Apportionment of Income between spouses governed by Portuguese Civil Code u/s5A.

Residential Status in India u/s 6: Sections 6(1), 6(6) (a), 6(2), 6(6) (b), 6(3), 6(4).

Practical problems to cover determination of residential status of Individuals only

c) EXEMPTIONS & EXCLUSIONS U/s 10**:**

1. Leave Travel Concession - u/s 10(5).
2. Gratuity–u/s 10(10)(only for theory).
3 . Compensation received at the time of Voluntary Retirement - u/s 10(10C).
4. Amount received under Life Insurance Policy - u/s 10(10D).
5. Payment received from Provident Fund-u/s 10(11), (12).
6. Payment received from approved superannuation fund- u/s 10(13).
7. House Rent Allowance - u/s 10(13A).
8. Special allowance - u/s 10(14):

Conveyance, Daily, Uniform, Helper, Research, Transport, Travelling, Children's Education, & Children's Hostel Expenditure Allowance.

9. Interest on Securities- u/s 10(15).
10. Dividends & Interest on Units - u/s 10(34), (35).

Unit II : COMPUTATION OF INCOME FROM SALARIES: (30-35 Marks, 15 lectures)

Sections 15, 16 & 17 Inclusive of allowances (exclusive of valuation of perquisites)

(Only elementary problems on computation of income from salaries of an individual assessee)

Unit III: COMPUTATION OF PROFITS & GAINS OF BUSINESS OR PROFESSION:

(30-35 Marks, 20 lectures)

Sections: 28,29,30,31,32(excluding Depreciation Rates)

Section 36: Restricted to following clauses:

i. Section 36 (1)(i)- Insurance premium
ii. Section 36 (1)(ii)- Bonus/Commission to employees.
iii. Section 36 (1)(iii)- Interest on Borrowed Capital

iv. Section 36 (1)(iv) - Employer's Contribution to RPF& Approved Superannuation Fund
v. Section 36 (1)(v) - Contribution towards Approved Gratuity Fund
vi. Section 36 (1)(vii) Bad Debts
Section 37(1) - General Deduction
Section 37(2B) - Advertisement Expenses in Souvenir etc. of a political party.
Section 40(a), 40A (2), 40A (3)
Section 43(B) - Disallowance of unpaid liabilities.
Section 44AD & 44AE

Unit IV: (20-25 Marks, 13 lectures)

a) Permissible Deductions under Chapter VI-A

Sections 80 C, 80CCC, 80CCD, 80 CCE, 80D, 80E, 80G, 80TTA, 80U.

b) Computation of total income of an individual assessee.

c) Computation of tax liability of an individual assessee, Rebate under Section 87A.

Books for Study and Reference:

1. Singhania, Vinod K., & Monica Singhania, Student's Guide to Income Tax, University edition, Taxmann Publications Pvt. Ltd,, New Delhi.
2. Ahuja, Girish and Ravi Gupta, Systematic Approach to Income Tax, Bharat Law House, Delhi.
3. Manoharan T.N., Direct Tax Laws, Snow White Publications,
4. Singhania V.K. Students' guide to Income Tax , Taxmann Publications
5. Hariharan.N., Income Tax Law& Practice Vijay Nicole Imprints Pvt.Ltd.
6. Singhania V.K., & Singahania K., Direct Taxes Law & Practice, Taxmann Publications.
7. Mehrotra H.C., Income Tax Law & Practice, Sahitya Bhavan , Agra
8. Prasad B., Income Tax Law & Practice, Wishwa Prakashan
9. Pagare D., Income Tax Law & Practice, Sultan Chand & Sons, New Delhi
10. Gaur V.P., & Narang.D.B., Income Tax Law & Practice, Kalyani Publications.

PATTERN OF QUESTION PAPER

General guidelines**:**

1. The question paper shall have total of 6 questions carrying 80 marks and shall be of 2 hours duration.
2. Four questions of 20 marks each to be answered.
3. Question No. 1 to be compulsory (four short problems of 5 marks each)
4. Any three questions from the remaining five questions to be answered.
5. A question may be sub-divided if necessary.

INCOME TAX (DIRECT TAX)
Semester IV

Duration: 2 Hours Max. Marks: 80

Instructions: (i) Q1. is compulsory
(ii) Answer any 3 from the remaining questions

Q1. Practical type, four sub-questions, carrying 5 marks each, covering the entire syllabus. (Marks-20)

Q2. Practical Question on Unit II i.e. Computation of Income from 'Salaries covering deductions under Chapter VI-A, and computation of tax liability of individual assessees only. (Marks -20)

Q3. Practical Question on Unit III i.e. computation of Profits and Gains from Business or Profession, covering deductions under Chapter VI-A and computation of tax liability of individual assessees only. (Marks-20)

Q4. Answer any four out of the following in relation to the Income Tax Act: (Marks-20)

a. Short Answer type Q. on Unit I
b. Short Answer type Q. on Unit I
c. Short Answer type Q. on Unit II
d. Short Answer type Q. on Unit III
e. Short Answer type Q. on Unit IV

Q5. Answer any four out of the following in relation to the Income Tax Act: (Marks-20)

a. Short Answer type Q. on Unit I
b. Short Answer type Q. on Unit II
c. Short Answer type Q. on Unit II
d. Short Answer type Q. on Unit III
e. Short Answer type Q. on Unit IV

Q6. Answer any four out of the following in relation to the Income Tax Act: (Marks-20)

a. Short Answer type Q. on Unit I
b. Short Answer type Q. on Unit II
c. Short Answer type Q. on Unit III
d. Short Answer type Q. on Unit IV
e. Short Answer type Q. on Unit IV

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SEMESTER IV
ACCOUNTING
Accounting For Service Organizations (CC 14)
(100 Marks – 60 Lectures)

Objectives: To familiarize the students with practical aspects of accounting for service organizations such as banks, general insurance companies, underwriters and hotels

Unit I Accounting for Banking Companies (40 Marks, 18 Lectures)

Meaning of Banking and Banking Company, Brief idea about- Important Legal Provisions affecting the accounts, Different types of Deposits, Different types of Advances, Other Facilities extended to Customers.

Practical problems to cover preparation of Balance Sheet (Form A) and Profit and Loss Account (Form B) in Vertical Form with Separate Schedules.

Unit II Accounting for General Insurance Companies (20 Marks, 18 Lectures)

Types of Insurance, Accounts of General Insurance Company. Final accounts to be prepared as per IRDA and shall comply with the requirement of Schedule B.

Revenue account to be prepared under FORM B-RA.

Profit & Loss A/C to be prepared under FORM B-PL.

Balance Sheet to be prepared under FORM B-BS.

Revenue a/c, P/L A/C Balance sheet to be prepared as per information provided.

Unit III Accounting for Underwriting of Shares and Debentures
(20 Marks, 12 Lectures)

Meaning, types of underwriting, Calculation of liability of Underwriter-Full underwriting – Partial underwriting – Sole underwriters – Joint underwriters – underwriting commission – Journal entries and Ledger Accounts.

Unit IV Accounting for Hotels (20 Marks, 12 Lectures)

Concepts, Visitors Ledger (theory only) and final Accounts of Hotels under sole proprietorship, partnership and joint stock company (in case of company-as per Schedule III, Companies Act 2013).

References:

1. Chowdhary, Chopde, & Pednekar, M. *Financial Accounting, Auditing & Taxation.* Mumbai: Sheth Publishers.
2. Jain, & Narang. *Advanced Accountancy.* New Delhi: Kalyani Publishers.
3. Monga, J. R., & Ahuja, G. *Advanced Accounting* (Vols. I, II). Noida: Mayoor Paperback.
4. Mukherjee, A., & Hanif, M. (2002). *Modern Accountancy* (Vol. II). New Delhi: Tata McGraw Hill.
5. Paul, S. K. *Accountancy* (Vols. I, II). Calcutta: New Central Book Agency.

6. Shukla, M. C., & Grewal, T. S. *Advanced Accounts.* New Delhi: S. Chand & Co .
7. Tulsian, P. C. *Accountancy.* New Delhi: S. Chand & Co.

Websites:
www.icai.org

Question Paper guidelines

- Two questions from Unit I and Unit II each (Banking and insurance)
- One question on preparation of Profit and Loss Statement and the second question to be on preparation of Balance Sheet.
- One question each from Unit III and Unit IV each.

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SEMESTER -IV
Companies Act and IPR Laws (SEC 2)
(100 Marks, 60 Lectures)

Objective: To impart basic knowledge of the provisions of the Companies Act 2013, The Patents Act, 1970, Indian Copyright Act, 1957, The Trademarks Act, 1999 and The Designs Act, 2000.

UNIT 1: Introduction to Regulatory Framework of Companies (40 Marks, 24 lectures)

Characteristics of a company; lifting of corporate veil; types of companies including one person company, small company, and dormant company; association not for profit; illegal association; formation of company, on-line filing of documents, promoters, their legal position, pre-incorporation contract; on-line registration of a company.

Memorandum of association, Articles of association, Doctrine of constructive notice and indoor management, prospector-shelf and red herring prospectus, misstatement in prospectus, GDR; book-building; issue, allotment and forfeiture of share, transmission of shares, buyback and provisions regarding buyback; issue of bonus shares.

Administration of Company Law [including National Company Law Tribunal (NCLT), National Company Law Appellate Tribunal (NCLAT), Special Courts]

UNIT 2: Management of Companies (20 Marks, 12 Lectures)

Classification of directors, women directors, independent director, small shareholders' director; disqualifications, director identity number (DIN); appointment; Legal positions, powers and duties; removal of directors.

Key managerial personnel; Meetings: Meetings of shareholders and board of directors; Types of meetings, Convening and conduct of meetings, Requisites of a valid meeting, postal ballot, meeting through video conferencing, e-voting.

Committees of Board of Directors - Audit Committee, Nomination and Remuneration Committee, Stakeholders Relationship Committee, Corporate Social Responsibility Committee

UNIT 3: Books of Accounts, Winding-up and Insider Trading (20 Marks, 12 lectures)

Provisions relating to Books of Accounts, Auditors' Appointment, Auditor's Report.

Winding Up: Concept and modes of Winding Up.

Insider Trading and Whistle Blowing: Meaning & legal provisions of insider trading; Whistleblowing: Concept and Mechanism.

Unit 4 : Intellectual Property Rights (20 Marks, 12 Lectures)

Meaning of Intellectual Property, Meaning and Registration of Patent , Patentable Invention, Compulsory Licensing, Remedies in case of Violation of Patent.

Meaning of Design, Registration Procedure of Design, Piracy of Registered Design , Remedies for Violation of Design.

Copyright - Meaning, Registration of Copyright, Infringement of Copyright, Broadcasting Right, Performer's Right.

Trademark - Meaning, Procedure for Registration of Trademark, , Deceptively Similar Mark, , Remedies in Case of Violation of Trademarks and Copyright

References:

1.MCKuchhal, Modern Indian Company Law, ShriMahavir Book Depot (Publishers), Delhi.
2. GK Kapoor and Sanjay Dhamija, Company Law, Bharat Law House, Delhi.
3. Anil Kumar, Corporate Laws, Indian Book House, Delhi
4. ReenaChadha and SumantChadha, Corporate Laws, Scholar Tech Press, Delhi.
5. Avtar Singh, Introduction to Company Law, Eastern Book Company
6. Ramaiya, A Guide to Companies Act, LexisNexis, Wadhwa and Buttersworth.
7. Manual of Companies Act, Corporate Laws and SEBI Guideline, Bharat Law House, NewDelhi,.
8. A Compendium of Companies Act 2013, along with Rules, by TaxmannPublications.
9. Gower and Davies, Principles of Modern Company Law, Sweet & Maxwell
10. Sharma, J.P., An Easy Approach to Corporate Laws, Ane Books Pvt. Ltd., New Delhi
11. Dr. BL Wadhera , Intellectual Property Law, Delhi, Universal Publishing Co. Pvt. Ltd
12.P. Narayanan , Intellectual Property Law, Kolkata, New Delhi, Eastern Law House
13. KashiNath Jena, Intellectual Property Rights, Globalisation and Global Relations , Abhijeet Publications, Delh
14. A V NarsimhaRao , Law of Patents Concepts and Cases , ICFAI Universiy Press

Government of India Websites for Registration of Companies, Patents, Copyright, Trademarks and Designs

1. www.mca.gov.in
2. http://www.ipindia.nic.in/
3. http://copyright.gov.in/

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SEMESTER IV
Business Statistics – II (GE 5)
(100 Marks - 60 Lectures)

Unit I Correlation and Regression Analysis (14Lectures -30marks)

Meaning, Types and Methods of studying Correlation, Scatter Diagram, Karl Pearson's Coefficient of Correlation, Spearman's Rank Coefficient of Correlation, Properties of Coefficient of correlation, Linear Regression, Lines of regression and regression coefficients.

Unit II Probability Theory (21Lectures -36 marks)

Elements of Probability-Random Experiments, events, definition of probability, conditional probability, addition and multiplication theorem, Mathematical expectation.
Theoretical Distribution - Random variable, Binomial, Poisson and Normal Distribution.

Unit III Sampling Theory (14Lectures -16 marks)

Methods of sampling- Census and Sample enumeration, Methods of Sampling: Simple Random Sampling, Systematic Sampling, Stratified Sampling, Cluster Sampling, Purposive Sampling, Quota and multi stage sampling (with examples).
Test of Hypothesis and Estimation- Sampling distribution, Standard error, Sample mean and Sample proportion, confidence limits, population mean and population proportion, Procedure for testing of hypothesis, Type I and Type II error, critical region, level of significance, test of significance for large samples.

Unit IV Interpolation and Extrapolation (11Lectures -18marks)

Finite differences, Forward and Backward differences, Forward and Backward difference table, Newton-Gregory forward and backward difference formula for equidistant values of the argument (only applications), Lagrange's Interpolation formula for unequally spaced points (only applications), Shift Operator, Binomial Expansion method to find missing values (maximum 2 missing values).

References:

1. Gupta S.P., *Statistical Methods*, Sultan Chand & sons.
2. Gupta C.B., *Fundamentals of Statistics*, Himalaya Publishing House.
3. Shah R.J., *Statistical Methods*.
4. Mazumdar Neeta, *Statistical Techniques*, RajhaunsVitaran.
5. Sastry S.S., *Introductory Methods of Numerical Analysis*

B.COM
SEMESTER IV
Indian Economy (GE 6)
(100Marks, 60 Lectures)

Objectives:

1.To enable the students to grasp the current economic problems in India.

2. To highlight the important economic sectors and challenges faced by them in the recent years.

3. To acquaint students with the major policy regimes of government to resolve problems in agriculture, industry and service sector of India.

4. To enable students to understand the change in policy focus from central planning to process of market integration of the Indian Economy with other markets in the world.

Unit I Basic Issues in Economic Development (20 Marks, 10Lectures)

Concept and Measures of Development and Underdevelopment; The concept of economic growth and development, India's recent position in the world economy(based on World Bank GNI per capita), Human Development- concept, the Human Development Index – interpretation of indicator and value & rank of the indicator for India in the world context.

Unit II Basic Features of the Indian Economy (20 Marks,10 Lectures)

Composition of national income and occupational structure, per capita income, inflation, unemployment, income distribution, poverty); India's population demographics [infant mortality rate, literacy rate, gender composition-female male ratio(issue of missing women) and age structure- concept of demographic dividend]

Unit III Policy Regimes, Growth, Development& Structural Change (30 marks, 20Lectures)

a) Review of Planning Policy Experience in India.
b) Policies for Agricultural and Rural Development(since Green Revolution till recently).
c) Major Industrial policies under planning- Nehru-Mahalanobis Model and Liberalization, Globalization and Privatization (LPG) model of industrial growth.Evolution of Disinvestment policy of Government.
d) Economic Reforms since 1991 – in banking sector (Narasimham Committee report main suggestions), capital markets,in the external sector, managed exchangerate system, rupee convertibility, in Government's policy on IT services,FDI,FPI entry in domestic sectors.
e) The experience of Growth, Development and Structural Change in different phases ofgrowth and policy regimes across sectors and regions.

Unit IV Sectorial Trends and Issues (30 Marks, 20 Lectures)

a) Agriculture Sector:

Nature of Indian Agriculture; Brief evaluation of the agricultural sector (achievements and problems); Agricultural Finance (organized-NABARD, Cooperative and Commercial banks, Micro finance institutions, unorganized sources- moneylenders, landlords, traders etc.); Agricultural Marketing (defects and corrective measures); Government Policy Measures : Minimum Support

Price, Food Security- PDS, TDPS (only meaning and challenges), National Food Security Act 2013(only rationale).Farmers Suicides, Land Acquisition.

b) Industry and Services Sector:

Present structure of industry in the Indian economy; Composition of the Indian industrial sector (organized & unorganized sector, public & private sector, large, medium, small and micro industrial units); Brief evaluation of the industrial sector (achievements and weaknesses); Challenges facing Indian manufacturing; MSME sector – role in the Indian economy and challenges faced.Meaning of Services, importance of services sector in the Indian economy; important components – Information Technology and IT-enabled Services, trade, tourism and travel, transport, telecommunications, real estate and construction, financial services, healthcare and education (contribution to GDP, employment, export earnings (where relevant));

c) External Sector:

Structure, Performance and Reforms: Foreign Trade and balance ofPayments: Structural Changes and Performance of India's Foreign Trade and Balance ofPayments (value, volume and direction); Export-import policies and their impact on exports and imports.WTO, meaning of major agreements (AOA, MFA,TRIPS, TRIMS etc.) and impact on India (wherever relevant).

References:

1. Ahluwalia I.J. & I.M.D. Little 1998, India's Economic Reforms & Development: Essays for Manmohan Singh, Oxford University Press, Delhi.
2. Dreze Jean and SenAmartya 1996, Indian Economic Development and Social Opportunity, Oxford University Press, Delhi
3. Datt R. and Sundaram K.P.M., 2015, Indian Economy, S. Chand and Co., New Delhi. 71st edition.
4. Ghosh A. (Latest Edition), Indian Economy, World Press, Calcutta.
5. Kapila Raj and Kapila Uma 2001, India's Economy in the 21st Century: Collection of Select Articles, Academic Foundation, Ghaziabad.
6. Mishra S K and Puri V. K. 2015, Indian Economy, Himalaya Publishing Co., Mumbai. 33rd edition.
7. Patel, I.G. 1998 Economic Reforms and Global Change, Macmillan, Delhi.
8. Patnaik, Prabhat. *Some Indian Debates on Planning*. T. J. Byres (ed.). The IndianEconomy: Major Debates since Independence, OUP.
9. Rangarajan, C. and N. Jadhav. *Issues in Financial Sector Reform*. BimalJalan. (ed). *The Indian Economy*. Oxford University Press, New Delhi.
10. Tandon B.B. and Tandon K.K. 2015, Indian Economy, Tata McGraw Hill, New Delhi.

***J*ournals**

1.EPW

2. Yogana

Websites

1.www.indiabudget.nic.in

2. www.rbi.org.in

3. www.finmin.nic.in
4. www.goidirectory.nic.in

B. COM
SEMESTER V
Industrial Management (CC 15)
(100 Marks- 60 Lectures)

Objective: To enable the students to gain understanding of concepts and environment of industrial management.

Unit I Introduction to Industrial Management, Factory Location and Plant Layout (25 Marks-15 Lectures)

Concept of Industrial Management – Industrial Management Process – Importance of Industrial Management. Scientific approach to Industrial Management- Concept, principles and significance of scientific management.
Meaning and factors determining factory location.
Concept, objectives and importance of plant layout, factors influencing layout, types of layout, problems of layout.

Unit II Industrial Productivity and Work Environment (25 Marks-15 Lectures)

Meaning of Productivity: Factors affecting Industrial Productivity – Significance of higher Industrial Productivity –– Suggestions for Productivity improvement-Role of National Productivity Council.
Work environment- Factors affecting Work Environment - Lighting, air, ventilation, temperature, water, sanitation and noise.
Occupational Hazards- Meaning and types - Biological Hazards, Chemical Hazards and Psychological Hazards. Measures to minimize occupational hazards.

Unit III Total Quality Management (25 Marks-15 Lectures)

Concept of TQM – Principles of TQM – Benefits of TQM.
Methods of TQM – Management methods (i) Benchmarking - Meaning, Types of Benchmarking, Steps in Benchmarking Process(ii) Deming Wheel – Steps in Deming Wheel(iii) Just in time-Objectives and Characteristics of Just in Time (iv) Quality Circles-Concept and features of Quality Circles, (v) Six Sigma
Analytical methods – (i) Critical Path Method – Process and advantages of Critical Path Method(ii) Force Field Analysis – Driving and restraining forces, decision making(iii) Failure Mode and Effect Analysis –Meaning and steps in Failure Mode and effect Analysis
ISO-9000-Concept, Standards and guidelines.

Unit IV Industrial Safety and Occupational Health (25 Marks – 15 Lectures)

Definition of safety – Objectives of Safety Management.
Industrial Accidents – Causes of Accidents (a) Mechanical causes (b) Human Causes
Effects of Industrial accidents on employers, workers and society.
Code of practices for accident prevention.
Occupational Health- Concept- Health program in industries – Role of National Institute of Occupational Health(NIOH) - legal provisions regarding health- OHSAS 18000- (Occupational

Health and Safety Standards) - (In brief)

References:

1) Lundy, J. *Effective Industrial Management.* Eurasia Publishing House, New Delhi.
2) Khanna, O.P. *Industrial Engineering and Management.* Dhanpat Rai Publications, New Delhi.
3) Ahuja, K.K. *Industrial Management and Organisational Behaviour.* Khanna Publishers, Delhi.
4) Rao, Thukaram. *Industrial Management.* Himalaya Publishing House, Mumbai.
5) *Aswathappa*, K. *Factory Organisation and Management*. Himalaya Publishing House, Mumbai.
6) Telsang. Martand. *Industrial and Business Management.* S Chand Publications, New Delhi.
7) Deshpande, A.S. *Industrial Organisation and Management.* Vora & Co Publishers,Mumbai.
8) Rao, Sunil S. & Jain R.K., *Industrial Safety, Health and Environment Management Systems.* Khanna Publishers, Delhi.
9) Sarma, A.M., *Industrial Health and Safety Management.* Himalaya Publishing House, Mumbai.
10) Mukherjee, P.N. *Total Quality Management.* Prentice Hall, New Delhi.
11) *Industrial Safety Chronicle*, Quarterly Journal published by National Safety Council.
12) *Productivity*, Quarterly Journal published by National Productivity Council.

B.COM
SEMESTER V
Indian Monetary and Financial System (CC 16)
(100 Marks , 60 Lectures)

Objectives:
(1)To enable the student to get a basic understanding of the components of money supply and the role of the central bank in controlling money supply.
(2) To familiarize the student with the structure and composition of the financial system.
(3) To facilitate an understanding of the functioning of the money and capital markets in an economy.
(3) To provide the students a basic knowledge of financial institutions and to acquaint them with major financial services in India.

Unit I Money and Money Supply (15 Marks,8 Lectures)
Money: Definition; Origin; components of money - currency, coins and credit; RBI indices of money supply; Role of the RBI in the control of money supply - use of instruments (Quantitative - variable reserve requirements, open market operations, bank rate, repo, reverse repo rates and Qualitative credit controls) in expanding and contracting money supply.

Unit II Financial System and its Components (25 Marks, 12 Lectures)
Structure (formal and informal financial system); Composition of the Indian financial system – Financial markets, financial institutions, financial instruments, financial services; Flow of Funds Matrix; Financial system and economic development; an overview of Indian Financial system.

Unit III Financial Markets (30 Marks, 20 Lectures)
Money Market – Features, functions, organization and instruments; Role of central bank in money markets; Indian money market – an overview.
Capital Markets – Features, functions, organization and instruments; Indian debt market; Indian equity market – primary and secondary markets; Role of stock Exchanges in India; SEBI and Investor protection.

Unit IV Financial Institutions and Services (30 Marks, 20 Lectures)
Commercial banking – introduction, its role in project finance and working capital finance; Development Financial Institutions (DFIs) – An overview and role in Indian economy; Life and non-life insurance companies in India; Mutual funds-introduction and their role in capital market development; Non-banking financial companies (NBFCs); Financial services - Merchant banking, underwriting, credit rating, venture capital finance, financial counseling.

References:

1. Mishra S.K &V.K. Puri (2010), *Indian Economy*, Himalaya Publishing House, Mumbai (Latest edition)
2. M.L.Jinghan, *Money, Banking, International Trade and Public Finance*, Vrinda Publications Pvt. Ltd, New Delhi
3. Bharati V Pathak,(2011) , *The Indian Financial System- Markets, Institutions and Services*, Pearson, Delhi
4. M.Y.Khan,(2011*), Indian Financial System*, Tata Mcgraw Hill Education Private Ltd, New Delhi
5. Machiraju H.R,(2010) *Indian Financial System* , Vikas Publishing House, 4th edition
6. Bhole L.M.,(2009) *Financial Institutions and Markets*, Tata McGraw-Hill, New Delhi
7. Bhole L.M (2000) *Indian Financial System*, Chugh Publications, Allahabad
8. Dutt and Sundaram (2015), *Indian Economy*, S Chand Publishers
9. Prasanna, Chandra, *Financial Management: Theory and Practice*, McGraw- Hill Education
10. Clifford Gomez, *Financial Markets, Institutions and Financial Services*, PHI Learning

Latest editions of suggested books to be referred to

Websites

1. https://rbi.org.in
2. www.nseindia.com
3. www.bseindia.com
4. www.sebi.gov.in

B. COM.
SEMESTER V
Accounting
Income Tax, Service Tax and Goa Value Added Tax (DSE 1)
(100 Marks –60 Lectures)

Objective: *To provide an insight into main provisions of the Income Tax Act, 1961, applicable to the 'assessment year' which shall be same as the 'academic year' (e.g .for academic year 2016-17 the assessment year shall be 2016-17) and to impart some basic knowledge about the Service Tax as amended by the current Finance Act up to June 30 of the academic year. and some basic provisions of the Goa Value Added Tax Act, 2005 applicable to the current financial year, as amended up to November 30 of the immediately preceding the current academic year.*

UNIT I: (30-35 Marks, 15 lectures)

a) COMPUTATION OF INCOME FROM HOUSE PROPERTY

Definition of Annual Value u/s. 2(2).
Sections: 22, 23, 24, 25, 25(AA), 25(B), 26, 27

b) COMPUTATION OF CAPITAL GAINS:

Definition of Capital Asset u/s. 2(14) and Transfer u/s. 2(47).
Sections. 45, 47, 48.
Elementary practical problems may be covered for 5 marks on computation of short term and long terms capital gains including exemptions under sections 54, 54B, 54EC, & 54

c) CLUBBING OF INCOME: only for theory

Sections 60, 64(1)(ii), 64(1)(iv), 64(1)(vi), 64(1)(vii),64(1)(viii) & 64(1A)

UNIT II: (30-35 marks, 20 lectures)

a) INCOME FROM OTHER SOURCES

Section 56,57 ,58
Practical problems of Individual assessees only .

b) PERMISSIBLE DEDUCTIONS FROM GROSS TOTAL INCOME UNDER

CHAPTER VI-A:
Sections 80C, 80CCC, 80 CCD, 80CCE, 80CCG,
80D,80DD,80DDB,80E,80EE,80G,80GG, 80QQB,80RRB, 80TTA,80U

Unit III: (20-25 Marks, 15 lectures)

a) COMPUTATION OF TOTAL INCOME AND TAX LIABILITY:

1. Computation of total income of individual assessees only (excluding capital gains) as under:

a. Computation of Income from house property plus computed figures of Income from Salaries and Profits and Gains of Business or Profession

b. Computation of Income from Other Sources (including exemptions & exclusions – practical part) plus computed figures of Income from Salaries and Income from house property) [Note: Since Income from Salaries and profits and gains of Business or Profession are covered in semester IV as part of core course, computed figures of these two heads must be given here]
2. Computation of income tax:
Rates of income tax for individuals and calculation of income tax and cess at these rates (on given income excluding capital gains and casual income like winnings from lotteries etc. having specific rates of tax for 5 marks may be covered. Rebate u/s87A.

c) ADVANCE PAYMENT OF TAX, FILING OF RETURN & ASSESSMENT, SET OFF & CARRY FORWARD OF LOSSES:

i. Advance payment of tax & payment of tax when demanded, section 210 & 211.
ii. Filing of return & assessment of income; Sections 139. 139(1), (3),(4),(5),(9), 140A, 142(1),(2),(3),143(1),(2),(3), Section 144(Reassessment not included)
iii. Set off & carry forward of losses (only for theory)
Sections 70, 71, 71B, 72, 73, 74,74A

Unit IV: INDIRECT TAXES

a) THE GOA VALUE ADDED TAX (VAT) ACT, 2005. (**10-15marks 5 lectures**)

i) DEFINITIONS:
Business, Dealer, Goods, Declared Goods, Input Tax, Manufacture, Out Put Tax, Person, Sale, Sale Price, Turnover, Works-Contract, Taxable Turnover.
ii) Incidence of Tax, Composition of Tax, Net Tax of Registered Dealers, Input Tax Credit, Payment of Tax.

(Note: In case of Goa VAT, small practical problems of 5 marks on computation of taxable turnover, computation of tax thereon, computation of net tax/tax liability etc. of regular dealers as well as dealers in composition may be covered)

b) SERVICE TAX (10-15 Marks, 5 lectures)

A. NEW SERVICE TAX REGIME BASED ON 'NEGATIVE LIST' APPROACH:
Only brief idea about what is 'negative list' (and not the entire list) to be covered.

B. ADMINISTRATION OF THE ACT AND BASIC PROPOSITIONS:
i). The Administration of the Act.
ii) Basic Propositions:
a) Act does not extend to Jammu & Kashmir
b) Same transaction cannot be taxed more than once under different services
c) Composite Services-Abatement

C. MEGA EXEMPTION NOTIFICATION:
1. Services provided to United Nations or an International Organisation.
2. Services provided to Developer / Unit in Special Economic Zone:
(i) Developer
(ii) SEZ
3. Value of Goods and Materials sold by service provider.

4. Threshold Exemption:

- Exemption to Small Service Providers.
- Persons excluded from Exemption Benefit:

i) Person using brand name / trade name of another person.

ii) Where service tax is payable by persons other than service providers.

- Exemption is linked with preceding year's turnover.

New service providers (new services commenced during the year).

D. FURNISHING OF RETURN:

a) Periodicity for Filing of Return, Due Date for Filing of Return, Delay in Filing of Return (fees for late filing of return), Filing of Revised Return, e- filing of Return.

E. RATE OF SERVICE TAX & PAYMENT OF SERVICE TAX:

Rate of service tax, Monthly/Quarterly Payment of Service Tax, Due Dates for Payment of Service Tax, e-payment of Service Tax, Penalty for Failure to pay Service Tax, Interest for Late Payment of Service Tax

Books for Study and Reference:

A. <u>For Income Tax</u>:

	Title	***Author(s)***	***Publisher***
1	Taxmann's Students Guide to Income Tax	Dr. Vinod Singhania & Monica Singhania.	Taxmann Allied Services Pvt. Ltd
2	Systematic Approach To Income Tax, Service Tax & VAT	Dr. Girish Ahuja, Dr. Ravi Gupta	Bharat Law House
3	Student'S Handbook On Income-Tax, VAT & Service Tax	T. N. Manoharan	Snow White Publications Pvt. Ltd
4	Direct Taxes - Law & Practice	Dr. Vinod K Singhania, Dr Kapil Singhania	Taxmann Allied Services Pvt. Ltd.
5	Income Tax Law and Practice	Gaur V P, Narang D B	Kalyani Publications
6	Income Tax Law And Practice	Bhagwati Prasad	Wishwa Prakashan
7	Income Tax Law and Practice	Dinkar Pagare	Sultan Chand & Sons, New Delhi
8	Income Tax Law & Practice	Dr.H.C.Mehrotra	Sahitya Bhavan, Agra,
9	Direct Taxes – practice and Planning	B.B.Lal	Konark Publishers
10	Income Tax -Law & Practice	B.B.Lal and N.Vashisht	Dorling Kindersley(India) Pvt. Ltd., Delhi-110017
11	Practical approach to Income Tax	Girish Ahuja & Ravi Gupta	Bharat Law House

B. **<u>For Service Tax</u>**:

1. Taxmann's Service Tax – By S.S. Gupta, (as amended to-date)- Taxmann Allied Services Pvt. Ltd.
2. Service Tax-Ready Reckoner- By V.S.Datey, Taxmann Allied Services Pvt. Ltd.

B . For Goa VAT:

a. A Guide to Goa VAT – by Sandip P Bhandare & Mangurish Pai Raikar

b. Goa Value Added Tax Manual – by Prabhu Verlekar (C.A)
c. Website: http://www.goacomtax.gov.in/

PATTERN OF QUESTION PAPER

General guidelines:

1. The question paper shall have total of 6 questions carrying 80 marks and shall be of 2 hours duration.
2. Four questions of 20 marks each to be answered.
3. Question No. 1 to be compulsory (should be a practical question)
4. Any three questions from the remaining five questions to be answered.
5. A question may be sub-divided if necessary.

Specific guidelines :

ACCOUNTING: INCOME TAX, SERVICE TAX & GOA VALUE ADDED TAX

Duration : 2 Hours Max. Marks: 80

Instructions: i) Question 1 is compulsory.
ii) Answer any 3 questions from the remaining.

Q. 1. Practical type four sub-questions carrying 5 marks each, covering entire syllabus (one sub-question should be on Unit IV) (Marks-20)

Q. 2. Practical Question on Unit II i.e. computation of Income from house property. (Marks-20)

Q. 3. Practical Question on Unit I
(a) Computation of Income from other sources. (Marks- 15)
(b) Computation of Capital Gains. (Marks-05)

Q. 4. Answer any Four out of the following in relation to the Income Tax Act: (Marks-20)
a) Short Answer type Q. on Unit I
b) Short Answer type Q. on Unit I
c) Short Answer type Q. on Unit II
d) Short Answer type Q. on Unit II
e) Short Answer type Q. on Unit III

Q. 5 Answer any Four out of the following (Marks-20)
a) Short Answer type Q. on Unit I
b) Short Answer type Q. on Unit II
c) Short Answer type Q. on Unit III
d) Short Answer type Q. on Unit III
e) Short Answer type Q. on Unit IV

Q. 6. Answer any four out of the following (Marks -20)
a) Short Answer type Q. on Unit II

b) Short Answer type Q. on Unit III
c) Short Answer type Q. on Unit III
d) Short Answer type Q. on Unit IV
e) Short Answer type Q. on Unit IV

B.COM
SEMESTER V
Cost Accounting – I (DSE 1)
(100 Marks, 60 Lectures)

Objective: To familiarize students to the basic concepts of cost accounting and elements of cost.

Unit I Cost Concepts and Terminology (20 Marks: 10 Lectures)

Concepts of Cost, Costing, Cost accounting – objectives, principles, Importance, Advantages and Limitations of cost accounting system, Role of cost accounting in managerial decisions, Cost classification, Installation of costing system, Distinction between cost accounting and financial accounting.

Unit II Material cost and control (20 Marks, 10 Lectures)

a) Material cost: Meaning of material, Types of material, Procedure for purchase of materials, Calculation of material Purchase price, Types of purchase system – centralised and decentralised, Accounting for material losses – defective, spoilage and pilferage.

b) Material control: Meaning of material control, Dimensions of material control – cost and quantity, Need for control of materials, Essentials of material control, Advantages of material control.

Unit III Stores control (30 Marks, 20 Lectures)

Location and organisation of stores department, Store keeper and functions of store keeper ,Classification and Codification of material, Inventory control system, Perpetual inventory system-Bin card and Stores ledger, Stores register, ABC Method of stores control, Calculation of Stock levels, Economic ordering quantity.

Unit IV Material Issue Pricing and Control (30 Marks, 20 Lectures)

Methods of pricing of material – Specific price method, First in First out, Last in First out, Average pricing methods (Simple average method, Weighted average method), Standard price method, Highest in first out method, Market price method.

References :-

9. Jain S. P and K.L. Narang- *Cost Accounting Principles and practice* – Kalyani Publishers, Ludhiana.
10. Bhar, B.K. *Cost Accounting- Methods & Problems ,* Academic Publishers Calcutta 700073.
11. Kishore R. *Cost Accounting*- Taxmann Allied Service Pvt.Ltd.New Delhi.
12. Iyenger, S. P. *Cost Accounting*. S. chand& Co. New Delhi
13. Khana, B. S. & J. M. Pandey- *Practical costing.* S. Chand & Co. New Delhi

14. Khan, M. Y. & P.K. Jain- *Theory and Problems of Management and Cost Accounting*- Tata McGraw Hill Publishing co. Ltd. New Delhi
15. Lal, J. *Cost Accounting.* Tata McGraw –Hill Publishing co. Ltd. New Delhi
16. Nigam, B. & J.C. Jain. *Cost Accounting Principles & Practice.* Prentice- Hall of India Pvt. Ltd., New Delhi

B.COM
SEMESTER V
International Marketing Management (DSE 1)
(100 Marks 60 Lectures)

Objective: To develop an understanding of the basic concepts of International marketing

Unit 1 Introduction to International Marketing Management (25 Marks 15 Lectures)

Meaning, Features of International Marketing, Distinction between International and Domestic Marketing, Objectives and Importance of International Marketing, Challenges in International Marketing, Importance of International Marketing Research. International Marketing Environment.

Unit 2 Developing International Marketing. (25 Marks 15 Lectures)

International market entry strategies—Licensing, Joint Ventures and Direct Investment
Export Promotion Organisations- Trade Blocks, Free Trade Zones, Special Economic Zones, Export Processing Zones.

Unit 3 International Product and Price Policy. (25 Marks 15 Lectures)

Global Branding, Trademarks, Packaging and Labelling. International Pricing Strategies, Factors affecting International Product Pricing, Dumping and types of Dumping, Price Quotations.

Unit 4 International Distribution and Promotion Policy. (25 Marks 15 Lectures)

Types of International market Intermediaries, Export Marketing Communication Mix. Importance of Export Marketing Communication, International Advertising, Trade Fairs and Exhibitions.

References:

1 Rao, P. S.. *International Business*- Text and Cases. Himalaya Publishing House.
2 Cherunilam, Francis. *International Trade and Export Management.* Himalaya Publishing House.
3 Kotler, Philip; Keller, Kevin Lane et al. *Marketing Management*- A South Asian Perspective. By Pearson Education.
4 Ramaswamy, V.S. & Namakumari. S. *Marketing Management*. MacMillan.
5 R, Philip & Graham, Cateora John. *International Marketing.* Sage Publications.
6 Ahmed, Mehtab et al. *Export Management.* Sheth publishers.
7 Madan, Pankaj et al. *Marketing Management.* Global Vision Publishing House.
8 Sherlekar, S.A. & Sherlekar, V.S. *Global Marketing Management*. Himalaya Publishing House.

B. COM.
SEMESTER V
BANKING & FINANCIAL SERVICES
Modern Banking Operations and Services (DSE 1)
(100 Marks – 60 Lectures)

Objectives: To acquaint the students with various financial services provided by the banks and enable them to understand current issues and emerging trends in modern banking operations.

Unit I An Overview of Banking & Financial Services (25 Marks - 15 Lectures)
Merchant/Investment banking, Leasing, Factoring, Forfaiting, Mutual Funds, Portfolio Management, Wealth Management, Bancassurance, Loan Syndication, Consumer Finance/Retail Banking, Securitization, Stock broking.

Unit II Modern Services in Banking (25 Marks – 15 Lectures)
Demat Account Services, Fund based and Non fund based services and their types, Wholesale Banking Products; International Banking, Requirements of Importers & Exporters, Remittance Services; Universal Banking.: Banking policy practices for MSMES in view of the MSMED Act 2006, Performance and credit rating of bank borrowers, Role and Functions of CIBIL; Fair Practices Code for Debt Collection; Codes of BCSBI.

Unit III Modern Information Technology in Banking
(25 Marks - 15 Lectures)
Bank Computerization – Need & Importance, Special Electromagnetic Cards: Add-on cards, charge cards, smart cards, green card and Kissan cards, MICR cheques, Core banking; Mobile banking apps and security considerations, Risk Concern Areas relating to IT in Banks, Types of Threats in E-banking; Control Mechanism; Computer Audit; Information system Security; Information System Audit; Evaluation Requirements.

Unit IV Current Issues and Emerging Trends (25 Marks – 15 Lectures)
Financial Inclusion: RBI definition, meaning, recommendations of Rangarajan Committee. Pradhan Mantri Jan-Dhan Yojana.
Corporate Governance in banks: Meaning and importance; issues, principles and practices of corporate governance in Indian banks.
Consolidation in banks: Mergers and Acquisitions – Rationale for M&A in Indian banking; a study of post-reform mergers and acquisitions in the Indian banking sector – their objectives, benefits and problems.
Universal Banking – Meaning, rationale, merits & demerits, Green Banking- Meaning, concept and channels, Shadow Banking.

References
1. Basu P. (ed.) (2005): *India's Financial Sector: Recent Reforms, Future Challenges*

2. Bhole L. M. &Mahakud J. (2009): *Financial Institutions and Markets: Structure, Growth & Innovations*, New Delhi, Tata-McGraw Hill, 5e
3. Deva V.(2005): *E-Banking,* New Delhi, Commonwealth
4. Dewan B. (2011): *E-Commerce*, New Delhi, S. Chand
5. Indian Institute of Banking and Finance (2008): *Principles & Practices of Banking*, New Delhi, Macmillan, 2e
6. Joshi V. C. (2004): *E-finance – Log in to the Future*, New Delhi, Response Khan M. Y.(2004): *Indian Financial System*, New Delhi: Tata-McGraw Hill, 4e
7. Nagarajan N. (ed.) (2004): *Bank Economists' Conference, 2002 – Vol. I & II, Indian Banking: Managing Transformation – Structure*, Hyderabad, ICFAI, 1e
8. M Y. Khan, Financial Services, Tata McGraw Hill.
9. Justin P. &Padmalatha S. (2007): Management of Banking & Financial Services, New Delhi, Pearson
10. Rajashekar N. (ed.) (2001): *Banking in the New Millennium*, Hyderabad, ICFAI Whiting D. P.(1994): *Mastering Banking*, London, Macmillan, 2e
11. Rayudu C.S. (2004): *E-Commerce andE-Business*, Mumbai, Himalaya

Journals:-

1. The Indian Banker, published by Indian Banker Association
2. Bank Quest, published by Indian Institute of Banking and Finance
3. RBI Bulletin (Monthly), published by RBI
4. Trends and Progress of Indian Banking (Annual), published by RBI

Websites:-

1. Reserve Bank of India www.rbi.com
2. Indian Institute of Banking and Financewww.iibf.org.in
3. Indian Bankers Associationwww.iba.org.in
4. Institute of Banking Personal Selectionwww.ibps.com
5. Institute of Finance, Banking and Insurance www.ifbi.com

B. COM.
SEMESTER V
DISCIPINE SPECIFIC ELECTIVE
ACCOUNTING
Auditing –I (DSE 2)
(100 Marks – 60 Lectures)

Objective:
The course aims at imparting knowledge about the principles, methods, techniques of auditing and their applications to understand the objective and concepts of auditing to gain working knowledge of generally accepted auditing procedures and of techniques and skills.

Unit I Introduction: (20 Marks-10 Lectures)

- Evolution of audit
- Meaning and Definition
- Scope of Auditing
- Auditing V/s. Accountancy
- Objectives of Auditing – Primary & Secondary
- Various classes of audit (Based on authority, time and scope)
- Qualities of an Auditor
- Basic Principles governing an audit.
- Benefits and limitations of Auditing

Unit II Internal Control System (20 Marks-10 Lectures)

- Meaning – Nature and Objectives of internal Control System
- Procedure for Evaluation of Internal Control System
- Methods for evaluation of internal control system,
  - Internal Control Questionnaire – Meaning, illustrations, merits and demerits
  - Flow chart – meaning, illustrations , merits and de-merits
- Internal Check – Meaning, objectives, merits and demerits
- Internal Audit – Meaning and Significance

UNIT III Audit Process (40 Marks-25 lectures)

(a) Basic Preparations

- Audit plan – Meaning and steps in audit planning
- Audit Programme – Meaning, objectives, contents, merits and limitations.
- Audit evidence - Procedures for obtaining evidence, Sources of evidence, Reliability of audit evidence, Methods of obtaining audit evidence, Physical verification, documentation, direct confirmation, re-computation, Analytical review techniques, and representation by management.
- Audit Working Papers – Purpose, contents, working files – permanent and temporary files, ownership & confidentiality of working papers.

- Audit Note Book- Purpose, content and benefits
- Routine checking
- Audit Sampling - Judgmental and statistical sampling
- Test checking

(b) Vouching, Verification and Valuation

- Vouching – Meaning, objectives
- General procedure for vouching
- General Considerations in audit of payments, receipts, purchases and sales
- Verification-meaning, objectives, verification V/s Vouching
- Valuation-meaning, objectives, Verification V/s. Valuation
- Procedure for Verification & Valuation in general – Verification of inventories with case laws.

(c) **Audit Report**

- Types of audit report, distinction between report and certificate
- Reporting under CARO.

Unit IV Developments in Auditing **(20 Marks, 15 lectures)**

Tax audit
Management audit
Cost audit
VAT audit
Forensic audit
Audit in computerized environment
Peer review

Note.

1. Relevant auditing standards to be covered wherever applicable
2. Syllabus will be revised on regular basis at the beginning of the year to accommodate changes made in auditing standards

References:

1. Aruna Jha, Students guide to auditing. Taxman publication New Delhi.
2. Gupta Kamal: Contemporary Auditing, Tata McGraw-Hill, New Delhi
3. Tandon B. N. Principles of Auditing: S. Chand & Co, New Delhi.
4. Pagare Dinkar: Principles & Practice of Auditing: Sultan Chand, New Delhi
5. Sharma T.R.: Auditing Principle & Problems: Sahitya Bhavan, Agra.
6. Sekhar & Sekhar: Auditing: Vikas Publishing House Ltd., New Delhi.
7. Saxena R. G. & Others: Practical Auditing: Himalaya Publishers, Mumbai.
8. S.D Sharma: Auditing Principles, Taxman publication New Delhi
9. Ravinder Kumar & Virender Sharma: Auditing Principles & Practice: Prentice Hall of India, New Delhi.

B.COM
SEMESTER II
Cost Accounting-II (DSE 2)
(100 Marks , 60 Lectures)

Objective: To familiarize the students to the basic concepts and element of cost - labour cost and overhead.

Unit I Labour cost and Control (20 Marks , 10 Lectures)
Meaning, classification of labour, Time keeping and Time booking, Payroll Accounting, Monetary benefit, Fringe benefits, Overtime Premium, Holiday and Vacation Pay, Idle time, Labour Turnover.

Unit II Labour remuneration (30 Marks , 20 Lectures)
Methods of labour remuneration, Incentive Schemes-Individual and Group, profit sharing, Calculation of Gross wages and Net wages, Individual incentive schemes and Group bonus schemes and Labour cost per unit.

Unit III Overhead classification, Allocation and Apportionment (30 Marks , 20 Hours)
Direct and indirect cost, Classification of overhead cost, Departmentalisation, Allocation and Apportionment of overhead to cost centres, Primary distribution of overhead, secondary distribution of overhead-Direct distribution method, step ladder method, Repeated distribution method, Simultaneous equation method.

Unit IV Overhead absorption (20 Marks , 10 Lectures)
Procedure for accounting of overhead cost, Overhead absorption rates, Actual and predetermined overhead rate, Methods of absorption, Accounting for under- absorption and over- absorption of overhead.

References :-

1. Jain S. P and K.L. Narang- *Cost Accounting Principles and practice* – Kalyani Publishers, Ludhiana.
2. Bhar, B.K. *Cost Accounting- Methods & Problems ,* Academic Publishers Calcutta 700073.
3. Kishore R. *Cost Accounting*- Taxmann Allied Service Pvt.Ltd.New Delhi.
4. Iyenger, S. P. *Cost Accounting*. S. chand& Co. New Delhi
5. Khana, B. S. & J. M. Pandey- *Practical costing.* S. Chand & Co. New Delhi
6. Khan, M. Y. & P.K. Jain- *Theory and Problems of Management and Cost Accounting*- Tata McGraw Hill Publishing co. Ltd. New Delhi
7. Lal, J. *Cost Accounting.* Tata McGraw –Hill Publishing co. Ltd. New Delhi
8. Nigam, B. & J.C. Jain. *Cost Accounting Principles & Practice.* Prentice- Hall of India Pvt. Ltd., New Delhi.

B.COM
SEMESTER – V
Retail Management Strategies (DSE 2)
(100 Marks – 60 Lectures)

Objective: To acquaint students with retail management strategies.

Unit I Retail Major Decisions (25 Marks-15 Lectures)

Product Decisions - 1. Types of Goods 2. Life Cycle of Goods 3. Quality.
Pricing– Price v/s value – Meaning, factors affecting retail pricing
Promotion decisions – Need, objectives and forms.

Unit II Understanding the Retail Consumer (25 Marks-15 Lectures)

Identifying and responding to changing customer profiles
Retail Shopper – Meaning and factors influencing retail shopper. Customer decision-making process. Changing trends among the Indian consumers – Factors responsible.

Unit III Servicing the Retail Consumer (25 Marks-15 Lectures)

Customer Service – Meaning. Standardisation v/s Customisation. Importance of service in retailing, Product enhancement through services – Principles for delivering distinctive services. Managing customer expectations and handling complaints – Meaning, process of handling complaints. Customer loyalty – Meaning. Customer Loyalty Programmes – Meaning and essential features.
Concept of Customer Relationship Management.

Unit IV: Retail Strategy and Implementation (25 Marks-15 Lectures)

Growth strategies: Development, Diversification. Market penetration, Market expansion, Retail format.
Implementing Retail Strategies process- Define the business mission, conduct a situation Audit, Identify strategic opportunities, Evaluate strategic alternatives, Establish specific objectives and allocate resources, Develop a retail mix to implement strategy, Evaluate performance and make adjustments.

Retail Logistics Management – Meaning, importance.
Concept of supply chain management – Retail logistics – Push logistics v/s pull logistics.

References:

1. Pradhan, Swapna. *Retail Management – Text and Cases.* Tata McGraw Hill Publishing, New Delhi.
2. Levy, Michael & Weiz, Barton A. Retailing Management. Tata McGraw Hill Publishing, New Delhi.

3. Gilbert, David. *Retail Marketing Management.* Pearson Education, Delhi.
4. Lucas, George H.; Bush, Robert & Gresham, Larry. *Retailing*. All India Publishers and Distributors, Chennai.
5. Madaan, K.V.S. *Fundamentals of Retailing*. Tata McGraw Hill.
6. Bajaj, Chetan. *Retail Management.* Oxford University Press, Delhi.
7. Vedamani, Gibson. *Retail Management.* Jaico Publishing house, Mumbai.
8. Dawson, John. *International Retail Management*. Jaico Publishing house, Mumbai.
9. Vedamani, Gibson G. *Retail Management: Functional Principles and Practices.* Jaico Publishing house, Mumbai.
10. Singh, Harjit. *Retail Managemen- A Global Perspective.* S. Chand, New Delhi.
11. Gopal V. V. *Retail Management*. The ICFAI university press, Hyderabad.
12. Nair, Suja R. *Retail Management*: Himalaya Publishing house, Mumbai.

B.COM.
SEMESTER VI
BANKING & FINANCIAL SERVICES
Bank Management (DSE 2)
(100 Marks – 60 Lectures)

Objectives: To enable the students understand financial analysis of banks and their treasury operations and further provide an insight into banking services and technology.

Unit I Financial Statement Analysis of Banks (25 Marks - 15 Lectures)
Income-Expenditure Statement of Banks: Items in Income statements and Expenditure Statements and their relative significance. Balance Sheets of Banks: Meaning, components, items on liabilities and assets sides, their relative significance, (Simple Problems on Income statement & balance sheet). Financial disclosure requirements of banks, Additional disclosures prescribed by RBI.

Unit II Asset-Liability Management (25 Marks - 15 Lectures)
Asset-Liability Management: Definition & meaning, need and significance, objectives, benefits; ALM framework in banks in India – ALM Committee, ALM Information system, ALM Process, ALM Techniques and Tools. Credit Management: loan policy and principles of bank lending, Management of Investments: components of bank investments – SLR and non-SLR / approved and non-approved securities, Treasury operations – meaning, importance, trends in India.

Unit III Risk & Resource Management (25 Marks-15 Lectures)
Risk – Meaning; Risk process , Types of risks: liquidity risk, credit risk, market risk ,interest rate risk, currency risk, legal risk , operational risk – meaning, sources, Risk Measurement and Control, Risk management tools, Capital: components of bank's capital; Deposits: pricing of deposits – importance, methods; deposit insurance, Non-deposit sources: components, relative importance

Unit IV Bank Marketing and Customer Redressal Management (25 Marks - 15 Lectures)
Bank marketing: meaning, objectives and importance, 7Ps of marketing of banking and financial services, Marketing Information system, marketing strategies; marketing of banking services in India - emerging trends, Role of DSC and DMA in bank marketing, Tele-marketing, Importance of customer redressal in banks; Customer Grievance Redressal mechanism (Internal and External) – Consumer Protection Act- major provisions, Redressal machinery, types of deficiencies for which banks are liable under the Act, Banking Ombudsman Scheme – Scope of Banking ombudsman, types of complaints, Mechanism of redressal under Ombudsman scheme.

References
Books:-
Gopal V. V. (ed.) (2004): *CRM in Banking: Concepts and Cases*, Hyderabad, ICFAI, 1e Indian Institute of Banking and Finance (2005): *Risk Management*, New Delhi, Macmillan Indian

Institute of Banking and Finance (2009): *Principles & Practices of Banking*, New Delhi, Macmillan, 2e
Joshi V. C. & Joshi V. V. (1998): *Managing Indian Banks – The Challenges Ahead*, New Delhi, Response
Justin P. &Padmalatha S. (2007): Management of Banking & Financial Services, New Delhi, Pearson
Koch T. W. & MacDonald S. S. (2003): *Bank Management*, Singapore, Thomson, South-Western Publishing, 5e
Nagarajan N. (ed.) (2004): *Bank Economists' Conference, 2002 – Vol. I & II, Indian Banking: Managing Transformation – Structure*, Hyderabad, ICFAI, 1e
Satish D. (ed.) (2004): *Currency Risk Management: Concepts and Cases*, Hyderabad, ICFAI,1e
Subbulakshmi V. (ed.)(2004): *Operational Risk Measurement & Management*, Hyderabad, ICFAI
Vijaychandra Kumar C. (ed.) (2004): *Credit Risk Management: Concepts and Cases*, Hyderabad, ICFAI, 1e
Vijayaragavan G. (2009): *BankCredit Management: Text & Cases*, Mumbai,Himalaya

Journals:-

1. The Indian Banker, published by Indian Banker Association
2. Bank Quest, published by Indian Institute of Banking and Finance
3. RBI Bulletin (Monthly), published by RBI
4. Trends and Progress of Indian Banking (Annual), published by RBI

Websites:-

1) Reserve Bank of India www.rbi.com
2) Indian Institute of Banking and Finance www.iibf.org.in
3) Indian Bankers Association www.iba.org.in
4) Institute of Banking Personal Selection www.ibps.com.
5) Institute of Finance, Banking and Insurance www.ifbi.com

B. COM
SEMESTER VI
Human Resource Management (CC 17)
(100 Marks- 60 Lectures)

Objective: To enable the students to understand and comprehend the vital issues of HRM in a dynamic environment.

Unit I Introduction to Human Resource Management (25 Marks-15 Lectures)
Human Resource Management – Meaning and importance, Human resource planning (HRP) defined, objectives and importance of HRP.

Job Analysis and Design - Process of Job analysis, methods of data collection, concept of job design, factors affecting job design, methods/ techniques of design.

Recruitment, Selection and Placement
Meaning, sources of recruitment and recruitment process, meaning of selection, meaning of placement, Business Process Outsourcing, need for outsourcing, HR Outsourcing Opportunities in India.

Unit II Employee Compensation, Empowerment and Participation (25 Marks-15 Lectures)
Employee Compensation: Concept of Wage - Factors determining Wage Rates- Essentials of a sound Wage system – System of wage payment- (i) Time wage system (ii) Piece wage system, Individual wage incentive plans - Meaning - (i) Halsey Premium Plan (ii) Rowan Plan (iii) Taylor's Differential Piece rate Plan.

Group incentive plans - Meaning- (i) Profit sharing scheme-features, advantages and disadvantages (ii) Co-partnership – features, advantages and limitations. Payment of Bonus, ESOPs.

Employee Empowerment: Meaning, forms of empowerment, barriers to empowerment, empowerment in India: An overview.

Workers Participation in Management: Definition and objectives, forms of workers participation in management.

Unit III Labour Welfare and Trade Union (25 Marks-15 Lectures)
Labour Welfare: Concept and objectives. Labour welfare agencies –Government, Employers and Trade Unions. Labour Welfare Programmes in Industries –Statutory and Non Statutory measures.

Trade Union: Definition and functions of Trade Union - weaknesses and problems of Indian Trade Union- suggestions for healthy growth of Trade Unions in India – Challenges faced by Trade Unions in the light of globalization.

Labour Turnover and Labour Absenteeism: Meaning of labour turnover and absenteeism. Causes and effects of labour turnover and absenteeism, measures to minimize labour turnover and absenteeism.

Unit IV Trends in HRM **(25 Marks-15 Lectures)**

HRM in a changing environment – Changing environment and Challenges before HR manager
Competencies and learning organizations: Employee branding, The need for innovation, creating an innovative organization, managerial roles, creating the innovation culture.
Re - Engineering: The role of HR in Business Process Re-engineering.

References:

1) Lepak, David & Gowan, Mary. *Human Resource Management*. Dorling Kindersley (India).

2) Khanna, S.S. *Human resource Management (Text and Cases)*. S. Chand, New Delhi.

3) Sadri.J, Sadri.S, Nayak.N, *A Strategic Approach to Human Resource Management*, JAICO Publishing House.

4) Davar, R. S. *Personnel Management and Industrial Relations*. Vikas Publication, Noida.

5) Robbins, Stephen P. *Organisational Behaviour*. Pearsons Education, New Delhi.

B.COM
SEMESTER VI
International Economics (CC 18)
(100Marks, 60 Lectures)

Objectives:

1. To enable the students to understand the role of international trade and the importance of trade policy in the current global scenario
2. To enable the students to have an understanding of the importance of investment flows across countries and their dependence on various macroeconomic variables that are of significance in an open economy
3. To acquaint students with the key accounts of the balance of payments, how exchange rates are determined in the markets for foreign exchange and help them understand the connection between balance of payments and exchange rate movements
4. To enable students to be aware of the meaning and significance of regional and multilateral trade negotiations

Unit I International Trade (25 Marks, 15 Lectures)

International trade – meaning and features; Theories of international trade: Classical (comparative advantage), H-O theorem, Product Life Cycle, Technological Gaps, Intra-industry trade; Gains from International trade; Terms of Trade: meaning and 3 concepts (Net Barter, Gross Barter and Income Terms of Trade); Free Trade v/s protectionism; types of protective devices - tariff and non-tariff barriers (exchange control, voluntary export restraints, anti-dumping duties & countervailing duties, social clauses such as labour & environmental standards, sanitary &phyto-sanitary measures and administered protection).

Unit II Balance of Payments & Foreign Exchange Rates (30 Marks, 18 Lectures)

Balance of Payments: Meaning and Structure; Distinction between Balance and Equilibrium; Balance of Trade and Balance of Payments; Disequilibrium – meaning, types and causes; Corrective Measures– exchange rate adjustments (Revaluation and Devaluation), Exchange Control, Trade Measures, Effects of Monetary policy and Fiscal policy on internal and external balance (brief explanation of how the measures work)

Foreign exchange rates: Foreign exchange market – meaning, features and functions; Types of exchange rate systems (fixed, flexible and managed floating – meaning of each); Types of foreign exchange transactions (spot and forward transactions, arbitrage, currency swaps, futures contracts, speculation); Factors influencing short-term exchange rates; Concept of convertibility of Rupee on current account and capital account;Liberalized Exchange Rate Management System (LERMS); Hedging and Exchange rate risk management; Concept of PPP dollar

Unit III International Investment (25 Marks , 15 Lectures)

Foreign Investment – meaning and composition (FDI & FPI), Foreign Direct Investment: Meaning; Determinants of FDI (resources, market size, trade barriers, economic and business environment of the host country), Multinational corporations: meaning and operational characteristics; Entry modes adopted by Multinational Corporations (licensing, franchising, joint ventures/collaborations, wholly-owned subsidiaries, mergers and acquisitions);
Foreign Portfolio Investment: Meaning; Operations of Foreign Institutional Investors; Determinants of FPI (return on investment, level of financial sector development, capital controls, exchange risk); Impact of FPI on capital markets and the exchange rate.

Unit IVMultilateralism and Regional Economic Cooperation (20 Marks , 12 Lectures)

Multilateralism and Regionalism – meaning and distinction; World Trade Organization – objectives, principles, functions and Agreements (Market access, Agreement on Agriculture, TRIPs, TRIMs, GATS, Dispute Settlement); Regional economic cooperation - Meaning and reasons for growth; Forms of regional integration - Preferential Trade Agreement, Free Trade Agreement, Customs Union, Monetary Union, Economic Union; Integration efforts among Countries in Europe, North America and Asia (NAFTA, EU, ASEAN and SAARC)

References:

1. *Bhole, L. M. &Mahakud, J. 2009*, Financial Institutions and Markets: Structure, Growth & Innovations, Tata-McGraw Hill, New Delhi
2. *Cherunilam, F. 2008*, International Economics, Tata McGraw-Hill, New Delhi, *5th Edition*
3. *Cherunilam, F. 2013*, International Business Environment, Himalaya Publishing House, New Delhi, *6th Revised Edition*
4. *Dutt, R. and Sundaram, K.P.M.* ,Indian Economy, S. Chand and Co., New Delhi, *Latest Edition*
5. *Kindleberger, C.P. 1973,* International Economics, Homewood, R.D. Irwin
6. *Krugman, P.R. and Obstfeld, M. 2009,* International Economics: Theory and Policy, Pearson International Edition, Boston MA
7. *Machiraju, H.R. 2009,*International Financial Markets and India, New Age International, New Delhi,
8. *Rajwade, A.V. 2008,* Foreign Exchange International Finance Risk Management, Academic Foundation, New Delhi
9. R. B.I. Reports on Currency Finance
10. *Salvatore, D.L. 1997,* International Economics, Prentice-Hall, Upper Saddle River, N.J.

11. *Sharan, V. 2012*, International Financial Management, PHI Learning Pvt. Ltd., New Delhi
12. *Sodersten, B. & Reed, G. 1994,* International Economics, Palgrave Macmillan, London
13. *SubbaRao, P. 2014*, International Business: Text and Cases, Himalaya Publishing House, New Delhi,*4th Revised Edition*

B.COM
SEMESTER VI
International Economics (CC 18)
(100Marks, 60 Lectures)

Objectives:

1. To enable the students to understand the role of international trade and the importance of trade policy in the current global scenario
2. To enable the students to have an understanding of the importance of investment flows across countries and their dependence on various macroeconomic variables that are of significance in an open economy
3. To acquaint students with the key accounts of the balance of payments, how exchange rates are determined in the markets for foreign exchange and help them understand the connection between balance of payments and exchange rate movements
4. To enable students to be aware of the meaning and significance of regional and multilateral trade negotiations

Unit I International Trade (25 Marks, 15 Lectures)

International trade – meaning and features; Theories of international trade: Classical (comparative advantage), H-O theorem, Product Life Cycle, Technological Gaps, Intra-industry trade; Gains from International trade; Terms of Trade: meaning and 3 concepts (Net Barter, Gross Barter and Income Terms of Trade); Free Trade v/s protectionism; types of protective devices - tariff and non-tariff barriers (exchange control, voluntary export restraints, anti-dumping duties & countervailing duties, social clauses such as labour & environmental standards, sanitary &phyto-sanitary measures and administered protection).

Unit II Balance of Payments & Foreign Exchange Rates (30 Marks, 18 Lectures)

Balance of Payments: Meaning and Structure; Distinction between Balance and Equilibrium; Balance of Trade and Balance of Payments; Disequilibrium – meaning, types and causes; Corrective Measures– exchange rate adjustments (Revaluation and Devaluation), Exchange Control, Trade Measures, Effects of Monetary policy and Fiscal policy on internal and external balance (brief explanation of how the measures work)

Foreign exchange rates: Foreign exchange market – meaning, features and functions; Types of exchange rate systems (fixed, flexible and managed floating – meaning of each); Types of foreign exchange transactions (spot and forward transactions, arbitrage, currency swaps, futures contracts, speculation); Factors influencing short-term exchange rates; Concept of convertibility of Rupee on current account and capital account;Liberalized Exchange Rate Management System (LERMS); Hedging and Exchange rate risk management; Concept of PPP dollar

Unit III International Investment (25 Marks , 15 Lectures)

Foreign Investment – meaning and composition (FDI & FPI), Foreign Direct Investment: Meaning; Determinants of FDI (resources, market size, trade barriers, economic and business environment of the host country), Multinational corporations: meaning and operational characteristics; Entry modes adopted by Multinational Corporations (licensing, franchising, joint ventures/collaborations, wholly-owned subsidiaries, mergers and acquisitions);

Foreign Portfolio Investment: Meaning; Operations of Foreign Institutional Investors; Determinants of FPI (return on investment, level of financial sector development, capital controls, exchange risk); Impact of FPI on capital markets and the exchange rate.

Unit IV Multilateralism and Regional Economic Cooperation (20 Marks , 12 Lectures)

Multilateralism and Regionalism – meaning and distinction; World Trade Organization – objectives, principles, functions and Agreements (Market access, Agreement on Agriculture, TRIPs, TRIMs, GATS, Dispute Settlement); Regional economic cooperation - Meaning and reasons for growth; Forms of regional integration - Preferential Trade Agreement, Free Trade Agreement, Customs Union, Monetary Union, Economic Union; Integration efforts among Countries in Europe, North America and Asia (NAFTA, EU, ASEAN and SAARC)

References:

1. *Bhole, L. M. &Mahakud, J. 2009*, Financial Institutions and Markets: Structure, Growth & Innovations, Tata-McGraw Hill, New Delhi
2. *Cherunilam, F. 200*8, International Economics, Tata McGraw-Hill, New Delhi, *5th Edition*
3. *Cherunilam, F. 2013*, International Business Environment, Himalaya Publishing House, New Delhi, *6th Revised Edition*
4. *Dutt, R. and Sundaram, K.P.M.* ,Indian Economy, S. Chand and Co., New Delhi, *Latest Edition*
5. *Kindleberger, C.P. 1973,* International Economics, Homewood, R.D. Irwin
6. *Krugman, P.R. and Obstfeld, M. 2009,* International Economics: Theory and Policy, Pearson International Edition, Boston MA
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8. *Rajwade, A.V. 2008,* Foreign Exchange International Finance Risk Management, Academic Foundation, New Delhi
9. R. B.I. Reports on Currency Finance
10. *Salvatore, D.L. 1997,* International Economics, Prentice-Hall, Upper Saddle River, N.J.
11. *Sharan, V. 2012*, International Financial Management, PHI Learning Pvt. Ltd., New Delhi
12. *Sodersten, B. & Reed, G. 1994,* International Economics, Palgrave Macmillan, London
13. *SubbaRao, P. 2014*, International Business: Text and Cases, Himalaya Publishing House, New Delhi,*4th Revised Edition*

B.COM
SEMESTER VI
ACCOUNTING
Advanced Company Accounts (DSE 5)
(100 Marks – 60 Lectures)

Objective: To develop accounting skills in students to for preparation of financial statements of limited companies and for accounting of transactions in the special circumstances of internal and external reconstruction, redemption debentures and valuation of goodwill and shares.

Unit I: Company Final Accounts (Comprehensive Study): (20 Marks, 16 Lectures)
Preparation of 'Balance Sheet' and 'Statement of Profit and Loss' as per Schedule III of the Indian Companies Act, 2013. (Problems to include 'Notes' required as per Schedule III**).**

Unit II: Internal Reconstruction: (20 Marks, 12 Lectures)
Concept, Treatment of special items, Legal aspects, accounting procedures, Journal entries, Capital Reduction Account and Balance sheet after reconstruction (as per Schedule III).

Unit III: Valuation of Goodwill and Shares: (20 Marks, 14 Lectures)
a) Valuation of Goodwill:
Circumstances under which goodwill is valued, factors affecting value of goodwill, Methods of valuation of Goodwill (Super profit, Future Maintainable Profit and Capitalization of FMP).

b) Valuation of shares:
Meaning and need for Valuation of shares, Factors affecting valuation of shares, Methods of Valuation of Shares:

i) Net Assets Method (or Intrinsic Value Method/Liquidation value Method/Breakup ValueMethod/Asset Backing Method),

ii) Yield Value/Market Value Method: Earning Yield and Dividend Yield,

iii) Fair Value Method.

Unit IV: Mergers, Acquisitions & External Reconstruction : (40 Marks, 18 Lectures)
Concept, Terms, Introduction to IND-AS 14, Calculation of Purchase consideration; Accounting procedures in the books of Vendor company and Purchasing company, Treatment of liquidation expenses, Journal entries , Ledger accounts and Balance sheet (including pooling of interest method and purchase method but exchange of shares method based on valuation of shares to be excluded).

Note: Relevant amendments to the Companies Act to be covered wherever applicable.

References:

1. Agarwal, B., & Gupta, M. *IPCC (Group II) Advanced Accounting Text & Problems - Revised.* Allahbad: Suchita Prakashan.
2. Gupta, R. L., & Radhaswamy, M. *Advanced Acountancy.* New Delhi: Sultan Chand.
3. Jain, & Narang. *Advanced Accountancy.* New Delhi: Kalyani Publishers.
4. Mahajan, S., & Kulkarni, M. *Corporate Accounting.* Pune: Nirali Publication.
5. Mahajan, S., Jagtap, & Zagade, S. *Corporate Accounting.* Pune: Diamond Publication.
6. Monga, J. R., & Ahuja, G. *Advanced Accounting* (Vols. I, II). Noida: Mayoor Paperback.
7. Mukherjee, A., & Hanif, M. (2002). *Modern Accountancy* (Vol. II). New Delhi: Tata McGraw Hill.
8. Paul, S. K. *Accountancy* (Vols. I, II). Calcutta: New Central Book Agency.
9. Shukla, M., Grewal, T., & Gupta, S. *Advanced Accounts.* New Delhi: S. Chand & Co.
10. Tulsian, P. C. *Accountancy.* New Delhi: S. Chand & Co.
11. Tulsian, P. C., & Tulsian, B. *Accounting for CA – IPCC (Group I& II).* New Delhi: S. Chand.

General guidelines for paper setting:

1. Four questions of 20 mark each to be answered.
2. Question No. 1 to be compulsory (All Questions should be practical in nature)
3. Any Three questions from the remaining Five Questions to be answered.

Specific Guidelines for paper setting:

1. Two questions each to be asked on Unit III and Unit IV
2. One question each to be asked on Unit I & Unit II

B.COM.
SEMESTER VI
COST AND MANAGEMENT ACCOUNTING
Advanced Cost Accounting-1 (DSE 5)
(100 Marks , 60 Lectures)

Objective: To provide basic conceptual & working knowledge of various methods of cost accounting

Unit I Job Costing and Batch Costing (30 Marks, 20 Lectures)

Nature, Purpose and Procedure of Job Costing, Recording and Controlling Costs in Job order Costing, Forms used in Job order Costing, Tenders and Quotations, Nature and use of Batch Costing, Determination of Economic batch quantity.

Unit II Operating costing (20 Marks, 10 Lectures)

Meaning, Nature, Basic Principles of Operating Costing – transport, entertainment and hotels.

Unit III Reconciliation of Costing profit with Financial Profit (25 Marks , 15 Lectures)

Need for reconciliation, reasons for disagreements in Profit, procedure for reconciliation

Unit IV Cost Control and Cost Reduction (25 Marks , 15 Lectures)

Meaning, Elements, Scheme and techniques of Cost control, Essentials for success of cost control, meaning of cost reduction, areas of cost reduction, tools and techniques of cost reduction, distinction between cost control and Cost reduction

References:-

1. Jain S. P and K.L. Narang- *Cost Accounting Principles and practice* – Kalyani Publishers, Ludhiana.
2. Bhar, B.K. *Cost Accounting- Methods & Problems ,* Academic Publishers Calcutta 700073.
3. Kishore R. *Cost Accounting*- Taxmann Allied Service Pvt.Ltd.New Delhi.
4. Iyenger, S. P. *Cost Accounting*. S. chand& Co. New Delhi
5. Khana, B. S. & J. M. Pandey- *Practical costing.* S. Chand & Co. New Delhi
6. Khan, M. Y. & P.K. Jain- *Theory and Problems of Management and Cost Accounting*- Tata McGraw Hill Publishing co. Ltd. New Delhi
7. Lal, J. *Cost Accounting.* Tata McGraw –Hill Publishing co. Ltd. New Delhi
8. Nigam, B. & J.C. Jain. *Cost Accounting Principles & Practice.* Prentice- Hall of India Pvt. Ltd., New Delhi

B.COM
SEMESTER VI
DISCIPLINE SPECIFIC ELECTIVE
BUSINESS MANAGEMENT
Financial Management II (DSE 5)
(100 marks- 60 lectures)

Objectives : To familiarize the students with concepts, role and techniques of financial management in firms and provide an insight into various decisions in management of corporate finance.

Unit I Dividend Policy (25 marks-10 lectures)

Meaning of dividend & dividend policy, determinants of dividend policy- dividend payout ratio, stable dividends & the other determinants; forms of dividends (cash dividend, scrip dividend, stock dividend, property dividend). Types of dividend- interim dividend and final dividend. Models in which investment & dividend decisions are related;

1. Walter's model and Gordon's model
2. M.M. Hypothesis (Modigliani and Miller)

UNIT II Cost of Capital & its Measurement (25 marks-15 lectures)

Meaning of cost of capital, importance of cost of capital, types- historical cost, future cost, explicit cost, implicit cost, specific cost and composite cost; measuring cost of capital: cost of Debt, cost of Preference capital, cost of Equity share capital:- (*4 approaches- D/P ratio, E/P ratio, E/P ratio + growth ratio, realized yield approach*); cost of retained earnings and weighted average cost of capital.

UNIT III Capital Budgeting (25 marks- 20 lectures)

Meaning and nature of Capital Budgeting; importance of Capital Budgeting decisions; Capital Budgeting process; kinds of Capital Budgeting decisions (*Accept- reject decisions, mutually exclusive project decisions, capital rationing decision*s); project classification (*mandatory investment, new projects, replacement projects, expansion projects, diversification projects, research and development projects and miscellaneous projects*); investment criteria, methods of appraising capital expenditure proposals :

A. Non discounting criteria

1. Pay Back Period method 2. Average/ Accounting Rate of Return method

B. Discounting criteria

1. Net Present Value method 2. Internal Rate of Return method 3. Profitability Index

UNIT IV Capital Structure Decisions (25 marks – 15 lectures)

A. Meaning of capital structure, importance of capital structure and optimum capital structure, risk – return trade off, capital structure theories:- (*Net Income Approach, Net Operating Income Approach, Traditional Approach*) features of a sound / optimum capital mix, factors determining capital structure.

B. Leverages- meaning and types:

1. Financial leverage & its features
2. Operating leverage & its features
3. Combined leverage

Problems on:

1. Cost of capital and its measurement
2. Capital budgeting – only 3 methods i.e Pay Back Period method, Average/ Accounting Rate of Return method, Net Present Value method.
3. Leverages- Financial leverage, Operating leverage, Combined leverage

Books for study and reference:

1. Chandra, Prasanna. *Financial Management, Theory & Practice*. Tata McGraw Hill
2. Pandey I. M. *Financial Management*. Vikas Publishing House
3. Khan & Jain. *Financial Management.* Tata McGraw Hill
4. Kuchal, S.C. *Financial Management.* Chaitanya Publishing House
5. Sharma & Gupta, Shashi*. Financial Management*. Kalyani Publishers
6. Vanhorne, James C. *Fundamentals Of Financial Management.* Prentice Hall Of India
7. Phatak. *Indian Financial System,*
8. Singh, Preeti. *Investment Management.* Himalaya Publishing House
9. G. Sudarshana, Reddy. *Financial Management- Principles and Practice.* Himalaya Publishing House
10. Tulsian, P.C. *Financial Management.* S. Chand & Co Ltd
11. Shavam, Vyuptakesh*. Fundamentals Of Financial Management*. Pearson

B.COM.
SEMESTER V
DISCIPLINE SPECIFIC ELECTIVE
BANKING AND FINANCIAL SERVICES
Law and Practice of Banking –I (DSE 5)
(100 Marks, 60 Lectures)

Objectives: To introduce the student to the basic principles, practices, rules and procedures of bank lending.

Unit I Principles of Sound Lending Working Capital Assessment and Credit Monitoring (20 marks –Lectures 12)

Credit Appraisal Techniques;Working capital finance and term loan finance –sources, appraisal of proposals for working capital finance, Operating Cycle; Projected Net WC; Turnover Method,Cash Budget; Credit Monitoring & Its Management, Base Rate. Term loan finance consumer finance & calculation on interest on different types of loans (EMI, SI and compound interest) Margins and Drawing Limits, procedures and practices of personal loans, housing loans, education loans, vehicle loans.

Unit II Types of Securities & Modes of Creating Charge (30 marks –Lectures 18)

Types of securities –personal and tangible security, primary and collateral security; suitability and valuation, measures to ensure good title, Escrow Arrangements, Trust and Retention Arrangements. Different modes and methods of creating charge –1. lien, 2. pledge, 3. Hypothecation, 4. Mortgage:- types of mortgage; enforcement of mortgage, 5. assignment, 6. set-off, 7. Guarantees:- Deferred Payment Guarantees :purpose of DPGs; Methods of Payment,Definition and Types of Bank Guarantees; Banker's Duty to honour Guarantee; Precautions to be taken for Issuance of Bank Guarantee, 8. Indemnities. Advances against documents of title to goods, advances against stock exchange securities, advances against Fixed Deposit receipts, advances against insurance policies, advances against supply bills, land and building.

Unit III Bank Documentation (20 marks –Lectures 12)

Need for Documentation, types of documents for loans, other documents and deeds (Mortgage, Pledge, Hypothecation, types of letters (Guarantee, balance confirmation, Letter of undertaking.Stamps (importance & types), legal formalities for documentation, Execution, Attestation, Registration, Effects of Non-registration, precautions to be taken by banks with respect to documentation.

Unit IV Banking Legislation, Supervision and Control (30 marks –Lectures 18)

Need & Role of RBI in Supervision & Control of the commercial Banks in India, Project appraisal and recovery measures: Non legal measures- follow up action- onetime settlement, recovery camps. Legal measures- debt recovery tribunal.*SARFAESI Act 2002:-* Definitions; Regulation & Reconstruction; Enforcement of Security Interest; Offences & Penalties;Miscellaneous Provisions. FEMA (Foreign Exchange Management Act, 1999):- important terms; Powers of RBI,

Regulation and Management; Recovery of Debts due to Banks and Financial Institutions Act, 1993(DRT Act):- Debt Recovery Tribunals Objective of the Act, Constitution of Tribunal, Procedure to be followed Enforcement process. The Legal Services Authorities Act 1987,LokAdalat- Organization; Jurisdiction; Disposal of Cases; Awards.

References

Books

1. K.P. Kandasami, S. Natarajan,R. Parameshwaran:Banking Law and Practise, S. Chand & Co. Ltd, New Delhi.
2. Sukhavinder Mishra: Banking Law and Practise, S. Chand & Co. Ltd, New Delhi.
3. Bedi H.L. &HardikarV.K.: Practical Banking Advances, UBS Publishers New Delhi..
4. Gordon E. Natarajan K.: Banking Theory, Law and Practise, Mumbai Himalaya, 1998.
5. Indian Institute of Banking and Finance: Legal Aspects of Banking, New Delhi, Macmillan 2005.
6. Khubchandanib.s.: practise and law of banking, new delhi, macmillan.2000.
7. Kumar N. & Mittal R.: Banking Law AndPractise, New Delhi Anmol 2002.
8. Reddy P.N. &Appannaiah H.R. : Banking Theory and Practise, Mumbai Himalaya, 4e.
9. Shekhar K.C. &Shekhar L.: Banking Theory and Practise, New Delhi, Vikas Publication.
10. Varshney P.N.: Banking Law and Practise,New Delhi, Sultan Chand & Sons, 2005.
11. Prem Kumar Srivastava, Banking Theory and Practise, Himalaya Publication.
12. Financial Markets & Institutions: Dr. G,V, Kayandepatil, Dr. B.R. Sangale, Dr. G.T. Sangle, Prof. N.C. Pawar.

Journals:-

1. The Indian Banker, published by Indian Banker Association
2. Bank Quest, published by Indian Institute of Banking and Finance
3. RBI Bulletin (Monthly), published by RBI
4. Trends and Progress of Indian Banking (Annual), published by RBI

Websites:-

1) Reserve Bank of India www.rbi.com
2) Indian Institute of Banking and Finance www.iibf.org.in
3) Indian Bankers Association www.iba.org.in
4) Institute of Banking Personal Selection www.ibps.com
5) Institute of Finance, Banking and Insurance www.ifbi.com

COMMERCE ELECTIVES SEMESTER – I

B.COM.
SEMESTER I
Banking I (GE 1)
(100 Marks- 60 Lectures)

Objectives: To acquaint students with basics of banking and structure of banking business in India.

Unit I Introduction to Banking in India (25 Marks-15 Lectures)
Evolution of Banking, Origin of Modern Banking in India, Meaning and Definition of Banking, Structure of Commercial Banking in India- Scheduled and Non-scheduled Banks, Public Sector Banks, Private Banks, Foreign banks and Regional Rural Banks.Systems of Banking - Group and Chain Banking, Unit & Branch Banking, Investment Banking, Mixed Banking and Universal Banking. Central Banking – Reserve Bank of India, Origin and growth – Functions, Bank Nationalization in India.

Unit II Functions of Banks (30 Marks 18 Lectures)
Accepting Deposits-Importance of deposits, Classification& features of deposits-Demand deposits, (Current account deposits, Saving account deposits, Pigmy deposits and Call deposits) Term deposits, (Fixed deposits, Recurring deposits) and Hybrid deposits or Flexi-deposits.**Loans and Advances**-Importance of lending, Principles of lending and Credit Management, Different types of lending facilities in brief -Cash credit, Overdraft. Loans: (Demand loans, Medium term loan and Long term loans)Bills purchased and Bills discounted, project finance, Loan syndication and Bridge loan, Agency and miscellaneous services.

Unit III Types of Customers and their Accounts (25 Marks-15 Lectures)
Types of Individual Customers: Minor, Married Women, Illiterate persons, Hindu Undivided Family. Opening of deposits accounts, Need for identity proof and proof of residence, Know your customers (KYC) norms, Guidelines of the RBI, Introduction, Specimen Signature, Nomination, Pass book, Statement of accounts, Bank slips and documents, Demand draft, Cheque book and Closing of accounts, Non-Resident Accounts- Features of NRO, Foreign Currency Non-Resident (FCNR) account and Non-Resident (External) (NRE) accounts.

Unit- IV Retail Banking &Customer Relationship Management (**20 marks 12 lectures**)
Introduction to Retail Banking – objectives and importance, different retail products offered by banks.Pricing of Retail banking products, Customer Relationship Management in Banking: concept, objectives and importance. Principles of Customer Relationship and customer relationship building strategies.

Reference:
1. Indian Institute of Banking and Finance, Principles and Practices of Banking, (2nd Edition) Macmillan Publication India Limited, New Delhi.

2. Indian Institute of Banking and Finance, Basics of Banking (Know your Banking-I), Taxman Publication Pvt. Ltd. New Delhi.
3. Indian Institute of Banking and Finance, Banking Products and Services, Taxman Publication Pvt. Ltd. New Delhi.
4. B. S. Khubchandani, Practice and Law of Banking, Macmillan Publisher India Ltd. New Delhi.
5. Gordon and Natarajan, Banking Theory, Law and Practice, (21st revision edition) Himalaya Publishing House Ltd., Mumbai
6. Dr. P. K. Srivastava, Banking Theory and Practice, Himalaya Publishing House Ltd. Mumbai.
7. P. N. Varshney, Banking Law and Practice, Sultan Chand and Sons, New Delhi.
8. D.Muraleedharan, Modern Banking Theory and Practice, PHI Learning Pvt.Ltd. New Delhi.
9. K. C. Shekhar and LekshmyShekhar, Banking Theory and Practice, Vikas Publishing House Pvt. Ltd. New Delhi.
10. O. P. Agarwal, Modern Banking In India, Himalaya Publishing House, New Delhi.
11. DR. K. M. Bhattacharya and O. P. Agarwal, Basic of Banking and Finance, Himalaya Publishing House Ltd. Mumbai.
12. H. L. Bediand V. K. Hardikar, Practical Banking and Advances USB Publishers Distribution Ltd. New Delhi.

Journals:

1. RBI bulletins on Banking (Yearly)
2. The Indian Banker, Indian Bank's Association
3. The IUP Journal of Bank Management, IUP publications, Hyderabad
4. IIB Journal, Indian Institute of Banking & Finance.

Website

1. Reserve Bank of India www.rbi.org.in
2. Indian Institute of Banking and Finance www.iibf.org.in
3. Indian Banker, Indian Bank's s Association www.iba.org.in

B. COM.
SEMESTER I
Business Ethics, Corporate Governance and Corporate Social Responsibility (GE 1)
(100 Marks – 60 Lectures)

Objective: To familiarize the students with concept of business ethics, corporate governance and corporate social responsibility.

Unit I Business Ethics (25 Marks, 15 Lectures)
Morality and ethics, business values and ethics , approaches and practices of business ethics, corporate ethics, ethics program, codes of ethics, ethics committee; Ethical Behaviour: Concepts and advantages; Rating Agencies; Green Governance

Unit II Corporate Governance (25 Marks, 15 Lectures)
Conceptual framework of Corporate Governance: Theories & Models, Corporate Governance Reforms. Major Corporate Scandals in India and Abroad: Common Governance Problems Noticed in various Corporate Failures. Codes & Standards on Corporate Governance at international level

Unit III Corporate governance code in India (25 Marks, 15 Lectures)
Governance code applicable to listed companies in India- clause 49 of listing agreement – Board of directors and its composition, code of conduct, Audit committee, Disclosure, related party transactions, remuneration of directors and report on corporate governance

Unit IV Corporate Social Responsibility (CSR) (25 Marks, 15 Lectures)
Concept of CSR, Corporate Philanthropy, Strategic Planning and Corporate Social Responsibility; Relationship of CSR with Corporate Sustainability ; CSR and Business Ethics, CSR and Corporate Governance; CSR provisions under the Companies Act 2013; CSR Committee; CSR Models, Codes, and CSR. Case studies in CSR

References:

1. KV Bhanumurthy and Usha Krishna, *Politics, Ethics and Social Responsibility of Business,* Pearson Education
2. Erik Banks, *Corporate Governance: Financial Responsibility, Controls and Ethics* , Palgrave Macmillan
3. Balasubramanian, N. *A Casebook on Corporate Governance and Stewardship*, McGraw Hill Education
4. Ghosh, B. *Business Ethics and Corporate Governance*, McGraw Hill Education
5. Mandal, S. *Ethics in Business and Corporate Governance* , McGraw Hill Education
6. Tricker, B. *Corporate Governance-Principles, Policies, and Practice (Indian Edition)*, Oxford University Press
7. Mallin, C. *Corporate Governance (Indian Edition),* Oxford University Press

8. Sharma, J.P., *Corporate Governance, Business Ethics, and CSR*, Ane Books Pvt Ltd, New Delhi
9. Sarbanes –Oxley Act of 2002
10. SEBI Listing Guidelines.

B.COM
SEMESTER I
Co - Operative Management and Accounting (GE 1)
(100 Marks, 60 Lectures)

Objective:To introduce the students to the basic principles of Co-operatives and various aspects of accounting and management of co-operatives.

Unit I Introduction to Co-operation (20 Marks, 12 Lectures)
Origin, Meaning and objectives of co-operatives, Emergence of co-operative movement in India, Development and growth of co-operatives, Co-operative principles and values, Difference between co-operative and other forms of organisations, Co-operatives under Five year Plans, Rural credit survey Report and its salient features, Role of co-operatives in socio-economic development and present scenario of co-operatives in India and in Goa.

Unit II Co-operative Institutions (30 Marks, 18 Lectures)
Different types of co-operatives and their salient features- Co-operatives banks, Credit co-operatives, Consumer co-operatives, Primary agriculture credit co-operatives, Dairy co-operatives, Sugar co-operatives, Housing co-operatives, Transport service co-operatives, Case studies of co-operative institutions.

Unit III Management of Co-operative Institutions (30 Marks,18 Lectures)
Role of management in the development of co-operative organisations, Conceptual framework of management, Management process, Unique features of co-operative management, Professional management for co-operatives- meaning and importance, leadership in co-operative organisations, Management of co-operatives in foreign countries – Japan, Germany, Italy and china. Apex bodies- National Co-operative Union of India (NCUI), National Co-operative Development Corporation (NCDC), International Co-operative Alliance (ICA) - features and objectives.Co-operative societies Act 1912,Multi-state co-operative Societies Act and Goa State Co-operative societies Act 2005 – features and objectives.

Unit IV Accounting and Auditing (20 Marks, 12 Lectures)
Special features of co-operative accounting, Books of accounts and Registers, Preparation of final accounts of Consumer Cooperative Societies, Housing Cooperative Societies and Cooperative Credit Societies - Distribution of Profits Appointment of auditor and audit procedures, Audit report and its contents.

References:

1. Drivedi R.C. *'Democracy' in Co-operative movement – An Indian profile*.
2. Hajela T.N. *'Principles, Problems and Practice of Co-operations'.*
3. KamatG.S 'New *Dimension of Co-operative Management*' Himalaya Publishing House New Delhi.

4. Nakkirans, *Co-operative Management Principles and Techniques,* Deep and Deep publications, New Delhi.
5. Sah A.K.,*Professional Management for Co-operatives.*
6. K.K. Taimani, *Co-operative Organisation and Management.*
7. B.C.Mehta, '*Consumer Co-operative in India.*
8. K.R. Kulkarni (1965) *'Theory and Practice of Co-operatives in India and Abroad,*Vol II (Part II), the co-operators bank depot, Bombay.
9. R.D. Bedi (1995) *Theory History and Practice of Co-operation*,R.Lall book depot Meerat.
10. P.R. Dubhashi (1970),*Principles and philosophy of co-operartions*: Vaikunth Mehta national Institute of Co-operative Management Pune.
11. T.P.Rajmanohar and V. Balaji (2008) *Indian Co-operatives Issues and Experiences*: ICFAI University Press Hyderabad.
12. N. Ajith Kumar (2002) *Co-operation*, Himalaya Publishing House, Mumbai.
13. C.B. Mamoria and R.D. Saksema (1972) *Co-perationin Foreign lands*, KitabMAhalAllahbad.
14. B.S. Mathur (1990) *Co-operations in India,*SahityaBhavan Agra.
15. Sharda V. (2004), *The Theory of Co-operations,*Himalaya Publishing House.
16. C. Dinesh (1970), *Co-operations Leadership and Management*, Vaikunth Mehta National Institute of Co-operative Management –Pune.
17. R.D. Agarwal (1977) *Co-operative Management Principles Policies and Practices,*Vaikunth Mehta Training Research, Pune.
18. L.P. Singh (2000),*Co-operatives Marketing in India and Abroad*, Himalaya Publishing.
19. S.L. Goel (1979) *Principles, Problems and Prospects of Co-operative Administration*, Sterling Publications, New Delhi.
20. Y. Ramakrishna (2009),*Management of Co-operatives,*Jaico Publishing House New Delhi.
21. Martin A. Abrahamsen (1976), *Co-operative Business Enterprises,*McGraw- Hill New York.
22. K.K.Saxena(1974), *Evolution of Co-operative thought*, Somaiya Publications, Bombay.

B.COM.
SEMESTER-I
Principles of Insurance (GE 1)
(100 Marks-60 Lectures)

Objectives: To introduce to students the concepts in risk management and insurance and practices in Life and General insurance.

Unit I Risk Management (20 Marks-10 lectures)
Basic concept of risk, Risk versus Uncertainty, Types of risks, Risk management-meaning, features, importance, process, principles of risk management, methods of handling risks.Meaning of Insurance, Insurance terminology, Reinsurance.

Unit II Introduction to Insurance Business (25 Marks-10 lectures)
Brief history of insurance in India, Insurance contract, functions and importance of insurance, Principles of insurance, difference between insurance and wagering agreement, IRDA Act1999-constitution of IRDA, objectives, functions, duties and powers of regulator, Role of insurance in Economic Development, benefits of insurance to society.

Unit III Life Insurance Business (25 Marks-20 lectures)
Life Insurance-Meaning, features, benefits, objectives of Life Insurance, Contents of life insurance policy, Documentation in life insurance contracts, procedure for issuing life policy, Types of Life Insurance policies (Term policy, whole life, endowment, money back, children, women,group insurance, pension plans,unit linked insurance), An overview of Lump Sum Policies, Installment/Annuity policies, Rider benefits, Public & private sector companies in Life insurance Business in India, Pradhan Mantri Jeevan JyotiYojana 2015.

Unit IV General Insurance Business (30 Marks-20 lectures)
Brief history of General Insurance in India, Need and Advantages, Fire Insurance-Meaning, features, types of fire insurance policies, Marine Insurance-meaning, features, risks covered, types of policies and types of marine insurance contracts. Motor vehicles insurance-Need, features and different types of policies. Health, Liability, Personal accident, Engineering, Fidelity, Theft, Baggage, Travel insurance: Meaning, objectives and advantages.Difference between Life &General insurance. Public & private sector companies in General insurance Business .PradhanMantriSurakshaBimaYojana 2015.

References:
Books

1. Dr. Periaswamy, Principles and Practice of Insurance, Himalaya Publishing House
2. Dr. P.K.Gupta, Insurance and Risk Management- Himalaya Publishing House
3. Reddy and Murali Krishna, Risk Management-Ramakrishna, Discovery Publishing House, New Delhi
4. DrP.K.Gupta, Fundamentals and Insurance- Himalaya Publishing House

5. C.Tyagi and MadhuTyagi, Insurance Law and Practice- Atlantic Publishers and Distributors
6. Arthur, C.andC.William Jr., Risk Management and Insurance, McGraw Hill
7. JyotsnaSethi and Nishwan Bhatia, Elements of Banking and Insurance, PHI Learning

Journals:

1. Journal of Insurance and Risk Management, Birla Institute of management & Technology
2. The Journal of Insurance Institute of India, Insurance Institute of India

Websites:

1. www.insuranceinstituteofindia.com
2. www.irdai.gov.in

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SEMESTER I

Marketing Management (GE 1)

(100 Marks – 60 Lectures)

Objective: To introduce the students to the basics of marketing management.

Unit I Introduction to Marketing (25 Marks- 15 Lectures)

Concept of marketing and importance

Product Planning & Decisions

Product planning – Meaning, new product development process, reasons for new product development and reasons for product failure. Product Life Cycle (PLC) - meaning, stages and implications.

Branding - concept and strategies, essentials of a good brand name.

Packaging – Meaning and essentials. Labeling – Meaning and importance.

Unit II Pricing (25 Marks-15 Lectures)

Meaning, importance and factors influencing pricing. Major pricing methods – cost, demand, competition. Pricing policies - Skimming pricing, Penetration pricing, Geographical, Leader pricing, Psychological pricing.

Unit III Promotion (25 Marks-15 Lectures)

Advertising - Meaning, objectives, role and limitations of advertising.

Sales promotion - Meaning, importance of sales promotion, major tools of sale promotion.

Personal selling –Meaning and steps. Public relations - Meaning and tools.

Unit IV Marketing Logistics (25 Marks-15 Lectures)

Physical distribution – Meaning and elements. Channels of distribution – Meaning and types, factors influencing choice of channels. Distribution channel policies.

References:

1) Kotler, Philip. Armstrong Gary. *Principles of Marketing.* Prentice-Hall.
2) Gandhi, J.C. *Marketing a Managerial Introduction*. Tata McGraw Hill.
3) Kotler, Keller, Koshy & Jha. *Marketing Management - A South Asian Perspective*. Thirteenth International Ed. Pearson, Delhi.
4) Karunakaran, K. *Marketing Management - Text and cases in Indian context*. Himalaya Publishing House, Mumbai.
5) Banerjee, Mrityunjoy. *Essentials of Modern Marketing*. Oxford & IBH Publishing.
6) Ramaswamy, V.S., Namakumari, S. *Marketing Management Planning Implementation & Control*. MacMillan, India.
7) Stanton, William; Etzel Michael & Walker Bruce. *Fundamentals of Marketing*. McGraw Hill International.

B. COM.
SEMESTER I
Management of Micro, Small and Medium Enterprises (GE 1)
(100 Marks- 60 Lectures)

OBJECTIVE: To motivate the students to be self employed. From the syllabus they will get theoretical knowledge on how to start an enterprise of their own. Practical knowledge can be obtained through assignments on various units from the syllabus.

UNIT I Steps in Setting-up a MSME (30 Marks-20 lectures)

Concept of MSME, definition of MSME in India, Characteristics of MSMEs Evolution of MSME, Role and significance of MSMEs in economic development, Challenges and opportunities of MSME in India

a) Selection of a product –factors to be considered while selecting a product
b) Preparation of project report
c) Selection of form of ownership-meaning of Sole proprietorship, Partnership, Company, HUF, Co-operative society and factors to be considered for selection of form of ownership.
d) Selection of site-factors to be considered and different sites available
e) Designing capital structure-factors to be considered
f) Quotation for machinery or equipment
g) Provisional Registration of SSI- procedure in detail and its importance
h) Obtaining NOC and other statutory licenses from pollution board, food and drug department, municipality, health, factories and boilers.
i) Apply for power/water connection
j) Recruitment, Selection and Training of staff an overview
K) Procurement of inputs
l) Trial and commencement of commercial production.
m) Permanent registration-procedure in detail and its importance

UNIT II Functional areas of Management (25 Marks-15 lectures)

a) Production management: factors influencing choice of technology.
Material management- Purchasing- need and importance, Inventory Control-need and importance.
b) Marketing Management: factors affecting choice of channels, Problems faced by SSI units and remedies to overcome the problems.
c) Financial Management: Fixed and Working capital- factors considered, sources and management of fixed and working capital. Problems faced by SSI units.
d) Man power requirements- unskilled, semi-skilled, skilled, contract and casual workers. Sources of recruitment in SSI units, problems faced(labour turnover, labour absenteeism, labour shortage, maintenance of workers).

UNIT III Institutional Support to Entrepreneurs and Industrial Sickness (25 Marks-15 lectures)

SIDO, MSMEDI, NSIC, GIDC, EDC, DIC, GHRSSIDC, KVIC, EDI-India, NIESBUD, SIDBI, SFC, DRDA, GCCI and commercial banks (objectives, functions/schemes)

Meaning, Need and Issues of Incentives. Incentives and Subsidies offered by Government of Goa and incentives and subsidies offered by Central Government. PMRY scheme, CMRY scheme, Seed Capital Assistance Scheme, Horticulture kiosk scheme in brief.
Industrial Sickness-Meaning, Symptoms, Causes, Consequences of Industrial Sickness, Remedial measures taken including government's role.

UNIT IV Social Responsibilities of Entrepreneurs (20 Marks- 10 lectures)

Social responsibilities of entrepreneurs- towards owners, employees, shareholders, customers, government, suppliers, competitors, society and environment. Arguments for and against social responsibilities

References:

1. Desai, Vasant. *Dynamics of Entrepreneurship Development*
2. Kale, Ahmed. *Industrial Organisation and Management*
3. Mascarenhas, Romeo. *Entrepreneurship Management,* Vipul Prakashan
4. Paul, Jose & Kumar Ajith. *Entrepreneurship Development and Management.* Himalaya publishing house
5. Khanka, S.S. *Entrepreneurial Development.* Sultan Chand publication
6. Gordon, Natarajan. *Entrepreneurship Development.* Himalaya publishing house
7. Gupta, C.B., Srinivasan. *Entrepreneurial Development.* Sultan Chand
8. Pednekar, Achut P. *Entrepreneurship Management.* Himalaya publishing house.

COMMERCE ELECTIVES SEMESTER-II

B.COM.
SEMESTER II
Banking II (GE 2)
(100 Marks- 60 Lectures)

Objective: To provide an insight to banker-customer relationship, banking technology, bank financials and regulations.

Unit I Banker-Customer Relationship (20 Marks-15 Lectures)

General relationship between banker and customer, Special features of banker-customer relationship, Banker as a debtor, creditor, trustee agent, consultant, bailee, and lessor, Obligation to honour cheques, to maintain secrecy of customer accounts, obligation of immediate credit of outstation cheques. Banker's Rights: Banker's Lien, Right to Set-off, Right of appropriation of accounts, Right to charge interest/commission, Right of assignment, termination of relationship, Paperless banking, branchless banking, Day-wise banking, global banking, priority banking.

Unit - II Technology in Banking (25 marks and 15 lectures)

Electronic Banking - Introduction, Impact of information technology on banking, Conventional systems: Demand drafts & pay orders and their clearing, drawbacks/difficulties of these systems. Electronic fund transfer system: RTGS, NEFT & SWIFT. Electronic Clearing Systems (ECS).Debit & Credit cards, Automated Teller Machines (ATMs), HWAK, PIN, Signal storage and Retrieval, Core Banking, Telephone Banking, Mobile banking, Internet banking,. Recent trends and developments in banking technology: CTS; Note & Coin Counting & Vending Machines; Microfiche; Banking payment intermediaries –RUPAY, VISA, Mastercard etc. Components & Modes of Transmission; Emerging trends in banking Communication, Networks for Banking. Funds Transfer Systems.

Unit III Financial Statement Analysis of Banks (30 Marks- 20 Lectures)

Meaning and Significance of Financial Statements, Financial Statements of banks, Assets and Liabilities of a Bank, Revenue and Expense of a Bank, Bank Financial / Performance Analysis Ratios – CAMELS approach: Capital Adequacy Ratios, CD Ratio, Assets Quality Ratios, Profitability Ratios, Liquidity Ratios and Productivity Ratios, Practical problems on ratios.

Unit IV An Overview of Banking Regulations (25 Marks-10 Lectures)

Banking Regulation Act, 1949 – objectives and functions, Reserve Bank of India Act, 1934 Objectives and functions.The Securitization and Reconstruction of Financial Assets and Enforcement of Security Act 2002- objectives and functions. A brief introduction to: Ombudsman Act, Credit Information Bureau (India) Ltd., Reforms in banking sector (Second generation reforms), Negotiable Instruments - Features of negotiable instruments, Promissory notes, Cheques and other instruments. Types of Cheques – Bearer and Crossed cheques (General Crossing and Special Crossing). Endorsements of cheques: meaning and importance.

References:

Books

1. Indian Institute of Banking and Finance, Principles and Practices of Banking, (2nd Edition) Macmillan Publication India Limited, New Delhi.
2. Indian Institute of Banking and Finance, Basics of Banking (Know your Bankin), Taxman Publication Pvt. Ltd. New Delhi.
3. Indian Institute of Banking and Finance, Banking Products and Services, Taxman Publication Pvt. Ltd. New Delhi.
4. B. S. Khubchandani, Practice and Law of Banking, Macmillan Publisher India Ltd. New Delhi.
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6. Dr. P. K. Srivastava, Banking Theory and Practice, Himalaya Publishing House Ltd.Mumbai.
7. P. N. Varshney, Banking Law and Practice, Sultan Chand and Sons, New Delhi.
8. D.Muraleedharan,Modern Banking Theory and Practice, PHI Learning Pvt.Ltd. New Delhi.
9. K. C. Shekhar and LekshmyShekhar, Banking Theory and Practice, Vikas Publishing House Pvt. Ltd. New Delhi.
10. O. P. Agarwal, Modern Banking in India, Himalaya Publishing House, New Delhi.
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12. H. L. Bediand V. K. Hardikar, Practical Banking and Advances USB Publishers Distribution Ltd. New Delhi.

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1. RBI bulletins on Banking (Yearly)
2. The Indian Banker, Indian Bank's Association
3. The IUP Journal of Bank Management, IUP publications, Hyderabad
4. IIB Journal, Indian Institute of Banking & Finance.

Website

1. Reserve Bank of India www.rbi.org.in
2. Indian Institute of Banking and Finance www.iibf.org.in
3. Indian Banker, Indian Bank's s Association www.iba.org.in

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SEMESTER II
Customer Relationship Management (GE 2)
(100 marks- 60 Lectures)

Objective: To acquaint students to the analytical and strategic aspects of CRM.

Unit I Introduction to CRM (25 marks- 15 Lectures)

Consumer behaviour and organizational buying behaviour - concept and differences.
Relationship Marketing - concept, CRM - Meaning, overview of CRM process, benefits to customer and organization. Relationship Value of customers- factors influencing relationship value.
Customer Service/Sales Profile- Customer Pyramid, Hourglass, Hexagon. Pitfalls of Customer Service/ Sales Profile.
CRM typical business touch points, CRM capabilities and customer life cycle.

Unit II Creating Customer Value and Loyalty (25 marks- 15 Lectures)

Customer Lifetime Value - Meaning and measurement concepts, Customer Equity -concepts.
Customer Loyalty, Customer Profitability, Customer Pyramid-concepts.
The 4 A's framework and Customer Focus.
Customer Complaints-nature of consumer action, types of complainers.

Unit III Customer Databases & Database Marketing (25 marks- 15 Lectures)

Collecting customer data- Customer databases – sources. Data warehouses and data mining.
Identifying information- Privacy and CRM programmes.
Analysing customer data and identifying target customers. Limitations of database marketing and CRM.
E-CRM, operational CRM (a) Sales Force Automation (SFA), (b) Customer Service and Support (CSS), (c) Enterprise Marketing Automation (EMA), (d) Integrated CRM.
E-CRM Technology Dimensions - Utility.

Unit IV Developing CRM Programmes (25 marks- 15 Lectures)

Increasing the value of customer base - Strategies.
Steps in attracting and retaining customers.
Customer Retention - strategies and levels -financial, social, customization and structural bonds.
Internal Marketing- concept.

References:

1. Kotler; Keller; Koshy & Jha. *Marketing Management-A South Asian Perspective*. Pearson Education.
2. Zeithaml, Valarie & Bitner, Mary Jo. *Services Marketing - Integrating Customer Focus Across The Firm*. McGraw Hill.
3. Karunakaran. *Marketing Management-Text and Cases in Indian Context*. Himalaya Publishing House.

4. Levy, Michael & Weitz, Barton. *Retail Management*.Tata McGraw Hill.
5. Zeithaml, Valarie; Bitner, Mary Jo & Gremler, Pandit. *Services Marketing-Integrating Customer Focus Across The Firm.* McGraw Hill.
6. P.T. Joseph S.J. *E-Commerce-An Indian Perspective*. Prentice Hall.
7. Mann Puja Walia, Niddhi. *E-Commerce*. MJP Publishers.
8. Venugopal, Vasanti & N., Raghu V. *Services Marketing*. Himalaya Publishing House.
9. Anderson, Kristin & Kerr, Carol. *Customer Relationship Management*. McGraw Hill.

B.COM.
SEMESTER-II
Practice of Insurance (GE 2)
(100 Marks-60 Lectures)

Objectives: To introduce the students to processes and intermediaries in claim management and insurance marketing and familiarize them with emerging concepts in insurance industry.

Unit I Claim Management (25 Marks-15 lectures)

Introduction-meaning of grace days, nomination, assignment, surrender value, Paid up value, foreclosure. Importance of claim management, OECD Guidelines on best practices in claim management, Claims Management in Life Insurance-Maturity and Death claims (documentation required and settlement). Repudiation of claim in Life Insurance, General Insurance- claim procedure for general insurance, procedure for claims in fire, marine and motor vehicle insurance, Claim settlement ratio.

Unit II Insurance Intermediaries (25 Marks-15 lectures)

Insurance Agents - Definition of an Agent, functions and responsibility of an agent, prerequisites for agents success, procedure for becoming an agent, methods of remunerating agents, agents regulations, agency as a profession, insurance ethics, TPA, Surveyors.

Unit III Insurance Marketing (25 Marks-15 lectures)

Marketing of insurance products- objectives, scope, importance, Marketing Mix, Distribution channels - Traditional and modern (Online insurance, Bancassurance) Marketing strategies of insurance companies.

Unit IV Emerging Concepts in Insurance Industry (25 Marks-15 lectures)

Rural Insurance-need and potential for rural insurance, Different rural insurance policies - objectives and benefits/ schemes-Aqua culture, Cattle, Farmers Package, Fish, Floriculture, Horticulture and poultry insurance. An overview of Social Insurance & Unemployment insurance, Double insurance.

References

Books

1. DrPeriaswamy,Principles and Practice of Insurance, Himalaya Publishing House
2. DrP.K.Gupta, Insurance and Risk Management- Himalaya Publishing House
3. Reddy and Murali Krishna,Risk Management-Ramakrishna, Discovery Publishing House, New Delhi
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1. Journal of Insurance and Risk Management, Birla Institute of management & Technology
2. The Journal of Insurance Institute of India, Insurance Institute of India

Websites:
1. www.insuranceinstituteofindia.com
2. www.irdai.gov.in
3. www.niapune.com

B. COM.
SEMESTER II
Production Management (GE 2)
(100 Marks – 60 Lectures)

Objective:

To acquaint students with the basic concepts of production management, some key decisions and functions relating to production that have a bearing on the performance and profitability of a business.

Unit I Introduction to Production (25 Marks 15 Lectures)

a) Meaning of production, production management and operations management. Importance of production function. Production planning and control – meaning and scope.
b) Plant layout – features, principles of a good plant layout. Importance of layout. Types of layout – product layout, process layout, group technology/combined layout.
Service facility layout – design of services and service processes.
Special arrangements for particular types of plants.
Arrangements of other facilities – location of receiving and shipping departments, storage, inspection, maintenance, employee facilities.

Unit II Purchasing and Material Handling (25 Marks 15 Lectures)

Purchasing - Meaning, importance (overview), purchasing cycle – steps. Purchasing policy – make or buy decisions.
Material handling – Materials and Materials handling – meaning. Material management – objectives.
Material handling costs – Cost of owning and cost of operating – concept.

Unit III Inventory Management and Control (25 Marks 15 Lectures)

Meaning of Inventory control and importance. Factors influencing inventory management.
Inventory control techniques – selective Inventory control, ABC analysis, HML analysis, FNSD analysis, VED analysis, SDE analysis.
Economic Order Quantity (EOQ) and Just-in-time (JIT) – concepts.

Unit IV Value Analysis (25 Marks 15 Lectures)

Meaning of Value, Value analysis. Steps in value analysis programme – selection of products for value analysis, identifying the functions, evaluation of function by comparison, developing alternatives.
Fundamental tools of value analysis programme. Design analysis and cost analysis.
Advantages and limitations of value analysis.

References:

1. Atul Sharma, Neetu Sharma *Production Management.* Vayu Education of India.
2. Ashwathappa & Bhat *Production and Operations Management.* Himalaya Publishing House.
3. Bedi Kanishka *Production and Operations Management.* Oxford Higher Education.
4. Chary, S. N. *Production and Operations Management.* Tata McGraw Hill.

5. Everette E. Adam, Jr. Ronald J. Ebert *Production and Operations Management.* Prentice Hall India.
6. Kothari, C. R. *An Introduction to Operational Research.* Vikas Publishing House.
7. Rao Thukarm M. E. *Production and Operations Management.* New Age International Publishers.
8. Singh, S. P. *Production and Operations Management.* S. Chand.
9. Singhal, R. K. *Production Management.* Katson Books.
10. Starr Martin. K. *Production and Operations Management.* Cengage Learning India.
11. Telsang, M. T. *Production Management.* S. Chand.

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SEMESTER II
Services Marketing – I (GE 2)
(100 MARKS - 60 LECTURES)

Objective: To familiarize the students with the concepts and processes in Services Marketing.

Unit I Introduction to Services (25 marks 15 Lectures)

Services- meaning and definition, Role of service sector in an economy, Service sector in India- an overview, importance of service sector in India

Service components- physical product, service product, service environment and service delivery,

Difference between goods and services, Classification/ types of services,

Factors responsible for growth of service sector,

Unit II Marketing Mix for Services (25 marks 15 Lectures)

Product Mix- service product- meaning, levels of service product (core level, expected level, augmented level and potential level)

Price Mix- meaning, special issues of pricing in a service sector

Place Mix- meaning, major issues-

i. Choice of location – meaning and factors.
ii. Choice of channels- Direct channels, Indirect channels- role of service intermediaries -agents and brokers, franchising, Electronic channels.

Promotion Mix- meaning, guidelines for managing service promotion.

People Mix- meaning, types of service personnel.

Process Mix- meaning, types of service processes.

Physical Evidence- meaning, components.

Unit III Customer Satisfaction (25 marks 15 Lectures)

Customer Expectations- meaning, types.

The Zone of Tolerance – meaning, variability.

Customer Satisfaction- meaning, States of satisfaction, Factors affecting customer satisfaction.

Unit IV Service Delivery and Customer Retention (25 marks 15 Lectures)

Service Delivery- i) Service culture- meaning, ii) Critical importance of service employees in service delivery- Services Triangle- meaning and concept; employee satisfaction.

iii) Major roles played by customers in service delivery.

Service Quality-meaning, components of service quality, service quality dimensions

Gap model of service quality- 5 gaps and strategies for each gap.

Service Encounters- meaning, importance, types of encounters.

Customer retention- meaning

Service Failure and recovery – meaning, service recovery strategies.

Service Guarantees – meaning and benefits.

References:

1. Zeithaml, Valarie & Bitner, Mary Jo. *Services Marketing.* Tata McGraw Hill.
2. Clow, Kenneth E. & Kurtz, David L. *Services Marketing- Operation, Management and Strategy*, (Second ed). Biztantra.
3. Woodruffe, Helen. *Services Marketing.* MacMillan.
4. Srinivasan, R. *Services Marketing – The Indian Context*. Prentice Hall.
5. Rust, Roland; Zahorik, Anthony & Keiningham, Timothy. *Services Marketing.* Eastern Press, Bangalore.
6. Shankar, Ravi. *Services Marketing – The Indian Perspective*. Excel Books.
7. Venugopal, Vasanti. *Services Marketing.* Himalaya Publications.

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SEMESTER II
Tourism and Hospitality Management (GE 2)
(100 Marks – 60 Lectures)

Objective: To acquaint the students with the fundamentals of tourism and hospitality management.

Unit 1: Introduction to Tourism **25 marks, 15 Lectures**

Definition and meaning of tourism and tourism related terms - Tour, Tourist, Tourism Market, Tourism Resources, Tourism Product, Travel agent, Tour operator. Nature, Characteristics and Importance of tourism. Tourism Product, Features of Tourism Product, Type of Tourism Products, Difference between Tourism Products and other products, the 5 A's of tourism product: Attraction, Accessibility, Accommodation , Amenities and Affordability.

Unit 2: Types and Forms of Tourism **25 marks, 15 lectures**

Types of tourism: Domestic, International; Inbound, Outbound, Inter-regional, Intra-regional Forms: - Leisure, Business, Cultural, Religious, Sports, Medical, Adventure, Eco Tourism, Green Tourism, Heritage tourism, Sustainable Tourism, Cultural Tourism, Agri-Tourism and Rural tourism. Factors affecting the growth of tourism, demand and supply factors for tourism, motivations in Tourism - Push and Pull factors Constituents of tourism industry: Primary Constituents: Accommodation, Food, Transport, Intermediaries, Government Organizations; Secondary Constituents: Shops and Emporiums, Handicrafts and Souvenirs.

Unit 3: Tourism and its Impacts **25 marks, 15 lectures**

Economic impacts of tourism: income and employment, multipliers of tourism, balance of payments, foreign exchange etc; Socio-cultural impacts of tourism: cultural exchange among nations and international understanding; Ecological and environmental impacts of tourism, garbage, habitat destruction, pollution etc. Political impacts-Ethics and Legislation, Sustainable Development- Environmental Impact Analysis, Issues from the perspective of different stakeholders (government, local people, tourists and tourism businesses).

Unit 4: Hospitality and its related sectors **25 marks, 15 lectures**

Origin, growth and nature of Hospitality Industry, Factors affecting Hospitality and Tourism Industry, Employment Opportunities in Hospitality Industry, Various sectors comprising the hospitality industry - lodging/accommodation, event planning, theme parks, transportation, cruises, Tourism and Hospitality in 21st century – Global gaming and Casino operations – Recent trends

References

1. Bhatia, A.K.: Tourism Development, Principles and practices: Sterling Publishers (P) Ltd.
2. Fletcher, J., Fyall, A., Gilbert, D., Wanhill, S., Tourism Principles and Practice, Pearson New International Edition, 2013.
3. Bhatt, H., *Hospitality and Tourism Management,* Commonwealth Publishers, New Delhi.

Journals

1. Journal of Hospitality and Tourism Research (JHTR), Sage Publications, jht.sage pub.com
2. Journal of Hospitality and Tourism Management, Elsevier,www.journals.elsevier.com
3. Journal of Hospitality and Tourism, www.johat.org
4. International Journal of Tourism Research, Wiley Online, onlinelibrary.wiley.com
5. Journal of Hospitality and Tourism Management, www.sciencedirect.com

SEMESTER – III

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SEMESTER II
Business Environment –I (GE 3)
(100 Marks-60 Lectures)

Objective: To familiarize students about different aspects of business environment and its impact on business activities.

Unit I Business and its Environment (25 marks -15 Lectures)

Meaning, definition, scope, nature and goals of business; contemporary characteristics of modern business; Business environment – meaning, importance and features; Components of business environment– micro and macro; Social responsibilities of business

Internal environment- value system, vision, mission and objectives, nature and structure of management, internal power relationship, company image.

External environment –Micro - Consumer / Customer , Competitors , Organization , Market , Suppliers , Intermediaries , Public. Macro – Demographic, Economic, Political, Legal, Socio – Cultural , Technological , physical and Global environment.

Unit II Socio-Cultural and Demographic Environment (30 marks -18 Lectures)

Culture- meaning, definition and characteristics- Organizational Culture – meaning and importance-Effect of socio-cultural environment on Business-Family system, marriages, Religion and caste, ethics, purchases, attitude to work, languages and global business.

Social groups such as caste, class & nouveau riche - their impact on business; Customs, traditions and values and their impact on business

Demographic environment - meaning and composition; Need of demographic studies for business

Migration - meaning, reasons for migration, impact of migration (positive and negative)

Unit III Natural and Technological Environment (20 marks -12 Lectures)

Natural environment – meaning and composition; impact of natural environment on business.

Technological Environment- Technology- modern and Indigenous technology -meaning and importance – Innovation and technology-sources of technological dynamics- Features of technology-status of technology in India- management of technology in India-Impact of technology on business-globalization and transfer of technology- Information technology-role of Information technology in development of global business, E-business in India, Technology Park – meaning & objectives.

Unit IV Political Environment (25 marks -15 Lectures)

Meaning, Role of Government in Business (regulatory, entrepreneurial, planning and promotional) Components of political environment - political systems, political stability, international relations, government bureaucracy and its role, special interest groups and their

impact on business, State Intervention in Business, Local self government -meaning, objectives, functions; Activities of Panchayat /Municipality and their impact on business.

References:

1. Misra, S.K. & Puri, V.K. (2007) Economic environment of Business, Himalaya Publishing House, Delhi
2. Menon, Lydia & Mallya, Prita, Business Environment
3. Cherunillam, Francis Business Environment, Himalaya Publishing House
4. Ashwathappa, K, Business Environment, Himalaya Publishing House
5. Dutt & Sundaram, Indian Economy, S. Chand & Company
6. Jain & Varma- Business Environment, Sahitya Bhavan, Agra.

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SEMESTER IV
Business Environment –II
(100 Marks-60 Lectures)

Objective: To introduce the students to elements and composition of economic, legal and international environment of business and also aims to bring about awareness of business environment in Goa.

Unit I Economic Environment of Business (30 Marks – 18 Lectures)

Meaning and components of economic environment of business, - Economic systems, Economic planning, Economic policies, Economic legislation, controls and regulations

Economic systems -capitalism, socialism and mixed economy- meaning and features

Economic planning in India- Objectives of planning and main provisions of current five Year plan, NITI Ayog.

Economic policies -fiscal, monetary, industrial policy, Import-Export policy, investment policy (including foreign investment policy) and employment policy –meaning and objectives.

Make in India policy and business.

Unit II Legal Environment of Business (20 Marks – 12 Lectures)
Meaning and components of legal environment; impact of legal environment on business

Environment Protection Act1986 – objectives and major provisions

Consumer Protection Act 1986 – Objectives and major provisions, Consumer Redressal Agencies; Jurisdiction and powers

Right to Information Act (RTI) 2005- Definition and meaning of information, public Authority, right to information and record- objectives of the Act- scope of right to information—exemption—public Information officer - procedure for seeking information, fees and response time, appeals, penalty provisions, case studies.

Unit III International Environment and India (20 Marks – 12 Lectures)
Overview of Industrial policy of India till 1990- new industrial policy-objectives and features, globalization- liberalization- privatization (meaning) and - Foreign capital- meaning, need - Multi-national Corporation-merits and demerits-case studies on MNCs in Goa.
International events and its impact on Indian industry

The International Finance Corporation's Ease of Doing Business Index - composition of the index; India's performance on the index and each of the components.

Unit IV Business Environment in Goa (**30 Marks – 18 Lectures)**

Brief introduction of industrialization in Goa- Current Status of the Goan economy- Goa's current performance on important economic and socio-economic indicators-Industrial policy in Goa - Introduction, objectives and thrust areas- Industrial Estates in Goa -Industry associations- meaning and need- Goa Chamber of Commerce and Industry (GCCI) and Goa State Industries Association (GSIC) -objectives and functions and major activities.
Environmental issues and Goan Industry
Local self government in Goa -meaning, objectives, functions; Activities of Panchayat /Municipality and their impact on business.
Environmental movements in Goa-meaning of environmental movement, movements related to mining, tourism and construction -their objectives and activities.
Case study on CSR in Goa.

References

1. Agarwal, P.N. (2001) A comprehensive History of Business India, Tata McGraw-Hill Publisher Company Limited, New Delhi.
2. Konoria, S.S. Ed (1990) Footprints of Enterprises, Federation of Indian Chamber & Commerce, New Delhi
3. Misra, S.K. & Puri, V.K. (2007) Economic environment of Business, Himalaya Publishing House, Delhi
4. Menon, Lydia & Mallya, Prita, Business Environment
5. Cherunillam, Francis Business Environment, Himalaya Publishing House
6. Ashwathappa, K, Business Environment, Himalaya Publishing House
7. Dutt & Sundaram, Indian Economy, S. Chand & Company
8. Goa Panchayat Raj Act
9. Right to Information Act 2005

Websites:

1. Envfor.nic.in/legis/env1.html
2. www.ncdrc.nic.in/11.html
3. www.iitb.ac.in/legal/RTI-Act.pdf

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SEMESTER-III
Fundamentals of Rural Marketing (GE 3)
(100 Marks – 60 Lectures)

Objective: To introduce students to the subject of rural marketing and issues related to rural markets.

Unit I Introduction to Rural Marketing: (25 Marks- 15 Lectures)

Concepts of rural market and rural marketing. Rural market – Profile. Tapping the rural market – need, how to identify the potential of rural market. Factors leading to growth of rural markets. Distinction between rural and urban marketing.

Unit II Rural Marketing Environment and segmentation for Rural Markets (25 Marks- 15 Lectures)

Rural marketing environment – Meaning, forces and their influence on rural marketing operations. Rural market segmentation – Meaning and bases – geographical, demographic, socio cultural, economic, behavioural.

Unit III Rural Consumer and Demand (25 Marks- 15 Lectures)

Profile of rural consumer – characteristics, attitudes and behaviour. Rural consumer demand – buying pattern and influences.

Unit IV Rural Marketing – Problems and opportunities. (25 Marks-15 Lectures)

Problems of Rural Marketing - Brand building in rural India – fake brands market – (use case study examples). Strategy to counter fake brands, Rural marketing opportunities. Cooperative marketing – concept. Micro-finance - concept and service providers.

References:

1. Sinha, A. *Rural Consumer Behaviour*. Sonali Publications, New Delhi.
2. Srivastava, P. K. *Marketing Management in a Developing Economy*, Bangalore.
3. Nair, N. Rajan & Varma, M. M. *Marketing Management*, New Delhi.
4. Mathur, U. C. *Rural Marketing*. Excel Books.
5. Velayudhan, Sanal Kumar. *Rural Marketing: Targeting the non-urban consumer.* Response Books, SAGE Publications.
6. Singh, Sukhpal. *Rural Marketing*.Vikas Publishers.
7. Rajagopal. *Managing Rural Business*. Wheeler Publications, New Delhi.
8. Gopalaswamy. *Rural Marketing.* Wheeler Publications, New Delhi.
9. Kamat, Minouti S. & Krishnamoorthy, R. *A Textbook on Rural Marketing*. Himalaya Publishing House.

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SEMESTER III (GE 3)
Indian Capital Markets
(100 Marks – 60 Lectures)

Objective: To provide a comprehensive understanding of various operations, issues and developments in Indian capital markets.

Unit I Introduction to Indian Securities Markets (25 Marks-15 Lectures)

Meaning of securities, role of securities markets, structure of securities markets and market segments, Capital market instruments, Capital market participants and intermediaries, Role of SEBI in Indian capital markets, Reforms in Indian Capital Markets, Major issues in Indian capital markets, Investor protection, Recent developments in Indian capital markets.

Unit II Primary Markets (25 Marks-15 Lectures)

(a) Structure: Nature and functions of primary market, Categories of issuers in primary markets, Regulatory framework for primary markets, Types of investors in primary markets, Types of public issues – IPO, FPO, private placement and offer for sale, Public issue process and Book-Building, Allotment of shares.

(b) Merchant banking: Meaning, nature and functions, Merchant Banking in India, Role in issue management, Classification and regulation of merchant bankers by SEBI.

Unit III Secondary Markets (25 Marks-15 Lectures)

Role and functions of secondary markets, Market structure and participants in secondary markets, Listing – Process and advantages; Stock market indices (BSE Sensex, NSE Nifty, sectoral indices) – Composition and computation – Overview of international exchanges and indices; Trading and settlement mechanism in Indian stock exchanges – BSE, NSE; Role of Clearing House, Internet trading, Risk management systems for secondary markets, Rights, obligations and grievance redressal mechanism for investors in secondary markets.

Unit IV Derivatives Markets (25 Marks-15 Lectures)

Key concepts with regard to derivatives, types of derivative products and their features, structure of the derivative markets, trading and settlement of derivatives, regulatory and risk management process for derivatives, use of derivatives in speculation, hedging and risk management, costs, benefits and risks of derivatives, key derivative market indicators.

References:

1. Chakrabarti, R., & De, S. (2010). *Capital Markets in India.* New Delhi: Sage Response.
2. Gordon, E., & Natarajan, K. (2015). *Financial Markets and Services* (Ninth ed.). New Delhi: Himalaya Publishing House.
3. Gurusamy, S. (2009). *Capital Markets* (Second ed.). New Delhi: Tata McGraw Hill.

4. Pandian, P. (2013). *Security Analysis and Portfolio Management* (Second ed.). New Delhi: Vikas Publishing House.

5. Patwari, D., & Bhargava, A. (2006). *Options & Furtures: An Indian Perspective.* New Delhi: Jaico Publishing House.

6. Ramesh Babu, G. (2014). *Capital Market in India.* New Delhi: Concept Publishing Co.

Journals:
Indian Journal of Finance
Indian Journal of Research in Capital Markets
Indian Journal of Economics and Research
Capital Markets
Vikalp
IIM – B Review

Websites:
www.bseindia.com
www.nseindia.com
www.equitymaster.com
www.shodhganga.inflibnet.ac.in
www.capitalmarket.com

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SEMESTER IV
APPLIED COMPONENT
Financial Services
(100 Marks – 60 Lectures)

Objective: To develop an understanding of salient features and mechanisms of important financial services and recent developments and issues in Indian financial services sector.

Unit I Introduction to Financial Services (25 Marks- 15 Lectures)

Meaning of Financial Services, Classification and types of financial services - asset/fund-based services and fee-based/advisory services, Importance of financial services; Constituents of financial services market, Growth and development of financial services in India, Problems of financial services sector in India.

Unit II Depository Services (25 Marks- 15 Lectures)

Meaning, Need for a depository system, Functions of a depository, Depositories in India - CDSL, NSDL; Depository participants (DPs) - Functions of Depository Participant – Dematerialization, Re-materialization, Account Opening, Transmission and nomination, Trading and settlement, Pledge and hypothecation, Corporate actions.

Unit III Mutual Funds (25 Marks- 15 Lectures)

Concept, Advantages and disadvantages of mutual fund investing, Structure of mutual funds in India, Classification of mutual funds, Mutual fund terminologies – Scheme, Portfolio, Net Asset Value (NAV), Load, Management fees; Portfolio management process of mutual funds, History and growth of mutual funds in India, SEBI regulations on mutual funds, AMFI.

Unit IV Credit Rating & Securitization Services (25 Marks- 15 Lectures)

(a) Credit Rating - meaning, rating methodology, importance of credit rating; credit rating agencies in India CRISIL, CARE, ICRA, Small & Medium Enterprises Rating Agency (SMERA).
(b) Securitization - Meaning, Features, Mechanism, Types, Benefits of Securitization, Process of Securitization, Issues in Securitization

References:

1. Gordon, E., & Natarajan, K. (2015). *Financial Markets and Services* (Ninth ed.). New Delhi: Himalaya Publishing House.
2. Gurusamy, S. (2009). *Financial Services* (Second ed.). New Delhi: Tata McGraw Hill.
3. Khan, M. Y. (2010). *Financial Services* (Fifth ed.). New Delhi: Tata McGraw Hill.

4. Pathak, B. (2009). *The Indian Financial System: Markets, Institutions and Services* (Second ed.). New Delhi: Pearson Education.

5. Ramesh Babu, G. (2005). *Financial Services in India.* New Delhi: Concept Publishing Company.

Journals:

International Journal of Financial Services Management
Journal of Private Equity
Journal of Applied Finance
Finance India
Indian Journal of Finance
Vikalpa

Websites:

http://financialservices.gov.in/
https://vcexperts.com/

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SEMESTER III
Business Finance
(100 Marks, 60 Lectures)

UNIT I: Nature and Objectives of Business Finance (25 Marks 15 Lectures)

Meaning of business finance, business finance v/s corporate finance, role of business finance in an organization, principles of business finance, meaning of financial planning, steps in financial planning, significance of financial planning, essential features of a good financial plan, types of financial plan.

UNIT II: Classification of Capital (25 Marks-15 Lectures)

Meaning of Capital, Classification of capital, factors determining capital requirements, meaning, features and sources of fixed capital, factors determining fixed capital requirements, importance of adequate fixed capital; meaning, features and sources of working capital, Factors determining working capital requirements, significance of adequate Working capital, types of working capital

UNIT III: Capitalisation (25 Marks-15 Lectures)

Meaning of capitalization, Theories of capitalization, Cost theory v/s Earnings theory, overcapitalization and under capitalization, meaning, causes, effects and remedies; overcapitalization v/s under capitalization; balanced capitalization, meaning and importance

UNIT IV: Capital Structure (25 Marks–15 Lectures)

Concept of capital structure, Meaning and importance of capital structure, factors affecting capital structure, concept of financial structure, capital gearing, meaning, types and advantages, trading on equity, meaning, types and advantages and limitations.

References:

Books

8. Sharma, R.K. & Gupta, Shashi., K. *Business Organisation and Management*
9. Srivastava, R.M. *Essentials of Business Finance*, Himalaya Publishing House, Kalyani Publications.
10. Singh, Preeti. Investment Management. Himalaya Publishing House
11. Kale, N.G. *Business Organisation.* Manisha Publications.
12. Sontakki C.N., *Business Organisation*, Seth Publishers
13. Gordon, E. & Natarajan, K. Financial Markets and Institutions, Himalaya Publishing House.
14. Sadak, H. *Mutual Funds in India*, Response Books, Sage Publications.

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SEMESTER IV
FUNDAMENTALS OF INVESTMENT (CC)
(100 Marks, 60 Lectures)

Objective: To familiarize the students with different investment alternatives, introduce them to the framework of their analysis and valuation and highlight the role of investor protection.

Unit I Investment Environment (30 Marks, 20 Lectures)

The investment decision process, Types of Investments – Commodities, Real Estate and Financial Assets (Equity, Mutual funds, Debt), the Indian securities market, the market participants (Stock exchanges, Stock brokers, Clearing House, Depositories, Depository Participants, FIIs, Domestic institutional investors, Individual investors), Online and offline trading in securities, security market indices, sources of financial information, Concept of return and risk, Impact of Taxes and Inflation on returns.

Unit II Analysis of Equity and Debt Instruments (30 Marks, 20 Lectures)

(c) Fixed Income Securities

Bond features, types of bonds, estimating bond yields, Bond Pricing, types of bond risks, default risk and credit rating, Bond market indices.

(d) **Approaches to Equity Analysis**

Introduction to Fundamental Analysis, Technical Analysis, dividend capitalisation models, and price-earnings multiple approach to equity valuation, Intrinsic value, Price to Book value ratio.

Unit III Portfolio Analysis and Financial Derivatives (20 Marks, 10 Lectures)

Portfolio and Diversification, Portfolio Risk and Return; Mutual Funds; Introduction to Financial Derivatives; Financial Derivatives Markets in India

Unit IV: Investor Protection (20 Marks, 10 Lectures)

Role of SEBI and stock exchanges in investor protection; Investor grievances and their redressal system, insider trading, investor awareness and activism.

References:

1. Jones, C.P. *Investments Analysis and Management*, Wiley, 8th ed.
2. Chandra, Prasanna. *Investment Analysis and Portfolio Management.* McGraw Hill Education
3. Rustogi, R.P. *Fundamentals of Investment*. Sultan Chand & Sons, New Delhi.
4. Vohra N.D. & Bagri B.R., *Futures and Options,* McGraw Hill Education
5. Mayo. An *Introduction to Investment*. Cengage Learning.

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SEMESTER V
DISCIPLINE SPECIFIC ELECTIVE
BUSINESS MANAGEMENT
Financial Management
(100 marks- 60 lectures)

Objectives : To familiarize the students with concepts, role and techniques of financial management in firms and provide an insight into various decisions in management of corporate finance.

UNIT I An Introduction to Financial Management (25 marks-10 lectures)

Meaning of Financial Management, scope and objectives of Financial Management, profit maximization v/s wealth maximization; Role & responsibilities of Financial Manager, measuring shareholders value creation, International Financial Management – meaning, forms of financial capital, importance, merits.

UNIT II Cost of Capital & its Measurement (25 marks-15 lectures)

Meaning of cost of capital, importance of cost of capital, types- historical cost, future cost, explicit cost, implicit cost, specific cost and composite cost; measuring cost of capital: cost of Debt, cost of Preference capital, cost of Equity share capital:- (*4 approaches- D/P ratio, E/P ratio, E/P ratio + growth ratio, realized yield approach*); cost of retained earnings and weighted average cost of capital.

UNIT III Capital Budgeting (25 marks- 20 lectures)

Meaning and nature of Capital Budgeting; importance of Capital Budgeting decisions; Capital Budgeting process; kinds of Capital Budgeting decisions (*Accept- reject decisions, mutually exclusive project decisions, capital rationing decision*s); project classification (*mandatory investment, new projects, replacement projects, expansion projects, diversification projects, research and development projects and miscellaneous projects*); investment criteria, methods of appraising capital expenditure proposals :

C. Non discounting criteria
2. Pay Back Period method 2. Average/ Accounting Rate of Return method
D. Discounting criteria
2. Net Present Value method 2. Internal Rate of Return method 3. Profitability Index

UNIT IV Capital Structure Decisions (25 marks – 15 lectures)

C. Meaning of capital structure, importance of capital structure and optimum capital structure, risk – return trade off, capital structure theories:- (*Net Income Approach, Net Operating Income Approach, Traditional Approach*) features of a sound / optimum capital mix, factors determining capital structure.
D. Leverages- meaning and types:
4. Financial leverage & its features
5. Operating leverage & its features

6. Combined leverage

Problems on:

4. Cost of capital and its measurement
5. Capital budgeting – only 3 methods i.e Pay Back Period method, Average/ Accounting Rate of Return method, Net Present Value method.
6. Leverages- Financial leverage, Operating leverage, Combined leverage

Books for study and reference:

12. Chandra, Prasanna. *Financial Management, Theory & Practice*. Tata McGraw Hill
13. Pandey I. M. *Financial Management*. Vikas Publishing House
14. Khan & Jain. *Financial Management.* Tata McGraw Hill
15. Kuchal, S.C. *Financial Management.* Chaitanya Publishing House
16. Sharma & Gupta, Shashi*. Financial Management*. Kalyani Publishers
17. Vanhorne, James C. *Fundamentals Of Financial Management.* Prentice Hall Of India
18. Phatak. *Indian Financial System,*
19. Singh, Preeti. *Investment Management.* Himalaya Publishing House
20. G. Sudarshana, Reddy. *Financial Management- Principles and Practice.* Himalaya Publishing House
21. Tulsian, P.C. *Financial Management.* S. Chand & Co Ltd
22. Shavam, Vyuptakesh*. Fundamentals Of Financial Management*. Pearson

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SEMESTER VI
DISCIPLINE SPECIFIC ELECTIVE
BUSINESS MANAGEMENT
Financial Management
(100 Marks- 60 Lectures)

UNIT I Dividend Policy (25 marks-15 lectures)

Meaning of dividend & dividend policy, determinants of dividend policy- dividend payout ratio, stable dividends & the other determinants; forms of dividends (cash dividend, scrip dividend, stock dividend, property dividend). Types of dividend- interim dividend and final dividend. Models in which investment & dividend decisions are related;

3. Walter's model and Gordon's model
4. M.M. Hypothesis (Modigliani and Miller)

UNIT II: Working Capital Management (25 marks-15 lectures)

Nature & concept of working capital, importance of working capital, types of working capital, determinants of working capital, sources of working capital (in brief), estimation and computation of working capital.

UNIT III : Management of Cash. (25 marks-15 lectures)

A. Cash management- introduction, objectives; motives of holding cash, factors determining cash needs, strategies employed to manage cash needs, techniques for speedy cash collection and techniques for slowing disbursements. Preparation of cash budget. (simple problems on the Receipt and Payments method)
B. Receivables management- introduction, objectives of Receivables management, cost associated with accounts receivables, factors influencing the size of receivables; decision areas in Receivables management- credit policies, credit terms and collection policies.

UNIT IV Inventory management (25 marks-15 lectures)

Introduction, objectives, motives of holding inventory, cost & benefits of holding inventory, techniques of inventory ,management-

1. ABC analysis
2. EOQ (problems on the formula method)
3. VED analysis
4. Various levels of stores: (a). re order level (b). minimum level (c) maximum level (d) average level
5. Inventory turnover ratio
6. Just in time (JIT) inventory control system- objectives, features, advantages.

<u>Problems on</u>

1. Estimation of working capital
2. Cash budget (simple problems on the Receipt and Payments method)
3. Techniques of inventory management- EOQ & various levels of inventory.

Books for study and reference:

1. Chandra, Prasanna. *Financial Management, Theory & Practice*. Tata McGraw Hill
2. Pandey I. M. *Financial Management*. Vikas Publishing House
3. Khan & Jain. *Financial Management.* Tata McGraw Hill
4. Kuchal, S.C. *Financial Management.* Chaitanya Publishing House
5. Sharma & Gupta, Shashi*. Financial Management*. Kalyani Publishers
6. Vanhorne, James C. *Fundamentals Of Financial Management.* Prentice Hall Of India
7. Phatak. *Indian Financial System,*
8. Singh, Preeti. *Investment Management.* Himalaya Publishing House
9. G. Sudarshana, Reddy. *Financial Management- Principles and Practice.* Himalaya Publishing House
10. Tulsian, P.C. *Financial Management.* S. Chand & Co Ltd
11. Shavam, Vyuptakesh*. Fundamentals Of Financial Management*. Pearson

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SEMESTER – III
Retail Management (GE 3)
(100 Marks – 60 Lectures)

Objective: To acquaint students with the basic concepts of retailing and its application in current marketing scenario.

Unit I Introduction (25 Marks-15 Lectures)

Retailing – Meaning, Factors responsible for growth. Functions/Role of a retailer.

Retail Life Cycle – Meaning and stages. Retail scenario in global and Indian context - including FDI in retail, multi-channel retailing.

Unit II Retail Formats (25 Marks-15 Lectures)

Retail Formats - Concept. Types of Retail Stores – on the basis of

a) Form of Ownership – Independent retailer, chain retailer, franchising, lease departments, consumer co-operatives.

(b) Merchandise Offered – Convenience stores, Super markets, Hyper Markets and Malls, Specialty Stores, Department Stores, Off - Price Retailers, Factory Outlets, Catalog Showrooms.

(c) Non-Store Retailing – Direct Selling, Mail Order, Telemarketing, Automated Vending.

Unit III Store Location (25 Marks-15 Lectures)

Meaning and importance of store location. Types of location – a) Free Standing (b) Part of Business District (c) Part of the shopping centre (d) Other Retail locations

Steps involved in choosing a retail location - 1. Market identification 2. Determining the market potential – Elements to be considered 3. Identification of alternate sites (including Factors) 4. Selection of site (including factors).

Unit IV Store Design and Layout (25 Marks-15 Lectures)

Store Design – Meaning and importance. Objectives of a Good Store Design. Exterior Store Design – Meaning and components. Interior Store Design – Meaning and components. Store layout – Meaning and types of layouts – a) Grid Layout (b) Racetrack layout (c) Freeform layout. Layout Selection – Factors to be considered. Space Planning – Meaning and concept of Planogram. Visual Merchandising – Meaning and methods of display. Detecting and Preventing Shoplifting – Meaning and measures to reduce shoplifting. Employee Theft – Meaning and measures to reduce employee theft.

References:

1. Pradhan, Swapna. *Retail Management* – Text and Cases.Tata McGraw Hill Publishing, New Delhi.
2. Levy, Michael & Weiz, Barton. A *Retailing Management.* Tata McGraw Hill Publishing, New Delhi.

3. Gilbert, David. *Retail Marketing Management*. Pearson, Delhi.
4. Lucas, George H.; Bush, Robert & Gresham, Larry. *Retailing*. All India Publishers and Distributors, Chennai.
5. Madaan, K.V.S. *Fundamentals of Retailing*. Tata McGraw Hill.
6. Bajaj, Chetan. *Retail Management.* Oxford university press, New Delhi
7. Vedamani, Gibson. *Retail Management*. Jaico Publishing house, Mumbai
8. Dawson, John. *International Retail Management*. Jaico publishing house, Mumbai
9. Vedamani, Gibson G. *Retail Management: Functional Principles and Practices*, Jaico Publishing house, Mumbai
10. Singh, Harjit. *Retail Management*- a Global perspective. S. Chand, New, Delhi.
11. Gopal, V. V. *Retail Management.* The ICFAI University press, Hyderabad.
12. Nair, Suja R. *Retail Management*. Himalaya Publishing house, Mumbai.

OTHERS ELECTIVE SEMESTER-III

B.COM.
SEMESTER II
Business Communication II (GE 3)
(Business and Public Communication)
(100 Marks, 60 Lectures)

Course Objectives:

- **To make students aware of their Constitutional rights and duties and how they can use their communication skills actively for the betterment of society.**
- **To familiarize students with a basic understanding of the process of writing for business.**
- **To develop an ability to use writing in practical business and public situations.**

Unit I Right to Information **(25 Marks - 22 Lectures)**

Learning about the nature, function and social relevance of Right of Information and thereafter undertaking an activity involving:

a) Student's proposal to ask an RTI of public importance
b) Writing/ Filing of application before Public Information Officer
c) Preparing a report containing the findings of the RTI

Note: A group of maximum 10 students should be formed of which 1 student is to file the application, it will carry 10 marks. The remaining 15 marks are for theory.
The 10 marks component of this unit can be an ISA.

Unit II Report Writing **(15 Marks - 8 Lectures)**

Report Writing: Meaning, Importance, Types, Formats, Structure of long and short reports.

Unit III Personnel Letters and Interviews

(a) Interview Skills, Job Applications and Creating Online and Offline CVs, Using Job Boards, Web Researching, **(15 Marks, 8 Lectures)**

(b) References and Testimonials, Appointment, Promotion and Resignation letters, Office Orders and Notices, Memorandums. **(15 Marks, 8 Lectures)**

Unit IV Business Letters, Representations and Press Releases

(a) Business Letters: Purchase letters: Inquiry, Quotations, Orders, Tenders, Complaint & Sales Letters. **(15 Marks, 8 Lectures)**

(b) Drafting of Representations / Petitions, Press Releases and Articles for the Press. **(15 Marks, 6 Lectures)**

Guidelines for Conduct of examination

1. One ISA of 10 Marks (Written Test)
2. Writing / Filing RTI

Books for Study and Reference:

1) *Right Information Act*, 2005: A Primer , Tata McGraw Hill, 2006

2) *How to Write Reports and Proposals*, 2nd Edition, Viva Books Pvt Ltd, 2010.

3) *Mastering Communication*, 5th Edition, Nicky Stanton, Palgrave Macmillan, 2009.

4) *Business Correspondence and Report Writing*, R C Sharma, Krishna Mohan, Tata McGraw-Hill Education, 2010.

5) *Business Letters for Busy People*, 4th Edition, John A Carey, Barnes and Noble.

www.ebooks-share.net/business-letters-for-busy-people
www.rti.gov.in

B.COM.
SEMESTER III
Computer Application for Business-I (GE 3)

Total Credits: 04 Theory : 3 Credits Practical: 1 Credits
LECTURES : 3 per week of 1 hr each (Total Lectures: 45)
Practical : 1 Practical Lab session of 2 hrs each per week per batch
(Batch of 10-15 students) (Total Practical sessions: 15)
Max. Marks : 75T + 25P = 100

Objectives:

- To provide advanced computer skills and knowledge for commerce students
- To enhance the students' understanding of usefulness of information technology tools for business operations
- To become familiar with the processes needed to develop, report, and analyze business data
- To learn how to use and apply Excel and Excel add-ins to solve business problems

Theory:

Unit I: Concepts of Data Processing and analysis 15 Lectures (22 Marks)

a. Data Processing – Steps involved in data processing, advantages of computers in data processing , file management concepts- standard methods of organizing data, file management system, file types: transaction & master, file organization techniques – sequential, direct, indexed sequential
b. Data analysis and forecasting - importance of data analysis in business, Data forecasting – its need , benefits of data forecasting , use of forecast formula, statistical and financial functions.
c. Data Integration: concept and how it works
d. Management Information Systems – An Overview – Concept, Elements – Structure – Computerized MIS – Approaches of MIS Development – Pre-requisites of an Effective MIS – MIS and Decision Support Systems – MIS and Information Resource Management

Unit II: Creating Business Spreadsheet 8 Lectures (10 Marks)

a. Spreadsheet concepts, Managing worksheets; Formatting, Entering data, Editing, and Printing a worksheet; Handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs
b. Generally used Spreadsheet functions: Mathematical, Statistical, Financial, Logical, Date and Time, Lookup and reference, Database, and Text functions
c. Creating spreadsheet in the area of: Loan and Lease statement; Ratio Analysis; Payroll statements; Capital Budgeting; Depreciation Accounting; Graphical representation of data; Frequency distribution and its statistical parameters; Correlation and Regression
d. Meaning and Advantages of macros

Unit III:

Database Management System 12 Lectures (16 Marks)

a. Database Designs for Accounting and Business Applications: Reality- Expressing the Application; Creating Initial design in Entity Relationship(ER) Model; Transforming ER Model to Relational data model concepts; Implementing RDM design using an appropriate DBMS.
b. SQL and Retrieval of Information: Basic Queries in SQL; Embedded Queries in SQL; Insert, Delete and Update statements in SQL
c. DBMS Software: Environment; Tables; Forms; Queries; Reports; Modules;
d. Applying DBMS in the areas of Accounting, Inventory, HRM and its accounting, Managing the data records of Employees, Suppliers and Customers.

Unit IV: Overview of Business Analytics 10 Lectures (12 Marks)

a. Introduction to Analytics: Business analytics – meaning and basic concepts. (Refer Reference 6)

b. Visualization/ Data Issues: Organization/sources of data, Importance of data quality , Dealing with missing or incomplete data , Data Classification (Refer Reference 7)

c. Introduction to Data Mining: Meaning, basic concepts, data mining process

REFERENCE

1. Computer Fundamentals by Pradeep K. Sinha and Priti Sinha
2. www.howstuffworks .com
3. Database systems – Bipin Desai
4. Excel manual and latest reference books
5. Access manual and latest reference books
6. Davenport article - “Competing on Analytics” , LaValle et al. article - “Analytics: The New Path to Value”
7. Davenport and Harris article - “The Dark Side of Customer Analytics”
8. Ramesh Behl : Information Technology for Management, Tata McGraw Hill Education Private Ltd.
9. Jerome Kanter : Managing with Information, Prentice Hall of India

Note:

1. There shall be a theory examination of 75 Marks (Internal Assessment – 15 Marks; End Semester Exam – 60 Marks) of 2 hrs duration
2. There shall be three lectures per theory class.

List of Practical Assignments for Computer Applications For Business – I(Lab) for B.Com. Sem III

PRACTICALS:

1. Advanced Spreadsheet (MS-Excel or any similar open source software)

a. Result representation of data using spreadsheet

b. What-if analysis, Logical tests(nested if functions), Goal seek,

c. Representing results graphically

d. Filtering, advanced filters, sorting and conditional formatting data

e. Data validation techniques, Hyperlinks,

f. Pivot table, Scenarios

g. Summing through the sheets,

h. Getting external data files into Excel

i. Macros - creation, editing and deletion of macros

j. Assignments to be given on the following topics: to prepare and analyse Loan and Lease statement; Ratio Analysis; Payroll statements; Capital Budgeting; Depreciation Accounting; Graphical representation of data; Frequency distribution and its statistical parameters; Correlation and Regression

2. Database Management System (Ms- Access or any similar open source software)

a. Creation of tables, forms, reports, queries using two tables

3. Business Analytics(Using Spreadsheet or Statistical Package such as Gretel/SPSS)

a. Assignments to analyze data available from IndiaStat.com such as Analysis of demographic data, environment data, public expenditure

b. Analyze data from annual reports of Companies and banks

Note:

1. There shall be a practical examination of 25 Marks at the end of each semester (Practical- 20 Marks and Work Book- 5 Marks) and duration of Examination shall be 2 Hrs.
2. There shall be 1 Practical Lab session per batch per week to be taught in computer Lab.

Question Paper Pattern

Sem III		Sem IV	
Unit I	22Mrks	Unit I	14Mrks
Unit II	10Mrks	Unit II	22Mrks
Unit III	16Mrks	Unit III	15Mrks
Unit IV	12Mrks	Unit IV	09Mrks

Q.1 Answer the following (any 5/6) (5 X 2=10Mks.)

Q.2.

a	I	OR	x	I	4MARKS
b	I		y	I	6MARKS

Q.3

a	I	OR	x	I	4MARKS
b	I		y	I	6MARKS

Q.4

a	I	OR	x	I	4MARKS
b	I		y	I	6MARKS

Q.5

a	I	OR	x	I	4MARKS
b	I		y	I	6MARKS

Q.6

a	I	OR	x	I	4MARKS
b	I		y	I	6MARKS

COMMERCE ELECTIVES SEMESTER-IV

B.COM
SEMESTER IV
Business Research Methods (GE 5)
(100 Marks – 60 Lectures)

Objectives: To develop analytical skills in students to undertake research in various domains of commerce and business.

Unit I Introduction (20-25 Marks, 15 Lectures)

Meaning of business research, Importance of business research, Types of business research, Process of business research, Identification of research problem, Review of literature, Formulation of research hypothesis, Research design – Meaning, Types of research design.

Unit II Sampling Theory (15-20 Marks, 10 Lectures)

Population and sample study, Sampling considerations, Sample design, Sampling techniques, Sampling errors.

Unit III Data Collection and Data Analysis (30-40 Marks, 25 Lectures)

(a) Data Collection: Sources of data – Primary sources, Secondary sources, Attitude measurement scale, Questionnaire designing, Interview techniques, Data coding.

(b) Data Analysis: Tabulation and graphs, Descriptive statistics – Measures of central tendency, Measures of dispersion, Skewness and Kurtosis, Correlation, Regression, Parametric tests - ANOVA, t-tests (Independent sample t-test, Paired samples t-test), Non-parametric tests – Chi-Square test, Mann-Whitney U Test, Wilcoxon test, Analysis of scale data.

(Relevant softwares may be used)

Unit IV Research Report (10-15 Marks, 10 Lectures)

Types of research report, Essentials of research report, Principles of writing, Writing of findings, conclusion, suggestions/recommendations, Bibliography and Reference styles, Document formatting, Plagiarism.

References:

1. Chawla, D., & Sondhi, N. *Research Methodology: Concepts and Cases.* New Delhi: Vikas Publishing House.
2. Cooper, D., & Schindler, P. *Business Research Methods.* New Delhi: Tata McGraw Hill.
3. Gupta, S. C. *Fundamentals of Statistics.* New Delhi: Himalaya Pubishign House.
4. Krishnaswami, O., & Ranganathan, M. *Methodology of Research in Social Sciences.* New Delhi: Himalaya Publish House.
5. Levin, & Rubin. *Statistics for Management.* New Delhi: Prentice Hall.
6. Malhotra, N., & Dash, S. *Marketing Research: An Applied Orientation* (Sixth ed.). New Delhi: Pearson Education.

7. Sachdeva, P. K. (2010). *Business Research Methodology.* New Delhi: Prentice Hall.

B.COM
SEMESTER IV
Business Environment –II (GE 5)
(100 Marks-60 Lectures)

Objective: To introduce the students to elements and composition of economic, legal and international environment of business and also aims to bring about awareness of business environment in Goa.

Unit I Economic Environment of Business (30 Marks – 18 Lectures)

Meaning and components of economic environment of business, - Economic systems, Economic planning, Economic policies, Economic legislation, controls and regulations

Economic systems -capitalism, socialism and mixed economy- meaning and features

Economic planning in India- Objectives of planning and main provisions of current five Year plan, NITI Ayog.

Economic policies -fiscal, monetary, industrial policy, Import-Export policy, investment policy (including foreign investment policy) and employment policy –meaning and objectives.

Make in India policy and business.

Unit II Legal Environment of Business (20 Marks – 12 Lectures)

Meaning and components of legal environment; impact of legal environment on business

Environment Protection Act1986 – objectives and major provisions

Consumer Protection Act 1986 – Objectives and major provisions, Consumer Redressal Agencies; Jurisdiction and powers

Right to Information Act (RTI) 2005- Definition and meaning of information, public Authority, right to information and record- objectives of the Act- scope of right to information—exemption—public Information officer - procedure for seeking information, fees and response time, appeals, penalty provisions, case studies.

Unit III International Environment and India (20 Marks – 12 Lectures)

Overview of Industrial policy of India till 1990- new industrial policy-objectives and features, globalization- liberalization- privatization (meaning) and - Foreign capital- meaning, need - Multi-national Corporation-merits and demerits-case studies on MNCs in Goa.

International events and its impact on Indian industry

The International Finance Corporation's Ease of Doing Business Index - composition of the index; India's performance on the index and each of the components.

Unit IV Business Environment in Goa (30 Marks – 18 Lectures)

Brief introduction of industrialization in Goa- Current Status of the Goan economy- Goa's current performance on important economic and socio-economic indicators-Industrial policy in Goa - Introduction, objectives and thrust areas- Industrial Estates in Goa -Industry associations-meaning and need- Goa Chamber of Commerce and Industry (GCCI) and Goa State Industries Association (GSIC) -objectives and functions and major activities.

Environmental issues and Goan Industry

Local self government in Goa -meaning, objectives, functions; Activities of Panchayat /Municipality and their impact on business.
Environmental movements in Goa-meaning of environmental movement, movements related to mining, tourism and construction -their objectives and activities.
Case study on CSR in Goa.

References

1. Agarwal, P.N. (2001) A comprehensive History of Business India, Tata McGraw-Hill Publisher Company Limited, New Delhi.
2. Konoria, S.S. Ed (1990) Footprints of Enterprises, Federation of Indian Chamber & Commerce, New Delhi
3. Misra, S.K. & Puri, V.K. (2007) Economic environment of Business, Himalaya Publishing House, Delhi
4. Menon, Lydia & Mallya, Prita, Business Environment
5. Cherunillam, Francis Business Environment, Himalaya Publishing House
6. Ashwathappa, K, Business Environment, Himalaya Publishing House
7. Dutt & Sundaram, Indian Economy, S. Chand & Company
8. Goa Panchayat Raj Act
9. Right to Information Act 2005

Websites:

1. Envfor.nic.in/legis/env1.html
2. www.ncdrc.nic.in/11.html
3. www.iitb.ac.in/legal/RTI-Act.pdf

B.COM.
SEMESTER IV
E-Commerce and E-Accounting (GE 5)
(100 Marks, 60 Lectures)

Objective: To familiarize the students with concepts and practical aspects of e-commerce and e-accounting.

Unit I Introduction to E-Commerce and M-Commerce (20 Marks, 10 Lectures)

a) Introduction to E-Commerce

Meaning & Definitions of E-Commerce, Components of E-Commerce – E-Markets, Electronic Data Interchange (EDI), Internet-Commerce, Categories of E-Commerce – B2B, B2C, C2C, B2G, C2G, Meaning & Definition of E-Business, E-Business Models, Revenue Models in E-Commerce, Advantages & Limitations of E-Commerce, International Nature of E-Commerce.

b) **Introduction to M-commerce**

Meaning & Definition of M-Commerce, Devices Used in M-Commerce, Applications of M-Commerce, Advantages & Limitations of M-Commerce.

Unit II E-Marketing, E-CRM and E-SCM (20 Marks, 15 Lectures)

(a) E-Marketing: Meaning & definitions of e-marketing, features of e-marketing, setting up of e-marketing **-** creating e-commerce websites, types of e-commerce websites, essentials of e-commerce websites, digital & online advertising & promotions, forms of digital & online advertising and promotions, web communities, e-branding, e-marketing strategies

(b) E-Customer Relationship Management (E-CRM) and E-Supply Chain Management (E-SCM):
(i) Meaning & definition of E-CRM, phases of E-CRM, applications of E-CRM, (ii) Meaning & definition of E-SCM, E-SCM technologies, components of E-SCM

Unit III Electronic Payment Systems (10 Marks, 10 Lectures)

Meaning & definitions of e-payment system, e-payment systems in India including fund transfers, different forms of e-payments – debit cards, credit cards, e-cash, e-wallets, e-cheque, online payment categories, requirements of e-payment system, risks in e-payment system

Unit IV: E- Accounting (50 Marks, 25 Lectures)

Maintaining accounts, creation of vouchers and recording of transactions, preparation of ledger accounts, cash book, bank book, preparation of reports, Trial balance, Profit & Loss account and Balance Sheet using any one accounting package

References:

1. Whitely, D. *E-Commerce Strategy, Technology & Implementation,* New Delhi:Tata McGraw Hill

2. Kalakota, R. Whinston, A. *Frontiers of Electronic Commerce* New Delhi: Pearson Education Inc.

3. Bhaskar, B. *Electronic Commerce Framework, Technologies & Applications* New Delhi: Tata McGraw Hill

4. Turban, E., King, D. Lee, J. *Electronic Commerce 2010 - A Managerial Perspective* Springer Publisher

5. Chakrobarti, R. *Asian Managers Handbook of E-Commerce* New Delhi: Tata McGraw Hill

6. Rayudu, C. *E-Commerce E-Business*, New Delhi: Himalaya Publishing House

7. Joseph, P. *E-Commerce – An Indian Perspective*, New Dlehi: Prentice Hall India Pvt. Ltd.

8. Schneider, G. *E-Commerce Strategy, Technology & Implementation*, Delmar Cengage Learning

9. Pandey, U., Srivastava, R. Shukla, S. *E-Commerce and its applications*, New Delhi: S.Chand & Company Ltd.

10. Bajaj, K. & Nag, D., *E- Commerce*, New Delhi: Tata McGraw Hill

11. Murthy, C. S. *E-Commerce Concepts, Models & Strategies*, New Delhi: Tata McGraw Hill

Guidelines for conduct of Practical

1. One batch for practical should be 15 – 20 students. In any case, batch should not exceed 20 students

2. One computer should be provided per student. In any case, not more than two students per computer

3. Licensed Accounting Package should be purchased by the respective colleges

4. A separate Computer Lab. with sufficient computers should be provided for commerce students

5. Students should maintain a journal for practical. Journal should have an Index with Date, Particulars and Remarks column

6. The transactions are to be recorded in the journal and below that details like type of voucher, details of account creation if any with group/subgroup, calculation of amounts, should be noted.

7. After completing each assignment, the student should get the same initialed by the concerned teacher.

8. Completed journal should be submitted by the students for assessment to the teacher concerned.

Guidelines for Conduct of examination

1. One ISA of 10 Marks on Unit I (Written Test)

2. One ISA of 10 Marks on Unit II (Consisting of 5 Marks for Maintenance of Journal and 5 Marks for Viva-voce on practical. Viva-voce can be conducted after the assessment of journal. Five questions may be asked to each student carrying one mark each)

3. Semester End Examination of 40 Marks on Unit I, Unit II & Unit III. (Theory Paper)
4. Duration of Theory paper to be 11/2 Hour
5. Semester End Examination of 40 Marks on Unit IV (Practical Examination)
6. Duration of Practical Examination to be One Hour
7. There shall be combined passing and no separate head of passing

Guidelines for Paper Setting (Theory Paper)

1. Question paper to be of 40 marks
2. Six questions of 10 marks each are to be included
3. Question No. 1 to be compulsory
4. Any Three questions from remaining Five questions to be answered
5. One question each on Unit I a, b, Unit II a, b(i), b(ii) and Unit III to be asked.

B.COM
SEMESTER IV
Event Management (GE 5)
(100 Marks – 60 Lectures)

Objective: To introduce to the students the concepts and operations in event management industry.

Unit 1: Introduction to Event Management **25 Marks, 15 Lectures**

Introduction, Growth of event management industry, Event management industry in India, Principles of event management, Size of Events – Mega events, Regional events, Major events, Minor events; Types of Events – Sporting, Entertainment, art and culture, Commercial, marketing and promotion events, Meetings, Exhibitions, Festivals, Family and Fund raising events; Issues in event management, Event evaluation, Event risks and laws.

Unit 2: Event Planning **25 Marks, 15 Lectures**

Concept and designing of events, Preparing event proposal, Critical path and function sheets, Event pricing and management fees, Client meetings and event contracts, Planning and management of event team and crew, Planning event resources, Event protocol, Event itinerary, Event planning tools and emerging technology.

Unit 3: Event Production **25 Marks, 15 Lectures**

Event production concepts and requirements, Identifying event vendors, Negotiations and contracts with vendors, Scheduling and Checklists, Venue management – Selection, Staging, Lights and sound, Audio-Visual, Event safety and security.

Unit 4: Event Marketing and Financing **25 Marks, 15 Lectures**

Event marketing mix, Event branding, Event publicity, public relations and communication, Event sponsorship, Event budgets and cost sheet, Financial control in events, Profit analysis of events, Computer applications in event financing and control.

References:

1. Allen, J. (2009). *Event Planning* (Second ed.). Ontario: John Wiley & Sons.

2. Bowdin, G., Allen, J., O'Toole, W., & McDonnell, I. (2011). *Events Management* (Third ed.). New York: Routledge.

3. Chaturvedi, A. (2009). *Event Management: A Professional and Developmental Approach.* New Delhi: Global India Publications.

4. Gaur, S. S., & Saggere, S. V. (2003). *Event Marketing and Management.* Noida: Vikas Publishing House.

5. Shone, A., & Perry, B. (2004). *Successful Event Management: A Practical Handbook.* London: Thomson Learning.

6. Wagen, L. V., & Carlos, B. R. (2009). *Event Management for Tourism, Cultural, Business, and Sporting Events.* New Delhi: Pearson Educationl.

Journals:

International Journal of Event Management Research
International Journal of Event Management and Festivals
International Journal of Hospitality and Event Management

B.COM.
SEMESETER IV
Financial Management I (GE 5)
(100 Marks- 60 Lectures)

Objective: To enable the students understand theoretical and practical aspects of long term and short term financial decisions pertaining to dividend and working capital management.

UNIT I An Introduction to Financial Management (25 marks-15 lectures)

Meaning of Financial Management, scope and objectives of Financial Management, profit maximization v/s wealth maximization; Role & responsibilities of Financial Manager, measuring shareholders value creation, International Financial Management – meaning, forms of financial capital, importance, merits.

Unit II: Working Capital Management (25 marks-15 lectures)

Nature & concept of working capital, importance of working capital, types of working capital, determinants of working capital, sources of working capital (in brief), estimation and computation of working capital.

Unit III : Management of Cash. (25 marks-15 lectures)

C. Cash management- introduction, objectives; motives of holding cash, factors determining cash needs, strategies employed to manage cash needs, techniques for speedy cash collection and techniques for slowing disbursements. Preparation of cash budget. (simple problems on the Receipt and Payments method)

D. Receivables management- introduction, objectives of Receivables management, cost associated with accounts receivables, factors influencing the size of receivables; decision areas in Receivables management- credit policies, credit terms and collection policies.

Unit IV Inventory management (25 marks-15 lectures)

Introduction, objectives, motives of holding inventory, cost & benefits of holding inventory, techniques of inventory ,management-

1. ABC analysis
2. EOQ (problems on the formula method)
3. VED analysis
4. Various levels of stores: (a). re order level (b). minimum level (c) maximum level (d) average level
5. Inventory turnover ratio
6. Just in time (JIT) inventory control system- objectives, features, advantages.

<u>Problems on</u>

1. Estimation of working capital
2. Cash budget (simple problems on the Receipt and Payments method)
3. Techniques of inventory management- EOQ & various levels of inventory.

References:

1. Chandra, Prasanna. *Financial Management, Theory & Practice*. Tata McGraw Hill
2. Pandey I. M. *Financial Management*. Vikas Publishing House
3. Khan & Jain. *Financial Management.* Tata McGraw Hill
4. Kuchal, S.C. *Financial Management.* Chaitanya Publishing House
5. Sharma & Gupta, Shashi*. Financial Management*. Kalyani Publishers
6. Vanhorne, James C. *Fundamentals Of Financial Management.* Prentice Hall Of India
7. Phatak. *Indian Financial System,*
8. Singh, Preeti. *Investment Management.* Himalaya Publishing House
9. G. Sudarshana, Reddy. *Financial Management- Principles and Practice.* Himalaya Publishing House
10. Tulsian, P.C. *Financial Management.* S. Chand & Co Ltd
11. Shavam, Vyuptakesh*. Fundamentals Of Financial Management*. Pearson

B.COM.
SEMESTER-IV
Practices in Rural Marketing (GE 5)
(100 Marks – 60 Lectures)

Objective: To enable students to gain a deeper understanding of the functioning of rural markets.

Unit I Distribution in Rural Markets (25 Marks- 15 Lectures) Physical distribution management in rural markets – problems in distribution, Typical marketing channels in rural markets – Emerging channels of distribution including e-distribution. Role of wholesalers & retailers. Problems in channels of distribution

Unit II Promotion and Communication in Rural Markets. (25 Marks- 15 Lectures) Meaning and objectives of promotion in rural markets. Constraints in promotion and marketing communication in rural areas. Media mix for rural market – Formal and informal media

Unit III Developing Sales Force for Rural Markets. (25 Marks- 15 Lectures)
Rural sales policy. Role/ activities of a sales person. Qualities of a successful rural salesman. Prospects and problems faced by sales personnel in rural markets, Call planning.

Unit IV Agricultural Marketing (25 Marks- 15 Lectures) Agricultural Marketing – Meaning, importance and essentials of effective agricultural marketing- in brief. Marketing of agricultural goods v/s manufactured goods. Role of government and other organizations in marketing agricultural products. Role of agricultural marketing in economic development. Problems and challenges in agricultural marketing.

References:

1. Sinha, A. *Rural Consumer Behaviour*. Sonali Publications, New Delhi.
2. Srivastava, P. K. *Marketing Management in a Developing Economy.* Sterling Publishers, New Delhi.
3. Nair, N. Rajan & Varma, M. M. *Marketing Management.* Sultan Chand & Sons, New Delhi.
4. Mathur, U. C. *Rural Marketing*.Excel Books.
5. Velayudhan, Sanal Kumar. *Rural Marketing: Targeting the non-urban consumer*. Response Books, SAGE Publications.
6. Sukhpal Singh. *Rural Marketing*. Vikas Publishers.
7. Rajagopal, *Managing Rural Business.* Wheeler Publications, New Delhi.
8. Gopalaswamy, *Rural Marketing.* Wheeler Publications, New Delhi.
9. Kamat, Minouti S. & Krishnamoorthy, R. *A Textbook on Rural Marketing*. Himalaya Publishing House.

OTHER ELECTIVE SEMESTER-IV

B.COM.

SEMESTER IV

Computer Application for Business-II (GE 5)

Total Credits: 04 Theory : 3 Credits Practical: 1 Credits
LECTURES : 3 per week of 1 hr each (Total Lectures: 45)
Practical : 1 Practical Lab session of 2 hrs each per week per batch
(Batch of 10-15 students) (Total Practical sessions: 15)
Max. Marks : 75T + 25P = 100

Objectives:

- To familiarise the student with various applications of Information and Communication technologies in business
- To enable the student to become familiar with the mechanism for conducting business transactions through electronic means
- To provide skills and knowledge to create a maintain a website for business

Theory:

Unit I: Internet technology 8 Lectures (14 Marks)

a. Introduction to computer networks : Introduction- need, advantages, disadvantages, types of networks, types of transmission media, Internetworking devices-bridges, routers, gateways, IP addressing: why IP address, basic format of IP address- IPV4, IPV6, Protocols - HTTP, HTTPS, FTP, DNS, Email
b. Applications on Internet: search engines ,browsers, blogs, social networking - types and applications

Unit II: Ecommerce theory 20 Lectures (22 Marks)

a. Introduction to E-Commerce: Scope, Definitions, Trade Cycles
b. The Value Chain, Supply Chain, Porter's Value Chain
c. Electronic data Interchange (EDI): Introduction, definition and benefits, technology standards, Communication, implementation, agreements, EDI and business.
d. E-Commerce models- categorizing major E-commerce business models(B2B,B2C,C2C), introduction , key elements a business model
e. E –Governance Models: (G2B, G2C, C2G, G2G), Challenges to E – Governance, Strategies and tactics for implementation of E – Governance Case Study

f. E-payment System: Models and methods of e–payments (Debit Card, Credit Card, Smart Cards, e-money), digital signatures (procedure, working), payment gateways, risks involved in e-payments.
g. E-Commerce applications in various industries: banking, insurance, payment of utility bills, online marketing, e-tailing (popularity, benefits, problems and features), online services (financial, travel and career), auctions, online learning, publishing and entertainment, Online shopping (amazon, snapdeal, alibaba, flipkart, etc.)

Unit III: ERP 10 Lectures(15 Marks)

a. Introduction: Traditional information model, Introduction to an enterprise, What is an ERP?, Reasons for growth of ERP market, Advantages and Disadvantages of ERP
b. Introduction to business modules: finance, manufacturing, Human resource, materials management, sales and distribution, Limitations of ERP,
c. ERP and e-Commerce

Unit IV : Security and Encryption (7 Lectures) (9 marks)

a. Need and concepts, the e-commerce security environment- dimension, definition and scope of e- security
b. Security threats in the E-commerce environment - security intrusions and breaches, attacking methods like hacking, sniffing, cyber-vandalism etc.
c. Technology solutions- Encryption security channels of communication, protecting networks and protecting servers and clients

Note:

3. There shall be a theory examination of 75 Marks (Internal Assessment – 15 Marks; End Semester Exam – 60 Marks) of 2 hrs duration
4. There shall be three lectures per theory class.

REFERENCE

1. Web technology- Kahate
2. Introduction to Information Technology – ITL Education Solutions Limited, Pearson Education
3. E-Commerce: Strategy, Technologies and Applications By David Whitely, Tata McGraw Hill Edition. I
4. Kalakota and Whinston, Frontiers of Electronic commerce, Pearson Education Asia.
5. S Sadagopan, “ERP a Management Prospective” Tata McGraw Hill Publishing Company Limited, New Delhi 1999
6. Alexis Leon , “ERP Demystified”, Tata McGraw Hill Publishing Company Limited, New Delhi 2000
7. Kenneth C. Laudon and Carlo Guercio Traver, *E-Commerce*, Pearson Education

8. Bharat Bhaskar, *Electronic Commerce: Framework, Technology and Application, 4th Ed.,* McGraw Hill Education
9. PT Joseph, *E-Commerce: An Indian Perspective*, PHI Learning
10. KK Bajaj and Debjani Nag, *E-commerce,* McGraw Hill Education
11. TN Chhabra, *E-Commerce,* Dhanpat Rai & Co.
12. Sushila Madan, *E-Commerce,* Taxmann
13. TN Chhabra, Hem Chand Jain, and Aruna Jain, An Introduction to HTML, Dhanpat Rai & Co .

List of Practical Assignments for Computer Applications For Business – II(Lab) for B.Com. Sem IV

PRACTICALS:

1. Designing, building and launching e-commerce website:

- A systematic approach involving decisions regarding selection of hardware, software, outsourcing vs. in house development of a website, updating website, uploading content on the website using FTP tools

2. Mini-Project in ERP Implementation
   Case study – Studying ERP implementation in any business firm
   Report preparation and submission – report shall include ERP introduction, life cycle as followed by the Business firm under study – pre-evaluation screening, package evaluation, project planning phase, gap analysis, reengineering, configuration, implementation team training, testing, going live, end user training, post implementation.

Note:

1. There shall be a practical examination of 25 Marks at the end of each semester (Practical-20 Marks and Work Book- 05 Marks) and duration of Examination shall be 2 Hrs.

University of Mumbai

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at

Semester I and II

Under Credit, Grading and Semester System

With Effect from Academic Year 2013-2014

Board of Studies-in-Accountancy, University of Mumbai

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at

Semester I and II

Semester I (Seven Courses)	
Course No.	**Title of the Course**
1.1.1	Financial Accounting - Elements of Financial Accounting - Paper I
1.1.2	Cost Accounting - Introduction and Element of Cost - Paper I
1.1.3	Economics - Micro Economics - Paper I
1.1.4	Commerce - Business Environment - Paper I
1.1.5	Accounting with Use of Accounting Softwares - Introduction and Applications - Paper I
1.1.6	Business Communication - Paper I
1.1.7	Foundation Course - Commercial Environment - Paper I

Semester II (Seven Courses)	
Course No.	**Title of the Course**
1.2.1	Financial Accounting - Special Accounting Areas - Paper II
1.2.2	Auditing - Introduction and Planning - Paper I
1.2.3	Financial Management - Introduction to Financial Management - Paper I
1.2.4	Taxation - Indirect Taxes - Paper I
1.2.5	Business Law - Business Regulatory Framework - Paper I
1.2.6	Quantitative Methods for Business - Paper I
1.2.7	Business Communication - Applications in Business - Paper II

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at

Semester I

Course No.	Title of the Course
1.1.1	Financial Accounting - Elements of Financial Accounting - Paper I
1.1.2	Cost Accounting - Introduction and Element of Cost - Paper I
1.1.3	Economics - Micro Economics - Paper I
1.1.4	Commerce - Business Environment - Paper I
1.1.5	Accounting with Use of Accounting Softwares - Introduction and Applications - Paper I
1.1.6	Business Communication - Paper I
1.1.7	Foundation Course - Commercial Environment - Paper I

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester I with Effect from the Academic Year 2013-2014

1.1.1 Financial Accounting - Elements of Financial Accounting - Paper I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Accounting Standards Issued by ICAI and Inventory Valuation	12
2	Final Accounts	12
3	Accounting from Incomplete Records	14
4	Fire Insurance Claims	12
Total		**50**

Sr. No.	Modules / Units
1	**Accounting Standards Issued by ICAI and Inventory Valuation**
1.1	**Accounting Standards:** Concepts, Benefits, Procedures for Issue of Accounting Standards Various AS: **AS – 1: Disclosure of Accounting Policies** (a) Purpose (b) Areas of Policies (c) Disclosure of Policies (d) Disclosure of Change in Policies (e) Illustrations **AS – 2: Valuation of Inventories (Stock)** (a) Meaning, Definition (b) Applicability (c) Measurement of Inventory (d) Disclosure in Final Account (e) Explanation with Illustrations **AS – 9: Revenue Recognition** (a) Meaning and Scope (b) Transactions Excluded (c) Sale of Goods (d) Rendering of Services (e) Effects of Uncertainties (f) Disclosure (g) Illustrations
1.2	**Inventory Valuation** Meaning of Inventories Cost for Inventory Valuation Inventory Systems : Periodic Inventory System and Perpetual Inventory System Valuation: Meaning and Importance Methods of Stock Valuation as per AS – 2: FIFO and Weighted Average Method Computation of Valuation of Inventory as on Balance Sheet Date: If Inventory is taken on a Date After the Balance Sheet or Before the Balance Sheet
2	**Final Accounts**
2.1	Expenditure a) Capital (b) Revenue Receipts a) Capital (b) Revenue
2.2	Adjustments and Closing Entries
2.3	Final Accounts of Manufacturing Concerns (Proprietary Firm)
3	**Accounting from Incomplete Records**
	Introduction Problems on Preparation of Final Accounts of Proprietary Trading Concern (Conversion Method)
4	**Fire Insurance Claims**
	Computation of Loss of Stock by Fire Ascertainment of Claim as per the Insurance Policy Exclude: Loss of Profit and Consequential Loss

Question Paper Pattern

Maximum Marks: 60
Questions to be Set: 04
Duration: 2 Hrs.
All Questions are Compulsory Carrying 15 Marks each.

Q-1	Full Length Practical Question	15 Marks
	OR	
Q-1	Full Length Practical Question	15 Marks
Q-2	Full Length Practical Question	15 Marks
	OR	
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question	15 Marks
	OR	
Q-3	Full Length Practical Question	15 Marks
Q-4	Objective Questions*	15 Marks
	(*Multiple Choice / True or False / Match the Columns / Fill in the Blanks)	
	OR	
Q-4	Theory Questions*	15 Marks
	(*Short Notes / Short Questions)	

Note: Full Length Question of 15 Marks may be Divided into Two Sub Questions of 08 and 07 Marks.

Reference Books

- Introduction to Accountancy by T.S. Grewal, S. Chand and Company (P) Ltd., New Delhi
- Advance Accounts by Shukla and Grewal, S. Chand and Company (P) Ltd., New Delhi
- Advanced Accountancy by R.L Gupta and M. Radhaswamy, S. Chand and Company (P) Ltd., New Delhi
- Modern Accountancy by Mukherjee and Hanif, Tata Mc. Grow Hill and Co. Ltd., Mumbai
- Financial Accounting by Lesile Chandwichk, Pentice Hall of India Adin Bakley (P) Ltd., New Delhi
- Financial Accounting for Management by Dr. Dinesh Harsalekar, Multi-Tech. Publishing Co. Ltd., Mumbai
- Financial Accounting by P.C. Tulsian, Pearson Publications, New Delhi
- Accounting Principles by R.N. Anthony and J.S. Reece, Richard Irwin, Inc
- Financial Accounting by Monga, J.R. Ahuja, Girish Ahuja and Ashok Shehgal, Mayur Paper Back, Noida
- Compendium of Statement and Standard of Accounting, ICAI
- Indian Accounting Standards, Ashish Bhattacharya, Tata Mc. Grow Hill and Co. Ltd., Mumbai
- Financial Accounting by Williams, Tata Mc. Grow Hill and Co. Ltd., Mumbai
- Company Accounting Standards by Shrinivasan Anand, Taxman, New Delhi
- Financial Accounting by V. Rajasekaran, Pearson Publications, New Delhi
- Introduction to Financial Accounting by Horngren, Pearson Publications, New Delhi
- Financial Accounting by M. Mukherjee and M. Hanif, Tata McGraw Hill Education Pvt. Ltd., New Delhi
- Financial Accounting a Managerial Perspective, Varadraj B. Bapat, Mehul Raithatha, Tata McGraw Hill Education Pvt. Ltd., New Delhi

Revised Syllabus and Question Paper Pattern of Courses of B.Com.
B.Com. (Accounting and Finance) Programme at Semester I
with Effect from the Academic Year 2013-2014

1.1.2 Cost Accounting -
Introduction and Elements of Cost - Paper I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Cost Accounting	12
2	Material Cost	14
3	Labour Cost	12
4	Overheads	12
Total		**50**

Sr. No.	Modules / Units
1	**Introduction to Cost Accounting**
	Evolution Objectives and Scope of Cost Accounting Importance and Advantages of Cost Accounting Difference between Cost Accounting and Financial Accounting Limitations of Financial Accounting Definitions: Cost, Costing and Cost Accounting Classification of Cost on Different Bases Cost Allocation and Apportionment Coding System Essentials of Good Costing System
2	**Material Cost**
	Material Cost: The Concept Material Control Procedure Documentation Stock Ledger, Bin Card Stock Levels Economic Order Quantity (EOQ)
3	**Labour Cost**
	Labour Cost: The Concept Composition of Labour Cost Labour Cost Records Overtime / Idle Time / Incentive Schemes
4	**Overheads**
	Overheads: The Concept Classification of overheads on different bases Apportionment and Absorption of Overheads

Question Paper Pattern

Maximum Marks: 60
Questions to be Set: 04
Duration: 2 Hrs.
All Questions are Compulsory Carrying 15 Marks each.

Q-1	Full Length Practical Question OR	15 Marks
Q-1	Full Length Practical Question	15 Marks
Q-2	Full Length Practical Question OR	15 Marks
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question OR	15 Marks
Q-3	Full Length Practical Question	15 Marks
Q-4	Objective Questions* (*Multiple Choice / True or False / Match the Columns / Fill in the Blanks) OR	15 Marks
Q-4	Theory Questions* (*Short Notes / Short Questions)	15 Marks

Note: Full Length Question of 15 Marks may be Divided into Two Sub Questions of 08 and 07 Marks.

Reference Books

- Lectures on Costing by Swaminathan: S. Chand and Company (P) Ltd., New Delhi
- Cost Accounting by C.S. Rayudu, Tata Mc. Grow Hill and Co. Ltd., Mumbai
- Cost Accounting by Jawahar Lal and Seema Srivastava, Tata Mc. Grow Hill and Co. Ltd., Mumbai
- Cost Accounting by Ravi M. Kishore, Taxmann Ltd., New Delhi
- Principles and Practices of Cost Accounting by N.K. Prasad, Book Syndicate Pvt. Ltd., Calcutta
- Cost Accounting Theory and Practice by B.K. Bhar, Tata Mc. Grow Hill and Co. Ltd., Mumbai
- Cost Accounting Principles and Practice by M.N. Arora, Vikas Publishing House Pvt. Ltd., New Delhi
- Advanced Cost and Management Accounting: Problems and Solutions by V.K. Saxena and C.D. Vashist, S. Chand and Company (P) Ltd., New Delhi
- Cost Accounting by S.P. Jain and K.L. Narang, Kalyani Publishers, Ludhiana
- Modern Cost and Management Accounting by M. Hanif, Tata McGraw Hill Education Pvt. Ltd., New Delhi

Revised Syllabus and Question Paper Pattern of Courses of B.Com.
B.Com. (Accounting and Finance) Programme at Semester I
with Effect from the Academic Year 2013-2014

1.1.3 Economics -
Micro Economics - Paper I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction	06
2	Demand and Supply Analysis	08
3	Theory of Production	06
4	Cost and Revenue Analysis	06
5	Market Structure	12
6	Pricing Practices, Market Failure and Project Planning	12
Total		**50**

Sr. No.	Modules / Units
1	**Introduction**
	(a) Concept of Scarcity (b) Choice and Efficiency (with Reference to PPC) (c) Basic Tools in Economic Analysis i. Equations ii. Functions iii. Identities iv. Slope v. Time Series vi. Cross Section Data vii. Scatter Diagrams viii. Derivatives and Limits
2	**Demand and Supply Analysis**
	(a) Demand Function and Determinants of Demand (b) Supply Function and Determinants of Supply (c) Determination of Equilibrium Price in an Open Market (d) Concept and Importance of Elasticity of Demand: Price, Income, Cross and Promotional (e) Consumer's Surplus (f) Demand Forecasting: Meaning, Significance and Methods (g) Case Studies
3	**Theory of Production**
	(a) Production Function: Short Run and Long Run (b) Law of Variable Proportions (c) Producer's Equilibrium (d) Principle of Returns to Scale (e) Economies of Scale (f) Case Studies
4	**Cost and Revenue Analysis**
	(a) Cost Concepts: Fixed and Variable Costs (b) Behavior of Cost Curves: Short Run and Long Run (c) Producer's Surplus (d) Revenue Concepts: Total Revenue, Average Revenue and Marginal Revenue under Perfect Competition and Monopoly (e) Break-Even Analysis (f) Case Studies
5	**Market Structure**
	(a) Features of Perfect Competition and Monopoly (b) Long-run Equilibrium of a Firm and Industry under Perfect Competition and Monopoly (c) Features of Monopolistic Competition (d) Features of Oligopoly: Price Indeterminateness, Cartel Formation and Forms of Price Leadership (e) Case Studies

6	**Pricing Practices, Market Failure and Project Planning**
6.1	**Pricing Practices**
	(a) Price Discrimination (b) Dumping (c) Marginal-Cost Pricing (d) Cost-Plus Pricing (e) Case Studies
6.2	**Market Failure**
	(a) Concept of Market Failure and Inefficiency (Productive and Allocative Inefficiency using PPC) (b) Causes of Market Failure (Public Goods, Market Power, Externalities, Information Asymmetry and Equity) (c) Government Intervention and Market Efficiency (d) Case Studies
6.3	**Capital Budgeting**
	(a) Meaning and Importance (b) Steps in Investment Appraisal (c) Case Studies

Question Paper Pattern

Maximum Marks: 60
Questions to be Set: 04
Duration: 2 Hrs.
All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Type Question	15 Marks
Q-2	Question with Internal Choice within the Questions	15 Marks
Q-3	Question with Internal Choice within the Questions	15 Marks
Q-4	Question with Internal Choice within the Questions	15 Marks

Note: Questions can be Sub-divided into (a) and (b), if Necessary, for 8 and 7 Marks Respectively.

Reference Books

- The Macro Economics Today by Bradley R. Schiller, Tata McGraw-Hill, New Delhi
- Microeconomics by B. Douglas Bernheim and Michael D. Whinston, Tata McGraw-Hill, New Delhi
- Economics, by R.G. Lipsey and A.K. Chrystal, Oxford University Press, New Delhi
- Economics: Principles and Applications by N.G. Mankiw, Cengage Learning, New Delhi
- Microeconomics by R.S. Pindyck and D.L. Rubinfeld, Pearson Education, New Delhi
- Principles of Economics by J.E. Stiglitz and C.E. Walsh, W.W. Norton, New York
- Microeconomics: Theory and Applications by D.L. Salvatore, Oxford University Press, New Delhi
- Managerial Economics by Suma Damodaran, Oxford University Press, New Delhi
- Intermediate Microeconomics: A Modern Approach by H.R. Varian, W.W. Norton, New York
- Microeconomic Theory by Sen and Anindya, Oxford University Press, New Delhi
- Modern Microeconomics by A .Koutsoyiannis, MacMillan Press, New Delhi
- Business Economics by H.L. Ahuja, Business Economics, S. Chand and Company (P) Ltd., New Delhi

Revised Syllabus and Question Paper Pattern of Courses of B.Com.
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with Effect from the Academic Year 2013-2014

1.1.4 Commerce -
Business Environment - Paper I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Business and its Environment	08
2	Business and Society	16
3	Contemporary Issues	12
4	International Environment	14
Total		**50**

Sr. No.	Modules / Units
1	**Business and its Environment**
	1. Business Objectives, Dynamics of Business and its Environment, Types of Business Environment 2. Environmental Analysis: Importance, Factors, PESTEL Analysis, SWOT Analysis
2	**Business and Society**
	1. Business Ethics: Nature and Scope of Ethics, Ethical Dilemmas, Corporate Culture and Ethical Climate 2. Development of Business Entrepreneurship: Entrepreneurship and Economic Development, Micro, Small and Medium Enterprises Development (MSMED) Act, 2006, Entrepreneurship as a Career Option 3. Consumerism and Consumer Protection: Consumerism in India, Consumer Protection Act 1986
3	**Contemporary Issues**
	1. Corporate Social Responsibility and Corporate Governance: Social Responsibility of Business, Ecology and Business, Carbon Credit 2. Social Audit: Evolution of Social Audit, Benefits of Social Audit, Social Audit v/s Commercial Audit
4	**International Environment**
	1. Strategies for going Global: MNCs and TNCs, WTO 2. Foreign Trade in India- Balance of Trade, FDI Investment Flows and its Implication for Indian Industries

Question Paper Pattern

Maximum Marks: 60
Questions to be Set: 04
Duration: 2 Hrs.
All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Type Question	15 Marks
Q-2	Question with Internal Choice within the Questions	15 Marks
Q-3	Question with Internal Choice within the Questions	15 Marks
Q-4	Question with Internal Choice within the Questions	15 Marks

Note: Questions can be Sub-divided into (a) and (b), if Necessary, for 8 and 7 Marks Respectively.

Reference Books

- Business Environment Text and Cases by M.B. Shukla, Taxman Publications, New Delhi
- Global Economy and Business Environment by Francis Cherunilam, Himalaya Publication House, Mumbai
- Business Environment: Text and Cases by Francis Cherunilam, Himalaya Publication House, Mumbai
- Indian Economy by Dutt and Sundaram, S. Chand and Company Pvt. Ltd., New Delhi
- Essentials of Business Environment by K. Aswathappa, Himalaya Publication House, Mumbai
- Business Environment by Justin Paul, Tata McGraw Hill Education Pvt. Ltd., New Delhi
- Indian Economy by Misra and Puri, Himalaya Publishing House, Mumbai
- Entrepreneurial Development by S.S. Khanka, S. Chand and Company Pvt. Ltd., New Delhi
- Dynamics of Entrepreneurship by Vasanta Desai, Himalaya Publishing House, Mumbai
- Entrepreneurship and Small Development Business Management by C.B. Gupta and S.S. Khanka, Sultan Chand and Sons, New Delhi
- Entrepreneurship by David H. Holt, PHI Learning Pvt. Ltd., New Delhi
- Management of Small-Scale Industries by Vasant Desai, Himalaya Publishing House, Mumbai
- Business and Government by Francis Cherunilam, Himalaya Publishing House, Mumbai
- Corporate Governance in India by Jayati Sarkar and Subrata Sarkar, Sage Publications, New Delhi
- Corporate Governance: Principles, Policies and Practices by A.C. Fernando, Pearson Education India, New Delhi

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1.1.5 Accounting with Use of Accounting Softwares - Introduction and Applications - Paper I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Computers	03
2	Office Productivity Tools	08
3	Web	02
3	Accounting with Use of Accounting Softwares	37
Total		**50**

Sr. No.	Modules / Units
1	**Introduction to Computers**
	(a) History of Computers (b) Parts of Computers (c) Hardwares: Specifications and Data Storage Management (d) Softwares: Concept of System Softwares and Applications
2	**Office Productivity Tools**
	(a) MS Word: Creating, Editing, Formatting and Printing of Documents, Using Tools, Mailmerge and Print Review and Set-up (b) MS Excel: Creating Worksheet, Creating Various Formulae, Creating Charts, Rename and Copy of Worksheets, Using Tools, Printing Review and Set-up (c) Power Point: Create Project Report, Create Slides, Animation, Page Designing, Insert Image, View Page, Print Review and Set-up
3	**Web**
	(a) Use of Various Web Browser (b) Information Searching Tool (c) Downloading (d) Create New email ID (e) Sending Data through email
4	**Accounting with Use of Accounting Softwares**
	(a) Introduction to Accounting Software (b) Features of Accounting Softwares (c) Installation of Tally ERP.9 Accounting Software: i) Opening Screen of Tally, Creating Company, Loading / Selecting of Company, Setting a Company, Altering / Modifying Existing Company, Configuring Company ii) Menu Related to Accounts, Groups, Managing Groups and Multiple Groups iii) Ledgers: Creating Single Ledger, Advanced Uses of Single Ledger, Displaying Ledger and Altering Multiple Ledger iv) Inventory: Creation of Group and Creation of Stock v) Vouchers in Tally 1. Pre-define Vouchers: Contra Vouchers, Sales Vouchers, Payment Vouchers, Receipt Vouchers, Journal Vouchers, Memo, Optional Vouchers and Post-dated Vouchers 2. Configuring Vouchers, Creating / Customizing Vouchers, Displaying Vouchers and Altering Vouchers vi) Bank Deposit: Filling and Check Preparation and Bank Reconciliation vii) Depreciation: Fixed Installment Method, Reducing Balance Method and Change in Method viii) Reports: Trail Balance, Balance Sheet, Profit and Loss Account, Bank Reconciliation Statement

Question Paper Pattern

Maximum Marks: 60
Questions to be Set: 04
Duration: 2 Hrs.
All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Type Question	15 Marks
Q-2	Question with Internal Choice within the Questions	15 Marks
Q-3	Question with Internal Choice within the Questions	15 Marks
Q-4	Question with Internal Choice within the Questions	15 Marks

Note: Questions can be Sub-divided into (a) and (b), if Necessary, for 8 and 7 Marks Respectively.

Reference Books

- Introduction to Computer by Peter Norton, Tata McGraw-Hill, New Delhi
- Computer Fundamentals by P.K. Sinha, P.B.P. Publications, New Delhi
- Fundamentals of Information Technology by S.K. Bansal, A.P.H. Publishing Corporation, New Delhi
- Using Microsoft Office XP by E. Bott and Woody Leonhard, Phuket Island Song Pen Co. Ltd., Phuket
- Microsoft Office 2010 by Gary B. Shelly and Misty E. Vermaat, Cengage Learning, Boston, U.S.A.
- The Complete Reference Internet by Margaret Levine Young, Tata McGraw-Hill, New Delhi
- The Complete Reference Internet by Harley Hahn, Tata McGraw-Hill, New Delhi
- www.tallysolutions.com

Revised Syllabus and Question Paper Pattern of Courses of B.Com.
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1.1.6 Business Communication - Paper I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Nature and Process of Communication	10
2	Methods of Communication	15
3	Dimensions of Corporate Communication	15
4	Listening and Communication	10
Total		**50**

Sr. No.	Modules / Units
1	**Nature and Process of Communication**
	(a) Concept of Communication (b) Definitions of Communication (c) Process of Effective Communication (d) Elements of Communication (e) Importance of Communication in Corporate World
2	**Methods of Communication**
	(a) Nature and Definitions of Verbal Communication (b) Oral Communication: Definition, Advantages and Disadvantages (c) Written Communication: Definition, Advantages and Disadvantages (d) Guidelines for Making Effective Verbal Communication (e) Non-verbal Communication: Facial Expressions, Gestures, Postures, Eye-Contact and Silence
3	**Dimensions of Corporate Communication**
	(a) Corporate World and Communication (b) Nature of Hierarchy in Corporate World (c) Downward Communication: Definition, Illustrations, Merits and Demerits (d) Upward Communication: Definition, Illustrations, Merits and Demerits (e) Horizontal Communication: Definition, Illustrations, Merits and Demerits (f) Vertical Communication: Definition, Illustrations, Merits and Demerits (g) Grapevine Communication: Definition, Illustrations, Merits and Demerits
4	**Listening and Communication** (a) Nature and Definitions of Listening (b) Importance of Effective Listening in Communication (c) Active and Passive Listening (d) Barriers to Effective Listening (e) Guidelines of Effective Listening

Question Paper Pattern

Maximum Marks: 60
Questions to be Set: 04
Duration: 2 Hrs.
All Questions are Compulsory Carrying 15 Marks each.

Q-1	Short Notes (Any 3 Out 5)	15 Marks
Q-2	Question with Internal Choice within the Questions	15 Marks
Q-3	Question with Internal Choice within the Questions	15 Marks
Q-4	Question with Internal Choice within the Questions	15 Marks

Note: Questions can be Sub-divided into (a) and (b), if Necessary, for 8 and 7 Marks Respectively.

Reference Books

- Business Communication Today by Bovee and Thill, Tata McGraw-Hill, New Delhi
- Business Communication by Balasubramanyam, Vikas Publishing House, New Delhi
- Effective Business Communication by Kaul, Prentice Hall, New Delhi
- Communicative Competence in Business English by Robinson, Netrakanti and Shintre, Orient Longman, Hyderabad
- Business Communication by J.K. Sinha, Galgotia Publishing House, Delhi
- Effective Communication in Business by Walf and Warner, Southern Western Publications Cine Innali, U.S.A.
- Today's Business Letter Writing by Avett Elizabeth Maynard, Prentice Hall, New Delhi

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1.1.7 Foundation Course - Commercial Environment - Paper I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Commerce	14
2	Business and Basic Commercial Information	10
3	Business and Basic Accounting Information	10
4	Basic Economic Challenges	10
5	Organization, Management and Administration	06
Total		**50**

Sr. No.	Modules / Units
1	**Introduction to Commerce**
1.1	**Concepts**
	(a) Trade (b) Commerce (c) Business (d) Industry (e) Profession (f) Employment
1.2	**Ecology and Business**
	(a) Meaning of Environment (b) Ecology and Ecology Balance (c) Relationship between Ecology and Business (d) Protection of Environment and Need for Pollution Control (e) Environment Audit
1.3	**Social Responsibilities of Business**
	(a) Concept of Social Responsibilities (b) Cases for and Against Social Responsibilities
1.4	**Business Ethics**
	(a) Concept and Need (b) Principles of Business Ethics
2	**Business and Basic Commercial Information**
2.1	**Managerial Response to Change in Business Environment**
	(a) Management Information System (MIS) (b) Forecasting (c) Experts (d) Innovation (e) Acquisition (f) Merger (g) Joint Venture
2.2	**Commercial Terms**
	(a) Services (b) Outstanding (c) e-Commerce (d) M-Commerce (e) Infrastructure (f) Bank Assurance (g) Liberalization (h) Privatization (i) Globalization (j) Profit

3	**Business and Basic Accounting Information**
	(a) Meaning and Objectives of Accounting (b) Accounting as a Source of Information (c) Internal and External Users of Accounting Information and their Needs (d) Basic Accounting Terms: Assets, Liability, Expenses, Capital Expenditure, Revenue Expenditure, Income, Debtors, Creditors, Goods, Stock, Voucher, Transaction and Drawings
4	**Basic Economic Challenges**
	(a) Poverty: Absolute and Relative (b) Rural Development - Key Issues: Credit and Marketing, Co-operatives, Farming, Organic Farming, Alternatives to Farming (c) Employment: Concept, Problems and Policies (d) Infrastructure: Concept, Types and Problems a Critical Assessment
5	**Organization, Management and Administration**
	(a) Organization: Concept and Features (b) Management: Concept and Features (c) Difference between Organization and Management (d) Administration: Concept and Features

Question Paper Pattern

Maximum Marks: 60
Questions to be Set: 04
Duration: 2 Hrs.
All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Type Question	15 Marks
Q-2	Question with Internal Choice within the Questions	15 Marks
Q-3	Question with Internal Choice within the Questions	15 Marks
Q-4	Question with Internal Choice within the Questions	15 Marks

Note: Questions can be Sub-divided into (a) and (b), if Necessary, for 8 and 7 Marks Respectively.

Reference Books

- Indian Economy under Liberalised System: Issues and Problems by Bhuleshkar, V. Ashok and Suresh R. Desai (eds), Himalaya Publishing House, Mumbai
- Business Environment by Cherunilam Francis, Himalaya Publishing House, Mumbai
- Centre for Science and Environment (1997), The State of India's Environment (1984-1985), CSE, New Delhi
- Man's Impact on Environment by T.R. Delwyler, Tata McGraw-Hill, New York
- Ecology and Development of Third World by A. Gupta, Roylledge, London
- Environmental Priorities in India and Sustainable Development by Khoshoo, Indian Environmental Society, New Delhi
- Environment and Entrepreneur by B.C. Tondon, Chugh Publications, Allahabad
- Entrepreneurial Megabucks by Siner A. David, John Willey and Sons, New York
- Practical Guide to Industrial Entrepreneur by S.B. Srivastava, Sultan Chand and Sons, New Delhi
- Entrepreneurship: New Venture Creation by Dacad H. Halt, Prentice Hall of India Ltd., New Delhi
- Introduction to Accountancy by T.S. Grewal, S. Chand and Company (P) Ltd., New Delhi
- Financial Accounting by Lesile Chandwichk, Pentice Hall of India Adin Bakley (P) Ltd
- Accounting Principles by R.N. Anthony and J.S. Reece, Richard Irwin, Inc
- Essentials of Management: An International Perspective by Harold Koontz and Heinz Weihrich, Tata McGraw-Hill, New Delhi
- Business Management and Organization by Thelma J. Talloo, Tata McGraw-Hill, New Delhi

Academic Council 7/4/2014
Item No. 4.12

University of Mumbai

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at

Second Year
Semester III and IV

Under Credit, Grading and Semester System

With Effect from Academic Year 2014-2015

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at

Semester III and IV

Semester III	
Course No.	**Title of the Course**
2.3.1	Financial Accounting Paper – III (Special Accounting Areas)
2.3.2	Cost Accounting Paper – II (Methods of costing)
2.3.3	Auditing Paper – II (Techniques of Auditing and Audit Procedures)
2.3.4	Economics Paper – II (Macro Economics)
2.3.5	Business Law Paper – II (Business Regulatory Framework)
2.3.6	Management Paper – II (Introduction to Management)
2.3.7	Quantitative Methods for Business Paper – II

Semester IV	
Course No.	**Title of the Course**
2.4.1	Financial Accounting Paper –IV (Special Accounting Areas)
2.4.2	Management Accounting Paper – I (Introduction to Management Accounting)
2.4.3	Taxation Paper – II (Indirect Taxes)
2.4.4	Commerce Paper – II (Financial Market Operations)
2.4.5	Business Law Paper – III (Company Law)
2.4.6	Information Technology Paper – II (Applications in Business)
2.4.7	Foundation Course - II (Value Education and Soft Skill)

With effect from Academic Year 2014-2015

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester III

Course No.	Title of the Course
2.3.1	Financial Accounting Paper – III (Special Accounting Areas)
2.3.2	Cost Accounting Paper – II (Methods of costing)
2.3.3	Auditing Paper – II (Techniques of Auditing and Audit Procedures)
2.3.4	Economics Paper – II (Macro Economics)
2.3.5	Business Law Paper – II (Business Regulatory Framework)
2.3.6	Management Paper – II (Introduction to Management)
2.3.7	Quantitative Methods for Business Paper – II

With effect from Academic Year 2014-2015

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester III with Effect from the Academic Year 2014-2015

2.3.1. Financial Accounting - Paper III
Special Accounting Areas

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Partnership Final Accounts based on Adjustment of Admission or Retirement / Death of a Partner during the Year	15
2	Piecemeal Distribution of Cash	10
3	Amalgamation of Firms	15
4	Conversion / Sale of a Partnership Firm into a Ltd. Company	10
5	Accounting with the Use of Accounting Software	10
Total		**60**

Sr. No.	Modules / Units
1	**Partnership Final Accounts based on Adjustment of Admission or Retirement / Death of a Partner during the Year**
	Simple final accounts questions to demonstrate the effect on final Accounts when a partner is admitted during the year or when partner Retires / dies during the year Allocation of gross profit prior to and after admission / retirement / death when stock on the date of admission / retirement is not given and apportionment of other expenses based on time / Sales/other given basis Ascertainment of gross profit prior to and after admission/retirement / death when stock on the date of admission / retirement is given and apportionment of other expenses based on time / Sales / other given basis Excluding Questions where admission / retirement / death takes place in the same year
2	**Piecemeal Distribution of Cash**
	Excess Capital Method only Asset taken over by a partner Treatment of past profits or past losses in the Balance sheet Contingent liabilities / Realization expenses/amount kept aside for expenses and adjustment of actual Treatment of secured liabilities Treatment of preferential liabilities like Govt. dues / labour dues etc Excluding: Insolvency of partner and Maximum Loss Method
3	**Amalgamation of Firms**
	Realization method only Calculation of purchase consideration Journal/ledger accounts of old firms Preparing Balance sheet of new firm Adjustment of goodwill in the new firm Realignment of capitals in the new firm by current accounts / cash or a combination thereof Excluding : Common transactions between the amalgamating firms
4	**Conversion / Sale of a Partnership Firm into a Ltd. Company**
	Realisation method only Calculation of New Purchase consideration, Journal / Ledger Accounts of old firms. Preparing Balance sheet of new company
5	**Accounting with the Use of Accounting Software**
	Cost Centre, Cost Categories Inventory- Creation of groups, Creation of stocks, Stock Categories Inventory vouchers-Stock Journal, Manufacturing Journal, Godown Management, Batch wise Management.

Question Paper Pattern

Maximum Marks: 60

Questions to be Set: 04

Duration: 2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Compulsory – Practical	15 Marks
Q-2	Compulsory – Objective Type True or false, Mach the following and/or multiple choice	15 Marks
Q-3 Q-3	Practical OR Practical	15 Marks 15 Marks
Q-4 Q-4	Practical OR Theory/ Practical	15 Marks 15 Marks

Note: Relevant Law / Statute/ Rules In force and Relevant Accounting Standards In force on 1st April immediately preceding commencement of Academic Year is applicable for ensuring examinations after relevant year.

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester III with Effect from the Academic Year 2014-2015

2.3.2 Cost Accounting - Paper II
Methods of Costing

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Classification of Costs And Cost Sheets	20
2	Reconciliation of Cost and Financial Accounts	10
3	Contract Costing	15
4	Process Costing	15
Total		**60**

Sr. No	Modules/ Units
1	**Classification of Costs and Cost Sheet**
	Classification of costs, Cost of Sales, Cost Centre, Cost Unit, Profit Centre and Investment Centre Cost Sheet, Total Costs and Unit Costs, Different Costs for different purpose Simple practical problems on preparation of cost sheet
2	**Reconciliation of cost and financial accounts**
	Practical problems based on reconciliation of cost and Financial accounts.
3	**Contract Costing**
	Progress payments, Retention money, Contract accounts, Accounting for material, Accounting for Tax deducted at source by the contractee, Accounting for plant used in a contract, treatment of profit on incomplete contracts, Contract profit and Balance sheet entries. Excluding Escalation clause Note- Simple practical problems
4	**Process Costing**
	Process loss, Abnormal gains and losses, Joint products and by products. Excluding Equivalent units, Inter-process profit Note- Simple Practical problems Process Costing and joint and by products

Question Paper Pattern

Maximum Marks: 60

Questions to be Set: 04

Duration: 2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Compulsory – Practical	15 Marks
Q-2	Compulsory – Objective Type True of false, multiple choice, answer in one sentence, match the following	15 Marks
Q-3 Q-3	Practical OR Practical	15 Marks 15 Marks
Q-4 Q-4	Practical OR Theory/ Practical	15 Marks 15 Marks

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester III with Effect from the Academic Year 2014-2015

2.3.3 Auditing - Paper II
Techniques of Auditing & Audit Procedures

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Vouching	15
2	Verification	15
3	Audit and Assurance Standards	15
4	Audit of Limited Companies	15
Total		**60**

Sr. No.	Modules/ Units
1	**vouching**
1.1	Audit of Income Revenue from Sales and Services, Rental Income, Interest & Dividends Income, Royalties Income, Recovery of Bad debts written off, Commission Received
1.2	Audit of Expenditure Purchases, Salaries & Wages, Rent, Insurance Premium, Telephone expense , Petty cash payment, Advertisement, Travelling Salesmen's Commission, Freight Carriage and Custom Duties
2	**Auditing Techniques :- verification**
2.1	Audit of assets Plant & Machinery, Furniture and fixtures, Accounts Receivable, Investments, Inventory, Goodwill, Patent Rights
2.2	Audit of Liabilities Outstanding Expenses, Accounts Payable, Secured loans, Unsecured Loans, Contingent Liabilities, Public Deposits
3	**Audit and Assurance Standards**
3.1	Significance of the Audit and Assurance Standards issued by Institute of Chartered Accountants of India. Responsibility of auditor for AAS
3.2	Understanding of following standards SA 200 Basic principles of Governing an Audit SA 200A Objective and scope of the audit of financial statements SA 230 Audit documentation SA 320 Audit materiality SA 570 Going Concern
4	**Audit of Limited Companies**
4.1	Qualifications, Disqualifications, Appointments (First & Subsequent auditor), Reappointment, Removal of auditors.

Question Paper Pattern

Maximum Marks: 60

Questions to be Set: 04

Duration: 2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Compulsory – No Option	15 Marks
Q-2	Compulsory – No Option - Objective Type True of false, multiple choice, answer in one sentence, match the following	15 Marks
Q-3 Q-3	Theory OR Theory	15 Marks 15 Marks
Q-4 Q-4	Theory OR Theory	15 Marks 15 Marks

Note: Question may be sub-divided into smaller questions if necessary

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester III with Effect from the Academic Year 2014-2015

2.3.4 Economics - Paper II
Macro Economics

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Macroeconomics: Nation Income, Theory of Income and Employment	08
2	Monetary Economics	10
3	Integration of Product and Money Market Equilibrium	06
4	Public Finance	10
5	International Trade, Balance of Payment and WTO	10
6	Foreign Exchange Market	06
Total		**60**

Sr. No.	Modules/ Units
1	**Macroeconomics: Nation Income, Theory of Income and Employment**
	National Income: Concept and Measurement - Real Vs Nominal GNP – PPP Income - Circular Flow of Income: Closed (two and three sector models) and Open Economy Models – Trade Cycles: Features and Phases – Concept of Aggregate Demand – Keynes' Theory of Income Determination – Theory of Multiplier – Acceleration Principle
2	**Monetary Economics**
	Supply of Money: Concept, Constituents and Determinants of Money Supply – Velocity of Circulation of Money: Meaning and Factors Determining – Demand for Money: Keynes' Theory of Demand for Money – Liquidity Preference Theory of Rate of Interest – Inflation: – Demand Pull and Cost Push Inflation – Causes, Effects and Measures to Control Inflation.
3	**Integration of Product and Money Market Equilibrium**
	Monetary Policy: Objectives and Instruments – Fiscal Policy: Objectives and Instruments – IS-LM Model: Framework, Impact of Fiscal and Monetary Policy Changes.
4	**Public Finance**
	Concept of Public Finance: Meaning, Scope and Functions - Distinction between Public and Private Finance - Principles of Maximum Social Advantage: Dalton & Musgrave versions - Modern Trends in Public Finance: Sound Finance v/s Functional Finance, Redistribute Taxation, Anti-Inflationary Taxation - Public Revenue: Sources of Revenue (Tax & Non – Tax Revenue) – Merits and Demerits of Direct & Indirect Tax- Public Expenditure: Classification and Causes of increase in Public Expenditure - Public Debt :Types, Burden and Management - Concepts of deficit.
5	**International Trade, Balance of Payment and WTO**
	Theories of International Trade: Comparative Cost Theory, Hecksher - Ohlin Theory - Terms of Trade: Meaning & Types – Gains from Trade (with offer curves) - Concept & Structure of BOP, Causes of disequilibrium, Measures to correct disequilibrium in BOP -WTO Agreements with reference to TRIPS, TRIMS and GATS

6	**Foreign Exchange Market**
	Concept of Foreign Exchange Rate: Spot and Forward, Foreign exchange market: Functions & Dealers - Arbitrage and Speculation - Equilibrium Exchange Rate Determination – Purchasing Power Parity theory – Types of Floating Rate System.

Question Paper Pattern

Maximum Marks: 60

Questions to be Set: 04

Duration: 2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Compulsory – No Option	15 Marks
Q-2	Compulsory – No Option - Objective Type True of false, multiple choice, answer in one sentence, match the following	15 Marks
Q-3 Q-3	Theory OR Theory	15 Marks 15 Marks
Q-4 Q-4	Theory OR Theory	15 Marks 15 Marks

Note: Question may be sub-divided into smaller questions if necessary

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester III with Effect from the Academic Year 2014-2015

2.3.5 Business Law - Paper II
Business Regulatory Framework

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	The Indian Partnership Act - 1932	30
2	Limited Liability Partnership Act - 2008	10
3	Factories Act - 1948	20
Total		**60**

Sr. No.	Modules/ Units
1	**The Indian Partnership Act - 1932**
	a) Concept of Partnership - Partnership and Company - Test for determination of existence for partnership - Kinds of partnership b) Registration and effects of non-registration of Partnership c) Rights and Duties of Partners d) Authority and Liability of partners e) Admission, Retirement and Expulsion of Partner f) Dissolution of Partnership
2	**Limited Liability Partnership Act - 2008**
	a) Concept , Formation, Membership and Functioning of Partnership b) Dissolution of Partnership
3	**Factories Act - 1948**
	a) Definitions • Section 2 (k) – Manufacturing Process, • Section2 (l) –Workers • Section 2 (m)– Factory b) Provisions pertaining to i. Health- Section 11 to Section 20 ii. Safety- Section 21 to Section 41 iii. Welfare- Section 42 to Section 49

Question Paper Pattern

Maximum Marks: 60

Questions to be Set: 04

Duration: 2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Compulsory – No Option	15 Marks
Q-2	Compulsory – No Option - Objective Type True of false, multiple choice, answer in one sentence, match the following	15 Marks
Q-3 Q-3	Theory OR Theory	15 Marks 15 Marks
Q-4 Q-4	Theory OR Theory	15 Marks 15 Marks

Note: Question may be sub-divided into smaller questions if necessary

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester III with Effect from the Academic Year 2014-2015

2.3.6 Management - Paper II
Introduction to Management

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction to Basic Management Concepts	10
2	Planning	10
3	Organising	10
4	Staffing	10
5	Directing and Controlling	10
Total		**50**

Sr. No.	Modules / Units
1	**Introduction to Basic Management Concepts**
1.1	Introduction to Management, Definition of Management
1.2	Nature of Management
1.3	Objectives of Management
1.4	Administration vs Management
1.5	Levels of Management
1.6	Principles of Management
2	**Planning**
2.1	Definition and Importance of Planning
2.2	Process of Planning
2.3	Limitations of Planning
2.4	Features of Sound Planning
2.5	Features and process of decision making
3	**Organising**
3.1	Definition, nature and significance
3.2	Process of organisation
3.3	Principles of organisation
3.4	Formal and Informal organisation - features, advantages and disadvantages
3.5	Centralisation and decentralisation – factors, merits and demerits
3.6	Departmentation and Delegation
4	**Staffing**
4.1	Meaning, Importance of Staffing
4.2	Recruitment and its sources
4.3	Selection procedure
4.4	Distinction between Recruitment and Selection
4.5	Employment tests and types of Interview
5	**Directing and Controlling**
5.1	Meaning and Importance of directing
5.2	Principles of Directing
5.3	Leadership trails and Styles
5.4	Motivation – Importance and Factors
5.5	Co-ordination – Meaning, features and Importance
5.6	Meaning and steps in controlling
5.7	Essentials of a good control system

Question Paper Pattern

Maximum Marks: 60

Questions to be Set: 04

Duration: 2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Compulsory – No Option	15 Marks
Q-2	Compulsory – No Option - Objective Type True of false, multiple choice, answer in one sentence, match the following	15 Marks
Q-3 Q-3	Theory OR Theory	15 Marks 15 Marks
Q-4 Q-4	Theory OR Theory	15 Marks 15 Marks

Note: Question may be sub-divided into smaller questions if necessary

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester III with Effect from the Academic Year 2014-2015

2.3.7 Quantitative Methods for Business -Paper II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Decision Theory	15
2	Linear Programming Models	15
3	Transportation Models	15
4	Assignment Models	15
Total		**60**

Sr. No.	Modules/unit
1	**Decision Theory**
1.1	Introduction to Probability - Definition of Sample space & Event,probability of an event and simple examples . (No question to be asked in exam.)
1.2	Elements of Decision Problem: Concepts such as decision making, Decision maker, Courses of action, States of nature, Pay-off values , Pay-off Table, Opportunity Loss Table.
1.3	Decision Making process and decision making categories
1.4	Decision Making Environments - a) Decision Making under Certainty b) Decision Making under Uncertainty -Criterions such as Maximin, Minimax, Maximax, Laplace, Hurwicz Alpha, Regret. c) Decision Making under Risk – Criterions such as EMV, EOL and EVPI
1.5	Decision Tree techniques - Concept of Decision Tree and Examples
2	**Linear Programming Models**
2.1	Mathematical formulation and graphical solution of Linear Programming Problems.
2.2	Standard Linear Programming form – slack and surplus variables
2.3	Determination of Basic Feasible solution: Simplex Method - The Big "M" Method Two phase Method.
2.4	Special cases in Simplex method –Alternative optima, unbounded solutions, Infeasible solutions, Degeneracy.
3	**Transportation Models**
3.1	Introduction, Characteristics and Assumptions
3.2	Solution of Transportation Problem using – a) North – West Corner Method b) MODI Method c) Least- Cost Method d) Vogel's Approximation Method
3.3	Unbalanced Transportation Problem , Degeneracy in Transportation Problem
4	**Assignment Models**
4.1	Introduction, Characteristics and Assumptions
4.2	Formulation of an Assignment Problem
4.3	Hungarian Method
4.4	Variation of the Assignment Problem

Question Paper Pattern

Maximum Marks: 60

Questions to be Set: 04

Duration: 2 Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Compulsory – Practical	15 Marks
Q-2	Compulsory – Objective Type True or false, Mach the following and/or multiple choice	15 Marks
Q-3 Q-3	Practical OR Practical	15 Marks 15 Marks
Q-4 Q-4	Practical OR Theory/ Practical	15 Marks 15 Marks

University of Mumbai

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Third Year Semester V and VI

Under Credit, Grading and Semester System

With Effect from Academic Year 2015-2016

Board of Studies in Accountancy, University of Mumbai

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at

Semester V and VI

Semester V	
Course No.	**Title of the Course**
3.5.1	Financial Accounting Paper - V
3.5.2	Cost Accounting Paper – III
3.5.3	Financial Management – Paper II
3.5.4	Taxation Paper - III Direct Tax Paper – I
3.5.5	Auditing Paper – III
3.5.6	Management Paper – II (Management Applications)

Semester VI	
Course No.	**Title of the Course**
3.6.1	Financial Accounting Paper –VI
3.6.2	Cost Accounting Paper – IV
3.6.3	Financial Management – Paper III
3.6.4	Taxation Paper – IV (Direct Taxes - II)
3.6.5	Financial Accounting Paper – VII
3.6.6	Economics Paper - III Indian Economy

With effect from Academic Year 2015-2016

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at

Semester V

Course No.	Title of the Course
3.5.1	Financial Accounting Paper - V
3.5.2	Cost Accounting Paper – III
3.5.3	Financial Management Paper - II
3.5.4	Taxation Paper – III Direct Tax Paper – I
3.5.5	Auditing Paper – III
3.5.6	Management Paper – II (Management Applications)

With effect from Academic Year 2015-2016

B.Com. (Accounting and Finance) Programme at Semester V
with Effect from the Academic Year 2015-2016

3.5.1 Financial Accounting Paper - V

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	AS – 14 - Amalgamation, Absorption & External Reconstruction (excluding inter – company holding)	15
2	Internal Reconstruction	15
3	Underwriting of shares & debentures	10
4	Liquidation of Companies	10
5	Buy-Back of shares	10
	Total	**60**

Sr. No	Modules/ Units
1	**AS – 14 - Amalgamation, Absorption & External Reconstruction (excluding inter – company holding)**
	In the nature of merger and purchase with corresponding accounting treatments of pooling of interests and purchase method respectively. Meaning and Computation of purchase consideration. Inter-company debtors, creditors, loan, bills, loading in stock.
2	**Internal Reconstruction**
	Need for reconstruction and company law provisions Distinction between internal and external reconstructions. Methods including alteration of share capital, variation of shareholder rights, sub division, consolidation, surrender and reissue / cancellation, reduction of share capital with relevant legal provisions and accounting treatment for same.
3	**Underwriting of shares & debentures**
	Introduction, Underwriting, Underwriting Commission Provision of Companies Act with respect to Payment of underwriting commission Underwriters, Sub-Underwriters, Brokers and Manager to issues Types of underwriting, Abatement Clause Marked, Unmarked and Firm-underwriting applications, Liability of the underwriters in respect of underwriting contract Practical problems
4	**Liquidation of Companies**
	Meaning of liquidation or winding up Preferential payments Overriding preferential payments Preparation of statement of affairs, deficit / surplus account Liquidator's final statement of account
5	**Buy Back of Shares**
	Company Law / Legal provisions (including related restrictions, power, transfer to capital redemption reserve account and prohibitions) Compliance of conditions including sources, maximum limits and debt equity ratio. Cancellation of Shares Bought back (Excluding Buy Back of minority shareholding)

Note: Relevant Law / Statute & Accounting Standards in force on 1st April of every Academic Year shall be applicable for examination.

Question Paper Pattern

Maximum Marks: 75

Questions to be Set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions OR Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

3.5.2 Cost Accounting Paper – III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Uniform Costing and Inter-Firm Comparison	10
2	Integrated System and Non Integrated System of Accounts	15
3	Operating Costing	10
4	Process Costing- Equivalent Units of Production and Inter-process Profit (FIFO Method)	15
5	Introduction to Emerging concepts in costing	10
	Total	**60**

Sr. No	Modules/ Units
1	**Uniform Costing and Inter-Firm Comparison**
	Uniform Costing Meaning of and need for uniform costing Essentials for success of uniform costing Advantages and limitations of uniform costing Areas of Uniformity, Uniform cost manual Simple practical problems **Inter-Firm Comparison** Pre requisites of inter firm comparison Advantages and limitations Simple practical problems
2	**Integrated System and Non Integrated System of Accounts**
	Integrated System Meaning Advantages and disadvantages Distinctive features Journal Entries. Simple practical problems **Non-Integrated System** Meaning Advantages and disadvantages Distinctive features Cost control accounts to be prepared Journal entries Simple practical problems
3	**Operating Costing**
	Meaning of operating costing Determination of per unit cost Pricing of services Collection of costing data Simple practical problems based on costing of hospital, hotel, goods and passenger transport services
4	**Process Costing- Equivalent Units of Production and Inter-process Profit (FIFO Method)**
	Work in Progress and Equivalent Production (FIFO Method) Inter Process Profit Simple practical problems
5	**Introduction to Emerging concepts in costing**
	Target Costing Activity Based Costing (ABC) Product Life costing Excluding Practical Problems

Question Paper Pattern

Maximum Marks: 75

Questions to be Set:05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions OR Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

3.5.3. Financial Management - Paper – II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Risk and Return	15
2	Leverage	07
3	Capital Structure Decisions	08
4	Cash Management	15
5	Receivable Management	15
	Total	**60**

Sr. No.	Modules / Units
1	**Risk and Return**
	Introduction Meaning of Return Types of Return- Holding Period Return, Annualized Return, Expected Return Meaning of Risk Types of Risk- Business Risk, Financial Risk, Interest Rate risk, Market Risk and Liquidity Risk (Including Practical Problems)
2	**Leverage**
	Introduction EBIT & EPS Analysis Types of Leverages: Operating Leverage, Financial Leverage & Composite Leverage Relationship between Operating Leverage and Financial Leverage (Including Practical Problems)
3	**Capital Structure Decisions**
	Meaning Choice of Capital Structure. Importance Optimal capital Structure EBIT-EPS Analysis Cost of Capital, Capital structure and Market Price of Share Capital Structure Theories Dividend Policy - Payout Ratio
4	**Cash Management**
	Introduction Motives for holding cash Aspects of cash management Long terms cash forecasting Reason for cash surplus Cash management: Basic strategies, Cash Management Techniques/Processes, Marketable Securities (Including Practical Problems)
5	**Receivable Management**
	Introduction Aspects of Receivable Management Credit Policy, Credit Evaluation, Credit Granting decision, Control on Accounts Receivable (Including Practical Problems)

Question Paper Pattern

Maximum Marks: 75

Questions to be Set:05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ Fill in the blanks)	15 Marks
Q-2	Full Length Practical Question	15 Marks
	OR	
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question	15 Marks
	OR	
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Practical Question	15 Marks
	OR	
Q-4	Full Length Practical Question	15 Marks
Q-5	A) Theory questions	08 Marks
	B) Theory questions	07 Marks
	OR	
Q-5	Short Notes To be asked 05 To be answered 03	15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

3.5.4 Taxation Paper - III
Direct Tax Paper – I

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Definitions u/s – 2 Basis of Charge	08
2	Exclusions from Total Income	07
3	Heads of Income	25
4	Deductions under Chapter VI – A	10
5	Computation of Total Income	10
	Total	**60**

Sr. No	Modules/ Units
1	**Definitions u/s – 2 & Basis of Charge**
	Definitions u/s – 2 Section 2 –Assessee, Assessment Year, Assessment, Annual value, Business, Capital asset, Income, Person, Previous Year, Transfer **Basis of Charge** Section 3 – 9 – Previous Year, Residential Status, Scope Of Total Income, Deemed Income
2	**Exclusions from Total Income**
	Section 10 – restricted to, Agricultural Income, Sums Received From HUF By Member, Share of Profit from Firm, Casual & Non – Recurring Receipts, Scholarships, Income of Minor Child, Allowance to Members of Parliament and Legislative Assembly. Note -Exemptions related to specific Heads of Income to be covered with Relevant Provisions.
3	**Heads of Income**
	Salary Section 15 – 17, Including Section 10 relating to House Rent Allowance, Travel Concession, Special Allowance, Pension – Commutation, Leave Encashment, Compensation, Voluntary Retirement, Payment from Provident Fund **Income From House Property** Section 22 – 27, Including Section 2 – Annual Value **Profits & Gains From Business & Profession** Vocation Section 28-32, 36, 37, 40, 40A & 43B. including.: Section 2 – Business **Capital Gains** Section 45, 48, 49, 50, 54 and 55 **Income from Other Sources** Section 56 – 59
4	**Deductions under Chapter VI – A**
	80 A- Restriction on claim in Chapter VI- A deductions 80 C – Payment of LIC/PF and other eligible investments 80CCC – Contribution to certain Pension Fund 80D – Medical Insurance Premium 80 DD- Maintenance and medical treatment of handicapped dependent 80E – Interest on Educational Loan 80 TTA- Interest on Saving Bank account 80U – Deduction in the case of totally blind or physically handicapped or mentally retarded resident person
5	**Computation of Total Income**
	Computation of Total Income Of Individual & HUF

Note:

1. Relevant Law / Statute in force on 1st April immediately preceding commencement of Academic Year is applicable for ensuing examinations after relevant year.
2. The syllabus is restricted to study of particular section/s, specifically mentioned in rules and notifications only.

Question Paper Pattern

Maximum Marks: 75

Questions to be Set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ Fill in the blanks)	15 Marks
Q-2	Full Length Practical Question	15 Marks
	OR	
Q-2	Full Length Practical Question	15 Marks
Q-3	Full Length Practical Question	15 Marks
	OR	
Q-3	Full Length Practical Question	15 Marks
Q-4	Full Length Practical Question	15 Marks
	OR	
Q-4	Full Length Practical Question	15 Marks
Q-5	A) Theory questions	08 Marks
	B) Theory questions	07 Marks
	OR	
Q-5	Short Notes To be asked 05 To be answered 03	15 Marks

Note:

1. The Problems should not cover more than two heads of income & two deductions.
2. Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

3.5.5 Auditing - Paper III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Company Audit	15
2	Audit Report	15
3	Audit under Computerized Information System Environment	15
4	Professional Ethics	15
	Total	**60**

Sr. No.	Modules / Units
1	**Company Audit**
	Powers & Duties of Auditors, Liabilities of Auditors Branch Audit, Joint Audit, Special Audit, Tax Audit
2	**Audit Report**
	Reporting requirement under the Companies Act Qualifications in Audit Report, Disclaimers in Audit Report Adverse Opinion, Disclosures, Reports & Certificate
3	**Audit under Computerized Information System Environment**
	Special aspects of CIS Audit Environment , Need for review of internal control especially procedure controls and facility controls Approach to audit in CIS environment Use of computer for internal and management audit purposes Audit tools, test packs, computerized audit programmes Special aspects in Audit of E-Commerce Transaction.
4	**Professional Ethics**
	Code of Ethics with special reference to the relevant provisions of The Chartered Accountant Act, 1949 and the Regulations thereunder The Chartered Accountant Act, 1949 Schedules Members who are deemed to be in Practice Significance of the Certificate of Practice Disabilities for purpose of Membership Disciplinary Procedure Professional Misconduct

Note: Relevant Law / Statute & Accounting Standards in force on 1st April of every Academic Year shall be applicable for examination.

Question Paper Pattern

Maximum Marks: 75

Questions to be Set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Question OR Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question OR Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question OR Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question OR Short Notes To be asked 05 To be answered 03	15 Marks 15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

3.5.6. Management Paper – II
Management Applications

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Marketing Management	15
2	Production Management	15
3	Human Resource Management	15
4	Financial Management	15
	Total	**60**

Sr. No	Modules /Units
1	**Marketing Management**
	Meaning and Definition of Marketing – 4 Ps of Marketing Product Management – Meaning & Definition – Product Development Strategies Price Management – Meaning and Definition – Pricing Strategies Place (Distribution) Management – Meaning and Definition – Factors Governing Distribution Decisions – Types of Distribution Channels Promotion Management – Meaning – Promotion Strategies Case studies based on the above topics
2	**Production Management**
	Meaning and Definition of Production Management – Scope of Production Management - Production vs. Productivity Meaning of Productivity - Measurement of Productivity – Measure to increase Productivity – Productivity Movement in India Meaning and Definition of Quality Management – TQM – Quality Circles – ISO 9000/14000 Inventory Management – Meaning and Methods Case studies based on the above topics
3	**Human Resource Management**
	Meaning and Definition of Human Resource Planning, Human Resource Management and Human Resource Development Process of Human Resource Planning Scope of Human Resource Management Methods of Developing Human Resource Performance Appraisal – Meaning and Definition – Traditional and Modern Methods of Appraisal – Self Appraisal – 3600 Appraisal Case studies based on the above topics
4	**Financial Management**
	Meaning and Definition of Financial Management – Functions of Financial Management Short-term and Lone-term Sources of Finance – Sources and Significance Capital Market – Meaning and Constituents – Functions Fundamental Analysis – Technical Analysis - Venture Capital – DEMAT Account - Futures and Options Case studies based on the above topics

Question Paper Pattern

Maximum Marks: 75

Questions to be Set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Question OR Full Length Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Question OR Full Length Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Question OR Full Length Question	15 Marks 15 Marks
Q-5 Q-5	Full Length Question OR Short Notes To be asked 05 To be answered 03	15 Marks 15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester VI

Course No.	Title of the Course
3.6.1	Financial Accounting Paper –VI
3.6.2	Cost Accounting Paper – IV
3.6.3	Financial Management – Paper III
3.6.4	Taxation Paper – IV (Direct Taxes - II)
3.6.5	Financial Accounting Paper –VII
3.6.6	Economics Paper - III Indian Economy

With effect from Academic Year 2015-2016

3.6.1 Financial Accounting - Paper VI

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Final Accounts of Banking Company	15
2	Final Accounts of Insurance Company (Excl. Life Insurance)	15
3	Investment Accounting (w.r.t. Accounting Standard - 13)	10
4	Accounting of Transactions of Foreign Currency	10
5	Accounting for Limited Liability Partnership	10
	Total	**60**

Sr. No.	Modules / Units
1	**Final Accounts of Banking Company**
	Legal provision in Banking Regulation Act, 1949 relating to Accounts. Statutory reserves including Cash Reserve and Statutory Liquidity Ratio. Bill purchase and discounted, rebate of bill discounted. Final Accounts in prescribed form Non – performing assets and Income from non – performing assets. Classification of Advances, standard, sub – standard, doubtful and provisioning requirement.
2	**Final Accounts of Insurance Company (Excl. Life Insurance)**
	General Insurance – Various types of insurance, like fire, marine, Miscellaneous, Special terms like premium, claims, commission, Management expenses, Reserve for unexpired risk, reinsurance Final Accounts in a prescribed form. Revenue Statement – Form B – RA, Profit / Loss Account – Form B – PL and Balance Sheet Form B – BS.
3	**Investment Accounting (w.r.t. Accounting Standard- 13)**
	For shares (variable income bearing securities) For debentures/Preference. shares (fixed income bearing securities) Accounting for transactions of purchase and sale of investments with ex and cum interest prices and finding cost of investment sold and carrying cost as per weighted average method (Excl. brokerage). Columnar format for investment account.
4	**Accounting of Transactions of Foreign Currency**
	In relation to purchase and sale of goods, services and assets and loan and credit transactions. Computation and treatment of exchange rate differences
5	**Accounting for Limited Liability Partnership**
	Statutory provisions Conversion of partnership business into Limited Liability Partnership Final accounts

Question Paper Pattern

Maximum Marks: 75

Questions to be Set:05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns, Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions OR Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

3.6.2 Cost Accounting - Paper IV

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Budgeting and Budgetary Control	15
2	Absorption Costing and Marginal Costing Cost Volume and Profit Analysis	15
3	Managerial Decision Making	15
4	Standard Costing and Variance Analysis	15
Total		**60**

Sr. No	Modules /Units
1	**Budgeting and Budgetary Control**
	Meaning & objectives, Advantages and limitations of budgets Functional budgets, fixed and flexible budgets Zero based budgeting, performance budgeting *Simple practical problems of preparing flexible budgets and functional budgets*
2	**Absorption Costing and Marginal Costing, Cost Volume and Profit Analysis**
	Absorption Costing and Marginal Costing Meaning of absorption costing, Introduction to marginal costing Distinction between absorption costing and marginal costing Advantages and limitations of marginal costing **Cost Volume and Profit Analysis** Break even analysis meaning and graphic presentation Margin of safety Key factor *Simple practical problems based on using the marginal costing formulae*
3	**Managerial Decision Making**
	Make or buy Sales mix decisions Exploring new markets Plant shut down decision *Simple practical problems*
4	**Standard Costing and Variance Analysis**
	Preliminaries in installing of a standard cost system Material Cost variance Labour cost variance Variable overhead variances Fixed Overhead variances Sales variances *Simple practical problems*

Question Paper Pattern

Maximum Marks: 75

Questions to be Set:05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions OR Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

3.6.3 Financial Management – Paper III

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Financial Policy and Corporate Strategy	10
2	Security Analysis	15
3	Dividend Decisions	15
4	Mutual Funds	10
5	Portfolio Theory	10
	Total	**60**

Sr. No	Modules/ Units
1	**Financial Policy and Corporate Strategy**
	Meaning of strategic financial management Strategic financial decision making framework Functions of Strategic Financial Management Financial Planning
2	**Security Analysis**
	Fundamental analysis - Meaning, Dividend growth model and PE multiple Industry analysis - Factors affecting industry analysis, Techniques used industry analysis, Company analysis Technical analysis - Meaning ,General principles and methods, The Dow theory, Market indicators Bond valuation - Introduction , Bond valuation model ,Bond value theorems ,Yield to maturity Bond values with semi-annual interest
3	**Dividend Decisions**
	Introduction of dividend policy Practical considerations in dividend policy Theories on dividend policy, Traditional position, Walter approach, Gorden Growth approach Modigilani and Miller hypothesis
4	**Mutual Funds**
	Introduction Classification of MFs Evaluating performance MFs, NAV, Costs incurred by MFs, Holding Period Return Criteria for evaluating the performance, Sharpe ratio, Treynor ratio, Jensen's ratio
5	**Portfolio Theory**
	Activities in portfolio management Objectives of portfolio management Theories, Traditional approach, Modern approach Portfolio analysis

Question Paper Pattern

Maximum Marks: 75

Questions to be Set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions OR Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

Revised Syllabus and Question Paper Pattern of Courses of B.Com. (Accounting and Finance) Programme at Semester VI with Effect from the Academic Year 2015-2016

3.6.4 Taxation - Paper IV
Direct taxes - II

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Clubbing of Income	05
2	Set Off & Carry Forward of Losses	05
3	Computation of Tax liability of Individual & HUF	05
4	Computation of Income of Partnership Firm in Relation to Sec: 40(b) & Tax Thereon With Applicable Rate of Tax	15
5	Return of Income – Sec 139	10
6	Tax Deduction at Source Advance Tax Interest Payable	15
7	DTAA U/S 90 & 91	5
	Total	**60**

Sr. No.	Modules/ Units
1	**Clubbing of Income -** Section 60 to 65
2	**Set Off & Carry Forward of Losses**
	Sec: 70 – Set off Loss from one Source against Income from another Source under the Same Head of Income Sec: 71 – Set Off Loss from One Head against Income of another Head Sec: 71B – Carry Forward & Set off Losses from House Property Sec: 72 – Carry Forward & Set Off of Losses of Business Losses Sec: 73- Losses in Speculation Business Sec: 74- Loss under the head Capital Gains
3	**Computation of Tax liability of Individual & HUF**
4	**Computation of Income of Partnership Firm in Relation to Sec: 40(b) & Tax Thereon With Applicable Rate of Tax**
5	**Return of Income – Sec 139**
	Excluding u/s 139(4A), 139(4B), 139(4C) & 139 (4D)
6	**Tax Deduction at Source** **Advance Tax U/S 207, 208, 209, 210 & 211** **Interest Payable U/S 234A, 234B, 234C**
	Basic Aspects of Deduction of Taxes at Source Sec: 192 – TDS on Salary Sec: 194A – TDS on Interest Sec: 194C – TDS on Contractor Sec: 194H – TDS on Commission Sec: 194I – TDS on Rent Sec: 194J – TDS on Professional Fees **Advance Tax U/S 207, 208, 209, 210 & 211** Sec: 207 – Income Liable to Advance Tax Sec: 208 – Liability of Advance Tax Sec: 209 – Computation of Advance Tax Sec: 210 – Payment of Advance Tax by Assessee on His Own Account Sec: 211 – Due Dates of Payment of Advance Tax **Interest Payable U/S 234A, 234B, 234C** Sec: 234A – Interest for default in furnishing return of income Sec: 234B – Interest for default in payment of advance tax Sec: 234C – Interest for deferment of advance tax
7	**DTAA U/S 90 & 91**

Note:

1. Relevant Law / Statute in force on 1st April immediately preceding commencement of Academic Year is applicable for ensuing examinations after relevant year.
2. The syllabus is restricted to study of particular section/s, specifically mentioned rules and notifications only.

Question Paper Pattern

Maximum Marks: 75

Questions to be Set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions OR Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

3.6.5 Financial Accounting - Paper VII

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Valuation of Goodwill and Shares	15
2	Final Account for Electricity Company	15
3	Final Accounts for Co-Operative Society - Co-Operative Housing Society - Consumer Co-Operative Society	15
4	Foreign Branch	08
5	Introduction to IFRS and Ind - AS	07
	Total	**60**

Sr. No	Modules /Units
1	**Valuation of Goodwill and Shares**
	Valuation of Goodwill Maintainable Profit method, Super Profit Method Capitalization method, Annuity Method **Valuation of Shares** Intrinsic Value Method, Yield method and Fair Value Method
2	**Final Account for Electricity Company**
	Final Accounts as per Double Account System - Final Accounts as per Electricity Rules - Receipt & Expenditure on Capital Account - General Balance Sheet - Contingency Reserve Disposal of Surplus (As per Electricity Rules): Norms regarding Disposal of Surplus Replacement of Assets Simple practical problems
3	**Final Accounts for Co-Operative Society** **(Co-Operative Housing Society & Consumer Co-Operative Society)**
	Provisions of Maharashtra State Co-Operative Societies Act and rules. Accounting provisions including appropriation to various funds Format of Final Accounts – Form N Simple practical problems on preparation of final accounts of a Co-Operative housing society & Consumer Co-Operative Society
4	**Foreign Branch**
	Conversion as per AS 11 and incorporation in HO accounts
5	**Introduction to IFRS and Ind - AS**
	Purpose & Objective of financial statement-its Frame work-its assumption, characteristics, element, recognition & measurement. Convergence & first time adoption of IFRS First time adaptation of Indian Accounting Standard

Note: Relevant Law / Statute & Accounting Standards in force on 1st April of every Academic Year shall be applicable for examination.

Question Paper Pattern

Maximum Marks: 75

Questions to be Set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ Fill in the blanks)	15 Marks
Q-2 Q-2	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-3 Q-3	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-4 Q-4	Full Length Practical Question OR Full Length Practical Question	15 Marks 15 Marks
Q-5 Q-5	A) Theory questions B) Theory questions OR Short Notes To be asked 05 To be answered 03	08 Marks 07 Marks 15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

3.6.6 Economics Paper - III
Indian Economy

Modules at a Glance

Sr. No.	Modules	No. of Lectures
1	Introduction (09) Agricultural Sector (06)	15
2	Industrial Sector	15
3	Service Sector (09) External Sector (06)	15
4	Money and Banking	15
	Total	**60**

Sr. No	Modules/ Units
1	**Introduction** **Agricultural Sector**
	Introduction Demographic features- Poverty, Income inequality and Unemployment Urbanization and its effects Agricultural Sector Institutional Structure- Land reforms in India Technological changes in agriculture Agricultural pricing and agricultural finance Agricultural marketing National agricultural policy
2	**Industrial Sector**
	Growth and pattern of industrialization Industrial Policy of 1991.Public sector enterprises and disinvestment policy Small scale sector- problems and prospects
3	**Service Sector** **External Sector**
	Service Sector Nature and scope of service industry Recent trends in Banking industry, Insurance Industry, Healthcare Industry and Tourism Industry External Sector Structure and directions of Foreign trade India's Balance of payments since 1991 FDI, foreign capital and transnational companies in India. Role and impact of SAARC, ASEAN and WTO
4	**Money and Banking**
	Money market and its features Monetary policy of RBI Progress of commercial banking in India Development of capital markets SEBI and its functions

Question Paper Pattern

Maximum Marks: 75

Questions to be Set: 05

Duration: 2 ½ Hrs.

All Questions are Compulsory Carrying 15 Marks each.

Q-1	Objective Questions A) Sub Questions to be asked 10 and to be answered any 08 B) Sub Questions to be asked 10 and to be answered any 07 (*Multiple choice / True or False / Match the columns/ fill in the blanks)	15 Marks
Q-2	Full Length Question	15 Marks
	OR	
Q-2	Full Length Question	15 Marks
Q-3	Full Length Question	15 Marks
	OR	
Q-3	Full Length Question	15 Marks
Q-4	Full Length Question	15 Marks
	OR	
Q-4	Full Length Question	15 Marks
Q-5	Full Length Question	15 Marks
	OR	
Q-5	Short Notes To be asked 05 To be answered 03	15 Marks

Note: Full length question of 15 marks may be divided into two sub questions of 08 and 07 marks.

T.Y.B.Sc. CHEMISTRY (6 UNITS)

Choice Based Credit System

SEMESTER V

ANALYTICAL CHEMISTRY

COURSE CODE: USCH504 **CREDITS: 02** **LECTURES: 60**

UNIT I :INTRODUCTION TO QUALITY CONCEPTS,CHEMICAL CALCULATIONS AND SAMPLING (3 & 6 UNITS)			
1.1	**Quality in Analytical Chemistry**		**05 L**
	1.1.1	Concepts of Quality, Quality Control and Quality Assurance	
	1.1.2	Importance of Quality concepts in Industry	
	1.1.3	Chemical Standards and Certified Reference Materials; Importance in chemical analysis Quality of material: Various grades of laboratory reagents	
1.2	**Chemical Calculations (Numericals and word problems are expected)**		**04 L**
	1.2.1	Inter conversion of various concentration units. (Conversion of concentration from one unit to another unit with examples)	
	1.2.2	Percent composition of elements in chemical compounds	
1.3	**Sampling**		**06 L**
	1.3.1	Purpose, significance and difficulties encountered in sampling	
	1.3.2	Sampling of solids: Sample size – bulk ratio, size to weight ratio, multistage and sequential sampling, size reduction methods, sampling of compact solids, equipments and methods of sampling of compact solids, sampling of particulate solids, methods and equipments used for sampling of particulate solids.	
	1.3.3	Sampling of liquids: Homogeneous and heterogeneous, Static and flowing liquids.	
	1.3.4	Sampling of gases: Ambient and stack sampling: Apparatus and	

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		methods for sampling of gases.	
	1.3.5	Collection, preservation and dissolution of the sample.	
UNIT II : CLASSICAL METHODS OF ANALYSIS (TITRIMETRY) (3 & 6 UNITS)			
2.1	**Redox Titrations (Numerical and word Problems are expected)**		**08 L**
	2.1.1	Introduction	
	2.1.2	Construction of the titration curves and calculation of E_{system} in aqueous medium in case of: (1) One electron system (2) Multielectron system	
	2.1.3	Theory of redox indicators, Criteria for selection of an indicator Use of diphenyl amine and ferroin as redox indicators	
2.2	**Complexometric Titrations**		**07 L**
	2.2.1	Introduction, construction of titration curve	
	2.2.2	Use of EDTA as titrant and its standardisation, absolute and conditional formation constants of metal EDTA complexes, Selectivity of EDTA as a titrant. Factors enhancing selectivity with examples. Advantages and limitations of EDTA as a titrant.	
	2.2.3	Types of EDTA titrations.	
	2.2.4	Metallochromic indicators, theory, examples and applications	
UNIT III: OPTICAL METHODS(6 UNITS)			
3.1	**Atomic Spectroscopy: Flame Emission spectroscopy(FES) and Atomic Absorption Spectroscopy(AAS)**		**07 L**
	3.1.1	Introduction, Energy level diagrams, Atomic spectra, Absorption and Emission Spectra	
	3.1.2	Flame Photometry – Principle, Instrumentation (Flame atomizers, types of Burners, Wavelength selectors, Detectors)	
	3.1.3	Atomic Absorption Spectroscopy – Principle, Instrumentation (Source, Chopper, Flame and Electrothermal Atomiser)	
	3.1.4	Quantification methods of FES and AAS – Calibration curve method, Standard addition method and Internal standard method.	

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	3.1.5	Comparison between FES and AAS	
	3.1.6	Applications, Advantages and Limitations	
3.2	**Molecular Fluorescence and Phosphorescence Spectroscopy**		**04L**
	3.2.1	Introduction and Principle	
	3.2.2	Relationship of Fluorescence intensity with concentration	
	3.2.3	Factors affecting Fluorescence and Phosphorescence	
	3.2.4	Instrumentation and applications	
	3.2.5	Comparison of Fluorimetry and Phosphorimetry	
	3.2.6	Comparison with Absorption methods	
3.3	**Turbidimetry and Nephelometry**		**04 L**
	3.3.1	Introduction and Principle	
	3.3.2	Factors affecting scattering of Radiation: Concentration, particle size, wavelength, refractive index	
	3.3.3	Instrumentation and Applications	
UNIT IV: METHODS OF SEPARATION – I (6 UNITS)			
4.1	**Solvent Extraction**		**06 L**
	4.1.1	Factors affecting extraction: Chelation, Ion pair formation and Solvation	
	4.1.2	Graph of percent extraction versus pH. Concept of $[pH]_{1/2}$ and its significance (derivation not expected)	
	4.1.3	Craig's counter current extraction: Principle, apparatus and applications	
	4.1.4	Solid phase extraction: Principle, process and applications with special reference to water and industrial effluent analysis.	
	4.1.5	Comparison of solid phase extraction and solvent extraction.	
4.2	**High Performance Liquid chromatography (HPLC)**		**06L**
	4.2.1	Introduction and Principle Instrumentation- components with their significance: Solvent Reservoir, Degassing system, Pumps-(reciprocating pumps, screw driven- syringe type pumps, pneumatic pumps, advantages and disadvantages of each pump), Precolumn, Sample injection system, HPLC Columns, Detectors(UV – Visible detector, Refractive index detector)	
	4.2.2	Qualitative and Quantitative Applications of HPLC	

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4.3	**High Performance Thin Layer Chromatography (HPTLC)**		**03 L**
	4.3.1	Introduction and Principle Stationary phase, Sample application and mobile phase	
	4.3.2	Detectors a) Scanning densitometer- Components. Types of densitometer- Single beam and Double beam b) Fluorometric Detector	
	4.3.3	Advantages, disadvantages and applications	
	4.3.4	Comparison of TLC and HPTLC	

REFERENCES

1.	3000 solved problems in Chemistry, David E. Goldberg,PhD.,Schaums Outline	Unit/s: (1.2)
2.	A guide to Quality in Analytical Chemistry: An aid to accreditation, CITAC and EURACHEM, (2002),	Unit/s (1.1)
3.	A premier sampling solids, liquids and gases, Smith Patricia I, American statistical association and the society for industrial and applied mathematics, (2001)	Unit/s (1.3)
4.	Analytical Chemistry, Gary.D Christan, 5th edition	Unit/s (4.1,4.2,4.3)
5.	Analytical Chemistry Skoog, West ,Holler,7th Edition:	Unit/s (2.1)
6.	Analytical Chromatography, Gurdeep R Chatwal, Himalaya publication	Unit/s (4.1,4.2,4.3)
7.	Basic Concepts of Analytical Chemistry, by S M Khopkar, new Age International (p) Limited	Unit/s (4.1,4.2,4.3)
8.	Chemical methods of separation, J A Dean, Van Nostrand Reinhold, 1969	Unit/s (4.1,4.2,4.3)
9.	Fundamentals of Analytical Chemistry by Skoog and West , 8th Edition	Unit/s (4.1,4.2,4.3)
10.	Handbook of quality assurance for the analytical chemistry laboratory, 2ndEdn., James P. DuxVanNostr and Reinhold, 1990	Unit/s (1.1)
11.	High Performance Thin Layer Chromatography by Dr P.D. Sethi, CBS Publisher and Distribution	Unit/s(4.1,4.2,4.3)

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12.	High Performance Thin Layer Chromatography in Food analysis, by Prem kumar, CBS Publisher and distributer	Unit/s (4.1,4.2,4.3)
13.	Instrumental methods of Analysis, by Dr Supriya S Mahajan, Popular Prakashan Ltd	Unit/s (4.1,4.2,4.3)
14.	Instrumental methods Of Analysis, by Willard Merritt Dean, 7thEdition, CBS Publisher and distribution Pvt Ltd	Unit/s (3.1,3.2,3.3)
15.	Instrumental Methods of Chemical Analysis by B.K. Sharma Goel Publishing House	Unit/s (4.1,4.2,4.3)
16.	Principles of Instrumental Analysis , 5th Edition, By Skoog, Holler, Nieman	Unit/s (4.1,4.2,4.3)(3.1,3.2,3.3)
17.	Quality control and Quality assurance in Analytical Chemical Laboratory, Piotr Konieczka and Jacek Namiesnik, CRC press (2018)	Unit/s (1.1)
18.	Quality in the Analytical Chemistry Laboratory, Elizabeth Prichard, Neil T. Crosby, Florence Elizabeth Prichard, John Wiley and Sons, 1995	Unit/s (1.1)
19.	Solvent extraction and ion exchange, J Marcus and A. S. Kertes Wiley INC 1969	Unit/s (4.1,4.2,4.3)
20. .	Thin Layer Chromatography, A LAB. Handbook, Egon Stahl, Springer International Student Edition	Unit/s (4.1,4.2,4.3)

PRACTICALS

SEMESTER V

ANALYTICAL CHEMISTRY

COURSE CODE: USCHP13 **CREDITS: 02**

1. Spectrophotometric estimation of fluoride
2. Estimation of magnesium content in Talcum powder by complexometry, using standardized solution of EDTA
3. Determination of COD of water sample.
4. To determine potassium content of a Fertilizer by Flame Photometry (Calibration curve method).
5. To determine the amount of persulphate in the given sample solution by back titration with standard Fe (II) ammonium sulphate solution.
6. To determine the amount of sulphate in given water sample turbidimetrically.

Note: Calculation of percent error is expected for all the experiments.

MUQuestionPapers.com

REFERENCES

1.	Vogel's Textbook of Quantitative Chemical Analysis, 5thEdn., G. H. Jeffery, J Bassett, J Memdham and R C Denney, ELBS with Longmann (1989).
2.	Vogel's Textbook of Quantitative Chemical analysis, Sixth edition, J.Mendham et.al

SEMESTER VI

ANALYTICAL CHEMISTRY

COURSE CODE: USCH604 CREDITS: 02 LECTURES: 60

UNIT I: ELECTRO ANALYTICAL TECHNIQUES(3 & 6 UNITS)			
1.1	**Polarography (Numerical and word problems are expected)**		**11L**
	1.1.1	Difference between potentiometry and voltammetry, Polarizable and non-polarizable electrodes	
	1.1.2	Basic principle of polarography H shaped polarographic cell, DME (construction, working, advantages and limitations)	
	1.1.3	DC polarogram: Terms involved - Residual current, Diffusion current, Limiting current, Half-Wave Potential Role and selection of supporting electrolyte, Interference of oxygen and its removal, polarographic Maxima and Maxima Suppressors Qualitative aspects of Polarography: Half wave potential $E_{1/2}$, Factors affecting $E_{1/2}$ Quantitative aspects of polarography: Ilkovic equations: various terms involved in it (No derivation)	
	1.1.4	Quantification 1) Wave height – Concentration plots (working plots/calibration) 2) Internal standard (pilot ion) method 3) Standard addition method	
	1.1.5	Applications advantages and limitations	
1.2	**Amperometric Titrations**		**04L**
	1.2.1	Principle, Rotating Platinum Electrode(Construction, advantages and limitations)	
	1.2.2	Titration curves with example	
	1.2.3	Advantages and limitations	

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UNIT II: METHODS OF SEPARATION - II (3 & 6 UNITS)			
2.1	**Gas Chromatography** (**Numerical and word problems are expected**)		**09 L**
	2.1.1	Introduction, Principle, Theory and terms involved	
	2.1.2	Instrumentation: Block diagram and components,types of columns, stationary phases in GSC and GLC, Detectors: TCD, FID, ECD	
	2.1.3	Qualitative, Quantitative analysis and applications	
	2.1.4	Comparison between GSC and GLC	
2.2	**Ion Exchange Chromatography**		**06 L**
	2.2.1	Introduction, Principle.	
	2.2.2	Types of Ion Exchangers , Ideal properties of resin	
	2.2.3	Ion Exchange equilibria and mechanism, selectivity coefficient and separation factor Factors affecting separation of ions	
	2.2.4	Ion exchange capacity and its determination for cation and anion exchangers.	
	2.2.5	Applications of Ion Exchange Chromatography with reference to Preparation of demineralised water, Separation of amino acids	
UNIT III:FOOD AND COSMETICS ANALYSIS(6 UNITS)			
3.1	**Introduction to food chemistry**		**10 L**
	3.1.1	Food processing and preservation: Introduction, need, chemical methods, action of chemicals(sulphur dioxide, boric acid, sodium benzoate, acetic acid, sodium chloride and sugar) and pH control Physical methods (Pasteurization and Irradiation)	
	3.1.2	Determination of boric acid by titrimetry and sodium benzoate by HPLC.	
	3.1.3	Study and analysis of food products and detection of adulterants **1)** Milk: Composition & nutrients, types of milk (fat free, organic and lactose milk) Analysis of milk for lactose by Lane Eynon's Method	

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		2) Honey: Composition Analysis of reducing sugars in honey by Coles Ferricyanide method **3)** Tea: Composition, types (green tea and mixed tea) Analysis of Tannin by Lowenthal's method **4)** Coffee: Constituents and composition, Role of Chicory Analysis of caffeine by Bailey Andrew method	
3.2	**Cosmetics**		**05 L**
	3.2.1	Introduction and sensory properties	
	3.2.2	Study of cosmetic products – **1)** Face powder: Composition Estimation of calcium and magnesium by complexometric titration **2)** Lipstick: Constituents Ash analysis for water soluble salts: borates, carbonates and zinc oxide **3)** Deodorants and Antiperspirants: Constituents, properties Estimation of zinc by gravimetry	
UNIT IV:THERMAL METHODS AND ANALYTICAL METHOD VALIDATION (6 UNITS)			
4.1	**Thermal Methods**		**12 L**
	4.1.1	Introduction to various thermal methods (TGA, DTA and Thermometric titration)	

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	4.1.2	**Thermogravimetric Analysis(TGA)** Instrumentation-block diagram,thermobalance (Basic components: balance, furnace, temperature measurement and control, recorder) Thermogram (TG curve)for$CaC_2O_4..H_2O$ and $CuSO_4.5H_2O$ Factors affecting thermogram-Instrumental factors and Sample characteristics Applications: Determination of drying and ignition temperature range Determination of percent composition of binary mixtures (Estimation of Calcium and Magnesium oxalate)	
	4.1.3	**Differential Thermal Analysis (DTA):** Principle**,** Instrumentation, and Reference material used	
		Differential thermogram (DTA curve) $CaC_2O_4 .H_2O$ and $CuSO_4.5H_2O$	
		Applications Comparison between TGA and DTA.	
	4.1.4	**Thermometric Titrations –** Principle and Instrumentation Thermometric titrations of : 1) HCl v/s NaOH 2) Boric acid v/s NaOH 3) Mixture of Ca^{+2} and Mg^{+2} v/s EDTA 4) Zn^{+2} with Disodium Tartarate**.**	
4.2	**Analytical Method Validation**		**03L**
	4.2.1	Introduction and need for validation of a method	
	4.2.2	Validation Parameters: Specificity, Selectivity, Precision, Linearity, Accuracy and Robustness	

Note: Concept of sensitivity is to be discussed for all techniques and instruments mentioned in the syllabus.

REFERENCES

1.	An Advance Dairy chemistry, V 3, P. F. Fox, P. L. H. McSweeney Springer	Unit/s (3.1,3.2)

MUQuestionPapers.com

2.	Analysis of food and Beverages, George Charalanbous, Academic press 1978	Unit/s (3.1,3.2)
3.	Analytical Chemistry of Open Learning(ACOL),James W. Dodd & Kenneth H. Tonge	Unit/s (4.1,4.2)
4.	Analytical chemistry David Harvey The ,McGraw Hill Companies, Inc.	Unit/s (4.1,4.2)
5.	Analytical Chemistry, Gary.D Christan, 5th edition	Unit/s (2.1,2.2)
6.	Analytical chemistry, R. K. Dave.	Unit/s (2.1,2.2)
7.	Chemical methods of separation, J A Dean, Van Nostrand Reinhold, 1969	Unit/s (2.1,2.2)
8.	Egyankosh.ac.in/bitstream/123456789/43329/1/Unit-8	Unit/s (1.1,1.2,1.3)
9.	Food Analysis, Edited by S. Suzanne Nielsen, Springer	Unit/s (3.1,3.2)
10.	Food Analysis: Theory and practice, YeshajahuPomeranz, Clifton E. Meloan, Springer	Unit/s (3.1,3.2)
11.	Formulation and Function of cosmetics, Sa Jellineck	Unit/s (3.1,3.2)
12.	Fundamentals of Analytical Chemistry, D .A. Skoog and D. M. West and F. J. Holler Holt., Saunders 6th Edition (1992)	Unit/s (2.1,2.2)
13.	Government of India publications of food drug cosmetic act and rules.	Unit/s (3.1,3.2)
14.	Harry's Cosmetology, Longman scientific co.	Unit/s (3.1,3.2)
15.	High Performance Thin Layer Chromatography in Food analysis, by Prem kumar, CBS Publisher and distributer	Unit/s (3.1,3.2)
16.	Instrumental methods Of Analysis, by Willard Merritt Dean, 7thEdition, CBS Publisher and distribution Pvt Ltd	Unit/s (1.1,1.2,1.3) (4.1,4.2,4.3)
17.	Introduction to Polarography and Allied Techniques, By Kamala Zutshi, New Age International, 2006.	Unit/s (1.1,1.2,1.3)
18.	Modern cosmetics, E. Thomessen Wiley Inter science	Unit/s (3.1,3.2)

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19.	Principles of Instrumental Analysis , 5th Edition, By Skoog, Holler, Nieman	Unit/s (4.1,4.2,4.3)
20.	Principles of Polarography by Jaroslav Heyrovský , Jaroslav Kůta, 1st Edition, Academic Press, eBook ISBN: 978148326478	Unit/s (1.1,1.2,1.3)
21.	Solvent extraction and ion exchange, J Marcus and A. S. Kertes Wiley INC 1969	Unit/s (2.1,2.2,)

PRACTICALS

SEMESTER VI

ANALYTICAL CHEMISTRY

COURSE CODE: USCHP14 **CREDITS: 02**

1 Estimation of Chromium in water sample spectrophotometrically by using Diphenyl carbazide.

2 Estimation of reducing sugar in honey by Willstatter method.

3 Estimation o Mg^{+2} & Zn^{+2} by anion exchange resin.
using an anion exchange resin

4 Estimation of acetic acid in Vinegar sample by using Quinhydrone electrode potentiometrically.

5 Determination of phosphoric acid in cola sample pH metrically.

Note: Calculation of percent error is expected for all the experiments.

References:

1.	Vogel's Textbook of Quantitative Chemical Analysis, 5thEdn., G. H. Jeffery, J Bassett, J Memdham and R C Denney, ELBS with Longmann (1989).

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2.	Vogel's Textbook of Quantitative Chemical analysis, Sixth edition, J.Mendham et.al
3.	The chemical analysis of food and food products III edition Morris Jacob
4.	The chemical analysis of food by David Pearson and Henry Edward

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UNIVERSITY OF MUMBAI

No. UG/73of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular Nos. UG/156 of 2016-17, dated 16th November, 2016 relating to syllabus of the Bachelor of Science (B.Sc.) degree course.

They are hereby informed that the recommendations made by the Board of Studies in Chemistry at its meeting held on 28th May, 2018 have been accepted by the Academic Council at its meeting held on 14th June, 2018 **vide** item No. 4.41 and that in accordance therewith, the revised syllabus as per the (CBCS) for the Chemistry of T.Y.B.Sc. Physical Chemistry, Inorganic Chemistry, Organic Chemistry and Analytical Chemistry (Sem - V & VI) (3 and 6 Units) including Applied Component Drugs and Dyes, Heavy Fine Chemicals and Petrochemicals has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Dinesh Kamble)
I/c REGISTRAR

MUMBAI – 400 032
6th ~~June~~ July, 2018

To

The Principals of the affiliated Colleges & Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.41/14/06/2018

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No. UG/ 73 -A of 2018 MUMBAI-400 032 6th ~~June~~ July, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Science & Technology,
2) The Chairman, Board of Studies in Chemistry,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

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T.Y.B.Sc. CHEMISTRY (6 UNITS)

Choice Based Semester and Grading System

SEMESTER V

INORGANIC CHEMISTRY

COURSE CODE: USCH502 **CREDITS: 02** **LECTURES: 60**

UNIT-I	L/Week
1. Molecular Symmetry and Chemical Bonding	
1.1Molecular Symmetry (6L)	
1.1.1 Introduction and Importance of Symmetry in Chemistry.	
1.1.2 Symmetry elements and Symmetry operations.	
1.1.3 Concept of a Point Group with illustrations using the following point groups :(i)$C_{\infty V}$ (ii) $D_{\infty h}$ (iii) C_{2V} (iv) C_{3v} (v)C_{2h} and (vi)D_{3h}	
1.2 Molecular Orbital Theory for heteronuclear diatomic molecules and polyatomic species (9L)	
1.2.1 Comparision between homonuclear and heteronuclear diatomic molecules.	
1.2.2. Heteronuclear diatomic molecules like CO, NO and HCl, appreciation of modified MO diagram for CO.	
1.2.3 Molecular orbital theory for H_3 and H_3^+ (correlation diagram expected).	
1.2.4. Molecular shape to molecular orbital approach in AB_2 molecules. Application of symmetry concepts for linear and angular species considering σ- bonding only. (Examples like : i) BeH_2, ii) H_2O).	
UNIT-II	
2 SOLID STATE CHEMISTRY	
2.1 Structures of Solids (11L)	
2.2.1 Explanation of terms viz.crystal lattice, lattice point, unit cell and lattice constants.	
2.1.2 Closest packing of rigid spheres (hcp,ccp), packing density in simple cubic, bcc and fcc lattices. Relationship between density, radius of unit cell and lattice parameters.	

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2.1.3 Stoichiometric Point defects in solids (discussion on Frenkel and Schottky defects expected).	
2.2 Superconductivity (4L)	
2.2.1 Discovery of superconductivity.	
2.2.2 Explanation of terms like superconductivity, transition temperature, Meissner effect.	
2.2.3 Different types of super conductors viz.conventional superconductors, alkali metal fullerides, high temperature super conductors.	
2.2.4 Brief application of superconductors.	
UNIT-III	
3.0 CHEMISTRY OF INNER TRANSITION ELEMENTS (15L)	
3.1 Introduction: Position in periodic table and electronic configuration of lanthanides and actinides.	
3.2 Chemistry of Lanthanides with reference to (i) lanthanide contraction and its consequences(ii) Oxidation states (iii) Ability to form complexes (iv) Magnetic and spectral properties	
3.3 : Occurrence, extraction and separation of lanthanides by (i) Ion Exchange method and (ii) Solvent extraction method (Principles and technique)	
3.4 Applications of lanthanides	
UNIT-IV	
4. SOME SELECTED TOPICS	
4.1 Chemistry of Non-aqueous Solvents (5 L)	
4.1.1Classification of solvents and importance of non-aqueous solvents.	
4.1.2 Characteristics and study of liquid ammonia, dinitrogen tetra oxide as non-aqueous solvents with respect to : (i) acid-base reactions and (ii) redox reactions.	
4.2 Comparative Chemistry of Group 16 (5L)	
4.2.1 Electronic configurations, trends in physical properties, allotropy	
4.2.2 Manufacture of sulphuric acid by Contact process.	
4.3 Comparative Chemistry of Group 17 (5L)	
4.3.1Electronic configuration , General characteristics, anamolous properties of fluorine, comparative study of acidity of oxyacids of chlorine w.r.t acidity, oxidising properties and structures(on the basis of VSEPR theory)	
4.3.2 Chemistry of interhalogens with reference to preparations, properties and structures (on the basis of VSEPR theory) .	

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REFERENCES

SEM-V

Unit-I

1. Per Jensen and Philip R. Bunker , Fundamentals of Molecular Symmetry , Series in Chemical Physics, Taylor & Francis Group
2. J. S. Ogden, Introduction to Molecular Symmetry, Oxford University Press
3. Derek W. Smith, Molecular orbital theory in inorganic chemistry Publisher: Cambridge University Press
4. C. J. Ballhausen, Carl Johan Ballhausen, Harry B. Gray Molecular Orbital Theory: An Introductory Lecture Note and Reprint Volume Frontiers in chemistry Publisher W.A. Benjamin, 1965
5. Jack Barrett and Mounir A Malati, Fundamentals of Inorganic Chemistry, Affiliated East west Press Pvt. Ltd., New Delhi.
6. Satya Prakash, G.D.Tuli, R.D. Madan , , Advanced Inorganic Chemistry.S. Chand & Co Ltd

Unit-II

1. Lesley E. Smart, Elaine A. Moore Solid State Chemistry: An Introduction, 2nd Edition CRC Press,
2. C. N. R. Rao Advances in Solid State Chemistry
3. R.G. Sharma Superconductivity: Basics and Applications to Magnets
4. Michael Tinkham ,Introduction to Superconductivity: Vol I (Dover Books on Physics)
5. R. Gopalan, Inorganic Chemistry for Undergraduates, Universities Press India.
6. Richard Harwood, Chemistry, Cambridge University Press,
7. Satya Prakash, G.D.Tuli, R.D. Madan , , Advanced Inorganic Chemistry.S. Chand & Co Ltd .

Unit-III

1. Cotton, Wilkinson, Murillo and Bochmann, Advanced Inorganic Chemistry, 6th Edition.
2. Greenwood, N.N. and Earnshaw, Chemistry of the Elements, Butterworth Heinemann. 1997.
3. Huheey, J.E., Inorganic Chemistry, Prentice Hall, 1993.
4. G. Singh, Chemistry of Lanthanides and Actinides, Discovery Publishing House
5. Simon Cotton , Lanthanide and Actinide Chemistry Publisher: Wiley-Blackwell

Unit-IV

1. B. H. Mahan, University Chemistry, Narosa publishing.
2. R. Gopalan, Inorganic Chemistry for Undergraduates, Universities Press India.

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3. J. D. Lee, Concise Inorganic Chemistry, 4thEdn., ELBS,
4. D. F. Shriver and P. W. Atkins, Inorganic chemistry, 3rd edition, Oxford University Press
5. Cotton, Wilkinson, Murillo and Bochmann, Advanced Inorganic Chemistry, 6th Edition.
6. Gary Wulfsberg, Inorganic chemistry, Viva Books Pvt,.Ltd. (2002).
7. Richard Harwood, Chemistry, chapter 10 Industrial inorganic chemistry
8. Greenwood, N.N. and Earnshaw, Chemistry of the Elements, Butterworth Heinemann. 1997.
9. Huheey, J.E., Inorganic Chemistry, Prentice Hall, 1993
10. Satya Prakash, G.D.Tuli, R.D. Madan , Advanced Inorganic Chemistry.S. Chand & Co Ltd 2004

Practicals

SEMESTER V

INORGANIC CHEMISTRY

COURSE CODE: USCHP05 **CREDITS: 02**

Course USCH502: Inorganic Practicals (60L)

I. Inorganic preparations

1. Preparation of Potassium diaquobis- (oxalato)cuprate (II)
2. Preparation of Ferrous ethylene diammonium sulphate.
3. Preparation of bisacetylacetonatocopper(II)

II. Determination of percentage purity of the given water soluble salt and qualitative detection w.r.t added cation and/or anion (qualitative analysis only by wet tests).

(Any three salts of transition metal ions)

Reference Books (practicals)

1. Vogel Textbook of Quantitative Chemical Analysis G.H. Jeffery, J. Basset.

MUQuestionPapers.com

2. Advanced experiments in Inorganic Chemistry., G. N. Mukherjee., 1st Edn., 2010., U.N.Dhur & Sons Pvt Ltd .
3. Vogel's. Textbook of. Macro and Semimicro qualitative inorganic analysis. Fifth edition.

SEMESTER VI

INORGANIC CHEMISTRY

COURSE CODE: USCH602 **CREDITS: 02** **LECTURES: 60**

COURSE CODE	**CREDITS**	
USCH602	**(60 Lectures)**	
(Numericals and word problems are expected)		
UNIT-I		**L/week**
1.Theories of the metal-ligand bond (I)	**(15L)**	
1.1 Limitations of Valence Bond Theory.		
1.2 Crystal Field Theory and effect of crystal field on central metal valence orbitals in various geometries from linear to octahedral(from coordination number 2 to coordination number 6)		
1.3 Splitting of *d* orbitals in octahedral, square planar and tetrahedral crystal fields.		
1.4 Distortions from the octahedral geometry : (i) effect of ligand field and (ii) Jahn-Teller distortions.		
1.5 Crystal field splitting parameters Δ ; its calculation and factors affecting it in octahedral complexes, Spectrochemical series.		
1.6 Crystal field stabilization energy(CFSE), calculation of CFSE for octahedral complexes with d^0 to d^{10} metal ion configurations.		
1.7 Consequences of crystal field splitting on various properties such as ionic radii, hydration energy and enthalpies of formation of metal complexes of the first transition series.		
1.8 Limitations of CFT : Evidences for covalence in metal complexes (i) intensities of d-d transitions, (ii) ESR spectrum of $[IrCl_6]^{2-}$ (iii) Nephelauxetic effect.		
UNIT-II		
2.Theories of the metal-ligand bond (II)		
2.1 Molecular orbital Theory for coordination compounds. (4L)		

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2.1.1 Identification of the central metal orbitals and their symmetry suitable for formation of σ bonds with ligand orbitals.	
2.1.2 Construction of ligand group orbitals.	
2.1.3 Construction of σ-molecular orbitals for an ML_6 complex.	
2.1.4 Effect of π-bonding on complexes .	
2.1.5 Examples like $[FeF_6]^{-4}$, $[Fe(CN)_6]^{-4}$, $[FeF_6]^{-3}$, $[Fe(CN)_6]^{-3}$, $[CoF_6]^{-3}$, $[Co(NH_3)_6]^{+3}$	
2.2 Stability of Metal-Complexes (4L)	
2.2.1 Thermodynamic and kinetic perspectives of metal complexes with examples.	
2.2.2 Stability constants: stepwise and overall stability constants and their interrelationship.	
2.2.3 Factors affecting thermodynamic stability.	
2.3 Reactivity of metal complexes. (4L)	
2.3.1 Comparison between Inorganic and organic reactions.	
2.3.2 Types of reactions in metal complexes.	
2.3.3 Inert and labile complexes : correlation between electronic configurations and lability of complexes.	
2.3.4 Ligand substitution reactions : Associative and Dissociative mechanisms.	
2.2.5 Acid hydrolysis, base hydrolysis and anation reactions.	
2.4 Electronic Spectra. (3L)	
2.4.1Origin of electronic spectra	
2.4.2 Types of electronic transitions in coordination compounds: intra- ligand,Charge transfer and intra-metal transitions.	
2.4.3 Selection rules for electronic transitions.	
2.4.4 Electronic configuration and electronic micro states, Terms and Term symbols for transition metal ions, rules for determination of ground state term.	
2.4.5 Determination of Terms for p^2 and d^1 electronic configurations.	
UNIT-III	
3 ORGANOMETALLIC CHEMISTRY (15L)	
3.1 Organometallic Compounds of main group metal (6L)	
3.1.1General characteristics of various types of organometallic compounds, viz.ionic, σ-bonded and electron deficient compounds.	
3.1.2 General synthetic methods of organometallic compounds : (i) Oxidative-addition, (ii)Metal-metal exchange(transmetallation), (iii) Carbanion-halide exchange, (iv) Metal-hydrogen exchange(metallation) and (v) Methylene-insertion reactions.	
3.1.3 Some chemical reactions of organometallic compounds:	

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(i) Reactions with oxygen and halogens, (ii) Alkylation and arylation reactions (iii) Reactions with protic reagents, (iv) Redistribution reactions and (v) Complex formation reactions.	
3.2 Metallocenes (5L)	
Introduction, Ferrocene : Synthesis, properties, structure and bonding on the basis of VBT.	
3.3 Catalysis (4L)	
3.3.1 Comparison between homogeneous and heterogeneous catalysis	
3.3.2 Basic steps involved in homogeneous catalysis	
3.3.3 Mechanism of Wilkinson's catalyst in hydrogenation of alkenes.	
UNIT-IV	
4 SOME SELECTED TOPICS (15L)	
4.1 Metallurgy (7L)	
4.1.1 Types of metallurgies,	
4.1.2 General steps of metallurgy; Concentration of ore, calcinations, roasting,reduction and refining.	
4.1.3 Metallurgy of copper: occurrence, physicochemical principles, Extraction of copper from pyrites& refining by electrolysis.	
4.2 Chemistry of Group 18 (5L)	
4.2.1 Historical perspectives	
4.2.2 General characteristics and trends in physical and chemical properties	
4.2.3 Isolation of noble gases	
4.2.4 Compounds of Xenon (oxides and fluorides) with respect to preparation and structure (VSEPR)	
4.2.5 Uses of noble gases	
4.3 Introduction to Bioinorganic Chemistry. (3L)	
4.3.1Essential and non essential elements in biological systems.	
4.3.2 Biological importance of metal ions such as Na^{+},K^{+},Fe^{+2}/Fe^{+3} and Cu^{+2}(Role of Na^{+} and K^{+} w.r.t ion pump)	

References.

SEM-VI

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Unit-I:

1. Geoffrey A. Lawrance Introduction to Coordination Chemistry John Wiley & Sons.
2. R. K. Sharma Text Book of Coordination Chemistry Discovery Publishing House
3. R. Gopalan , V. Ramalingam Concise Coordination Chemistry , Vikas Publishing House;
4. Shukla P R, Advance Coordination Chemistry , Himalaya Publishing House
5. Glen E. Rodgers, Descriptive Inorganic, Coordination, and Solid-State Chemistry Publisher: Thomson Brooks/Cole

Unit-II:

1. Ramesh Kapoor and R.S. Chopra, **Inorganic Chemistry**, R. Chand publishers,
2. Basolo, F, and Pearson, R.C., Mechanisms of Inorganic Chemistry, John Wiley & Sons, NY,
3. Twigg ,Mechanisms of Inorganic and Organometallic Reactions Publisher: Springer
4. R.K. Sharma Inorganic Reaction Mechanisms Discovery Publishing House
5. M. L. Tobe Inorganic Reaction Mechanisms Publisher Nelson, 1972

Unit-III:

1. Cotton, Wilkinson, Murillo and Bochmann, Advanced **Inorganic Chemistry**, 6th Edition..
2. H.W. Porterfield, Inorganic Chemistry, Second Edition, Academic Press, 2005
3. Purecell, K.F. and Kotz, J.C., Inorganic Chemistry W.B. Saunders Co. 1977.
4. Robert H. Crabtree ,The Organometallic Chemistry of the Transition Metals, Publication by John Wiley & Sons
5. B D Gupta & Anil J Elias Basic Organometallic Chemistry: Concepts, Syntheses and Applications, University press
6. Ram Charan Mehrotra, Organometallic Chemistry: A Unified Approach, New Age International.

Unit-IV

1. R. Gopalan, Inorganic Chemistry for Undergraduates, Universities Press India.
2. D. F. Shriver and P. W. Atkins, Inorganic chemistry, 3rd edition, Oxford University Press
3. Cotton, Wilkinson, Murillo and Bochmann, Advanced Inorganic Chemistry, 6th Edition.
4. Jack Barrett and Mounir A Malati, Fundamentals of Inorganic Chemistry, Affiliated East west Press Pvt. Ltd., New Delhi.
5. R.Gopalan, Chemistry for undergraduates. Chapter 18. Principles of Metallurgy.(567-591)
6. Puri ,Sharma Kalia Inorganic chemistry. Chapter 10, Metals and metallurgy.(328-339)

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7 Greenwood, N.N. and Earnshaw, Chemistry of the Elements, Butterworth Heinemann. 1997.
8 Huheey, J.E., Inorganic Chemistry, Prentice Hall, 1993.
9 Lippard, S.J. & Berg, J.M. Principles of Bioinorganic Chemistry Panima Publishing Company 1994.
10 Satya Prakash, G.D.Tuli, R.D. Madan , , Advanced Inorganic Chemistry.S. Chand & Co Ltd

PRACTICALS

SEMESTER VI

INORGANIC CHEMISTRY

COURSE CODE: USCHP06 **CREDITS: 02**

I. Inorganic preparations

1. Preparation of Tris(acetylacetonato) iron(III)
2. Green synthesis of bis(dimethylglyoximato) nickel(II) complex using nickel carbonate and sodium salt of dmg .
3. Preparation of potassium trioxalato aluminate (III)

II. Determination of percentage purity of the given water soluble salt and qualitative detection w.r.t added cation and/or anion (qualitative analysis only by wet tests).

(Any three salts of main group metal ions)

Reference Books (practicals)

4. Vogel Textbook of Quantitative Chemical Analysis G.H. Jeffery, J. Basset.
5. Advanced experiments in Inorganic Chemistry., G. N. Mukherjee., 1st Edn., 2010., U.N.Dhur & Sons Pvt Ltd .
6. Vogel's. Textbook of. Macro and Semimicro qualitative inorganic analysis. Fifth edition.

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UNIVERSITY OF MUMBAI

No. UG/73of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular Nos. UG/156 of 2016-17, dated 16th November, 2016 relating to syllabus of the Bachelor of Science (B.Sc.) degree course.

They are hereby informed that the recommendations made by the Board of Studies in Chemistry at its meeting held on 28th May, 2018 have been accepted by the Academic Council at its meeting held on 14th June, 2018 **vide** item No. 4.41 and that in accordance therewith, the revised syllabus as per the (CBCS) for the Chemistry of T.Y.B.Sc. Physical Chemistry, Inorganic Chemistry, Organic Chemistry and Analytical Chemistry (Sem - V & VI) (3 and 6 Units) including Applied Component Drugs and Dyes, Heavy Fine Chemicals and Petrochemicals has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Dinesh Kamble)
I/c REGISTRAR

MUMBAI – 400 032
6th ~~June~~ July, 2018

To

The Principals of the affiliated Colleges & Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C./4.41/14/06/2018

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No. UG/ 73 -A of 2018 MUMBAI-400 032 6th ~~June~~ July, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Science & Technology,
2) The Chairman, Board of Studies in Chemistry,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

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T.Y.B.Sc, CHEMISTRY (Six Units)

SEMESTER V

ORGANIC CHEMISTRY

COURSE CODE: USCH503 **CREDITS: 02** **LECTURES: 60**

Unit I

1.1 Mechanism of organic reactions (10 L)

1.1.1 The basic terms & concepts: bond fission, reaction intermediates, electrophiles & nucleophiles, ligand, base, electrophilicity vs. acidity & nucleophilicity vs basicity.

1.1.2 Neighbouring group participation in nucleophilic substitution reactions**:** participation of lone pair of electrons, kinetics and stereochemical outcome.

1.1.3 Acyl nucleophilic substitution (Tetrahedral mechanism): Acid catalyzed esterification of carboxylic acids ($A_{AC}2$) and base promoted hydrolysis of esters ($B_{AC}2$).

1.1.4 Pericyclic reactions, classification and nomenclature

1.1.4.1 Electro cyclic reactions (ring opening and ring closing), cycloaddition, sigma tropic Rearrangement, group transfer reactions, cheletropic reaction (definition and one example of each type)

1.1.4.2 Pyrolytic elimination: Cope, Chugaev, pyrolysis of acetates

References:

1. A guidebook to mechanism in Organic Chemistry, 6th edition, Peter Sykes, Pearson education, New Delhi
2. Organic Reaction Mechanism, 4th edition, V. K. Ahluwalia, R. K. Parashar, Narosa Publication.
3. Organic reactions & their mechanisms,3rd revised edition, P.S. Kalsi, New Age International Publishers.
4. M.B.Smith and J. March, Advanced organic chemistry- reactions mechanism and structure, 5th edition.

1.2 Photochemistry (5 L)

1.2.1 Introduction: Difference between thermal and photochemical reactions. Jablonski diagram, singlet and triplet states, allowed and forbidden transitions, fate of excited molecules, photosensitization.

1.2.2 Photochemical reactions of olefins: photoisomerization, photochemical rearrangement of 1,4-dienes (di- π methane)

1.2.3 Photochemistry of carbonyl compounds: Norrish I, Norrish II cleavages. Photo reduction (e.g. benzophenone to benzpinacol)

References:

1. Organic Chemistry, 7th Edition, R.T. Morrison, R. N. Boyd & S. K. Bhattacharjee, Pearson.
2. Organic chemistry,8th edition, John Mc Murry

Unit II

2.1 Stereochemistry I (5 L)

2.1.1 Molecular chirality and elements of symmetry: Mirror plane symmetry, inversion center, roation -reflection (alternating) axis.

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2.1.2 Chirality of compounds without a stereo genic center: cummulenes and biphenyls.

References:

1. L. Eliel , stereochemistry of carbon compounds, Tata McGraw Hill
2. Stereochemistry P.S.Kalsi , New Age International Ltd.,4th Edition
3. Stereochemistry by Nassipuri.

2.2 Agrochemicals **(4 L)**

2.2.1 General introduction & scope, meaning & examples of insecticides, herbicides, fungicide, rodenticide, pesticides, plant growth regulators.

2.2.2 Advantages & disadvantages of agrochemicals

2.2.3 Synthesis & application of IAA (Indole Acetic Acid) & Endosulphan,

2.2.4 Bio pesticides – Neem oil & Karanj oil.

References:

1. Insecticides & pesticides: Saxena A. B., Anmol publication.
2. Growth regulators in Agriculture & Horticulture: Amarjit Basra, CRC press 2000.
3. Agrochemicals and pesticides: A.Jadhav and T.V.Sathe.

2.3 Heterocyclic chemistry: **(6 L)**

2.3.1 Reactivity of pyridine-N-oxide, quinoline and iso-quionoline.

2.3.2 Preparation of pyridine-N-oxide, quinoline (Skraup synthesis) and iso-quinoline (Bischler-Napieralski synthesis).

2.3.3 Reactions of pyridine-N-oxide: halogenation, nitration and reaction with $NaNH_2$/liq.NH_3, n-BuLi.

2.3.4 Reactions of quinoline and isoquinoline; oxidation,reduction,nitration,halogenation and reaction with $NaNH_2$/liq.NH_3,n-BuLi.

References

1. Name Reactions in Heterocyclic Chemistry, Jie-Jack Li, Wiley-Interscience publications, 2005.
2. Handbook of Heterocyclic Chemistry, 2nd Edition, Alan R. Katritzky and Alexander F. Pozharskii, Elsevier Science Ltd, 2000.
3. Heterocyclic Chemistry, 5th Edition, John A. Joule and Keith Mills, Wiley publication, 2010.
4. Heterocyclic chemistry, 3rd Edition, Thomas L. Gilchrist, Pearson Education, 2007.

Unit III

3.1 IUPAC **(5 L)**

IUPAC Systematic nomenclature of the following classes of compounds (including compounds upto two substituents / functional groups):

3.1.1 Bicyclic compounds – spiro, fused and bridged (upto 11 carbon atoms) – saturated and unsaturated compounds.

3.1.2 Biphenyls

3.1.3 Cummulenes with upto 3 double bonds

3.1.4 Quinolines and isoquinolines

References

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1. Nomenclature of Organic Chemistry**:** IUPAC recommendations and preferred Names 2013, RSC publication.
2. IUPAC nomenclature by S.C.Pal.

3.2 Synthesis of organic compounds **(10L)**

3.2.1 Introduction: Linear and convergent synthesis, criteria for an ideal synthesis, concept of chemo selectivity and regioselectivity with examples, calculation of yields.

3.2.2 Multicomponent Synthesis: Mannich reaction and Biginelli reaction. Synthesis with examples (no mechanism)

3.2.3 Green chemistry and synthesis:

Introduction: Twelve principles of green chemistry, concept of atom economy and E-factor, calculations and their significance, numerical examples.

i) Green reagents: dimethyl carbonate.
ii) Green starting materials : D-glucose
iii) Green solvents : supercritical CO_2
iv) Green catalysts: Bio catalysts.

3.2.4 Planning of organic synthesis

i) synthesis of nitroanilines. (*o&p*)
ii) synthesis of halobenzoic acid.(*o&p*)
iii) Alcohols (primary / secondary / tertiary) using Grignard reagents.
iv) Alkanes (using organo lithium compounds)

Reference:

1. Green chemistry an introductory text : Mike Lancaster.
2. Green chemistry: V. K. Ahluwalia (Narosa publishing house pvt. ltd.)
3. Green chemistry an introductory text : RSC publishing.
4. New trends in green chemistry V. K. Ahluwalia , M. Kidwai, Klumer Academic publisher
5. Green chemistry by V. Kumar.
6. Organic chemistry: Francis Carey
7. Organic chemistry: Carey and Sundberg.

Unit IV

4.1 Spectroscopy I **(5 L)**

4.1.1 Introduction: Electromagnetic spectrum, units of wavelength and frequency

4.1.2 UV – Visible spectroscopy: Basic theory, solvents, nature of UV-Visible spectrum, concept of chromophore, auxochrome, bathochromic and hypsochromic shifts, hyperchromic and hypochromic effects, chromophore-chromophore and chromophore-auxochrome interactions.

4.1.3 Mass spectrometry: Basic theory. Nature of mass spectrum. General rules of fragmentation. Importance of molecular ion peak, isotopic peaks, base peak, nitrogen rule, rule of 13 for determination of empirical formula and molecular formula. Fragmentation of alkanes and aliphatic carbonyl compounds.

References:

1. Organic spectroscopy (Second edition),Jag Mohan ,Narosa publication
2. Spectroscopy, Pavia, Lampman, Kriz,Vyvyan.

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3. Elementary organic spectroscopy (Third edition), Y.R.Sharma, S.Chand publication..
4. Introduction to spectroscopy (third edition), Pavia ,Lampman,Kriz,john vondeling,Emily Barrosse.
5. Organic chemistry Paula Y. Bruice, Pearson education.
6. Spectral identification of organic molecules by Silverstein.
7. Absorption spectroscopy of organic molecules by V.M.Parikh.

4.2 Natural Products: **(10L)**

4.2.1. Terpenoids: Introduction, Isoprene rule, special isoprene rule and the gem-dialkyl rule.

4.2.2 Citral:

a) Structural determination of citral.
b) Synthesis of citral from methyl heptenone
c) Isomerism in citral. (cis and trans form).

4.2.3. Alkaloids Introduction and occurrence.

Hofmann's exhaustive methylation and degradation in**:** simple open chain and N – substituted monocyclic amines.

4.2.4 Nicotine:

a) Structural determination of nicotine. (Pinner's work included)
b) Synthesis of nicotine from nicotinic acid
c) Harmful effects of nicotine.

4.2.5 Hormones:

Introduction, structure of adrenaline (epinephrine), physiological action of adrenaline.
Synthesis of adrenaline from

a) Catechol
b) p-hydroxybenzaldehyde(Ott's synthesis)

References:

1. Chemistry of natural products by Chatwal Anand – Vol I and Vol II
2. Chemistry of natural products by O.P. Agarwal
3. Chemistry of natural products by Meenakshi Sivakumar and Sujata Bhat.
4. Organic chemistry by Morrision and Boyd,7th edition.
5. I.L.Finar,Vol-I and Vol-II, 5th edition.

PRACTICALS

SEMESTER V

ORGANIC CHEMISTRY

COURSE CODE: USCHP09 **CREDITS: 02**

A) SEMESTER V: Separation of Binary solid-solid mixture (2.0 gms mixture to be given).

1. Minimum Six mixtures to be completed by the students.
2. Components of the mixture should include water soluble and water insoluble acids (carboxylic acid), water insoluble phenols(2-naphthol, 1-naphthol), water insoluble bases

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(nitroanilines) , water soluble neutral (thiourea) and water insoluble neutral compounds (anilides , amides, m-DNB, hydrocarbons)

After correct determination of chemical type, the separating reagent should be decided by the student for separation.

4. Follow separation scheme with the bulk sample of binary mixture.

5. After separation into component A and component B, one component (decided by the examiner) is to be analyzed and identified with m.p..

References:

1. Practical organic chemistry – A. I. Vogel
2. Practical organic chemistry – H.Middleton.
3. Practical organic chemistry – O.P.Aggarwal.

SEMESTER VI

ORGANIC CHEMISTRY

COURSE CODE: USCH603 **CREDITS: 02** **LECTURES: 60**

Unit I

1.1 Stereochemistry II (10 L)

1.1.1 Stereoselectivity and stereospecificity: Idea of enantioselectivity (ee) and diastereoselectivity (de) , Topicity : enantiotopic and diasterotopic atoms, groups and faces.

1.1.2 Stereochemistry of –

i) Substitution reactions : S_{Ni} (reaction of alcohol with thionyl chloride)

ii) Elimination reactions: E_2–Base induced dehydrohalogenation of 1-bromo-1,2-diphenylpropane.

iii) Addition reactions to olefins:

a) bromination (electrophilic anti addition)

b) syn hydroxylation with O_sO_4 and $KMnO_4$

c) epoxidation followed by hydrolysis.

References:

Refer Stereochemistry –I (Sem-V, Unit-II)

1.2 Amino acids & Proteins (5 L)

1.2.1 α-Amino acids: General Structure, configuration, and classification based on structure and nutrition. Properties: pH dependency of ionic structure, isoelectric point and zwitter ion. Methods of preparations: Strecker synthesis, Gabriel phthalamide synthesis.

1.2.2 Polypeptides and Proteins: nature of peptide bond. Nomenclature and representation of polypeptides (di-and tri-peptides) with examples Merrifield solid phase polypeptide synthesis. .Protiens:general idea of primary,secondary,tertiary & quaternary structure

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References:

1. Biochemistry, 8th Ed., Jeremy Berg, Lubert Stryer, John L. Tymoczko, Gregory J. Gatto Pub. W. H. Freeman Publishers
2. Lehninger Principles of Biochemistry 7th Ed., David Nelson and Michael Cox, Publisher W. H. Freeman
3. Name Reactions – Jie Jack Li, 4th Edition, Springer Pub.

Unit II

2.1 Molecular Rearrangements (5 L)

Mechanism of the following rearrangements with examples and stereochemistry wherever applicable.

2.1.1 Migration to the electron deficient carbon: Pinacol-pinacolone rearrangement.

2.1.2 Migration to the electron deficient nitrogen: Beckmann rearrangement.

2.1.3 Migration involving a carbanion : Favorski rearrangement.

2.1.4 Name reactions: Michael addition, Wittig reaction.

References:

Refer Mechanism of organic reaction (Sem-V, Unit-I)

2.2 Carbohydrates (10 L)

2.2.1 Introduction: classification, reducing and non-reducing sugars, DL notation

2.2.2 Structures of monosaccharides: Fischer projection (4-6 carbon monosaccharides) and Haworth formula (furanose and pyranose forms of pentoses and hexoses)
Interconversion: open chain and Haworth forms of monosaccharides with 5 and 6 carbons. Chair conformation with stereochemistry of D-glucose, Stability of chair form of D-glucose

2.2.3 Stereoisomers of D-glucose: enantiomer, diastereomers, anomers, epimers.

2.2.4 Mutarotation in D-glucose with mechanism

2.2.5 Chain lengthening & shortening reactions: Modified Kiliani-Fischer synthesis (D-arabinose to D-glucose and D-mannose), Wohl method (D-glucose to D-arabinose)

2.2.6 Reactions of D-glucose and D-fructose:
(a) Osazone formation (b) reduction: Hi/Ni, $NaBH_4$ (c) oxidation: bromine water, HNO_3, HIO_4 (d) acetylation (e) methylation:(d) and (e) with cyclic pyranose forms

2.2.7 Glycosides: general structure

References:

1. Organic chemistry (fourth edition),G,Marc Loudon,Oxford University press.
2. Introduction to Organic Chemistry (Third edition), Andrew Streitwieser, Jr. Clayton H. Heathcock, Macmilan publishing.
3. Organic chemistry fourth edition, Morrision and Boyd.
4. Introduction to Organic chemistry,John McMurry.
5. Organic chemistry volume-1&2 (fifth and sixth edition) IL Finar.

Unit III

3.1 Spectroscopy II (10 L)

3.1.1 IR Spectroscopy: Basic theory, nature of IR spectrum, selection rule, fingerprint region.

3.1.2 PMR Spectroscopy: Basic theory of PMR, nature of PMR spectrum, chemical shift (δ unit), standard for PMR, solvents used. Factors affecting chemical shift: (1) inductive effect (2) anisotropic effect (with reference to C=C, C≡C, C=O and benzene ring). Spin- spin coupling and

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coupling constant. application of deuterium exchange technique. application of PMR in structure determination.

3.1.3 Spectral characteristics of following classes of organic compounds, including benzene and monosubstituted benzenes, with respect to IR and PMR: (1) alkanes (2) alkenes (3) alkynes (4) haloalkanes (5) alcohols (6) carbonyl compounds (7) ethers (8) amines (broad regions characteristic of different groups are expected).

Problems of structure elucidation of simple organic compounds using individual or combined use of UV-Vis, IR, Mass and NMR spectroscopic technique are expected. (Index of hydrogen deficiency should be the first step in solving the problems).

References:

Refer spectroscopy –I, (Sem-V, Unit-IV)

3.2 Nucleic Acids **(5 L)**

Controlled hydrolysis of nucleic acids. sugars and bases in nucleic acids. Structures of nucleosides and nucleotides in DNA and RNA. Structures of nucleic acids (DNA and RNA) including base pairing.

References:

1. Organic chemistry R.T.Morrison and R.N.Boyd, 6th edition, pearson education
2. S.H.Pine, organic chemistry 4th edition. McGraw Hill

Unit IV

4.1 Polymer **(8 L)**

4.1.1 Introduction: terms monomer, polymer, homopolymer, copolymer, thermo plastics and thermosets.

4.1.2 Addition polymers: polyethylene, polypropylene, teflon, polystyrene, PVC, Uses.

4.1.3 Condensation polymers: polyesters, polyamides, polyurethanes, polycarbonates, phenol formaldehyde resins.Uses

4.1.4 Stereochemistry of polymers: Tacticity, mechanism of stereochemical control of polymerization using Ziegler Natta catalysts.

4.1.5 Natural and synthetic rubbers: Polymerisation of isoprene: 1,2 and 1,4 addition (cis and trans), Styrene butadiene copolymer.

4.1.6 Additives to polymers: Plasticisers, stabilizers and fillers.

4.1.7 Biodegradable polymers: Classification and uses. polylactic acid structure, properties and use for packaging and medical purposes.

(Note : Identification of monomer in a given polymer & structure of polymer for a given monomer is expected. condition for polymerization is not expected)

References:

1. Polymer chemistry by M.G.Arora, K.Singh.
2. Polymer science – a text book by Ahluwalia and Mishra
3. Introduction to polymer chemistry - R.Seymour, Wiley Interscience.

4.2 Catalysts and Reagents **(7 L)**

Study of the following catalysts and reagents with respect to functional group transformations and selectivity (no mechanism).

4.2.1 Catalysts: Catalysts for hydrogenation:

a. Raney Nickel

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b. Pt and PtO_2 (C=C, CN, NO_2, aromatic ring)
c. Pd/C : C=C, COCl→CHO (Rosenmund)
d. Lindlar catalyst: alkynes

d.2.2 Reagents**:**

a. $LiAlH_4$ (reduction of CO, COOR, CN,NO_2)
b. $NaBH_4$ (reduction of CO)
c. SeO_2 (Oxidation of CH_2 alpha to CO)
d. mCPBA (epoxidation of C=C)
e. NBS (allylic and benzylic bromination)

References:

1. Organic chemistry by Francis Carey – McGrawHill .
2. Oranic chemistry by Carey and Sundberg, Part A & B

PRACTICALS

SEMESTER VI

ORGANIC CHEMISTRY

COURSE CODE: USCHP10 **CREDITS: 02**

A) SEMESTER VI: Separation of Binary liquid-liquid and liquid- solid mixture.

1. Minimum Six mixtures to be completed by the students.
2. Components of the liq-liq mixture should include volatile liquids like acetone, methylacetate, ethylacetate, isopropylalcohol, ethyl alcohol, EMK and non volatile liquids like chlorobenzene , bromobenzene, aniline, N,N dimethylaniline, acetophenone, nitrobenzene, ethyl benzoate.
3. Components of the liq- solid mixture should include volatile liquids like acetone, methylacetate, ethylacetate, ethyl alcohol, IPA, EMK and solids such as water insoluble acids, phenols, bases, neutral.
4. A sample of the mixture one ml to be given to the student for detection of the physical type of the mixture.
5. After correct determination of physical type, separation of the binary mixture to be carried out by distillation method using microscale technique.
6. After separation into component A and component B, the compound to be identified can be decided by examiner.

References:

4. Practical organic chemistry – A. I. Vogel
5. Practical organic chemistry – H.Middleton.
6. Practical organic chemistry – O.P.Aggarwal.

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AC 26/2/2015
Item No. 4.70

UNIVERSITY OF MUMBAI

Syllabus for F.Y.B.Sc.
Program BSc
Course: ZOOLOGY

Semester I and II

(Credit Based Semester and Grading System
with effect from the academic year 2015–2016)

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Syllabus Committee Members

Dr. Anil S. Singh	-	Convenor
Dr. Manisha Kulkarni	-	Co-convenor
Dr. Jyotsna Mahale	-	Co-convenor
Dr. Meenakshi Sundaresan	-	Co-convenor
Prof. Lata Sardesai	-	Co-convenor
Prof. P.C. Mathew	-	Co-convenor
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Dr. V.M. Patole	-	Co-convenor
Dr. Kantilal H. Nagare	-	Co-convenor
Prof. Shanta Janyani	-	Co-convenor
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Ms. Purva S. Prabhu	-	Member (Student)
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Ms. Sonal S. Prabhulkar	-	Member (Student)

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Syllabus for
FYBSc
Course – ZOOLOGY

1. Preamble
2. Pedagogy
3. Syllabus Semester I & II
4. References and Additional Reading
5. Scheme of Examination and Paper Pattern
6. Distribution of periods
7. Model Question bank

Aims

- To nurture interest in the students for the subject of Zoology
- To create awareness of the basic and modern concepts of Zoology
- To orient students about the importance of abiotic and biotic factors of environment and their conservation.
- To provide an insight to the basic nutritional and health aspects of human life.
- To inculcate good laboratory practices in students and to train them about scientific handling of important instruments.

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Preamble

While presenting this new syllabus to the teachers and students of Semester I and Semester II (F.Y.B.Sc.) Zoology, I am extremely happy to state that for the first time efforts have been made to seek inputs of all the stake holders to make it more relevant.

In the first meeting of the Board of Studies an apex committee was formed to study syllabi worldwide with a view to include modern modules and plan semesters at UG and PG programs in advance to avoid overlapping and duplication of topics in various courses.

Meeting with the industry at the Indian Merchants' Chamber and with the meritorious alumni helped adding need based components. For the first time students were a part of the syllabus committee and the process became participative when the draft was finalized in an open meeting with all the Zoology teachers after having sought democratic criticism on the proposed syllabus placed on the University website for about one month.

While following the guidelines of UGC, use of animals is excluded from the practicals, substituting the same with audiovisual, ICT and simulation aids and that the syllabus is made more interesting with new, innovative topics. Providing the pedagogy as also indicating objectives and desired outcome of every topic for the teachers, and question bank for the students apart from the question paper pattern became an integral part of the syllabus, therefore.

Care is taken to provide the drafts from time to time and declare the final syllabus well in advance enabling the teachers to make preparations before commencement of the academic year and facilitating students to execute their right to know the details before admissions.

The success of this revamped syllabus will depend totally on the enthusiasm of the teachers which is very high all throughout the process and their hands will be strengthened by publishing the University text books for the first time. This curriculum of the Zoologists, for the Zoologists and by the Zoologists developed with the united efforts will take our ever progressive subject to greater heights in the years to come.

- VINAYAK DALVIE, Chairman, BOS in Zoology

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Syllabus for
FYBSc.
Course – ZOOLOGY
To be implemented from Academic year 2015-16
SEMESTER - I

COURSE CODE	UNIT	TOPICS	CREDITS	LECTURES/WEEK
USZO101	I	Wonders of animal world	2	1
	II	Biodiversity and its conservation		1
	III	Footsteps to follow		1
USZO102	I	Laboratory safety and Units of Measurement	2	1
	II	Animal Biotechnology		1
	III	Instrumentation		1
USZOP1	Practical based on both courses		2	6

SEMESTER - II

COURSE CODE	UNIT	TOPICS	CREDITS	LECTURES/WEEK
USZO201	I	Population Ecology	2	1
	II	Ecosystem		1
	III	National park and Sanctuaries		1
USZO202	I	Nutrition and Health	2	1
	II	Public health and Hygiene		1
	III	Common human Diseases		1
USZOP2	Practical based on both courses		2	6

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SYLLABUS F.Y.B.Sc. ZOOLOGY

UNIT WISE DISTRIBUTION

Semester I		Semester II	
Course 1	**Course 2**	**Course 3**	**Course 4**
Unit 1 Wonders of animal world	Unit 1 Laboratory Safety and Units of Measurement	Unit 1 Population Ecology	Unit 1 Nutrition and Health
Unit 2 Biodiversity and its Conservation	Unit 2 Animal Biotechnology	Unit 2 Ecosystem	Unit 2 Public Health and Hygiene
Unit 3 Footsteps to follow	Unit 3 Instrumentation	Unit 3 National Parks and Sanctuaries	Unit 3 Common Human Diseases
Practical (USZO P1)	Practical (USZO P1)	Practical (USZO P2)	Practical (USZO P2)

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PEDAGOGY

F.Y.B.Sc. Syllabus

First year B.Sc. course is the entry point for the students to undergraduate classes which acts like a guiding force for them to make up their mind in selecting a subject they would wish to pursue their studies in future for carving their career in a particular field.

The syllabus committee in the subject of Zoology for F.Y.B.Sc. Class has designed this syllabus with a view that it is most appropriate time when we transform our traditional closed classroom teaching learning practices to more of field and activity based studies, the correct methodology for the study of Natural Sciences. It is recommended to orient the students about ecosystem, bio-diversity, wildlife conservation and management with the help of models, photographs, movies, documentaries, charts and use of ICT and then take learners to field to have realistic experiences. This will enable them to get true insight about endurance of animal life in relation to human activity inducing sentiment of love, care and protection in the young mind and heart leading to understand importance of co-existence and conservation of bio-diversity. An interaction with the officials of wildlife protection force should be allowed to get basic knowledge about the relevant acts through lectures which for creating awareness about these issues and also to make best use of the knowledge in their own interest as well as for the country. Instrumentation and Animal Biotechnology component would initiate academia- industry interface and should be edified in collaboration with expertise from relevant research institutes and industrial establishments and entrepreneurs by inviting them as guest speakers or through industrial visits, excursions for practical experience about the principle, working and application of the instruments for commercial use. Population ecology need to be explained in the context with census to enlighten pupils about the effect of diversity and dynamism of human population on socio economic status of India. Experts from the field of nutrition and health can be invited to enlighten learners on the topics of nutritional value of food, balanced diet, ill-effects of eating junk food and aerated drinks. Medical professionals, relevant NGO's maybe engaged to educate students regarding myth, precautionary measures, immunization drives of common diseases, ill-effects of self-medication and stress, significance of BMI through series of programmes. During medical emergencies it is of immense importance to provide first aid assistance to the diseased within the golden period i.e. of few minutes. This enhances the possibility to save life, thus it is strongly recommended to form a consortium of colleges to conduct training in rotation of first aid techniques for teachers and students both with the help of organizations like Red Cross Society, Health Department of Civic Bodies, Civil Defence Department and Local Self Government etc.

Dr. Anil S. Singh
Convenor

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F.Y.B.Sc. ZOOLOGY

(THEORY)

SEMESTER I

USZO101 (Course 1)
Wonders of Animal World, Biodiversity and its Conservation

Unit 1: Wonders of Animal World (15 L)

Objective: *To take learners through a captivating journey of hoarded wealth of marvellous animal world.*

Desired Outcome*: Curiosity will be ignited in the mind of learners, to know more about the fascinating world of animals which would enhance their interest and love for the subject of Zoology.*

1.1**:** Echolocation in Bats and Cetaceans - Dolphins and Whales

1.2**:** Mechanism of Pearl formation in Mollusca

1.3**:** Bioluminescence in Animals: Noctiluca, Glow worm, Firefly, Angler Fish (Mechanism and use for the animal)

1.4**:** Regeneration in Animals - Earthworm (Annelida) and Lizard (Reptile)

1.5**:** Mimicry in Butterflies and its significance: Great Eggfly and Common Crow, Common Palmfly and Plain Tiger.

1.6**:** Mechanism of Coral formation and types of Coral reefs

1.7**:** Bird migration: Definition, types and factors inducing bird migration

1.8**:** Adaptive features of desert animals: Reptiles (Phrynosoma) and Mammals (Camel)

1.9**:** Breeding and Parental care in:

1.9.1**:** Pisces - Ovo-viviparous (Black Molly/Guppy), Mouth brooders (Tilapia), Brood pouches (Sea horse)

1.9.2**:** Amphibia - Mouth brooders (Darwin's Frog), Egg carriers (Midwife Toad)

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1.9.3**:** Mammals - Egg-laying (Duck-billed Platypus), Marsupials (Kangaroo)

1.10**:** Aves: Brood Parasitism (Cuckoo)

Unit 2: Biodiversity and its Conservation (15 L)

Objective*: To orient learners about rich heritage of Biodiversity of India and make them understand significance of its conservation.*

Desired Outcome*: Learners would appreciate treasure of Biodiversity, its importance and hence would contribute their best for its conservation*.

2.1: Introduction to Biodiversity - Definition, Concepts, Scope and Significance

2.2: Levels of Biodiversity - Introduction to Genetic, Species and Ecosystem Biodiversity

2.3: Introduction of Biodiversity Hotspots- (Western Ghats and Indo-Burma Border)

2.4: Values of biodiversity - Direct and Indirect use value

2.5: Threats to Biodiversity - Habitat loss and Man-Wildlife conflict

2.6: Biodiversity conservation and management

2.6.1**:** Conservation strategies: *in situ*, ex-situ, National parks, Sanctuaries and Biosphere reserves.

2.6.2**:** Introduction to International efforts : Convention on Biological Diversity (CBD), International Union for Conservation of Nature and Natural Resources (IUCN), United Nations Environment Program - World Conservation Monitoring Centre (UNEP-WCMC)

2.6.3**:** National Biodiversity Action Plan, 2002

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2.6.4**:** Introduction to Indian Wildlife (Protection) Act, 1972 and Convention for International Trade of endangered species

Unit 3: Footsteps to follow **(15 L)**

Objective*: To teach learners about innovative and novel work of scientists/philosopher/entrepreneurs in the field of biological sciences.*

Desired Outcome*: Minds of learners would be impulsed to think differently and would be encouraged ipso facto to their original crude ideas from the field of biological sciences.*

3.1**:** Dr. Hargobind Khorana (Genetic code)

3.2**:** Dr. Varghese Kurien (Amul –White revolution)

3.3**:** Dr. Salim Ali (Ornithologist)

3.4**:** Anna Hazare (Water Conservation-Ralegan Siddhi)

3.5**:** Baba Amte (Anandvan)

3.6**:** Kiran Mazumdar Shaw (Biocon)

3.7**:** Gadre Fisheries (Surimi)

3.8 : Rajendra Singh

Two cases preferably of local importance to the college be additionally taught.

USZO102 (Course 2)

INSTRUMENTATION and ANIMAL BIOTECHNOLOGY

Unit 1: Laboratory safety, Units and Measurement **(15 L)**

Objective: *To make learners aware of risks involved in handling of different hazardous chemicals, sensitive (electrical/electronic) instruments and infectious biological specimens especially during practical sessions in the laboratory and to train them to avoid mishap.*

Desired Outcome*: Learners would work safely in the laboratory and avoid occurrence of accidents (mishaps) which will boost their scholastic performance and economy in use of materials/chemicals during practical sessions.*

1.1: Introduction to good laboratory practices

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1.2: **Use of safety symbols**: meaning, types of hazards and precautions

1.3: **Units of measurement**:

1.3.1**:** Calculations and related conversions of each: Metric system- length (meter to micrometer); weight (gram to microgram), Volumetric (Cubic measures)

1.3.2**:** Temperature: Celsius, Fahrenheit, Kelvin

1.3.3**:** Concentrations: Percent solutions, ppt, ppm, ppb dilutions, Normality, Molarity and Molality.

1.3.4**:** Biostatistics: Introduction and scope, Sampling and its types, Central Tendencies (mean, median, mode) Tabulation, Graphical representations (Histograms, bar diagrams, pie diagrams).

Unit 2: Animal Biotechnology (15 L)

Objective: *To acquaint learners to the modern developments and concepts of Zoology highlighting their applications aiming for the benefit of human being.*
Desired Outcome*: Learners would understand recent advances in the subject and their applications for the betterment of mankind; and that the young minds would be tuned to think out of the box.*

2.1: **Biotechnology**: Scope and achievements of Biotechnology (Fishery, Animal Husbandry, Medical, Industrial)

2.2: **Transgenesis**: Retro viral method, Nuclear transplantation method, DNA microinjection method and Embryonic stem cell method

2.3: Cloning (Dolly)

2.4: Ethical issues of transgenic and cloned animals

2.5: **Applications of Biotechnology**:

2.5.1**:** DNA fingerprinting: Technique in brief and its application in forensic science (Crime Investigation)

2.5.2**:** Recombinant DNA in medicines (recombinant insulin)

2.5.3**:** Gene therapy: Ex-vivo and *In vivo*, Severe Combined Immunodeficiency (SCID), Cystic Fibrosis

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2.5.4**:** Green genes: Green Fluorescent Protein (GFP) from Jelly fish- valuable as reporter genes used to detect food poisoning.

Unit 3: Instrumentation **(15 L)**

Objective: *To provide all learners a complete insight about the structure and train them with operational skills of different instruments required in Zoology.*
Desired Outcome: *Students will be skilled to select and operate suitable instruments for the studies of different components of Zoology of this course and also of higher classes including research.*

3.1: Microscopy

3.1.1**:** Construction, principle and applications of dissecting and compound microscope.

3.2: Colorimetry and Spectroscopy - Principle and applications.

3.3: pH - Sorenson's pH scale, pH meter - principle and applications.

3.3: Centrifuge - Principle and applications (clinical and ultra centrifuges).

3.4: Chromatography - Principle and applications (Partition and Adsorption)

3.5: Electrophoresis - Principle and applications (AGE and PAGE)

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SEMESTER I

Practical USZOP1 (Course I)

1. Mounting of foraminiferan shells from sand (any 3)
2. Study of types of Corals - Brain, Organ pipe, Stag Horn, Mushroom coral Study of

3Study of the following;

a. Symbiosis (Termite and Trychonympha, hermit crab and sea anemone)
b. Camouflage (leaf insect, chameleon)
c. Cannibalistic mate-eating animals (Spider and Praying Mantis)
d. Animal architects: Termites, Harvester ant and Baya weaver bird
e. Study of bioluminescent organisms – Noctiluca, glow worm, fire fly, angler fish.

4. Breeding and parental care in Amphibia- *Rhacophorus*, Midwife toad, Darwin's frog, Caecilian.
5. Mounting of scales of fish (placoid, cycloid and ctenoid)
6 a) Study of Adaptive radiation in Reptiles - Turtle, Tortoise, *Phrynosoma*, *Draco*)
   b) Identification and differentiation of venomous and non-venomous snakes (Scales, Fangs, Bite marks, etc.)
7. Study of Types of feathers(contour, filoplume, down), beaks(Nectar feeding , Insect catching, Fruit eating, Scavenging, Filter feeding), claws (perching, wading, swimming, hopping) in birds
8 a. Identification of birds - Coppersmith Barbet, Bulbul, Rose ringed Parakeet, Magpie Robin, two local birds.
   b. Field Report – To be done in a group of ten students (submission of written / typed report preferably along with photographs/ tables/ graphs.

Other Suggested topics for field observation/survey:

- Butterflies/ Fishes/ Migratory birds of local area.
- Variations in Human like Attached vs. Free Earlobes, Blood Groups, Eye colour, etc. using statistical method.

9. Observations of fauna in the field (with reference to theory syllabus).

***Note - The practicals may be conducted by using specimens authorised by the wild such other regulating authorities though it is strongly recommended that the same sh taught by using photographs/audio-visual aids/ simulations / models, etc. as recomme the UGC and as envisaged in the regulations of the relevant monitoring bodies. specimens, however, shall be procured for the purpose of conducting practicals m here-in-above.**

#There shall be at least one excursion/field trip

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SEMESTER I

Practical USZOP1 (Course II)

1. Interpretation of safety symbols (toxic, corrosive, explosive, flammable, skin itant, oxidizing, compressed gases, aspiration hazards and Biohazardous fectious material.)
   b) Study of Central tendencies and plotting of Bar diagram, histogram and pie diagram.
2. Identification of transgenic fish (Trout and Salmon) / cloned animals (Dolly sheep, cc cat and Snuppy dog) from photograph.
3. Extraction of fruit juice with pectinase from apple/guava/or any other suitable fruit
4. Calculation of pH of three different samples (one each acidic, alkaline and neutral) using pH paper/Universal Indicator and confirming the result with pH meter.
   Application of DNA Fingerprinting in criminology (photograph of electrophoretic pattern to be given for interpretation by the students)
5. a) Study of parts of microscope and their functions.
   b) Technique of focussing a permanent slide under 10x and 45x (objectives).
6. a) Dilution of given sample and estimation of OD by using colorimeter.
   b) Calculation of concentration from the given OD using formula.
7. Calculation of pH of three different samples (one each acidic, alkaline and neutral) using pH paper/universal indicator/pH indicator from red cabbage and confirming the result with pH meter.
   a) Seperation of amino acids from the mixture by paper chromatography.
8. b) Calculation of Rf value of separated pigments/amino acids from given chromatogram and their identification from standard chart.
   a) Seperation of pigments by adsorption chromatography using chalk.
9. b) Seperation of lipids by TLC,

***Note - The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.**

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REFERENCES AND ADDITIONAL READING

1. Wonders of the Animal World - University Text Book of Zoology, F.Y.B.Sc. Semester I Course 1. V.V. Dalvie, G.B. Raje, P. Sardesai, N.S. Prabhu, University Press.
2. Vertebrate Zoology Volume I- Jordan and Verma , S. Chand and Co.
3. Invertebrate Zoology Volume II- Jordan andVerma , S. Chand and Co.
4. Invertebrate Zoology- T. C. Majupuria , S. Nagin and Co.
5. Chordate Zoology- P. S. Dhami and J. K. Dhami , R. Chand and Co.
6. Invertebrate Zoology- P. S. Dhami and J. K. Dhami , R. Chand and Co.
7. Introduction to Vertebrates- Moore Cambridge University- Low Priced Edition
8. Zoology- S. A. Miller and J. B. Harley, Tata McGraw Hill
9. Modern Textbook of Zoology, Invertebrates, R. L. Kotpal
10. Fundamentals of Ecology- E. P. Odum , Sunders Publication
11. Fundamentals of Ecology- M.C.Dash-2nd edition, Tata McGraw Hill
12. Essentials of Ecology and Environmental Science - S.V.S Rana
13. Biodiversity- S.V.S Rana- Prentice Hall Publications
14. Modern Biology- V. B. Rastogi
15. Biology of Mollusca- D. R. Khanna
16. A Textbook of Zoology, Vol. II- T. Jeffery Parker and William. A. Haswell-Low Price Publications
17. Ecology and Environment- P. D. Sharma, R. K. Rastogi Publications
18. Introduction to Ecology- R. Dajoz
19. Wildlife Laws and its Impact on Tribes- Mona Purohit , Deep and Deep Publications
20. Biodiversity- K.C.Agarwal- Agro Botanica Publications
21. Butterflies of India – Isaac Kehimkar- BNHS Publication

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Course II (USZO102)

REFERENCES AND ADDITIONAL READINGS

1. Basic Laboratory Techniques, Instrumentation and Biotechnology- University Text Book of Zoology, F.Y.B.Sc. Semester I Course 2. V.V. Dalvie, R. G. Deshmukh, R. D'souza and H.U. Shingadia University Press.

2. Introduction to Practical Biochemistry – David T. Plummer (Tata McGraw Hill Publishing Co. Ltd.)
3. Introductory Practical Biochemistry – S.K. Sawhney and Randhir Singh (Narosa Publishing House)
4. Methods in Biostatistics – B. K. Mahajan, (Jaypee Publications)
5. Microscopy and Cell Biology - V. K. Sharma, (Tata McGraw Hill Publishing Co. Ltd.)
6. Bioinstrumentation – L. Veerakumari, (M.J.P. Publishers)
7. Principles and Techniques of Practical Biochemistry – Keith Wilson and John Walker, (Cambridge University Press)
8. Biotechnology- Thieman and Pallidino, Pearson edu.
9. Biotechnology –Glick and Pasternak
10. Biochemistry –Satyanarayana
11. Understanding biotechnology- Aluizio Borem ,David Bowe-Low price edition –Pearson Publication
12. A Textbook of Biotechnology – R. C. Dubey, S. Chand Publication.
13. A Manual of Medical Laboratory Technology -A. H. Patel, Navneet Prakashan Ltd.
14. Biological instruments and methodology – Dr. P. K. Bajpai, S. Chand company Ltd.
15. Calculations in Molecular biology and Biotechnology - Frank H. Stephenson, Academic Press.

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SCHEME OF EXAMINATION (THEORY)

(a) Internal assessment of twenty five (25) marks per course per semester should be conducted according to the guidelines given by University of Mumbai vide circular number UG/04 of 2014 Dated 5th June 2014 to be implemented from academic year 2014-15.

(b) External assessment of seventy five (75) marks per course per semester should be conducted as per the following skeleton question paper pattern.

(c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory

Figures to the right indicate full marks

Time: 2.5 hours **Total marks: 75**

Q.1.	UNIT 1 Answer any four out of eight (5 marks each)	20 marks
Q.2.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 3 Answer any two out of four (10 marks each)	20 marks
Q.4.	a. Unit 1 - (One note of five marks OR objective type questions) b. Unit 2 - (One note of five marks OR objective type questions) c. Unit 3- (One note of five marks OR objective type questions)	15 marks

*For Question 4 it is recommended to have objective questions such as –

(a) Match the column (b) MCQ

(c) Give one word for (d) True and False

(e) Define the term (f) Answer in one sentence etc.

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MODEL QUESTION BANK SEMESTER I

USZO101(COURSE I)

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

UNIT 1 - (05 Marks)

1. Write a note on echolocation in Dolphins/ Whales
2. Write a short note on : Pearl formation in Mollusca
3. Describe : Mechanism of bioluminescence
4. Enumerate the uses of bioluminescence
5. Describe the uses of bioluminescence for…… (Noctiluca, Glow worm, Firefly, Angler fish, etc.)
6. Write a short note on : Luciferin – Luciferase interaction
7. Describe the process of regeneration in Earthworm
8. What is regeneration? Explain the term with an example
9. What is mimicry? Explain with an example.
10. Describe: mimicry in butterfly
11. Describe briefly the formation of Corals
12. Write a short note on types of coral reefs.
13. Describe needs of migration in birds.
14. Describe briefly, the factors inducing migration in birds.
15. How does Camel adapt itself to the desert environment?
16. Describe parental care and breeding in ……. (Examples of Pisces, Amphibia)
17. Describe briefly: Brood parasite
18. Explain parental care in Duck-billed Platypus

UNIT 2 - (05 Marks/10 Marks)

Questions that could be asked for 10 marks:

1. Explain biodiversity and its importance. What is a biodiversity hotspot? Explain Western Ghats as biodiversity hotspot in India.
2. Explain: Direct use value / Indirect use value
3. Explain biodiversity and its types.
4. Enumerate and explain threats to biodiversity.
5. State the factors which amount to habitat loss.
6. Explain the concept of Man-Wildlife conflict with an example.
7. Give a detailed account on *in situ* hybridization and ex-situ hybridization

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8. Describe National Park and state its importance in conservation
9. Describe Sanctuary and state its importance in conservation
10. Give a brief account on biosphere reserve.
11. Give a detailed account on: CBD (Convention on Biological Diversity).
12. Give an account of national biodiversity plan 2002.
13. Describe important clauses of Convention for International Trade of endangered species.

Questions that could be asked for 05 marks:

1. Explain biodiversity and mention its types.
2. Explain biodiversity and give two importance
3. Explain biodiversity hotspot
4. Describe *in situ* conservation strategies.
5. Write note on ex-situ conservation strategies.
6. Give an account of genetic / species / ecosystem biodiversity.
7. Enumerate importance threat to biodiversity.
8. State direct and indirect use value of biodiversity.

UNIT 3 - (10 Marks)

1. Give a detailed account on: ……(Name of the eminent personality) For e.g.: Gadre Fisheries, Kiran Mazumdar Shaw, Baba Amte etc.
2. Describe in detail - ……(Name of the case study)
   For e.g.: Amul white revolution, Biocon, Genetic code etc.
3. Give a detailed account on the contribution made by Dr.Salim Ali in the field of Ornithology.
4. What is white revolution? State contribution of Dr. Verghese Kurian for it.
5. Describe the work of water conservation of Anna Hazare.

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MODEL QUESTION BANK SEMESTER I USZO102 (COURSE II)

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

UNIT I: (5 marks)

1. Describe in brief (Minimum five points)
   a. Good laboratory practices
   b. Chemical hazards in a laboratory
   c. Physical hazards in a laboratory
   d. Biological hazards in a laboratory
   e. Personal hygiene in laboratory
   f. Waste disposal
2. Define and give conversions of the three scales of measuring temperature.
3. Define Molarity. How would you prepare
   a. 1 litre of 0.1 M NaOH solution? (Mol.wt. of NaOH=40)
   b. 100 ml of 1M NaOH
   c. 500 ml of 0.2 M NaOH
4. Define Normality. How would you prepare 1 litre of 2 N NaOH solution?
5. Explain briefly the measures of central tendencies?
6. Define mean, median and mode and explain each with an example.
7. The observations of length (in cm) of 10 fishes are 22, 24, 34, 26, 28, 31, 20, 25, 36, 32. Calculate the arithmetic mean of fish length (in cm).
8. Calculate the arithmetic mean for the following data on fish length by Direct method.

Class interval (length in cm)	5-15	15-25	25-35	35-45	45-55
Frequency (no. of fish)	9	21	40	22	8

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9. Calculate the arithmetic mean for the above data on fish length by shortcut method.
10. How do you find the median of the data and state the significance of median?
11. What is mode? How do you calculate mode for ungrouped and grouped data?
12. What is random sampling? State the significance.
13. Explain simple, subdivided and multiple bar diagrams.
14. What is a pie diagram? Write the formula for calculating the angles of degrees for different components.
15. The following data shows the areas in million square miles of the oceans of the world. Construct a pie diagram for the data.

16. What

Ocean	Pacific	Atlantic	Indian	Antarctic	Arctic	Total
Area (million sq. miles)	70.8	41.2	28.5	7.6	4.8	152.9

Plot a histogram/Bar diagram? Explain how it is constructed.

UNIT 2: (5 marks)

1. Give applications of Biotechnology in the field of Medicine / Fishery / Animal Husbandry.
2. Give the Scope of Biotechnology in different areas as a diagrammatic sketch
3. What is SCID? Name the scientist who discovered the gene therapy for it.
4. In SCID which enzyme does not work properly?
5. Which cells are used for SCID gene therapy?
6. Which gene is defective in SCID?
7. Define transgenesis and mention any two transgenic animals.
8. Ethical issues of transgenesis.
9. Enlist five applications of DNA finger printing.
10. What are green genes? State one application of it.

(10 marks)

1. Describe SCID and its treatment with suitable diagram.
2. Explain various methods of transgenesis.
3. What is Cystic fibrosis? Explain its diagnostic biotechnological method.
4. Define transgenesis and explain retro viral method with its application.

UNIT 3: (10 marks)

1. Describe the components of a compound microscope giving function.

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2. Explain the principle and the applications of compound microscope.
3. Discuss in detail the principle, construction and applications of dissecting microscope.
4. Write the principle and applications of
    a. Colorimeter
    b. Centrifuge
    c. Spectroscopy
    d. Compound microscope
    e. Dissecting microscope
5. Explain the principle of centrifugation and add a note on its application.
6. What is pH? Give the principle and applications of pH meter.
7. Describe paper chromatography as a separation technique.
8. Describe Agarose gel electrophoresis. Add a note on its applications.
9. Explain the principle and applications of Polyacrylamide gel electrophoresis.
10. With the help of a diagram, explain the parts of a colorimeter. Discuss the principle and uses.
11. Describe principle and uses of colorimeter.
12. Explain the principle and application of adsorption chromatography.

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PRACTICALS

USZOP1 (Course I)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Q.1. From the given sample mount foraminiferan shells (Minimum three types) (15 Marks)

OR

Mounting of scales (placoid and cycloid/ctenoid) from fishes.

Q.2. Identify the photograph of the given animals and comment on the type of interaction /speciality. (symbiosis, camouflage, cannibalistic mate eating animals and animal architects,bioluminiscence). Any two (10 Marks)

Q.3. Identify giving reasons - Venomous/Non-venomous snake (from photographs). (5 Marks)

Q.4. Identification (one specimen each) (10 Marks)

a. Types of corals

b. Amphibians-breeding and parental care

c. Adaptive radiation in reptiles

d. Types of feathers/ claws in birds

e. Types of beaks in birds

Q.5. Field study report (Biodiversity) and viva on it. (10 Marks)

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Semester I

USZOP1 (Course II)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Q. 1 Dilute the given sample and estimate the OD using colorimeter (Three dilutions) (15marks)

OR

Calculate concentration from given OD by formula (3 concentrations)

OR

Find pH of water samples (three) and comment on their chemical nature.

OR

Using red cabbage pH indicator, determine pH of the given samples and comment on their chemical nature

OR

Extract fruit juice using pectinase and compare the result with a set without using pectinase.

Q. 2. Perform experiment for separation of pigments by adsorption chromatography. (10Marks)

OR

Perform experiment for separation of mixture of amino acids by paper chromatography

OR

Calculate R_f value and identify the pigment from chromatogram.

OR

Perform Thin Layer Chromatography (TLC) for separation of lipids

Q. 3. Focus the given slide under 10 X and 45 X and show it to examiner. (5 Marks)

OR

Prepare a frequency distribution table / Plot histogram / Pie diagram / Bar diagram from the given data.

Q. 4. Identification (10 Marks)
(Safety Symbols (two), parts of compound microscope, transgenic animals, DNA fingerprinting)

Q. 5. Journal and Viva voce(on practical component) (10 Marks)

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SEMESTER-II

USZO201 (Course: 3)

Ecology and Wildlife Management

Unit 1: Population ecology: (15 L)

Objective: *To facilitate the learning of population ecology, its dynamics and regulatory factors important for its sustenance.*

Desired Outcome: *This unit would allow learners to study about nature of animal population, specific factors affecting its growth and its impact on the population of other life form.*

1.1: Population dynamics

1.1.1: Population density
1.1.2: Natality
1.1.3: Mortality
1.1.4: Fecundity
1.1.5: Age structure
1.1.6: Sex ratio
1.1.7: Life tables
1.1.8: Survivorship curves
1.1.9: Population dispersal and distribution patterns
1.1.10 Niche concept

1.2: Population growth regulation

1.2.1: Intrinsic mechanism – Density dependent fluctuations and oscillations
1.2.2: Extrinsic mechanism- Density independent, environmental and climate factors, population interactions

1.3: Population growth pattern

1.3.1: Sigmoid
1.3.2: J Shaped

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1.4: Human census (India) – Concept, mechanism and significance

Unit 2: Ecosystem: **(15 L)**

Objective: *To impart knowledge of different components of ecosystem and educate about essentials of coexistence of human beings with all other living organisms.*

Desired Outcome: *Learners will grasp the concept of interdependence and interaction of physical, chemical and biological factors in the environment and will lead to better understanding about implications of loss of fauna specifically on human being, erupting spur of desire for conservation of all flora and fauna.*

2.1: Concept of Ecosystems

2.1.1**:** Ecosystem - Definition and components
2.1.2**:** Impact of temperature on biota
2.1.3**:** Biogeochemical cycles (Water, Oxygen, Nitrogen, Sulphur)
2.1.4**:** Fresh water ecosystem – Lentic and Lotic
2.1.5**:** Food chain and food web in ecosystem (Fresh water and Grass land).
2.1.6**:** Ecological pyramids - energy, biomass and number.
2.1.7**:** Animal interactions (commensalism, mutualism, predation, antibiosis, parasitism)

Unit 3: National parks and Sanctuaries of India **(15 L)**

Objective: *To enlighten learners about the current status of wild life conservation in India in the light of guidelines from different relevant governing agencies vis-à-vis with adversity of poaching and biopiracy.*
Desired Outcome: *Learners would be inspired to choose career options in the field of wild life conservation, research, photography and ecotourism*.

3.1: Concept of Endangered and Critically Endangered species using examples of Indian Wildlife with respect to National Parks and Wildlife

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Sanctuaries of India (Sanjay Gandhi National Park, Tadoba Tiger Reserve, Corbett National Park, Kaziranga National Park, Gir National Park, Silent Valley, Pirotan Island Marine Park, Keoladeo Ghana National Park, Bandipur Sanctuary)

3.2: Management strategies with special reference to Tiger and Rhinoceros in India

3.3: Ecotourism

3.4: Biopiracy

SEMESTER-II

Course: 4 [USZO 202]

NUTRITION, PUBLIC HEALTH AND HYGIENE

Unit 1: Nutrition and Health **(15 L)**

Objective: *To make learners understand the importance of balanced diet and essential nutrients of food at different stages of life.*

Desired Outcome: *Healthy dietary habits would be inculcated in the life style of learners in order to prevent risk of developing health hazards in younger generation due to faulty eating habits.*

1.1**:** Concept of balanced diet, dietary recommendations to a normal adult, infant, pregnant woman and aged.

1.2**:** Malnutrition disorders – Anemia (B_{12} and Iron deficiency), Rickets, Marasmus, Goiter, Kwashiorkar (cause, symptoms, precaution and remedy).

1.3**:** Constipation, piles, starvation, acidity, flatulence, peptic ulcers (cause, symptoms, precaution and remedy).

1.4**:** Obesity (Definition and consequences).

1.5**:** Importance of fibres in food.

1.6**:** Significance of breast feeding.

1.7**:** Swine flu (cause, symptoms, precaution and remedy).

1.8**:** BMI calculation and its significance.

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Unit 2: Public Health and Hygiene (15 L)

Objective: *To impart knowledge about source, quantum and need for conservation of fast depleting water resource and essentials of maintaining proper sanitation, hygiene and optimizing use of electronic gadgets.*

Desired Outcome: *Promoting optimum conservation of water, encouragement for maintaining adequate personal hygiene, optimum use of electronic gadgets, avoiding addiction, thus facilitating achievement of the goal of healthy young India in true sense.*

2.1: Health

2.1.1**:** Definition of Health, the need for health education and health goal.

2.1.2**:** Physical, psychological and Social health issues.

2.1.3**:** WHO and its programmes - Polio, Small pox, Malaria and Leprosy (concept, brief accounts and outcome with respect to India).

2.1.4: Ill effects of self-medication.

2.2: Water and water supply

2.2.1**:** Sources and properties of water.

2.2.2**:** Purification of water, small scale, medium scale and large scale (rapid sand filters)

2.2.3 **:** Water footprint (concept, brief accounts and significance).

2.3: Hygiene:

2.3.1**:** Hygiene and health factors at home, personal hygiene, oral hygiene and sex hygiene.

2.4: Radiation risk:

2.4.1**:** Mobile Cell tower and electronic gadgets (data of recommended level, effects and precaution).

2.5: **Blood bank** – Concept and significance

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UNIT 3: Common Human Diseases and Disorders (15 L)

Objective: *To educate learners about causes, symptoms and impact of stress related disorders and infectious diseases.*

Desired Outcome: *Learners will be able to promptly recognize stress related problems at initial stages and would be able to adopt relevant solutions which would lead to psychologically strong mind set promoting positive attitude important for academics and would be able to acquire knowledge of cause, symptoms and precautions of infectious diseases*.

3.1: Stress related disorders

3.1.1**:** Hypertension, Diabetes type II, anxiety, insomnia, migraine, depression (cause, symptoms, precaution and remedy)

3.2: Communicable and non-communicable diseases

3.2.1**:** Tuberculosis , Typhoid and Dengue

3.2.2**:** Hepatitis (A and B), AIDS, Gonorrhea and Syphilis

3.2.3**:** Diseases of respiratory system- Asthma, Bronchitis.

3.2.4: Oral Cancer

(Discuss cause/causative agents, symptoms, diagnostics, precaution /prevention and remedy)

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SEMESTER II

Practical USZOP2 (Course III)

1. Interpretation of the given graphs/ tables and comment on pattern of population nature :
   i. Survivorship curve
   ii. Life tables
   iii. Fecundity tables
   iv. Age structure
   v. Sex ratio

2. a) Calculation of Natality, Mortality, Population density from given data
   b) Estimation of population density by capture recapture method

3. Interpretation of Growth curves (Sigmoid and J shaped)

4. Estimation of hardness from given water sample (tap water v/s well water)

5. Estimation of Free carbon dioxide (Free CO_2) from two different samples- aerated drinks(diluted) v/s tap water

6. Identification and interpretation of aquatic and terrestrial (Grassland) food chains and food webs

7. Construction of food chain/food web using given information/data.

8. a) Identification and interpretation of ecological pyramids of energy, biomass and number
   b) Construction of different types of pyramid from given data.

9. Study of the following:
   a) Endangered (Great Indian Bustard, Asiatic lion, Blackbuck, Olive Ridley sea turtle) and critically endangered species (Slender-billed vulture, Gharial, Malabar civet) of Indian wildlife and state reasons for their decline
   b) Study Biodiversity hotspots using world map (Western Ghats and Indo-Burma)
   Study of sanctuaries, national parks, biosphere reserves in India with respect to its brand fauna as listed in theory)

***Note - The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.**

#There shall be at least one excursion/field trip

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SEMESTER II

Practical USZOP2 (Course IV)

1. Qualitative estimation of Vitamin C by Iodometric method.

2. Study of microscopic structure of starch granules of different cereals (wheat, maize and jowar).

3. a) Estimation of maltose from brown/white bread.
   b) Moisture content from biscuits or other suitable food products.

4. Food adulteration Test:
   a) Milk adulterants (starch and glucose), methylene blue reduction Test (MBRT).
   b) Adulterants in Cheese, Butter, Jaggery, Ghee, Honey, Iodised Salt.

5. a) Estimation of protein content of two egg varieties.
   b) Study of efficacy of different antacids (any two antacids).

6. .Study of Human Parasites

   Endoparasites - Protozoans (*Entamoeba, Plasmodium*),
   Helminths (*Ascaris, Wuchereria*),
   Ectoparasites (Head louse, tick) and Exoparasites (Bed bug, Mosquito).

7. Screening of anaemic/non-anaemic persons using $CuSO_4$ method.

8. First Aid – Demonstration Practical Training for teachers and students to be conducted by the experts from Redcorss, Civil defence, Civic authorities by individual institute or cluster colleges in rotation.

9. BMI analysis - Measurement of Height/ Weight and calculation of BMI using formula, preparation and submission of report. (10 students/ group-50 readings/group)

***Note - The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for the purpose of conducting practicals mentioned here-in-above.**

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Semester II USZOP2 (Course III)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Q.1. Estimate Hardness from given water samples and compare the results. (15 Marks)

OR

Estimate Free CO_2 from given samples and compare the results.

Q.2. Solve the given problems (using statistical approach wherever possible) based on (Any two) (10Marks)

Natality
Mortality
Sex Ratio
Fecundity
Population density

Q.3. Identify brand animals (Min. 4) and place them in their respective National parks/ Sanctuaries on the given map quoting reasons for their decline. (5 Marks)

OR

Mark National parks and Sanctuaries on the map of India and mention the name of their brand animals stating reason for their decline. (Min. 4)

(5 Marks)

OR

Identify endangered and critically endangered animals (photographs) one each and state their reason of decline (5 Marks)

Q.4. Study the given information and give answers on the basis of food chain/food web and ecological pyramids. (10 Marks)

OR

Prepare food chain/food web and ecological pyramid from the given data and give its significance. (10 Marks)

OR

Identify and interpret the given graph/growth curve/age structure and comment on the pattern of population dispersal. (10 Marks)

OR

Determine Population density by capture and recapture method. (10 Marks)

Q.5. Journal and Viva voce (Based on practical component) (10 Marks)

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Semester II USZOP2 (Course IV)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs **Marks: 50**

Q.1. Estimate Vitamin C from given sample. (15 Marks)

OR

Estimate Maltose content from bread.

OR

Estimate protein content from two different types of eggs.

Q.2. Analyse the given food sample and identify food adulterants (any 2 samples). (10 Marks)

OR

Evaluate milk quality by Methylene Blue Reduction Test (MBRT).

OR

Determine efficacy of different antacids (any two) on acidic solution.

Q.3. Determine moisture content from biscuits/ any other suitable food product. (5 Marks)

OR

On the basis of microscopic structure of starch granules identify different cereals (any two).

OR

Detect adulterants present in th given milk sample (any two).

OR

Determine whether given blood sample is from anaemic/non-anaemic person using $CuSO_4$ Method and suggest the appropriate diet.

Q.4. Identification (10 Marks)

a) One specimen of Protozoan Parasites.

b) One specimen of Helminth Parasites.

c) One specimen from Ectoparasite

d) One specimen from Exoparasite

e) One specimen from Endoparasite

Q.5. Submission of report of Body Mass Index (viva based on it) (10 Marks)

Note: There shall be at least one excursion/field trip.

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CourseUSZO201III (Course(USZO201)III)

REFERENCES AND ADDITIONAL READING

1. Introduction to Ecology and Wildlife - University Text Book of Zoology, F.Y.B.Sc. Semester II Course 3. University Press.
2. Fundamentals of Ecology - Eugene P. Odum and Grey W. Barrett, Brook Cole/ Cengage learning
3. Fundamentals of Ecology - M. C. Dash , Tata McGraw Hill company Ltd, New Delhi
4. Ecology - Mohan P. Arora , Himalaya Publishing House
5. Field Biology and Ecology -- Alen H. Benton and William E. Werner ,Tata McGraw Hill ltd, New Delhi
6. Ecology and Environment - Sharma P. D , Rastogi Publication, Mumbai
7. Ecology : Principles and Applications - Chapman J.L , Cambridge University trust
8. Ecology - Subramaniam and Others, Narosa Publishing House
9. Wildlife laws and its impact on tribes - Mona Purohit, Deep and deep Publication
10. Biology - Eldra Solomon, Linda R. Berg and Diana W. Martin, Thomson/ Brooks/ Cole
11. Economic Zoology, Biostats and Animal Behaviour - Shukla, Mathur, Upadhyay, Prasad. Rastogi Publications.

USZO202 (Course IV)

REFERENCES AND ADDITIONAL READING

1. Common Diseases, Health and Hygiene - University Text Book of Zoology, F.Y.B.Sc. Semester II Course 4. University Press.
2. Common Medical Symptoms edited - P. J. Mehta National Inblisents and Distributions
3. Parks Textbook of Preventive and Social Medicine K. Park M/S Banarasidas Bhanot Jabalpar.
4. Human Physiology – Volume I – II C. C. Chatterjee, Medical Allied agency, Kolkatta.
5. Parasitology (Protozoology and Helminthoology) - K. D. Chatterjee, Chatterjee Medial Publishers.

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6. Nand's handbook of Forensic Medicine and Toxicology - Apurba Nandy, NCBA publication.
7. Essentials of Public Health and Sanitation- Part I and Part II. All India Institute of Local Self Government.
8. Epidemiology and Management for Health Care for all. P.V. Sathe, A. P. Sathe, Popular Prakashan, Mumbai.
9. Textbook of Medical Parasitology- C. K. JayaramPaniker. Jaypee Brothers.
10. A Treatise on Hygiene and Public Health. -B. N. Ghosh. Calcutta Scientific Publishing Company.
11. Prevention of Food Adulteration, Act 1954. Asian Law House.
12. Clinical Dietetics and Nutrition - F. P. Antia and Philip, Oxford University Press.
13. A Complete Handbook of Nature Cure - Dr. H. K. Bakru, Jaico Publishing House.
14. Dietetics - B. Srilakshmi, New Age International (P) Ltd. Publishers.
15. Nutrition: Principles and Application in Health Promotion - J. B. Lippincott Company. Philadelphia.
16. Are You Healing Yourself Mr. Executive - Dr. R. H. Dastur. IBH Publishing Company.
17. Food Nutrition and Health- Dr. Shashi Goyal, Pooja Gupta, S. Chand Publications.
18. Public Health Nutrition. Edited - Michael J. Gidney, Barrie M. Margetts, John M. Kearney and Lenore Arab. Willey Blackwell Publication.
19. Food and Nutrition – Vol. I and II - Dr. Swaminathan , Bappco Publication.
20. Textbook of Human Nutrition - Mahtab Bamji, Prahlad Rao.
21. Total Health by Paramjit Rana.

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SCHEME OF EXAMINATION THEORY

(a) Internal assessment of twenty five (25) marks per course per semester should be conducted as class test according to the guidelines given by University of Mumbai vide circular number UG/04 of 2014 Dated 5th June 2014 to be implemented from academic year 2014-15.

(b) External assessment of seventy five (75) marks per course per semester should be conducted as per the following skeleton paper pattern.

(c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory

Figures to the right indicate full marks

Time: 2.5 hours **Total marks: 75**

Q.1.	UNIT 1 Answer any four out of eight (5 marks each)	20 marks
Q.2.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 3 Answer any two out of four (10 marks each)	20 marks
Q.4.	a. Unit 1 - (One note of five marks OR objective type questions) b. Unit 2 - (One note of five marks OR objective type questions) c. Unit 3- (One note of five marks OR objective type questions)	15 marks

*For Question 4 it is recommended to have objective questions such as –

(a) Match the column (b) MCQ

(c) Give one word for (d) True and False

(e) Define the term (f) Answer in one sentence etc.

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MODEL QUESTION BANK

SEMESTER II

USZO203 (COURSE III)

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

UNIT 1: (10 marks)

Describe with suitable Example

1. J-Shaped and Sigmoid growth patterns
2. Population dispersal and distribution patterns
3. Natality and Mortality
4. Natality and Fecundity
5. Fecundity and Mortality
6. Density dependant fluctuation and oscillations
7. Population interactions
8. Age structure and population density
9. Concept of niche and its significance in population ecology.

Write notes on / Give a brief account of: (5 marks)

1. Population density
2. Natality
3. Mortality
4. Fecundity
5. Age structure
6. Sex ratio
7. Survivorship curve
8. Sigmoid growth pattern
9. J-shaped growth curve
10. Intrinsic mechanism
11. Extrinsic mechanism
12. Niche
13. Population dispersal and distribution pattern

UNIT 2: (5 marks)

1. Effect of temperature on metabolism

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16. Impact of temperature on reproduction
17. Effect of temperature on animal behaviour
18. Define ecosystem and describe any two abiotic factors
19. Define ecosystem and describe any two biotic factors
20. Explain producers / autotrophs
21. Give a brief account of various levels of consumers in an ecosystem
22. Describe in short the inter-relationship between biotic and abiotic factors
23. Describe the following (any one of the cycles can be asked) water cycle, nitrogen cycle and oxygen cycle, sulphur cycle.
24. Explain any one of the following - lake or river
25. Explain food chain from terrestrial or aquatic ecosystem
26. What is food web and explain the same with a suitable example
27. Give a brief account of: Energy pyramid, Pyramid of biomass, Pyramid of numbers.

Unit 3: (10 marks question)

1. State the differences between National park and Wildlife Sanctuary?
2. Write an account of critically endangered species of Indian wildlife with at least two examples.
3. Explain briefly management strategy of any one tiger project in India.
4. Briefly explain management strategy of Rhinoceros project in India.
5. Write in detail about Indian Wildlife (Protection) Act 1972.
6. What is biopiracy? Explain with suitable examples.
7. Write a note on flora and fauna of Sanjay Gandhi national park.
8. Write an account of Tadoba tiger reserve project.
9. Give an account of biodiversity of Jim Corbett national park.
10. Write a note on Ranthambore Tiger reserve.
11. Write in details about Gir Lion project.
12. Write a note on Keoladeo Ghana National park.
13. Write an account of biodiversity of Silent valley.
14. Describe in detail about Bandipur sanctuary.
15. Write a note on ecotourism in India with few examples.

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MODEL QUESTION BANK (COURSE IV) SEMESTERII

Question bank is suggestive and not exhaustive. The paper setters are free to modify the questions or include new questions to the best of their wisdom

Unit I (5 marks)

Explain the following:

1. Concept of balanced diet and dietary recommendations of any one of the following:
   a) Normal adult b)Infant c) Pregnant woman d) Aged
2. Cause and symptoms of the following: a) Anemia b) B_{12} deficiency c) Vitamin D deficiency d) Marasmus e) Kwashiorkar f) Goiter, g) Swine flu, h) Dengue
3. Precautions and remedy for all above mentioned health conditions.
4. Significance of breast feeding.
5. Importance of fibres in food.
6. Food adulterants and toxins with two side effects of each.
7. Causes, symptoms, precautions and treatment of a) Constipation, b) Piles, c) Insomnia, d) Starvation, e) Flatulence, f) Peptic ulcer, g) Obesity
8. BMI and its significance.

Unit II (5/10 marks)

Question of 5 marks:

1. Give a brief account and outcome of WHO Programs:
   a) Polio b) Smallpox c) Malaria d) Leprosy
2. a) Explain the concept of health goal and health knowledge.
   b) Enlist different needs of health education.
   c) State five points of social health issues.

Question of 10 marks:

1. Describe sources and properties of water in relation to human consumption.

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2. Describe methods of purification of water – small scale, medium scale and large scale.
3. Explain the concept of water footprint and give its significance.
4. Describe disposal of human and animal waste – STP and ETP, its functioning and significance.
5. Give a brief of risk of radiation from mobile cell towers and electronic gadgets.
6. Explain the concepts of physical health, psychological health and myth related to it.
7. Describe the term hygiene and explain in brief health factors related to it at home.
8. Explain personal hygiene, oral hygiene and sex hygiene with significance of each.
9. Describe ill effects of self medication with respect to antibiotics and steroids.
10. Give brief account of first aid symbols.

Unit III (10 marks)

1. Explain causes, symptoms, precautions and remedy
   a) Hypertension b) Diabetes Type II c) Anxiety and Insomnia d) Migraine and depression
2. Explain causes, symptoms, precautions and remedy
   a) Tuberculosis b) Common flu c) Dengue d) Malaria e) Typhoid f) Hepatitis A g) Hepatitis B h) AIDS

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UNIVERSITY OF MUMBAI
No. UG/34 of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular No. UG/02 of 2016-17, dated 21st April, 2016 relating to syllabus of the Bachelor of Science (B.Sc.) degree course.

They are hereby informed that the recommendations made by the Board of Studies in Zoology at its meeting held on 9th April, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 **vide** item No. 4.31 and that in accordance therewith, the revised syllabus as per the (CBCS) for the S.Y.B.Sc. in Zoology (Sem - III & IV) has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Dinesh Kamble)
I/c REGISTRAR

MUMBAI–400 032
22nd June, 2018

To

The Principals of the affiliated Colleges & Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.31/05/05/2018

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No. UG/ 34 -A of 2018 MUMBAI-400 032 22nd June, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Science & Technology,
2) The Chairman, Board of Studies in Zoology,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

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AC- 05/05/2018
Item No. 4.31

UNIVERSITY OF MUMBAI

Program: S.Y.B. Sc.

Course: Zoology

Syllabus for Semester III & IV

(Choice Based Credit System with effect from the academic year 2018-2019)

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S. Y. B. Sc. Syllabus Framing Committee

Sr. No.	Name	Address	Status
1	Dr. Anita Jadhav readersmailbox@rediffmail.com	Head & Associate Prof., Department of Zoology, ICL College, Vashi, Navi-Mumbai	I/C Chairperson, BoS in Zoology
2	Mr. Vinayak Dalvie dalvie@gmail.com	Head & Associate Prof., Mithibai College, Vile Parle (W), Mumbai-56	Chief Coordinator
3	Dr. Gulabrao B. Raje drgbraje@rediffmail.com	Head & Associate Prof., Department of Zoology, D. B. J College, Chiplun, Dist: Ratnagiri	Coordinator
4	Capt. Nilima S. Prabhu nilsprabhu@rediffmail.com	Assistant Prof., Department of Zoology, S.S. &L.S. Patkar College, Goregaon, Mumbai-62	Convenor USZO301& USZO401
5	Dr. Dilip K. Kakavipure dlpkakavipure@gmail.com	Associate Prof., Depsartment of Zoology, BNN College, Bhiwandi, Dist: Thane	Convenor USZO302& USZO402
6	Mr. Venkatesh Hegde drvnhegde@rediffmail.com	Assistant Prof., Department of Zoology, Mithibai College, Vile Parle (W), Mumbai-56	Convenor USZOE303A & USZOE403A (Elective 1)
7	Dr. Surekha Manoj Gupta gupta.surekha@yahoo.com	Assistant Prof., Department of Zoology, G. N. Khalsa College, Matunga, Mumbai-19	Convenor USZOE303B& USZOE403B (Elective 2)
8	Dr. Shaheda Rangoonwala shaheda.rangoonwala@gmail.com	Principal, V. N. College, Murud Janjira, Dist: Raigad	Co-Convenor USZO301 & USZO401
9	Dr. Shashibhal M. Pandey pandey.shashibhal@gmail.com	Assistant Prof., Department of Zoology, CHM College, Ulhasnagar-3	Co-Convenor USZO302 & USZO402
10	Dr, Leena Murlidharan leena.doctor@gmail.com	Associate Prof., Department of Zoology, VKK Menon College, Bhandup (E), Mumbai -42	Co-Convenor USZOE303A & USZOE403A (Elective 1)
11	Dr. Shirley Bless Agwuocha shirley_bless@rediffmail.com	Assistant Prof., Department of Zoology, Thakur College of Science & Com., Kandivali (E)	Co-Convenor USZOE303A & USZOE403A (Elective 1)
12	Dr. Nisar Shaikh nisargmmwc@gmail.com	Principal, DRT's A. E. Kalsekar Degree College, Kausa Mumbra, Dist: Thane -12	Co-Convenor USZOE303B& USZOE403B (Elective 2)
13	Dr. Sushant Mane sushantmane@yahoo.com	Assistant Prof., Department of Zoology, Wilson College, Girgaon, Mumbai-7	Member USZO301 & USZO401
14	Dr. Meena Poonja meenaprasad123@gmail.com	Assistant Prof., Department of Zoology, CHM College, Ulhasnagar-3	Member USZO301 & USZO401
15	Mr. T. V. Bicheesh Balan bicheesh@gmail.com	Assistant Prof., Department of Zoology, Mithibai College, Vile Parle (W), Mumbai-56	Member USZO301 & USZO401

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16	Mr. Nandu R. Hedulkar hedulkar@gmail.com	Head & Assistant Prof., Department of Zoology, Anandibai Raorane College, Vaibhavwadi, Dist: Sindhudurg	Member USZO302 & USZO402
17	Dr. Pratiksha P. Sawant sawant.pratiksha52@gmail.com	Associate Prof., Department of Zoology, S.P.K. College, Sawantwadi, Dist: Sindhudurg	Member USZO302 & USZO402
18	Dr. Kamran Abbas kamranabbas14@gmail.com	Head & Associate Prof., Department of Zoology, GMM College, Bhiwandi, Dist: Thane	Member USZO302 & USZO402
19	S/Lt. (Dr.) Kantilal Hiridas Nagare birlasparc11@gmail.com	Assistant Prof., Department of Zoology, Birla College, Kalyan, Dist: Thane -421304	Member USZOE303A & USZOE403A (Elective 1)
20	Mr. Nikhil Disoria nikhil.disoria@gmail.com	Assistant Prof., Department of Zoology, National College, Bandra (W), Mumbai -50	Member USZOE303A & USZOE403A (Elective 1)
21	Dr. Minakshi Gurav minakshi.gurav@ruparel.edu	Assistant Prof., Department of Zoology, Ruparel College, Mahim, Mumbai -16	Member USZOE303B& USZOE403B (Elective 2)
22	Dr. Harish T. Babar harishbabar@gmail.com	Assistant Prof., Department of Zoology, D. B. J College, Chiplun, Dist: Ratnagiri- 415605	Member USZOE303B& USZOE403B (Elective 2)

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7. Practical Syllabus for Semester III (Course codes: USZOP3)
8. References and Additional Reading (Course code: USZO301-USZOE303B)
9. Theory Syllabus for Semester IV (Course codes: USZO401-USZOE403B)
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PREFACE

Holistic development of students is the main purpose of the curriculum. While this is attempted through prescribing dynamic and updated curricular inputs, the new course that will be effective from the academic year 2018- 2019, will follow the Semester mode. The main aim of the revision of syllabus was to modify it to meet the unique requirements of students, up gradation of knowledge in the subject of zoology and to inculcate the skill of reasoning. The contents of the syllabus have been drawn-up to accommodate the widening horizons of the discipline of Biological Sciences. All possible attempts have been made to update the syllabus by incorporating current and most recent developments in various branches of Zoological Sciences, nevertheless, classical zoology also has been given due weightage. Introduction of an elective paper in zoology will also provide a glimpse of its application. Inclusion of research methodology to the undergrads is the highlight of the course. I am sure that these revised syllabi will cater to better understanding of the subject and beyond.

I appreciate and congratulate the entire team of syllabus framing for the co-operation, tireless work and wish them success.

Chairperson,
Ad-hoc Board of Studies in Zoology

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PREAMBLE

As a traditional procedural norm of the University of Mumbai, it is the Board of Studies that includes various disciplines, which revive the syllabi after completion of a cycle of five years. Due to rapid advancement in technology, new ideas and concepts, and an ocean of information being generated every day that necessitates updating the students in this present era of exponential information and knowledge. However, in the former practice of syllabus revision, students were unable to imbibe new ideas and concepts as there was limited scope of including them within the syllabi that was theoretical with poor applicability

Looking at the employment generating potential and need of trained human resource in various service sectors in our state, it was became imperative to make a breakthrough from the traditional practice of revising syllabus; and instead giving an opportunity to the stakeholders to adapt and acclimatize with the changes around them and imbibe knowledge which shall enable them to develop entrepreneurship and / or employment avenues and opportunities after pursuing the coveted degree.

With this intention, the Board of Studies in Zoology took decision to put before the S. Y. B. Sc. Zoology students one elective, so that they can study topics of their interest. Board of Studies in Zoology is the only Board in the University that has offered two electives for the S. Y. B. Sc. students and safeguarded their career. Further, BoS formulated Four Syllabus Review Committees (one per course with composition of 01 Convenor and 04 Members). All the committee members worked extensively and exhaustively; and prepared draft of the syllabus. The said draft was uploaded on the website of University of Mumbai for public criticism. The invited opinions were thereby incorporated in the syllabus to make it versatile and student friendly with high applicability. Further, the draft syllabus was re-discussed in the workshop where several teachers and students contributed their views to improve it. In the academic year 2016-17, new syllabus was introduced but it is revived immediately after two years with inclusion of new concepts and techniques. Due care is taken to make the syllabus interdisciplinary, flexible and choice based. All the member teachers have tried their level best to come out with “Need Based Syllabus” that may spark motives in all the stakeholders. We hope that the stakeholders will enjoy the learning of this syllabus in the classrooms, laboratories and on the field.

Dr. G. B. Raje
Coordinator

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PEDAGOGY

While disseminating the content of the present syllabus, it is imperative and expected that the facilitator is well versed or/and develops their Pedagogical Content Knowledge (PCK),which would include aspects like content, methodology, evaluation and so on. At the onset, the facilitator may include various topic-specific instructional strategies, employing the use of organizers (topic announcement in advance, making models, flip charts, photography, etc). Learning of topics on chromosomes, nucleic acids, cell biology, biomolecules, physiological processes are hence revised, and during the presentations by the learner, the facilitator is able to gauge the preconceptions and learning disabilities. Any misunderstanding of basic concepts can thus be clarified such as 'difference between gene and allele'. Peer teaching is another aspect of pedagogy which takes into account participative learning thus enhancing the learning of the content and making it enjoyable, for example, the use of 'Punnet squares' for working out the crosses in various illustrations on monohybrid and dihybrid ratios, problems based on inheritance, pedigree analysis, molecular biology etc. A declarative learning strategy, which employs the use of familiar contexts and analogies, illustrative diagrams, questioning techniques, discussions, may be used for topics like multiple alleles, polygenic inheritance, DNA testing for paternity issues, scientific attitude, methodology, scientific writing etc. This would enhance the relevance of these topics and engender motivation, thereby balancing the blend of content and pedagogy in teaching. The syllabus includes practical investigations, individual or group student experiments, simulations to assist learners in visualizing and /or internalizing the concepts and processes. The learner could be encouraged to organize field trips, nature trails and treks in and around the ecosystems like lakes, beaches, sanctuaries, national-parks etc. for learning topics like ethology and conservation, amazing animals, applied zoology, pollution and other such, where sensitization, awareness and action are to be invoked within the learner. Visits to museums, and an interdisciplinary approach with various departments like geology, history, geography, chemistry, psychology, medicine would bring about a multi and cross approach to learning concepts such as paleontological evidences, nucleic acids, physiological processes, biomolecules, holistic health and neurological and genetic diseases . ICT enabled learning is the need of the hour and could include screening of documentaries, videos, animations, PPT's, and the use of social media such as Whatsaap, Instagram, Facebook be employed for impactful and continued learning. Facilitators can upload the teaching material, videos of lectures, links to websites for not only enhancing but also focusing and developing the topics of interest by the learner by way of self-study. More importantly, the syllabus endeavours to develop life skills by discovering and

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honing entrepreneurial skills of the learner. To accomplish this purpose, visits to apiary, vermicomposting units, and dairy could be encouraged, also interviews with various entrepreneurs, officials of funding agencies must be undertaken to comprehend the nuances of business. Also small projects on various entrepreneurial aspects like setting up vermicomposting bins and aquaria, sale of the vermicompost or setting up an ornamental fish farms, innovations in dairy products and its sale could be encouraged in the campuses. The elective papers are so construed that the learner is driven to gain knowledge, experience through activity-based assignments, and projects, which would enhance entrepreneurial skills, a logical understanding and analysis of business functions.

Capt. Nilima Prabhu
Dr. Dilip Kakavipure
Mr. Venkatesh Hegde
Dr. Surekha Gupta
Convenors

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Syllabus for S. Y. B. Sc. Course: ZOOLOGY
Credit Based Semester and Grading System
(To be implemented from the Academic Year 2018-2019)

SEMESTER – III

COURSE CODE	UNIT	TOPIC	CREDITS	LECTURES /WEEK
USZO301	I	Fundamentals of Genetics	2	1
	II	Chromosomes and Heredity		1
	III	Nucleic Acids		1
USZO302	I	Nutrition and Excretion	2	1
	II	Respiration and Circulation		1
	III	Control and Coordination of Life Processes, Locomotion and Reproduction		1
USZOE303A ELECTIVE 1	I	Ethology	2	1
	II	Parasitology		1
	III	Economic Zoology		1
USZOE303B ELECTIVE 2	1	Maintenance of Aquarium	2	1
	II	Agricultural, Household Pests and their Control		1
	III	Amazing Animals		1
USZOP3		Practicals based on all three courses	03	**9**

<u>Important Note:</u> College may choose either Elective 1 or Elective 2 for Semester III and Semester IV as their third course depending on the preference selected by majority of the students and endorsed by Head of the Department of Zoology and the Principal of the college.

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SEMESTER IV

COURSE CODE	UNIT	TOPIC	CREDITS	LECTURES /WEEK
USZO401	I	Origin and Evolution of Life	2	1
	II	Population Genetics and Evolution,		1
	III	Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research		1
USZO402	I	Cell Biology	2	1
	II	Endomembrane System		1
	III	Biomolecules		1
USZOE403A ELECTIVE 1	I	Comparative Embryology	2	1
	II	Aspects of Human Reproduction		1
	III	Pollution and its Effect on Organisms		1
USZOE403B ELECTIVE 2	I	Dairy Industry	2	1
	II	Sericulture		1
	III	Aquaculture		1
USZOP4		Practicals based on all three courses	03	9

<u>Important Note:</u> College may choose either Elective 1 or Elective 2 for Semester III and Semester IV as their third course depending on the preference selected by majority of the students and endorsed by Head of the Department of Zoology and the Principal of the college.

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UNIT WISE DISTRIBUTION OF SYLLABUS

Semester III				Semester IV			
Course 5	**Course 6**	**(Elective 1) Course 7A**	**(Elective 2) Course 7B**	**Course 8**	**Course 9**	**(Elective 1) Course 10A**	**(Elective 2) Course 10B**
Unit 1 Fundamentals of Genetics	**Unit 1** Nutrition & Excretion	**Unit 1** Ethology	**Unit 1** Maintenance of Aquarium	**Unit 1** Origin & Evolution of Life	**Unit 1** Cell Biology	**Unit 1** Comparative Embryology	**Unit 1** Dairy Industry
Unit 2 Chromosomes & Heredity	**Unit 2** Respiration & Circulation	**Unit 2** Parasitology	**Unit 2** Agricultural & Household Pests& their Control	**Unit 2** Population Genetics & Evolution	**Unit 2** Endomembrane System	**Unit 2** Aspects of Human Reproduction	**Unit 2** Sericulture
Unit 3 Nucleic Acids	**Unit 3** Control and Coordination of Life Processes, Locomotion & Reproduction	**Unit 3** Economic Zoology	**Unit 3** Amazing Animals	**Unit 3** Scientific Attitude, Methodology, Scientific Writing & Ethics in Scientific Research	**Unit 3** Biomolecules	**Unit 3** Pollution & its Effects on Organisms	**Unit 3** Aquaculture
Practical (USZO P3)	**Practical (USZO P3)**	**Practical (USZO P3)**	**Practical (USZO P3)**	**Practical (USZO P4)**	**Practical (USZO P4)**	**Practical (USZO P4)**	**Practical (USZO P4)**

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SEMESTER III

Sr. No.	USZO301 (Course-V)	No. of lectures allotted	Learning pleasure
	Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids		
	Unit 1: Fundamentals of Genetics	**15L**	**25hrs**
	Objectives: ➢ *To introduce basic terms of genetics.* ➢ *To develop conceptual clarity of Mendelian principles of inheritance and other forms and pattern of inheritance*		
	Desired outcome: ➢ *Learner would comprehend and apply the principles of inheritance to study heredity.* ➢ *Learner will understand the concept of multiple alleles, linkage and crossing over.*		
1.1	**Introduction to Genetics** • Definition, Scope and Importance of Genetics. • Classical and Modern concept of Gene (Cistron, Muton, Recon). • Brief explanation of the following terms: Allele, Wild type and Mutant alleles, Locus, Dominant and Recessive traits, Homozygous and Heterozygous, Genotype and Phenotype, Genome.	**02L**	**02hrs**
1.2	**Mendelian Genetics** • Mendelian Genetics: Monohybrid & Dihybrid Cross, Test Cross, Back Cross, Mendel's Laws of Inheritance, Mendelian Traits in Man. • Exceptions to Mendelian inheritance: Incomplete dominance, Co-dominance, Lethal Genes, Epistasis - Recessive, Double recessive, Dominant and Double dominant. • Chromosome theory of inheritance. • Pedigree Analysis-Autosomal dominant and recessive, X- linked dominant, and recessive.	**08L**	**12hrs**

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1.3	**Multiple Alleles and Multiple Genes** • Concept of Multiple Alleles, Coat colour in rabbit, ABO and Rh blood group system • Polygenic inheritance with reference to skin colour and eye colour in humans. • Concept of Pleiotropy.	**03L**	**06hrs**
1.4	**Linkage and Crossing Over** • Linkage and crossing over, Types of crossing over, Cytological basis of crossing over.	**02L**	**05hrs**
	Unit: 2: Chromosomes and Heredity	**15L**	**26hrs**
	Objectives: ➢ *To familiarize the learners with the structure, types and classification of chromosomes.* ➢ *To introduce the concept of sex determination and its types, sex influenced and sex-limited genes.*		
	Desired outcome: ➢ *Learner will comprehend the structure of chromosomes and its types.* ➢ *Learner will understand the mechanisms of sex determination.* ➢ *Learner would be able to correlate the disorders linked to a particular sex chromosome.*		
2.1	**Chromosomes** • Types of Chromosomes–Autosomes and Sex chromosomes • Chromosome structure - Heterochromatin, Euchromatin • Classification based on the position of centromere • Endomitosis, Giant chromosomes- Polytene and Lampbrush chromosomes and Significance of Balbiani rings	**04L**	**08hrs**

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2.2	**Sex- determination** • Chromosomal Mechanisms: XX-XO, XX-XY, ZZ-ZW • Sex determination in Honey bees: Haplo-diploidy • Sex determination in *Drosophila*- Genic balance theory, Intersex, Gynandromorphs • Parthenogenesis • Hormonal influence on sex determination- Freemartin and Sex reversal. • Role of environmental factors- *Bonelia* and Crocodile • Barr bodies and Lyon hypothesis	**07L**	**10hrs**
2.3	**Sex linked, sex influenced and sex-limited inheritance.** • X-linked: Colour-blindness, Haemophilia • Y-linked: Hypertrichosis • Sex-influenced genes • Sex-limited genes	**04L**	**08hrs**
	Unit: 3 Nucleic acids	**15L**	**30hrs**
	Objectives: ➢ *To introduce the learner to the classical experiments proving DNA as the genetic material.* ➢ *To introduce the learner the structure of nucleic acids and the concept of central dogma of molecular biology.* ➢ *To familiarize the learner with the concept of gene expression and regulation.*		
	Desired outcome: ➢ *Learner will understand the importance of nucleic acids as genetic material.* ➢ *Learner would comprehend and appreciate the regulation of gene expressions.*		
3.1	**Genetic material** • Griffith's transformation experiment, Avery-Macleod &McCarty	**07L**	**14hrs**

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	experiment and Hershey Chase experiment of Bacteriophage infection • Chemical composition and structure of nucleic acids • Double helix nature of DNA, Solenoid model of DNA • Types of DNA – A, B, Z & H forms • DNA in Prokaryotes - Chromosomal and Plasmid • Extra nuclear DNA - Mitochondria and Chloroplast • RNA as a genetic material in virus • Types of RNA: Structure and function		
3.2	**Flow of genetic information in a eukaryotic cell** • DNA Replication • Transcription of mRNA • Translation • Genetic code	**05L**	**08hrs**
3.3	**Gene expression and regulation** • One gene-one enzyme hypothesis /one polypeptide hypothesis • Concept of Operon • Lac Operon	**03L**	**08hrs**

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	SEMESTER – III		
Sr. No	**USZO302 (COURSE-VI)**	**No. of lect allotted**	**Learning pleasure**
	Nutrition and Excretion, Respiration and Circulation, Control and Coordination of Life Processes, Locomotion and Reproduction		
	Unit: 1 Nutrition and Excretion	**15L**	**23hrs**
	Objectives: ➢ *To introduce the concepts of physiology of nutrition, excretion and osmoregulation.* ➢ *To expose the learner to various nutritional apparatus, excretory and osmoregulatory structures in different classes of organisms.*		
	Desired outcome: ➢ *Learner would understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy.* ➢ *Learner would be able to correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.*		
1.1	Comparative study of nutritional apparatus (structure and function): Amoeba, Hydra, Cockroach, Amphioxus, Pigeon, Ruminants.	**05L**	**06hrs**
1.2	Physiology of digestion in man.	**02L**	**04hrs**
1.3	Comparative study of excretory and osmoregulatory structures and functions. a) Amoeba -Contractile vacuole b) Planaria -Flame cells c) Cockroach- Malpighian tubules	**05L**	**08hrs**
1.4	Categorization of animals based on principle nitrogenous excretory products	**01L**	**01hrs**
1.5	Structure of kidney, uriniferous tubule and physiology of urine formation in man	**02L**	**04 hr**

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	Unit: 2 Respiration and Circulation	**15L**	**27hrs**
	Objectives: ➢ *To introduce the concepts of physiology of respiration and circulation* ➢ *To expose the learner to various respiratory and circulatory organs in different classes of organisms.*		
	Desired outcome: ➢ *Learner would understand the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy.* ➢ *Learner will be able to correlate the habit and habitat of animals with respiratory and circulatory organs.*		
2.1	Comparative study of respiratory organs (structure and function): Earthworm, Spider, Any bony fish (Rohu */ Anabas /Clarius)*, Frog and Pigeon.	**03L**	**06hrs**
2.2	Structure of lungs and physiology of respiration in man	**02L**	**03hrs**
2.3	Comparative study of circulation: (a) Open and Closed type, (b) Single and Double type.	**02L**	**04hrs**
2.4	Types of circulating fluids- Water, Coelomic fluid, Haemolymph, Lymph and Composition of blood	**02L**	**03hrs**
2.5	Comparative study of hearts (structure and function): Earthworm, Cockroach, Shark, Frog, Crocodile and Pigeon.	**04L**	**07hrs**
2.6	Structure and mechanism of working of heart in man.	**02**	**04hrs**
	Unit: 3 Control and Coordination, Locomotion and Reproduction	**15L**	**25hrs**
	Objectives: ➢ *To introduce the concepts of physiology of control and coordination, locomotion and reproduction.* ➢ *To expose the learner to various locomotory and reproductive structures in different classes of organisms.*		
	Desired outcome: ➢ *Learner would understand the process of control and coordination by nervous and endocrine regulation.*		

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	➢ *Learner would be amazed by various locomotory structures found in the animal kingdom.* ➢ *Learner would be acquainted with various reproductive strategies present in animals.*		
3.1	**Control and co-ordination** • Irritability in *Paramoecium*, nerve net in *Hydra*, nerve ring and nerve cord in earthworm. • Types of neurons based on the structure and function. • Conduction of nerve impulse: Resting potential, Action potential and Refractory period • Synaptic transmission	**05L**	**08hrs**
3.2	**Movement and Locomotion** Locomotory organs- structure and functions; a. Pseudopodia in Amoeba (Sol- Gel theory), Cilia in *Paramoecium* b. Wings and legs in cockroach c. Tube feet in starfish d. Fins of fish	**04L**	**08hrs**
3.3	Structure of striated muscle fibre in human and sliding filament theory	**02L**	**02hrs**
3.4	**Reproduction** **a. Asexual Reproduction**- Fission, Fragmentation, Gemmule formation and Budding **b. Sexual reproduction** i. Gametogenesis ii. Structure of male and female gametes in human iii. Types of fertilization iv. Oviparity, Viviparity, Ovo-viviparity	**04L**	**07hrs**

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	SEMESTER III		
	USZOE1303 (COURSE-VIIA) ELECTIVE 1		
	Ethology, Parasitology, Economic Zoology	**15L**	**26hrs**
	Unit: 1 Ethology		
	Objectives: ➢ *To equip learner with a sound knowledge of how animals interact with one another and their environment.* ➢ *To enable the learner to understand different behavioural patterns.*		
	Desired Outcome: ➢ *Learner would gain insight into different types of animal behaviour and their role in biological adaptations.* ➢ *Learner would be sensitized to the feelings which are instrumental in social behaviour.*		
1.1	**Introduction to Ethology:** • Definition, History and Scope of Ethology • Animal behaviour : Innate and Learned behaviour • Types of learning: Habituation, Imprinting and Types of imprinting - Filial and sexual, Classical conditioning • Instrumental learning and insight learning.	**04L**	**06hrs**
1.2	**Aspects of animal behaviour:** • Communication in bees and ants • Mimicry and colourations • Displacement activities, Ritualization • Migration in fish, schooling behaviour • Habitat selection, territorial behaviour.	**07L**	**12hrs**
1.3	**Social behaviour:** • Social behaviour in primates-Hanuman langur • Elements of socio-biology: Altruism and Kinship	**04L**	**08hrs**

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	Unit: 2 Parasitology	15L	27hrs
	Objectives: ➢ *To acquaint the learner with the concepts of parasitism and its relationship in the environment.* ➢ *To introduce the learner to modes of transmission of parasites.*		
	Desired Outcome: ➢ *Learner would understand the general epidemiological aspects of parasites that affect humans and take simple preventive measures for the same.* ➢ *Learner would comprehend the life cycle of specific parasites, the symptoms of the disease and its treatment.*		
2.1	**Introduction to Parasitology and Types of Parasites** • Definitions: Parasitism, Host, Parasite, Vector-biological and mechanical • Types of parasite- Ectoparasite, Endoparasite and their subtypes • Parasitic adaptations in Ectoparasites and Endoparasites • Types of host: Intermediate and definitive, reservoir	**03L**	**06hrs**
2.2	**Host-parasite relationship and host specificity** • Different types of host- parasite relationship, structural specificity, physiological specificity and ecological specificity	**02L**	**06hrs**
2.3	**Life cycle, pathogenicity, control measures and treatment** • *Entamoeba histolytica, Fasciola hepatica, Taenia solium, Wuchereria bancrofti*	**04L**	**06hrs**
2.4	**Morphology, life cycle, pathogenicity, control measures and treatment** • Head louse (*Pediculus humanus capittis*), Mite (*Sarcoptes scabei)*, Bed bug (*Cimex lectularis)*	**02L**	**06hrs**
2.5	**Parasitological significance** • Zoonosis- Bird flu, Anthrax, Rabies and Toxoplasmosis	**04L**	**03hrs**

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	Unit 3 Economic Zoology	**15L**	**24hrs**
	Objectives: ➢ *To disseminate information on economic aspects of animals like apiculture, vermiculture and dairy science.* ➢ *To encourage young learner for self-employment.*		
	Desired Outcome: ➢ *Learner would gain knowledge on animals useful to mankind and the means to make the most of it.* ➢ *Learner would learn the modern techniques in animal husbandry.* ➢ *Learner would pursue entrepreneurship as a career.*		
3.1	**APICULTURE**	**06L**	**08hrs**
3.1.1	**Methods of bee keeping and management** • Introduction to different species of honey bees used in apiculture. • Selection of flora and bees for apiculture. • Advantages and disadvantages of traditional and modern methods of apiculture. • Pests and Bee enemies- Wax moth, wasp, black ants, bee-eaters, king crow and disease control		
3.1.2	**Economic importance** • Honey- Production, chemical composition and economic importance • Bee wax- Composition and economic importance. • Role of honey bee in pollination.		
3.2	**VERMICULTURE**	**04L**	**08hrs**
3.2.1	**Rearing methods, management and economic importance** • Introduction to different species of earthworms used in vermiculture. • Methods of vermiculture. • Maintenance and harvesting		

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	• Economic importance: Advantages of vermiculture, demand for earthworms; market for vermicompost and scope for entrepreneurship.		
3.3	**DAIRY SCIENCE**	**05L**	**08hrs**
3.3.1	**Dairy development in India** • Role of dairy development in rural economy, employment opportunities		
3.3.2	**Dairy Processing** • Filtration, cooling, chilling, clarification, pasteurization, freezing		
3.3.3	**Milk and milk products** • Composition of milk • Types of milk: a) Buffalo milk b) Cow milk (A1 &A2) • Whole milk and toned milk • Milk products		

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	SEMESTER III		
	USZOE2303 (COURSE-VIIB) – ELECTIVE 2		
	Maintenance of Aquarium, Agricultural and Household pests and their control , Amazing animals	**15L**	**26hrs**
	Objectives: ➢ *To develop skills for maintenance of aquarium and budgeting for setting up an aquarium and ornamental fish farm.* ➢ *To study the biology of ornamental fishes, its food and feeding and their transportation.*		
	Desired Outcome: ➢ *Learner will develop skills for maintenance of aquarium and become familiar with the budgeting aspects for setting up an ornamental fish farm.* ➢ *Learner will derive knowledge about the biology of ornamental fishes, its food and feeding habits and their transportation.*		
	Unit.1 Maintenance of Aquarium		
1.1	Introduction and scope.	**02L**	**04hrs**
1.2	Exotic and Endemic species.	**02L**	**06hrs**
1.3	Biology of aquarium fishes: • Guppy • Molly • Gold fish	**02L**	**08hrs**
1.4	Common characters and sexual dimorphism of marine fishes: • Anemone fish • Butterfly fish	**02L**	**06hrs**

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1.5	Food and feeding: • Live fish feed • Formulated fish feed	**02L**	**04hrs**
1.6	Fish transportation: i) Handling ii) Packing iii)Transport	**03L**	**05hrs**
1.7	General maintenance of aquarium and budget for setting up an ornamental fish farm.	**02L**	**04hrs**
	Unit: 2 Agricultural pests and their control	**15L**	**27hrs**
	Objectives: ➢ *To study different types of pests.* ➢ *To comprehend various aspects of agricultural and household pests and their economic implications.* ➢ *To learn about the different pest control measures and plant protection appliances.*		
	Desired Outcome: ➢ *Learner will gain information on the different types of pests and comprehend various aspects of agricultural and household pests and its economic implications.* ➢ *Learner will derive knowledge of pest control measures and appliances used for plant protection against pests.*		
2.1	Introduction and concept of pest	**02L**	**06hrs**
2.1.1	Types of pests: • Agricultural: Locust • Household: Bed bug • Stored grains: Flour beetle • Structural: Termites • Veterinary: Tick • Forestry: Grasshopper	**03L**	**06hrs**

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2.2	Major insect pests of agricultural importance (Life cycle, nature of damage and control measures). a) Jowar stem borer b) Brinjal fruit borer c) Aphids d) Rice weevil e) Pink bollworm	**03L**	**06hrs**
2.3	Other pests: Rats, bandicoots, crabs, snails, slugs, birds and squirrels	**02L**	**06hrs**
2.4	Pest control measures: i) Cultural control ii) Physical control iii) Mechanical control iv) Chemical control v) Biological control, vi) Concept of IPM	**03L**	**03hrs**
2.5	Plant protection appliances: Rotary duster, knapsack sprayer and cynogas pump, hazards of pesticides and antidotes.	**02L**	**03hrs**
	Unit 3 Amazing animals	**15L**	**24hrs**
	Objectives: ➢ *To comprehend the concept of life timeline, and the natural history of some amazing animals.* ➢ *To kindle interest and yearning to study amazing animals.*		
	Desired Outcome: ➢ *Learner would understand the concept of life time-line.* ➢ *Learner will gain knowledge of and develop various skills while studying amazing animals.*		
3.1	Natural History a) Introduction and life timeline b) Butterflies the flying jewels- Blue Mormon, Striped tiger c) Herpetofauna of India- Flying frog, Fan Throated	**04L**	**08hrs**

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	lizard and Gharial d) Feathered Bipeds: Kingfisher, Drongo e) Mammals of India: Malabar giant squirrel		
3.2	The world's most amazing animals (emphasis should be given only on amazing aspects) a) Octopus b) Spider c) Mudskipper d) Flying fish e) Pebble toad f) Strawberry poison frog g) Komodo dragon h) Lesser flamingo i) Great white pelican j) Spatule-tailed hummingbird k) Cheetah	**05L**	**10hrs**
3.3	Five most incredible animals discovered within the last decade a) The Purple (joker) crab, b) The African dwarf saw-shark (stabbing shark), c) The Psychedelic (crime fighting) gecko, d) The Matilda viper e) The Myanmar snub-nosed monkey	**03L**	**5hrs**
3.4	Marvels of Animals a) Mantis shrimp: Fastest punch b) Homing in Pacific salmon c) Sperm whale: Mechanism of deep sea diving.	**03L**	**08hrs**

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	PRACTICAL SEMESTER III
	Practical USZOP3 (Course - V)
1	Extraction and detection of DNA
2	Extraction and detection of RNA
3	Mounting of Barr bodies
4	Study of polytene chromosome
5	Study of mitosis- temporary squash preparation of Onion root tip
6	Detection of blood groups and Rh factor
7	Problems in Genetics a) Monohybrid/ Dihybrid Cross: b) X- linked inheritance: c) Multiple Alleles
8	Chromosome morphology: (photograph to be provided)
9	Pedigree analysis
10	Problems based on molecular biology

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	SEMESTER III
	Practical USZOP3 (Course - VI)
1	Urine analysis—Normal and Abnormal constituents
2	Detection of ammonia excreted by fish from aquarium water
3	Detection of uric acid from excreta of birds
4	Study of striated and non-striated muscle fibre
5	Study of nutritional apparatus (Amoeba, Hydra, Earthworm, Pigeon, Ruminant stomach)
6	Study of respiratory structures: a. Gills of bony fish and cartilaginous fish b. Lungs of frog c. Lungs of mammal d. Accessory respiratory structure in *Anabas* / *Clarius* e. Air sacs of Pigeon
7	Study of locomotory organs (Amoeba, Bivalve, Cockroach, Starfish, Fish, and Bird).
8	Study of different types of hearts (Cockroach, Shark, Frog, Garden lizard, Crocodile and Mammal).
9	Study of permanent slides on Reproduction: (a) Sponge gemmules, (b) Hydra budding, (c) T.S. of mammalian testis, (d) T.S. of mammalian ovary.

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	SEMESTER III
	Practical USZOE1P3 (Course - VIIA) Elective I
1	Extraction of casein from milk and its qualitative estimation
2	Preparation of paneer from given milk sample
3	Measurement of density of milk using different samples by Lactometer
4	Study of Honey Bee: a) Life Cycle of Honey Bee and Bee Hive b) Mouthparts of Honey Bee c) Legs of Honey Bee d) Sting Apparatus of Honey Bee
5	Study of ethological aspects: a) Warning colouration b) Animal instinct c) Imprinting d) Communication in animals: Chemical signals and Sound signals e) Displacement activities in animals: Courtship and mating behaviour in animals and Ritualization
6	Study of Protozoan parasites: a. *Trypanosoma gambiense* b. *Giardia intestinalis*
7	Study of Helminth parasites: a. *Ancylostoma duodenale* b. *Dracunculus medinensis*
8	Parasitic adaptations: Scolex and mature proglottid of Tapeworm
9	Study of Ectoparasites: a) Leech b)Tick c)Mite
10	Project- Suggested topics on economic zoology (e.g. Apiculture/ Sericulture/ Lac culture / Vermicompost technique / Construction of artificial beehives /Animal husbandry/ Aquaculture / any other)

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	SEMESTER III
	Practical USZOE2P3 (Course - VIIB) Elective 2
1	Maintenance of Aquarium– Equipments required for setting up of aquarium – types of filter, type of gravel, aerator pump, lighting, nets, different species of aquatic plants and ornamental fishes.
2	Types of pest – Agricultural-aphids, Household-cockroaches, housefly, Structural-termites, Stored grains- borer, Veterinary- fleas, Forestry- caterpillar.
3	Other pests- a) Invertebrates -nematodes, leech, snails, slugs. b) Vertebrates-rats, birds
4	Types of pest control –a) Physical b) Biological c) Electronic d) Insecticides, Rodenticides and Special Treatments
5	Hybrid animals- a) Liger b) Wholphin c) Zebroid d) Savannah cat
6	Most incredible animals in last decades – a) Joker crab b) Snub nose monkey c) Matilda viper
7	Endangered animals of India – a) Amboli bush frog b) Indian egg- eating snake (Wester mann's snake) c) Spoon- billed sandpiper d) Snow leopard
8	A project on aquarium setting in laboratory / vermicomposting.
9	A field visit to study the natural flora and fauna; and submission of report with photographs.

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***Note-** The practicals may be conducted by using preserved specimens/permanent slides authorized by the wild life and such other regulating bodies though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/simulations/ models etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for conducting practicals mentioned here in above.

N.B:

I) It is pertinent to note that we have to adhere strictly to the directions as given in the UGC Circular F14-4/2006 (CPP-II).

II) Apart from the Institutional Animal Ethics Committee (IAEC) and any other Committee appointed by a Competent Authority/Body from time to time, every college should constitute the following Committees:

1) A Committee for the Purpose of Care and Supervision of Experimental Animals (CPCSEA)

2) A Dissection Monitoring Committee (DMC) to ensure that no dissections or mountings are done, using animals

Composition of DMC shall be as follows:

i) Head of the Concerned Department (Convener/Chairperson)

ii) Two Senior Faculty Members of the concerned Department

iii) One Faculty of related department from the same College

iv) One or two members of related department from neighboring colleges.

USE OF ANIMALS FOR ANY EXPERIMENT/DISSECTION/MOUNTING IS BANNED. SIMULATIONS, AUTHORISED PERMANENT SPECIMENS/SLIDES, CHARTS, MODELS AND OTHER INNOVATIVE METHODS ARE ENCOURAGED.

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Semester –III

REFERENCE BOOKS AND ADDITIONAL READING

USZO301 (COURSE-V)

1. Principles of Genetics. Gardner, E. J., Simmons, M.J and Snustad, D.P. John Wiley and Sons
2. Concepts of Genetics. Klug, W. S., Cummings M. R., Spencer, C.A. Benjamin Cummings
3. Genetics- A Molecular Approach. Russell, P. J Benjamin Cummings
4. Genetics: Analysis of Genes and Genomes. Daniel L., Hartl, Elizabeth W. Jones Jones & Bartlett Publishers
5. Introduction to Genetic Analysis. Griffiths, A. J. F., Wessler. S.R., Lewontin, R.C. and Carroll, S. B. W. H. Freeman and Co
6. Cell Biology Genetics, Molecular Biology Evolution and Ecology Verma P. S. and Agrawal P.K., 9th edition, S. Chand Publication, New Delhi
7. Principles of Genetics – Eight edition- Eldon john Gardner, Michael J. Simmons, D. Peter Snustad
8. Genetics- Weaver, Hedrick, third edition, McGraw Hill Education
9. Genetics A Mendelian approach Peter J. Russel, Pearson Benjamin Cummings
10. Genetics A conceptual approach, Benjamin A. Pierce, Southwestern University, W.H. Freeman and company, New York
11. Genetics, Third Edition, Monroe W. Strickberger
12. Genetics from gene to genome, third edition, Leeland H. Hartwell, Leeroy Hood, Michael 7. L. Goldberg, Ann E. Reynolds, Lee M. Silver, McGraw Hill Education

USZO302 (COURSE-VI)

1. Vertebrate Zoology Volume I- Jordan and Verm , S. Chand and Co.
2. Invertebrate Zoology Volume II- Jordan and Verma , S. Chand and Co.
3. Invertebrate Zoology- Majupuria T. C., NaginS.and Co.
4. Chordate Zoology- Dhami P. S. and Dhami J. K., R. Chand and Co.
5. Invertebrate Zoology- Dhami P. S. and Dhami J. K., R. Chand and Co.
6. Introduction to Vertebrates- Moore Cambridge University- Low Priced Edition.
7. Zoology- Miller S. A. and Harley J. B., Tata McGraw Hill.
8. Modern Textbook of Zoology, Invertebrates, Kotpal R. L

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9. Biological Science, Taylor D.J., Stout G.W., Green N.P.O, Soper R., Cambridge University Press.

USZOE1303 (COURSE-VIIA)

1. Animal Behaviour- David McFarland
2. Animal Behaviour- Mohan Arora
3. Animal Behaviour- Reena Mathur
4. An introduction to Animal Behaviour- Dawkins
5. Animal Behaviour-Agarwal
6. Animal Behaviour- Tinbergen
7. Biology of Insects- 1992 Saxena S. C. Oxford and IBH Publishing Co New Delhi. Bombay. Calcutta
8. Bee and Bee Keeping- Roger A. Morse, Cornell University Press London
9. Vermiculture Technology - Clive A. Edwards, Norman Q. Arancon and Rhonda Sherman
10. Parasitology- Chatterjee K. D., Chatterjee Medical Publishers.
11. Medical Parasitology- Arora
12. Textbook of Medical Parasitology-.C.K Jayaram Paniker, Jaypee Brothers.
13. A text book of Parasitology- Kochhar S. K. Dominant Pub. & Dis, New Delhi.
14. Essentials of Parasitology- Gerald D. Schmidt: Universal Bookstall, New Delhi.
15. Introduction to Parasitology- Sharma P. N. and Ratnu L.S., Chand S & Co. Pvt. Ltd.
16. Introduction to Parasitology- Chandler and Read John Wiley & Sons
17. Economic Zoology Biostatistics and Animal behaviour – S. Mathur, Rastogi Publicatons.
18. Economic Zoology- Shukla G.S. & Upadhyay V. B., Rastogi Publications.
19. A handbook on Economic Zoology, S. Chand & Co.

USZOE2303 (COURSE-VIIB)

1. A General textbook of entomology -- A D Imms. Asia Publication.
2. Agricultural insect pests and their control. V.B. Awasthi. Scientific Publication.
3. A manual of practical entomology. – M. M. Trigunayat. Scientific Publication.
4. Applied Entomology – Alaka Prakash and Fennemore. New Age Publishers.
5. Applied Entomology – Awasthi. Scientific Publication.
6. A Text book of insect morphology, physiology and endocrinology – Tembhare D. B.– Chand Publication
7. Entomology and Pest Management –Larry P. Pedigo. Pearson Education.

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8. Forensic Entomology-The utility of Arthropods in legal investigations. –Jason H. Byrd and James L. Castner. CRC Press.
9. General and applied Entomology – David and Ananthakrishnan. Tata McGraw Hill
10. Insect endocrinology and physiology – Tembhare D B – S Chand publication.
11. Insect Jewelry by Roger D. Akre., Laurel D. Hansen, and Richards S. Zack: in Summer (1991). (Online available as research article).
12. Insect Year Book of Agriculture- American Agriculture Department Publication.
13. Economic Zoology- Shukla G.S. & Upadhyay V. B., Rastogi Publications.
14. A handbook on Economic Zoology, S. Chand & Co.
15. Candler, W., & Kumar, N. (1998). India: The dairy revolution: The impact of dairy development in India and the World Bank's contribution. World Bank Publications.
16. Milk and dairy products in human nutrition: production, composition and health. John Wiley & Sons, Park, Y. W., & Haenlein, G. F. (Eds.). (2013).
17. Dairy development in India: An appraisal of challenges and achievements. Concept Publishing Company, Venkatasubramanian, V., Singh, A. K., & Rao, S. V. N. (2003).
18. Dairy Development in The New Millennium (The Second White Revolution). Deep and Deep Publications, Shrivastava, J. S. M. (2008).
19. http://listverse.com/2012/12/03/10-amazing-animal-abilities/
20. www.toptenz.net/top-10-amazing-animals-discovered-within-the-last-decade.php
21. dailynewsdig.com/top-10-amazing-animal-hybrids.
22. https://www.pinterest.com/pin/16044142395584735/
23. www.naturalhistorymag.com/
24. https://naturalhistory.si.edu/.

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SEMESTER IV

Sr. No	USZO401 (COURSE-VIII)	No. of lect allotted	Learning pleasure
	Origin and Evolution of Life, Population Genetics and Evolution, Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research		
	Unit 1: Origin and Evolution of Life	**15L**	**30hrs**
	Objective: ➢ *To impart scientific knowledge about how life originated on our planet*		
	Desired outcomes: ➢ *Learner will gain insights into the origin of life.* ➢ *Learner will analyse and critically view the different theories of evolution.*		
1.1	**Introduction** • Origin of the Universe • Chemical evolution - Miller-Urey experiment, Haldane and Oparin theory • Origin of life • Origin of eukaryotic cell	**05L**	**10hrs**
1.2	**Evidences in favour of organic evolution** • Evidences from geographical distribution, palaeontology, anatomy, embryology, physiology and genetics	**04L**	**08hrs**
1.3	**Theories of organic evolution** • Theory of Lamarck • Theory of Darwin and Neo- Darwinism • Mutation Theory • Modern synthetic theory • Weismann's Germplasm theory	**06L**	**12hrs**

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	Unit: 2: Population Genetics and Evolution	15L	28hrs
	Objective: ➢ *To develop an understanding of genetic variability within a population and learn as to how the change in the gene pool leads to evolution of species*		
	Desired outcomes: ➢ *Learner would understand the forces that cause evolutionary changes in natural populations* ➢ *Learner would comprehend the mechanisms of speciation* ➢ *Learner will be able to distinguish between microevolution, macroevolution and megaevolution*		
2.1	**Introduction to Population genetics** • Definition • Brief explanation of the following terms: Population, Gene pool, Allele frequency, Genotype frequency, Phenotype frequency, Microevolution	**01L**	**03hrs**
2.2	**Population genetics** • Hardy- Weinberg Law • Factors that disrupt Hardy Weinberg equilibrium: Mutation, Migration (gene flow), Non-random mating (inbreeding, inbreeding depression, assortative mating(positive and negative), disassortative mating, Genetic drift (sampling error, fixation, bottleneck effect and founder effect) • Natural Selection: Patterns of Natural Selection-Stabilizing selection, Directional selection (examples: peppered moth, antibiotic resistance in bacteria, pesticide resistance) and Disruptive selection	**05L**	**08hrs**
2.3	**Evolutionary genetics** • Genetic variation: Genetic basis of variation-mutations and recombination (crossing over during meiosis, independent assortment of chromosomes during meiosis and random union of gametes during fertilization) • Nature of genetic variations: Genetic polymorphism, Balanced polymorphism, Mechanisms that preserve balanced polymorphism-	**07L**	**13hrs**

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	Heterozygote advantage and frequency dependent selection, • Neutral variations • Geographic variation (Cline) • Species concept: Biological species concept and evolutionary species concept • Speciation and Isolating mechanisms**:** Definition and modes of speciation (allopatric, sympatric, parapatric and peripatric) • Geographical isolation • Reproductive isolation and its isolating mechanisms (prezygotic and postzygotic)		
2.4	Macroevolution and megaevolution: Concept and Patterns of macroevolution (stasis, preadaptation /exaptation, mass extinctions, adaptive radiation and coevolution), Megaevolution	**02L**	**04hrs**
	Unit: 3 Scientific Attitude Methodology, Scientific Writing and Ethics in Scientific Research	**15L**	**32hrs**
	Objective: ➢ *To inculcate scientific temperament in the learner*		
	Desired outcome: ➢ *The learner would develop qualities such as critical thinking and analysis* ➢ *The learner will imbibe the skills of scientific communication and he/she will understand the ethical aspects of research*		
3.1	**Process of science:** • A dynamic approach to investigation: The Scientific method, Deductive reasoning and inductive reasoning, Critical thinking, Role of chance in scientific discovery (serendipity) • Scientific research: Definition, difference between method and methodology, characteristics, types • Steps in the Scientific method: Identification of research problem, formulation of research hypothesis, testing the hypothesis using experiments or surveys, preparing research/study design including	**04L**	**10hrs**

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	methodology and execution (appropriate controls, sample size, technically sound, free from bias, repeat experiments for consistency), documentation of data, data analysis and interpretation, results and conclusions • Dissemination of data: Reporting results to scientific community (publication in peer- reviewed journals, thesis, dissertation, reports, oral presentation, poster presentation) • Application of knowledge: Basic research, Applied research and Translational research		
3.2	**Scientific writing:** • Structure and components of a research paper: preparation of manuscript for publication of research paper- title, authors and their affiliations, abstract, keywords and abbreviations, introduction, material and methods, results, discussion, conclusions, acknowledgement, bibliography; figures, tables and their legends	**04L**	**10hrs**
3.3	**Writing a review paper** • Structure and components of review • Report writing and types of report • Computer application: Plotting of graphs, Statistical analysis of data. Internet and its application in research-Literature survey, online submission of manuscript for publication	**03L**	**05hrs**
3.4	**Ethics** • Ethics in animal research: The ethical and sensitive care and use of animals in research, teaching and testing, approval from Dissection Monitoring Committee (DMC) • Ethics in clinical research: Approval from clinical research ethics committee or/and informed consent	**03L**	**05hrs**
3.5	**Plagiarism**	**01L**	**02hrs**

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	SEMESTER IV		
Sr. No.	**USZO402 (Course - IX)**	**No. of lectures allotted**	**Learning pleasure**
	Unit 1: Cell Biology	**15L**	**24hrs**
	Objective: ➢ *To study the structural and functional organization of cell with an emphasis on nucleus, plasma membrane and cytoskeleton.*		
	Desired outcome: ➢ *Learner would acquire insight into the composition of the transport mechanisms adopted by the cell and its organelles for its maintenance and composition of cell*		
1.1	**Introduction to cell biology** • Definition and scope • Cell theory • Generalized prokaryotic, eukaryotic cell: size, shape and structure	**02L**	**04hrs**
1.2	**Nucleus** • Size, shape, number and position • Structure and functions of interphase nucleus • Ultrastructure of nuclear membrane and pore complex • Nucleolus: general organization, chemical composition & functions • Nuclear sap/ nuclear matrix • Nucleocytoplasmic interactions	**05L**	**06hrs**
1.3	**Plasma membrane** • Fluid Mosaic Model • Junctional complexes • Membrane receptors • Modifications: Microvilli and Desmosomes	**04L**	**08hrs**
1.4	**Transport across membrane** • Diffusion and Osmosis • Transport: Passive and Active • Endocytosis and Exocytosis	**02L**	**04hrs**
1.5	**Cytoskeletal structures** • Microtubules: Composition and functions • Microfilaments: Composition and functions		

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	Unit: 2: Endomembrane System	**15L**	**28hrs**
	Objective: ➢ *To acquaint the learner with ultrastructure of cell organelles and their functions*		
	Desired outcome: ➢ *Learner would appreciate the intricacy of endomembrane system.* ➢ *Learner would understand the interlinking of endomembrane system for functioning of cell*		
2.1	**Endoplasmic reticulum (ER):** General morphology of endomembrane system, ultrastructure, types of ER and biogenesis of ER • Functions of Rough Endoplasmic Reticulum (RER) and Smooth Endoplasmic Reticulum (SER)	**01L**	**03hrs**
2.2	**Golgi complex:** Ultrastructure of Golgi complex, functions of Golgi complex (protein glycosylation, lipid and polysaccharide metabolism, protein sorting and secretion, Golgi Anti-Apoptotic Protein -GAAP)	**06L**	**10hrs**
2.3	**Lysosomes:** Origin, occurrence, polymorphism and functions; Peroxisomes: Origin, morphology & functions	**03L**	**5hrs**
2.4	**Mitochondria:** Ultrastructure, chemical composition, functions of mitochondria and bioenergetics (Chemical energy & ATP, Kreb's cycle, respiratory chain and oxidative phosphorylation)	**05L**	**10hrs**
	Unit: 3 Biomolecules	**15L**	**30hrs**
	Objective: ➢ *To give learner insight into the structure of biomolecules and their role in sustenance of life.*		
	Desired outcome: ➢ *The learner will realize the importance of biomolecules and their clinical significance.*		
3.1	**Biomolecules**: Concept of micromolecules and macromolecules	**02L**	**05hrs**

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3.2	**Carbohydrates:** • Definition classification, properties and isomerism, glycosidic bond • Structure of Monosaccharides (glucose and fructose); Oligosaccharides (lactose and sucrose); Polysaccharides (cellulose, starch, glycogen and chitin) • Biological role and clinical significance	**04L**	**08hrs**
3.3	**Amino Acids and Proteins:** • Basic structure, classification of amino acids, • Essential and Non-essential amino acids, Peptide bond, • Protein conformation: Primary, Secondary, Tertiary, Quaternary • Types of proteins – Structural (collagen) and functional proteins (haemoglobin) • Biological role and clinical significance	**05L**	**08hrs**
3.4	**Lipids:** • Definition, classification of lipids with examples, ester linkage • Physical and chemical properties of lipids • Saturated and unsaturated fatty acids • Essential fatty acids; Triacylglycerols; Phospholipids (lecithin and cephalin); Steroids (cholesterol) • Biological role and clinical significance	**04L**	**05hrs**
3.5	**Vitamins**: • Water soluble vitamins (e.g. Vit C, Vit B_{12}) • Lipid soluble vitamins (e.g. Vit A, Vit D) • Biological role and clinical significance	**02L**	**04hrs**

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	SEMESTER IV		
	USZOE1403 (Course-XA) Elective 1		
	Comparative Embryology, Aspects of Human Reproduction, Pollution and its effect on organisms		
	UNIT 1: Comparative Embryology	**15L**	**25hrs**
	Objective: ➢ *To acquaint the learner with key concepts of embryology.*		
	Desired Outcome: ➢ *Learner will be able to understand and compare the different types of eggs and sperms* ➢ *Learner will be able to understand and compare the different pre- embryonic stages*		
1.1	Types of Eggs- Based on amount and distribution of yolk	03L	4hrs
1.2	Structure and Types of Sperm	02L	4hr
1.3	Types of Cleavages	02L	4hrs
1.4	Types of Blastulae	02L	4hrs
1.5	Types of Gastrulae	02L	4hrs
1.6	Coelom -Formation and types	04L	6hrs
	UNIT 2: Aspects of Human Reproduction	**15L**	**30 hrs**
	Objectives: ➢ *To acquaint the learners with different aspects of human reproduction.* ➢ *To make them aware of the causes of infertility, techniques to overcome infertility and the concept of birth control*		
	Desired Outcome: ➢ *Learners will able to understand human reproductive physiology* ➢ *Learners will become familiar with advances in ART and related ethical issues.*		
2.1	**Human reproductive system and hormonal regulation** • Anatomy of human male and female reproductive system	02L	4hrs

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	• Hormonal regulation of reproduction and impact of age on reproduction - menopause and andropause		
2.2	**Contraception & birth control** • Difference between contraception and birth control • Natural Methods: Abstinence, rhythm method, temperature method, cervical mucus or Billings method, coitus interruptus, lactation amenorrhea • Artificial methods **:** Barrier methods, hormonal methods, intrauterine contraceptives, sterilization, termination, abortion	02L	4hrs
2.3	**Infertility** **Female infertility:** • **Causes -** Failure to ovulate; production of infertile eggs; damage to oviducts (oviduct scarring and Pelvic inflammatory disease -PID, TB of oviduct), Uterus (TB of uterus and cervix) • **Infertility associated disorders -** Endometriosis, Polycystic Ovarian Syndrome (PCOS), Primary ovarian failure (POF),Sexually Transmitted Infections (STIs) - gonorrhoea, chlamydia, syphilis and genital herpes; Antibodies to sperm; Genetic causes- recurrent abortions • **Role of endocrine disruptors**	04L	8hrs
2.5	**Treatment of infertility** • Removal /reduction of causative environmental factors • Surgical treatment • Hormonal treatment- fertility drugs • Assisted Reproductive Technology (ART) - *In vitro* fertilization (IVF); Embryo transfer (ET); Intra-Fallopian transfer (IFT), Gamete Intra-Fallopian Transfer (GIFT) &Intra-Zygote Transfer (ZIFT); Intra-cytoplasmic Sperm Injection (ICSI) with ejaculated sperm and sperm retrieved from testicular biopsies; Testicular sperm extraction (TESE).	04L	8hrs

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	• Sperm bank, cryopreservation of gametes and embryos • Surrogacy		
	UNIT3: Pollution and its effect on organisms	**15L**	**27hrs**
	***Objective*:** ➢ *To provide a panoramic view of impact of human activities leading to pollution and its implications.*		
	Desired Outcome: ➢ *The learners will be sensitized about the adverse effects of pollution and measures to control it.*		
3.1	**Air Pollution** • Types and sources of air pollutant • Effects of air pollution on organisms, its control and abatement measures	03L	6hrs
3.2	**Water Pollution** • Types and sources of water pollutant • Effects of water pollution on organisms, its control and abatement measures	03L	6hrs
3.3	**Soil Pollution** • Types and sources of soil pollutant • Effects of soil pollution on organisms, its control and abatement measures	03L	4hrs
3.4	**Sound pollution** • Different sources of sound pollution • Effects of sound pollution on organisms, its control and abatement measures	01L	3hrs
3.5	**Pollution by radioactive substances**	01L	2hrs
3.6	**Pollution by solid wastes** • Types and sources, • Effects of solid waste pollution, its control and abatement measures	02L	4hrs
3.7	**Pollution –** Climate Change and Global Warming	02L	2hrs

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	USZOE2403 (Course-XB) Elective 2		
	Dairy Industry, Sericulture and Aquaculture		
	UNIT 1: Dairy Industry	**15L**	**30hrs**
	Objectives: ➢ *To comprehend the functioning of various aspects of dairy industry.* ➢ *To study different indigenous and exotic cattle breeds including buffalo breeds of India.* ➢ *To develop an understanding of the different systems of breeding and various aspects dealing with housing of dairy animals.*		
	Desired Outcome: ➢ *Learner would gain knowledge on the functioning of various aspects of dairy industry, indigenous, exotic cattle and buffalo breeds in India.* ➢ *Learner will study different systems of breeding and gain information regarding various aspects pertaining to housing of dairy animals.*		
1.1	Indian Cattle breeds – Origin, distribution, distinguishing characters and economic uses: • Malvi • Hariyana • Deoni • Red sindhi • Khillari	02L	4hrs
1.2	Exotic breeds - Origin, distribution, distinguishing characters and economic uses: • Jersy • Holstein	02L	4hr
1.3	Indian buffalo breeds - Origin, distribution, distinguishing	02L	4hrs

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	characters and economic uses: • Nagpuri • Bhadawari • Murrah • Jafrabadi		
1.4	Systems of inbreeding and crossbreeding	03L	6hrs
1.5	Maintenance of dairy farm	02L	4hrs
1.6	Weaning of calf, castration and dehorning	02L	4hrs
1.7	Diseases and control	02L	4hrs
	UNIT 2: Sericulture	**15L**	**30 hrs**
	Objectives: ➢ *To comprehend the functioning of sericulture industry and its scope in India.* ➢ *To study the varieties of silk-worms and host plants.* ➢ *To critically study the life history and rearing of Bombyx mori, harvesting, processing of cocoon, production of silk and diseases afflicting silk-worms.*		
	Desired Outcome: ➢ *Learner would understand the basics of the functioning of sericulture industry and its scope in India.* ➢ *Learner shall gain knowledge on the varieties of silk-worms, host-plants and aspects on silk extraction and the diseases afflicting silk-worms.*		
2.1	Introduction and scope of sericulture	02L	4hrs
2.2	Varieties of silk worm, host plants	02L	4hrs
2.3	Life history and rearing of *Bombyx mori*	02L	8hrs
2.4	Harvesting and processing of cocoon	02L	4hrs

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2.5	Reeling and extraction of silk	03L	4hrs
2.6	Diseases and control measures	03L	4hrs
	UNIT3: Aquaculture	**15L**	**27hrs**
	Objectives: ➢ *To comprehend various kinds of aquaculture practices and its scope as fishery resource in India.* ➢ *To study various techniques employed in aquaculture practices*		
	Desired Outcome: ➢ *Learner shall understand the aquaculture practices and the scope of fishery in India.* ➢ *Learner would gain knowledge of various techniques employed in aquaculture practices.*		
3.1	**Pisciculture:** • Definition and scope of fishery resources in India • Finfish culture – monoculture and polyculture • Role of exotic fishes in polyculture • Cage culture • Fish seed transport • Fish diseases -- symptoms and control	05L	6hrs
3.2	**Prawn/shrimp culture:** Sources, seed, culture methods – • Giant fresh water prawn (*Macrobrachium rosenbergii*) • White shrimp (*Penaeus vannamei*)	05L	6hrs
3.3	**Pearl culture:** • Pearl producing species and their distribution • Pearl culture methods • Composition of pearl	05L	4hrs

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	SEMESTER IV
	Practical USZOP4 (Course - VIII)
1	Study of population density by Line transect method & Quadrant method and calculate different diversity indices. • Index of Dominance • Index of frequency • Rarity Index • Shannon Index • Index of species diversity
2	Study of prokaryotic cells (bacteria) by Crystal violet staining technique
3	Study of eukaryotic cells (WBCs) from blood smear by Leishman's stain
4	Identification and study of fossils: • Arthropods: Trilobite • Mollusca: Ammonite • Aves: Archaeopteryx
5	Identification of : • Allopatric speciation (Cyprinodont species) • Sympatric speciation (Hawthorn fly and Apple maggot fly) • Parapatric speciation (Snail)
6	Bibliography/ Abstract writing
7	Preparation of Power Point Presentation based on research paper.

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	SEMESTER IV
	Practical USZOP4 (Course - IX)
1	Study of permeability of cell through plasma membrane (osmosis in blood cells)
2	Measurement of cell diameter by occulometer (by using permanent slide)
3	Qualitative tests for carbohydrates (Molisch's test, Benedicts test, Barfoed's test, Anthrone test)
4	Qualitative tests for protein (Ninhydrin test, Biuret test, Millon's test, Xanthoproteic test)
5	Qualitative test for lipids (Solubility test, Sudan III test)
6	Study of rancidity of lipids by titrimetric method
7	Ultrastructure of cell organelles (Electron micrographs) of: • Nucleus • Endoplasmic reticulum (Smooth and Rough) • Mitochondria. • Golgi apparatus • Lysosomes
8.	Study of clinical disorders due to carbohydrates, proteins and lipid imbalance (Photograph to be provided / symptoms to be given and disorder to be identified): • Hyperglycemia • Hypoglycemia • Anemia • Kwashiorkar • Marasmus • Fatty Liver

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	SEMESTER IV
	Practical USZOE1P4 (Course - XA)
1	Study of air microflora.
2	Estimation of dissolved oxygen from the given water sample.
3	Estimation of salinity by refractometer from the given water sample.
4	Estimation of conductivity by conductometer from the given water sample.
5	Study of physical properties of soil: temperature, moisture and texture
6	Study of chemical properties of soil- pH, organic matter
7	Study of sound pollution monitoring device
8	Detection of pregnancy from given sample of urine
9	Study of birth control measures applicable to humans – IUD, condom and hormonal pills.
10	Study of the following permanent slides, museum specimens and materials • Mammalian sperm and ovum • Types of Egg– fish, frog and hen • Cleavage, blastula and gastrula (Amphioxus, Frog and Bird)
11	Review writing based on programmes telecast by Doordarshan, Gyandarshan, UGC programmes or other media sources
12	Study of natural ecosystem and field report of the visit

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	SEMESTER IV
	Practical USZOE2P4 (Course - XB) – Elective 2
1	Estimation and comparison of protein content in Cow and Buffalo milk sample
2	Estimation and comparison of fat content in Cow and Buffalo milk sample
3	Preparation of falooda
4	Preparation of caramel custard
5	Restraining devices used in cattle farming- Halters, gags, bull-rings, muzzles, cradle, crush and ropes.
6	Study of life cycle of *Bombyx mori*
7	Study of commercially important fishery. (Catla, Rohu, Catfish, Mackeral, Pomfret, Bombay duck, Prawn/Shrimp, Crab, Lobster, Edible oyster)
8	Study of Crustacean fishery – common characters and sexual dimorphism in lobster (*Panulirus spp.*), prawn (*Penaeus spp.*), crab (*Scylla spp.*)
9	Visit to dairy farm /aquaculture/ fish landing centre/fishery institute and submit report of the same

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 # There shall be at least one excursion / field trip.

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iii) One Faculty of related department from the same College

One or two members of related department from neighboring colleges

USE OF ANIMALS FOR ANY EXPERIMENT/DISSECTION/MOUNTING IS BANNED. SIMULATIONS, AUTHORISED PERMANENT SPECIMENS/SLIDES, CHARTS, MODELS AND OTHER INNOVATIVE METHODS ARE ENCOURAGED.

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Semester IV
References and additional reading

USZO401 (COURSE-VIII)

1. Theory of Evolution- Smith, Cambridge Press, and Low price Ed
2. Evolution - Strickberger, CBS publication
3. Evolution- P. S. Verma and Agarwal
4. Introduction to Evolution by Moody
5. Biology. E. P. Solomon, L. R. Berg, D. W. Martin, Thompson Brooks/Cole
6. Biology -The Unity and Diversity of Life**.** C. Starr, R. Taggart, C. Evers, L. Starr, Brooks/Cole Cengage learning International Edition
7. Research Methodology, Methods and Techniques- by C.R. Kothari, Wiley Eastern Ltd. Mumbai
8. Practical research planning and design 2nd edition- Paul D Leedy, Macmilan Publication

USZO402 (COURSE - IX)

1. Cell Biology, Singh and Tomar, Rastogi Publication.
2. Cell and Molecular Biology, E.D.P De Robertis and E.M.R Robertis, CBS Publishers and Distributors.
3. The cell, A molecular approach, Goeffrey M. Coper ASM Press Washington D.C.
4. A textbook of cytologym Suruchi Tyagi Dominant Publishers and Distributors New Delhi.
5. Cell and molecular biology, Gupta P. K., Rastogi Publication, India.
6. Cell Biology, Pawar C.B. Himalaya publication
7. Molecular Biology of the cell, (6th ed) by the Insertus
8. Principles of Biochemistry, 2005, 2nd and 3rd edn. Lehninger A.L. Nelson D.L. and Cox M.M ,
9. Biochemistry, Dushyant Kumar Shrma, 2010, Narosa Publishing house PVT.Ltd.
10. Fundamentals of Biochemistry, Dr AC Deb, 1983, New Central Book Agency Ltd.
11. A Textbook of Biochemistry, 9th edition, Dr. Rama Rao A.V.S.S and Dr A Suryalakshmi.
12. Biochemistry- G Zubay, Addison Wesley, 1983
13. Biochemistry, L Stryer, 3rd/4th/5th ed, 1989, Freeman and Co. NY
14. Harper's Biochemistry,1996, 26th edition, Murray R.K. Granner D.K. Mayes P.A. Rodwell V.M. Hall international USA
15. Outline of Biochemistry, 1976, E.E. Conn and P.K. Stumpf. John Wiley and Sons USA

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USZOE1403 (COURSE-XA)

References of Elective 1

1. Developmental Biology- 5th Edition, Scot F. Gilbert, Sinauer Associates Inc.
2. Developmental Biology- Subramoniam T., Narosa Publishers.
3. Developmental Biology-BerrilN.J., Tata McGraw –Hill Publication.
4. Essential Reproduction-Martin H. Johnson, Wiley-Blackwell Publication.
5. Chick Embryology- Bradley M. Pattern.
6. Embryology-Mohan P. Arora.
7. Chordate Embryology-Dalela,Verma and Tyagi
8. Human Anatomy and Physiology. E. L. Marieb, Pearson Education Low Price Edition
9. Biological Science. Taylor, Green and Stout. Cambridge Publication
10. Biology. E. P. Solomon, L. R. Berg, D. W. Martin, Thompson Brooks/Cole
11. Human Biology-Daniel D. Chiras Jones and Bartlett
12. The Physiology of Reproduction Vol I & II - E. K . Nobil and JU. D. Neil, Raven Press, New York.
13. Air Pollution, Kudesia V. P. Pragati Prakasan, Meerut
14. Fundamentals of Air Pollution Daniel A. Vallero, Academic press 5th Edition
15. Principles and Practices of Air Pollution Control and Analysis J. R. MudakaniI K International Pub. House Pvt. Ltd.
16. Text Book of Air Pollution and its Control, S. C. Bhatia Atlantic
17. Water Pollution, Kudesia V. P., Pragati Prakasan, Meerut
18. A text book of Environmental Chemistry and Pollution Control, S. S. Dogra, Swastic Pub, New Delhi
19. Practical Methods for water and Air Pollution Monitoring, S. K. Bhargava, New Age International
20. Hand Book of Water and waste water Analysis, Kanwaljit Kaur, Atlantic
21. Aquatic Pollution by Edward A. Laws
22. Environmental Science and Technology, Stanely E. Manahan
23. Environmental Chemistry, A. K. De, New Age International
24. A Text Book of Environmental Studies, Gurdeep R.Chatwal, Harish Sharma, Madhu Arora,

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USZOE2403 (COURSE-XB)

References of Elective 2

1. Principles of Dairy Chemistry R. Jenness, S. Patton John Wiley and Sons Inc.
2. Fundamentals of dairy chemistry B.H. Webb, A.H. Johnson, J.A. Alford Avi Pub. Co.
3. Food Chemistry Owen R. Fennema CRC Press
4. Food Chemistry John M. De Man Springer
5. Technology of Dairy Products Early, Ralph. Academic & Professional, 1998
6. Quality of milk production and processing technology D.K. Thompkinson and lathasabikhi New India Publishing agency, New delhi
7. Outlines of Dairy Technology Sukumar De Oxford University Press, New delhi
8. Food Microbiology William C. Frazier, dennis C. Westoff Tata Mcgrew Hill publishing Company Ltd. New Delhi
9. Applied Dairy Microbiology Elmer H. Marth, James L. Steele CRC Press
10. Dairy plant engineering and management Tufail Ahmed Kitab Mahal
11. Latest Aquaculture, Principles and Practices by Pillay T.V.R. – Fishing New Books (1988).
12. Course Manual in Fishing Technology by Latha Shenoy, CIFE, Versova, Mumbai.
13. Prawn and Prawn Fisheries by Kurian and Sebestian

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MARKING SCHEME OF EXAMINATION (THEORY)

(a) External assessment of one hundred (100) marks per course per semester should be conducted as per the following skeleton question paper pattern.

(c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory

Figures to the right indicate full marks

Draw neat and labeled diagrams wherever necessary

Time: 3 hours **Total Marks: 100**

Q1	Objective questions*	20 marks
Q.2.	UNIT 1 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.4.	UNIT 3 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.5.	Answer any four out of six Unit 1 - (Two notes of five marks each) Unit 2 - (Two notes of five marks each) Unit 3- (Two notes of five marks each)	20 marks

***Note:** For Question No. 01 it is recommended to have objective questions on all units, such as –

(a) Match the column (b) MCQ

(c) Give one word for (d) True and False

(e) Define the term (f) Answer in one sentence

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PRACTICAL (SEMESTER III)

USZOP3 (Course - V)

Skeleton-Practical Examination Question Paper Pattern

Time: 2hrs 30 min **Marks: 50**

Major Question **15**

Q1. Extraction and detection of DNA

OR

Q1. Extraction and detection of RNA

Minor Question **07**

Q2. Mounting of Barr bodies / Polytene chromosomes

OR

Q2. Study of mitosis-Temporary squash preparation of Onion root tip

OR

Q2. Detection of blood groups and Rh factor

Q3. Problems based on Genetics and Molecular biology
(Transcription /Genetic code) (01 problem each) **10**

Q4. Identification **08**

A. Chromosome morphology

B. Pedigree analysis

Q5. Viva **05**

Q6. Journal **05**

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PRACTICAL (SEMESTER III)

USZOP3 (Course - VI)

Skeleton-Practical Examination Question Paper Pattern

Time: 2hrs 30 min **Marks: 50**

Major Question 15

Q1. Urine analysis—Normal and abnormal constituents

Minor Question 10

Q2. Detection of ammonia excreted by fish in aquarium water

OR

Q2. Detection of uric acid from excreta of Birds

OR

Q2. Mounting of striated and non-striated muscle fibre

Q3. Identification 15

a. Nutritional apparatus

b. Respiratory structures

c. Locomotory organs

d. Study of hearts

e. Permanent slides on reproduction

Q4. Viva 05

Q5. Journal 05

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PRACTICAL (SEMESTER III)

USZOE1P3 (Course - VIIA) – Elective 1

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min **Marks: 50**

Major Question 12

Q1. Extraction of casein from milk and its qualitative detection

OR

Q1. Preparation of paneer from the given milk sample.

OR

Q1. Measurement of density of different samples of milk by lactometer

Minor Question (Sketch and label) 08

Q2. Life cycle of honey bee

OR

Q2. Mouthparts of honey bee

OR

Q2. Legs of honey bee

OR

Q2. Sting apparatus of honey bee

Q3. Identify and describe as per instructions 15

a. Ethology
b. Protozoan parasite
c. Helminth parasite
d. Ectoparasite
e. Parasitic adaptation

Q4. a) Project submission 06

b) Viva based on project 04

Q5. Journal 05

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PRACTICAL (SEMESTER III)

USZOE2P3 (Course - VIIB) – Elective 2

Skeleton-Practical Examination Question Paper Pattern

Time: 2 hrs 30min **Marks: 50**

Major Question 15

Q1. Identification (5 Marks each)

a) Aquarium equipment.

b) Type of pest (Any insect)

c) Other pest

Q.2. Identification (3 Marks each) 15

a) & b) Types of pest control

c) Hybrid animal

d) Incredible animal

e) Endangered animal

Q.3. Submission of photographs of any five amazing animals with description. 05

Q4. a) Project submission 06

b) Viva based on project 04

Q5. Journal 05

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PRACTICAL (SEMESTER IV)

USZOP4 (Course - VIII)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min **Marks: 50**

Major Question

Q1. Study Population density by Line transect or Quadrant method and calculate Biodiversity Indices. (Any 2) **12**

Minor Question **08**

Q2. Prepare a smear to show prokaryotic cell.

OR

Q2. Prepare a smear to show eukaryotic cell.

Q3. Identify and describe as per instructions. **08**

a) Fossil b) Speciation

Q4. From the given article, prepare the bibliography/ abstract. **06**

Q5. Submission of power point presentation. **06**

Q6. Viva. **05**

Q.7. Journal. **05**

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PRACTICAL (SEMESTER IV)

USZOP4 (Course - IX)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min **Marks: 50**

Major Question 15

Q1. Study of osmosis in R.B.Cs.

OR

Q1. Measurement of cell diameter by occulometer using permanent slide.

Minor Question 10

Q2. Qualitative tests for carbohydrates (Molisch's test, Benedicts test, Fehling's test, Anthrone test)

OR

Q2. Qualitative tests for protein (Ninhydrin test, Biuret test, Millon's test, Xanthoprotein test)

OR

Q2. Qualitative test for lipid (Solubility test, Sudan III test)

OR

Q2. Estimation of rancidity of lipids by titrimetric method

Q3. Identify and describe as per instructions 15

- Ultrastructure of cell organelles (a, b & c)
- Clinical disorders (d & e)

Q4. Viva 05

Q5. Journal 05

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PRACTICAL(SEMESTER IV)

USZOE1P4 (Course - XA) – Elective 1

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min **Marks: 50**

Major Question 12

Q1. Estimation of Dissolved Oxygen from the given water sample.

OR

Q1. Detection of pregnancy from given sample of urine.

OR

Q1. Determination of organic matter from the given soil sample.

Minor Question 08

Q2. Estimation of salinity by refractometer from the given water sample

OR

Q2. Estimation of conductivity by conductometer from the given water sample

OR

Q2. Determination the pH of the given soil sample

OR

Q2. Determine the texture of the given soil sample

Q3. Identify and describe as per instructions 15

- Permanent slides (a &b)
- Birth control measure (c)
- Fishery (d & e)

Q4. a) Field report submission 06

b)Viva based on field report 04

Q5. Journal 05

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PRACTICAL (SEMESTER IV)

USZOE2P4 (Course - XB) Elective 2

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min **Marks: 50**

Major Question 15

Q1.Comparison of protein content from cow and buffalo milk

OR

Q.1 Comparison of fat content from cow and buffalo milk

Minor Question 08

Q.2 Preparation of falooda

OR

Q.2 Preparation of caramel custard

Q.3 Identification (3 marks each) 12

a) Restraining device

b) Any stage of life cycle of *Bombyx mori*

c) Commercial fishery

d) Crustacean fishery

Q4. a) Project submission 06

b) Viva based on project 04

Q5. Journal 05

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MODEL QUESTION BANK SEMESTER III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZO301 (COURSE - V)

Unit1 (10 Marks)

1. Define genetics and explain its scope and importance.
2. Explain Mendel's laws of inheritance
3. Describe in detail the monohybrid cross and state the Mendelian principle of inheritance derived from it. Add a note on Co-dominance
4. Describe in detail dihybrid cross and state the Mendelian principles of inheritance derived from it
5. Discuss in brief inheritance of Mendelian phenotypic traits in humans.
6. Describe incomplete dominance with a suitable example
7. Describe Co-dominance with a suitable example
8. What is epistasis? Give a detailed account of double dominant epistasis
9. What is epistasis? Give a detailed account of recessive epistasis
10. What is epistasis? Give a detailed account of dominant epistasis
11. What is epistasis? Give a detailed account of double recessive epistasis
12. Explain the pattern of inheritance of recessive and dominant lethal alleles
13. Explain the inheritance of multiple alleles with the help of a suitable example
14. Describe polygenic inheritance with reference to skin colour and eye colour in man
15. Compare pleiotropy and polygenic inheritance
16. Explain the phenomenon of linkage with respect to Morgan's Experiment. Add a note on the differences between complete and incomplete linkage
17. Describe the pattern of inheritance of blood group and Rh factor in man
18. Explain the cytological basis and molecular mechanisms of crossing over
19. Explain pedigree analysis of X-linked recessive traits

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Unit1 (5 Marks)

1. Describe the classical concept of gene
2. Explain the modern concept of gene
3. Differentiate between (Any two):
   - (a) Genotype and phenotype of an organism
   - (b) Dominant and recessive traits
   - (c) Gene and genome
   - (d) Homozygous and heterozygous
   - (e) Monohybrid and Dihybrid cross
   - (f) Incomplete Dominance and Co-dominance
   - (g) Multiple alleles and Polygenes
   - (h) Test cross and Backcross
4. Write a note on the chromosome theory of inheritance
5. Describe co-dominance with a suitable example
6. Give an account of the symbols used in human Pedigree analysis
7. Characteristics of autosomal dominant traits
8. Characteristics of X-linked recessive traits
9. Characteristics of autosomal recessive traits
10. Characteristics of X-linked dominant traits
11. Intermediate lethal alleles
12. Explain the inheritance of skin colour in humans
13. Write a note on pleiotropy.

Unit 2 (10 Marks)

1. Explain the structure of eukaryotic chromosome

2. Classify chromosomes on the basis of the position of centromere

3. Explain any two mechanisms of chromosomal basis of sex determination

4. Explain the inheritance of colour blindness in man

5. Explain sex determination in honey bee and *Drosophila*

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Unit 2 (5 Marks)

1. Describe the terms euchromatin and heterochromatin
2. Write a note on polytene chromosomes
3. Write a note on Lampbrush chromosomes
4. Write a note on salivary gland chromosome of Drosophila
5. Write a note on Balbiani rings
6. Explain endomitosis
7. Write a note on Gynandromorphs
8. Explain the role of environment on sex determination
9. Explain the role of hormones in sex determination
10. Explain hypertrichosis
11. Differentiate between sex limited and sex influenced genes
12. Differentiate between human X and Y chromosomes
13. Differentiate between autosomes and sex chromosomes
14. Write a note on Lyons hypothesis
15. What are Barr bodies? Give a scientific reason that Barr bodies are present only in women and not in men
16. Give a scientific reason that Y chromosome is a sex determining chromosome in man
17. Explain parthenogenesis
18. Give scientific reason that the X-linked genes affect males more than females in human being

Unit 3 (10 marks)

1. Describe Griffith's transformation experiment
2. Explain Avery, Macleod, McCarty's experiment
3. Give an account of Hershey Chase experiment of bacteriophage infection
4. Write a note on types of DNA
5. Explain RNA as a genetic material
6. Describe the process of DNA replication
7. Explain in detail the process of transcription
8. Explain in detail the process of translation
9. What is gene expression? Describe the regulation of genes with lac *operon* model

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Unit 3 (5 Marks)

1. Chemical composition of nucleic acid
2. A and B DNA
3. Plasmid
4. Function of rRNA
5. Function of mRNA
6. Function of tRNA
7. Genetic code
8. One gene-one enzyme hypothesis
9. Concept of operon
10. ZDNA
11. H DNA
12. Chromosomal DNA in prokaryotes
13. Mitochondrial DNA
14. DNA in chloroplast

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MODEL QUESTION BANK SEMESTER – III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception.

USZO302 (COURSE-VI)

Unit 1 (10 Marks)

1. Explain in detail the digestive system of cockroach.
2. Describe the digestive system of pigeon.
3. With the help of a labeled diagram describe the structure and functions of ruminant stomach.
4. Explain the physiology of digestion in cockroach.
5. Give an account of the enzymes involved in the process of digestion in cockroach.
6. With the help of a labeled diagram describe the structure of mammalian kidney.
7. Give a detailed account of process of urine formation in man.

Unit 1 (5 Marks)

1. Write a note on nutritional apparatus in amoeba.
2. Describe briefly gastrovascular cavity in hydra.
3. Write a note on wheel-organ of Amphioxus.
4. Write a note on structure of ruminant stomach.
5. Write short note on digestion of proteins with respect to man.
6. Write short note on digestion of carbohydrates with respect to man
7. Write short note on digestion lipids with respect to man
8. Write short note contractile vacuoles in protozoa.
9. Write a note on flame cells.
10. Describe briefly excretory and osmoregulatory structures in cockroach.
11. Diagrammatic representation of structure of mammalian kidney.
12. Write a note on Ammonotelic organisms.
13. Write a note on Ureotelic organisms.
14. Write a note on Uricotelic organisms.
15. Schematic diagram of ultrafiltration in mammalian kidney.

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Unit 2 (10 Marks)

1. Describe briefly air sacs in pigeon.
2. Describe briefly the process of cellular respiration inhuman
3. Describe briefly the process of respiration inhuman
4. Give a brief account of types of circulating fluids present in animals.
5. Describe briefly mechanism of working of heart.
6. Describe briefly the heart of shark/fish.
7. Describe briefly the heart of frog.
8. Describe briefly heart of crocodile.
9. Give a brief account of heart of man.

Unit 2 (5 Marks)

1. Write short note on cutaneous respiration.
2. Write a note on book lungs in spider.
3. Explain the structure of gills of bony fish
4. Describe briefly lungs as respiratory organs in frog.
5. Describe briefly lungs as respiratory organs in man.
6. Write short note on open circulation.
7. Write short note on closed circulation.

8 Write a note on heart of cockroach

10. Write a note on heart of earthworm

Unit 3(10 Marks)

1. Describe different types of neurons on the basis of structure and function.
2. Explain conduction of nerve impulse.
3. Briefly describe synaptic transmission.
4. Explain Sol-Gel theory of amoeboid movement.
5. Describe ciliary movement in *Paramecium*.
6. Give an account on types of wings in insects.
7. Describe different types of fins in fishes.
8. Describe sliding filament theory.
9. Describe briefly asexual reproduction in animals.
10. Describe the structure and function of tube feet.

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11. Describe spermatogenesis.
12. Describe oogenesis.
13. Describe briefly the structure of mammalian gametes.
14. Give a brief on types of fertilization.

Unit 3 (5 Marks)

1. Write a note on irritability in *Paramecium*.
2. Write a note on resting potential of nerve membrane.
3. Write a note on action potential of nerve membrane.
4. Describe different types of neurons on the basis of structure.
5. Describe briefly different types of neurons on the basis of functions.
6. Describe the structure of synapse.
7. Describe striated muscle fibre.
8. Describe the structure of cilia.
9. Give an account on types of legs in insects.
10. Write a note on ovo-viviparity.
11. Write a note on viviparity.
12. Write a note on oviparity.
13. Describe the structure of mammalian egg.
14. Describe the structure of mammalian sperm.
15. Describe the formation of gemmule in sponges.
16. Write a note on budding as asexual reproduction in animals.

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MODEL QUESTION BANK SEMESTER – III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception.

USZOE1303 (COURSE - VIIA) – Elective 1

Unit 1 (10 marks each)

1. How do honey bees communicate for foraging?
2. What is classical conditioning? Explain with an example.
3. What is imprinting? Explain different types of imprinting.
4. What do you mean by animal learning? Describe any two types of learning.
5. Describe the various ways in which ants communicate.
6. What is the significance of mimicry and warning coloration?
7. What is mimicry? Explain different types of mimicry with examples.
8. What is displacement activity? In what situations do displacement activities occur? Explain with examples.
9. Comment on any two aspects of non-human primate social behaviour.

Unit 1 (5 marks)

i. Mimicry
ii. Innate learning
iii. Acquired learning
iv. Warning colouration
v. Imprinting
vi. Classical Conditioning
vii. Territorial behaviour
viii. Schooling behaviour
ix. Altruism
x. Kinship
xi. Displacement activities
xii. Ritualization

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Unit 2 (10 Marks)

1. Give an account of the life history and pathogenecity of the parasite causing amoebic dysentery.
2. Describe the life history of *Taenia solium.*
3. Give an account of parasitic adaptive features of *Taenia solium*.
4. Give an account of the life history of *Fasciola hepatica.*
5. Give an account of the life history of filarial worm and discuss its pathogenic effects.
6. Describe the life history of bedbug and suggest some control measures.
7. Give an account of the life history of *Sarcoptes scabiei.*
8. Give an account of the life history of head louse *Pediculus.*
9. What is bird flu? How it spreads and what are its symptoms?
10. How would you control the transmission of anthrax among humans?
11. How is anthrax transmitted to man?

Unit 2 (5 Marks)

1. Describe the structure of *E. histolytica.*
2. Write a brief note on amoebiasis.
3. Write a short note on pathogenecity of *E. histolytica*.
4. Briefly describe the life cycle of *E. histolytica*.
5. Illustrate the complete life history of *T. solium* with the help of diagram only.
6. What is the effect of *Fasciola* on the hosts?
7. Describe the life cycle of *Wuchereria bancrofti*.
10. What is host specificity?
11. What are the signs and symptoms of bird flu?
12. How is rabies transmitted in human?
13. What are the preventive measures to be taken to prevent infection of rabies virus?
14. What is toxoplasmosis and what are its causes?
15. Write notes on:
    i. Parasitic adaptations in endoparasites
    ii. Cysticercus or bladder worm.
    iii. Pathogenecity of *Wuchereria*
    iv. Control measures of bedbug.
    v. Types of hosts

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Unit 3 (10 Marks)

1. What does the modern method of apiculture include? Explain in brief.
2. How is an artificial bee hive constructed?
3. How do you select the flora and bee species for apiculture?
4. Enumerate the advantages of vermiculture
5. Describe any two methods of vermiculture.
6. Describe the processing of raw milk.
7. Write a brief note on Type A1 and A2 cow milk.

Unit 3 (5 Marks)

1. State the economic importance of honey and beeswax.
2. What are the disadvantages of the indigenous method of apiculture?
3. How does the wax moth cause damage to the honey comb?
4. Name any two bee enemies and explain how they harm the bees.
5. Give an account of the commonly found species of honey bee in India.
6. What are the advantages of the modern method of apiculture?
7. Which type of flora is beneficial for apiculture?
8. Which type of bee is suitable for apiculture?
9. What is the chemical composition of honey?
10. What is the suitable material for culturing earthworms?
11. What are the advantages of processing dairy products?
12. What is whole milk and toned milk? How is toned milk prepared?

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MODEL QUESTION BANK SEMESTER – III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception.

USZOE2303 (COURSE - VIIB)

Unit 1 10 mark each

1. Give a brief account on exotic species used in aquarium.
2. Give a brief account on endemic species used in aquarium.
3. Give sexual dimorphism in fresh water fishes along with examples.
4. Give sexual dimorphism in marine water fishes along with examples.
5. Give a brief account on feed used in aquarium.
6. Give a brief account on fish transportation in aquarium.

Unit 2 (10 mark each)

1. Explain agricultural pests along with suitable example.
2. Explain household pests along with suitable example.
3. Explain stored grains pests along with suitable example.
4. Explain structural pests along with suitable example.
5. Explain veterinary pests along with suitable example.
6. Explain forestry pests along with suitable example.

Unit 3(10 mark questions):

1. Give a brief account on Blue Mormon butterfly and Striped Tiger butterfly
2. Describe the behaviour of Octopus and spider as most dedicated mothers in the world.
3. Describe marvellous characters of fan throated lizard and flying frog.
4. Describe marvellous characters of Mantis shrimp.
5. Give a brief account on Malabar giant squirrel
6. Describe marvellous characters of the Purple (Joker) crab and lesser flamingo.
7. Describe marvellous characters of the Stabbing Shark and Crime fighting gecko.
8. Describe marvellous characters of the Gharial and the Matilda Viper

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Unit 1 (5 Marks)

Write short note on:-

1. Budgeting for setting up of an aquarium
2. Fish packing
3. Formulated fish feed
4. Gold fish
5. Molly
6. Guppy

Unit 2(5 Marks)

Write short note on:-

1. Jowar stem borer
2. Brinjal fruit borer
3. Aphids
4. Rice weevil.
5. Non-insect pests
6. Cultural control of pests
7. Physical control of pests
8. Mechanical control of pests
9. Chemical control of pests
10. Biological control of pests
11. Concept of IPM

Unit 3(5 Marks)

Write short note on the amazing characters in following amazing animals.

1. Blue Mormon butterfly
2. Striped Tiger butterfly
3. Mudskipper
4. Komodo dragon
5. Pebble toad
6. Lesser flamingo
7. Great white pelican
8. Drongo

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9. Malabar giant squirrel
10. Cheetah
11. Octopus

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MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZO401 (COURSE - VIII)

Unit 1 (10 Marks)

1. Write explanatory notes on: 1. Lamarckism 2. Darwinism and Neo Darwinism 3. Mutation Theory 4. Modern Synthetic theory 5. Weismann's germplasm theory
2. Discuss evidences in favour of organic evolution by giving examples of geographical distribution
3. Discuss evidences in favour of organic evolution by giving examples based on genetic studies.
4. Discuss evidences in favour of organic evolution by giving examples based on physiological studies.
5. Give a brief account on the origin of eukaryotic cell

Unit 1 (5 Marks)

1. Describe Miller-Urey experiment simulating Chemical evolution.
2. Describe chemical evolution as postulated by the Haldane and Oparin theory
3. Write short notes on: 1. Mutation Theory 2. Modern Synthetic theory

Unit 2 (10 Marks)

1. Define the term 'population genetics'. Describe in brief the various evolutionary forces that tend to disturb genetic equilibrium and introduce changes in the gene pool of a population
2. State Hardy Weinberg's law of equilibrium and discuss its salient features
3. Give an account of the different factors involved in speciation
4. Describe the different types of speciation
5. Explain the role of geographic isolation in the development of new species
6. Explain the role of reproductive isolation in the development of new species
7. Discuss the pre-zygotic barriers responsible for reproductive isolation

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8. Discuss the post-zygotic barriers which lead to reproductive isolation
9. Describe the sources of genetic variation in natural populations
10. Explain the nature and extent of genetic variation within populations
11. Describe the mechanisms that preserve balanced polymorphisms
12. Describe the salient features of microevolution
13. Compare and contrast microevolution and macroevolution
14. Explain the salient features of macroevolution
15. Give an account of the different patterns of macroevolution
16. Elaborate on the role of adaptive radiation and extinction in macroevolution
17. What do you understand by the term natural selection? Describe the different types of natural selection with suitable examples
18. What is megaevolution? Explain the mechanism of megaevolution using a suitable example

Unit 2(5 Marks)

1. Explain the term ‘gene pool’. How does evolution operate via the gene pools of populations?
2. Differentiate between:
    - **a.** Allopatric and Sympatric speciation
    - **b.** Biological and evolutionary species
    - **c.** Microevolution and macroevolution
    - **d.** Stabilizing selection and disruptive selection
3. Explain stabilizing selection with the help of a suitable example
4. How does the example of sickle cell allele illustrate heterozygote advantage?
5. How does frequency-dependent selection affect genetic variation within a population over time?
6. Write short notes on:
    - **a.** Role of mutations in evolution
    - **b.** Role of migration in evolution
    - **c.** Non-random mating
    - **d.** Role of natural selection in evolution
    - **e.** Genetic drift

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f. Bottleneck effect

g. Founder effect

h. Directional evolution in peppered moth

i. Evolution of Antibiotic resistance in bacteria

j. Geographic variation

k. Genetic polymorphism

l. Parapatric speciation

m. Adaptive radiation

7. What is the biological species concept? What are its limitations? How does it differ from the evolutionary species concept?
8. Explain the concept of coevolution using suitable examples

Unit 3 (10 Marks)

1. Describe briefly, the steps towards preparing a research design
2. Describe literature survey, collection of data and its analysis
3. What is a patent and how is it obtained?
4. Write an account on application of statistics in research

Unit 3 (5 Marks)

1. Define research. State the difference between research method and research methodology
2. Write a note on computer application in research
3. Describe briefly identification of research problem and formulation of research hypothesis
4. Write a note on abstract writing?
5. Write a note on plagiarism?
6. Write a note on bibliography?
7. Write a short note on ethics in scientific research

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MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZO402 (COURSE - IX)

Unit 1 (10 Marks)

1. Explain prokaryotic cell.
2. Explain Eukaryotic cell.
3. Give an account of cell theory.
4. Describe the ultrastructure of nuclear membrane.
5. State the chemical composition and functions of nucleolus.
6. Describe nucleocytoplasmic interactions.
7. Describe fluid mosaic model of plasma membrane.
8. Give an account of active and passive transport
9. Describe various modifications of plasma membrane
11. Explain endocytosis and exocytosis
12. Give an account on cell permeability
13. Differentiate prokaryotic and eukaryotic cell

Unit 1 (5 Marks)

Write a short note on:

1. Virus
2. Nuclear matrix
3. Number and position of nucleus.
4. Nucleolus
5. Membrane receptors

Unit 2 (10 Marks)

1. Write a note on structural organization & importance of endomembrane system.
2. Describe ultrastructure of Endoplasmic Reticulum
3. Describe the types and functions of ER.
4. Give an account of ultrastructure and functions of Golgi complex.
5. Write an essay on functions of Golgi complex.

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6. Give an account of polymorphism in lysosomes.
7. Write an essay on peroxisomes.
8. Describe the structure and chemical composition of mitochondria.
9. Write a note on mitochondria as powerhouse of the cell.
10. Describe the major functions of mitochondria.

Unit 2 (5 Marks)

1. Importance of endomembrane system
2. Write a short note on biogenesis of endomembrane system
3. Functions of Rough Endoplasmic Reticulum
4. Functions of Smooth Endoplasmic Reticulum
5. Structure of Golgi complex
6. Chemical composition of Golgi complex
7. Lipid & polysaccharide metabolism in Golgi complex
8. Secretion and protein sorting by Golgi complex
9. Write a brief note on GAAP
10. Write a brief note on protein glycosylation by Golgi complex
11. Origin and functions of lysosomes
12. Write a short note on peroxisomes
13. Structure of mitochondria
14. Chemical composition of mitochondria
15. Write a short note on ATP
16. Write a short note on glycolysis
17. Write a short note on Kreb's cycle
18. Write a short note on oxidative phosphorylation

Unit 3 (10 Marks)

1. Explain the concept of micromolecules and macromolecules.
2. Define carbohydrate. Add a note on its classification.
3. What are carbohydrates? Classify carbohydrate with suitable examples.
4. Explain with suitable example monosaccharide and disaccharide.
5. Discuss the properties of carbohydrates.
6. Explain oligosaccharides with suitable examples.

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7. What are polysaccharides? How are they classified? Write the structures of glycogen and heparin/ chitin and heparin.
8. Discuss about chemical structure of the monosaccharides / disaccharides.
9. What are amino acids? Classify amino acids based on functional group.
10. Give an account of primary and secondary structure of proteins.
11. Write an account on tertiary and quaternary structure of proteins.
12. Describe the structure of saturated and unsaturated fatty acids.
13. What are fatty acids? Add a note on types of fatty acids.
14. Describe the structure and functions of water soluble vitamins.
15. Describe the structure and functions of lipid soluble vitamins.

Unit 3 (5 Marks)

1. Write a short note on monomers and polymers.
2. Write note on properties of carbohydrates.
3. Give an account of polysaccharides.
4. With suitable example explain glycosidic bond.
5. Explain the linkage in lactose and sucrose.
6. Give the biological importance of carbohydrates.
7. What are essential and nonessential amino acids?
8. Give an account of properties of amino acids.
9. Define and explain peptide bond with suitable example.
10. Explain the different types of proteins with suitable examples.
11. Explain the biological role of proteins.
12. Peptide bond
13. Types of fatty acids.
14. Biological role of lipids
15. Sterols
17. Describe properties of lipids.
18. Discuss the clinical significance of protein / carbohydrate.
19. Write short note on clinical significance of lipids.
20. Write a note on isomerism in carbohydrates/amino acids.
21. Describe the structure and functions of vitamin A/ vitamin B/ vitamin C/ vitamin D.

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MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZOE1403 (COURSE - XA) – Elective 1

Unit-1 (10 Marks)

1) Classify the different types of eggs.
2) Briefly explain types and structure of sperms (any two animals).
3) Define cleavage Explain types of cleavages.
4) Give brief account on various types of blastulae.
5) What is gastrulation? Explain gastrulation in frog.
6) Give an account of process of coelom formation and its types

Unit-1 (5 Marks)

1) Draw neat labeled diagram and explain any one of the following:
   (Microlecithal, Alecithal, Homolecithal, Heterolecithal, Isolecithal, Telolecithal, Centrolecithal, Discoidal).
2) Explain structure of sperm of frog/ reptile/ bird/ mammal.
3) Short note on holoblastic cleavage/ meroblastic cleavage.
4) Short note on equal or unequal cleavage.
5) Short note on discoblastula /coeloblastula.
6) Short note on centroblastula /amphiblastula /stereoblaastula,
7) Explain the process of coelom formation
8) Explain the process of gastrulation.

Unit 2 (10 Marks)

1. Describe male reproductive system and its hormonal regulation.
2. Describe female reproductive system and its hormonal regulation.
3. Define reproduction. Explain the hormonal regulation of reproduction.
4. What is contraception? Explain different methods of contraception.
5. Explain the various measures of birth control.
6. Define infertility and explain the causes of female infertility.
7. What are the causes of male infertility?
8. Explain the hormonal treatment for infertility using drugs.

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9. Describe the methods of treatment of infertility.
10. Give a brief account of infertility related disorders.
11. What are sperm banks? Add a note on cryopreservation of sperms.
12. What is testicular biopsy? Explain Testicular sperm extraction (TESE), Pronuclear stage transfer (PROST).
13. What are the steps involved in Embryo transfer (ET) and / Intra-fallopian transfer (IFT)/IVF? Add a note on its ethics.

Unit 2 (5 Marks)

1. Write a note on impact of age on reproductive stage –
    a. Menopause
    b. Andropause
2. Write a note on amenorrhea.
3. How does sterilization act as a method of contraception?
4. Write a note on birth control.
5. What is the difference between natural and artificial methods of contraception?
6. How is T.B. a cause of female infertility?
7. What are the genetic causes of infertility?
8. Write a note on STD's as infertility related disorders?
9. What are the roles of endocrine disruptions in infertility?
10. Explain the role of the following in infertility:
    a. Gonorrhoea
    b. Syphilis
    c. Genital Herpes
    d. Chlamydia
11. Write a note on treatment of infertility by removal of causative environmental factors.

Unit 3 (10 Marks)

1. What are the causes, effects and control measures for air pollution?
2. What are the causes, effects and control measures for water pollution?
3. What are the causes, effects and control measures for soil pollution?
4. What are the causes, effects and control measures for sound pollution?
5. Define air pollution and give an account of hazardous air pollutants.

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6. What is ocean littering? Explain in detail the causes and control measures for ocean littering?
7. Describe the alteration of metabolism of micro-organisms due to soil pollution.
8. Explain sound pollution along with its measurement and permissible limits.
9. Give a brief account of methods to control gaseous / particulate matters.
10. What is pollution? Add notes on:
    a. Effect of air pollution on vegetation.
    b. Effect of sound pollution on animals.

Unit 3 (5 Marks)

1. Explain the effects of air pollution on human beings.
2. What are different types of pollutants that cause air pollution?
3. Write short notes on:
    a. Ozone depletion
    b. Green house gases
    c. Global warming
    d. Acid rain
    e. Sonic boom
    f. Acoustic zoning
4. Explain the effect of thermal pollution on biodiversity.
5. Write a note on ionizing radiation
6. How is oil spill becomes a cause of water pollution / ocean littering?
7. How do pesticides and fertilizers contaminate water?
8. How can oil be retracted back from sea / ocean?
9. What are the effects of soil pollution on food chain?
10. What are the auditory / non – auditory effects of sound pollution?

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MODEL QUESTION BANK SEMESTER - IV

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USZOE2403 (COURSE - XB) – Elective 2

Unit 1 (10 Marks)

1. Give in brief different indigenous breed of cattle with a suitable example.
2. Give in brief different exotic breeds of cattle with a suitable example.
3. Give in brief different breed of buffalo with a suitable example.
4. Give in brief different housing types in dairy farm.
5. Explain different types of diseases in cattle and add a note on its control.

Unit 1(05 Marks)

Write short note on

1. Malvi
2. Hariyana
3. Deoni
4. Red sindhi
5. Khillari
6. Jersy
7. Holstein
8. Nagpuri
9. Bhadawari
10. Murrah
11. Jafrabadi
12. Weaning of calf
13. Castration
14. Dehorning
15. Cleaning and sanitation.

Unit 2 (10 Marks)

1. Give in brief life history of silkworm.
2. Give in brief reeling and extraction of silk.
3. Give in brief diseases and control measures in sericulture.

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4. Give in brief harvesting and processing of cocoon.

Unit 2 (5 Marks)

1. Varieties of silkworm
2. Rearing of silkworm
3. Silk extraction
4. Host plants for sericulture

Unit 3 (10 Marks)

1. Give an account on pisciculture, add a note on finfish culture
2. Explain monoculture with respect to aquaculture
3. Explain polyculture with respect to polyculture
4. Give an account on fresh water prawn culture
5. Give an account on pearl culture.

Unit 3 (5 Marks)

Write short notes on:-

1. Composition of pearl
2. White shrimp culture
3. Cage culture
4. Fish diseases
5. Symptoms of diseases
6. Control of diseases

----------The End----------

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BACHELOR OF COMMERCE
SYLLABUS FOR B.COM DEGREE PROGRAM UNDER CBCS w.e.f. 2017-18

B.COM. (GENERAL) COURSE STRUCTURE

SEMESTER I

CATEGORY	PAPER
CC 1	General Management
CC 2	Financial Accounting
CC 3	Micro Economics
CC 4	Commercial Arithmetic I
AECC 1	Spoken English
AECC 2	Environmental Studies I
GE 1	Computer Application I/ Geography/
	Commerce -
	(From the list of approved Commerce electives for Sem I)
	/Any other GE

SEMESTER II

CATEGORY	PAPER
CC 5	Introduction to Marketing
CC 6	Financial Statement Analysis & Interpretation
CC 7	Managerial Economics
CC 8	Commercial Arithmetic II
AECC 3	Business Communication
AECC 4	Environmental Studies II
GE 2	Computer Application/ Geography/
	Commerce -
	(From the list of approved Commerce electives for Sem II)
	/Any other GE

SEMESTER III

CATEGORY	PAPER
CC 9	Business Finance
CC 10	Fundamentals of Cost Accounting
CC 11	Entrepreneurship Development
SEC 1	Business Laws (With practical component)
	/Any other
GE 3	Business Statistics /
	Commerce
	(From the list of approved Commerce electives for Sem III)
	Any other GE
GE 4	Economics of Resources / Any other

SEMESTER IV

CATEGORY	PAPER
CC 12	Fundamentals of Investment
CC 13	Income Tax
CC 14	Accounting for Service Organizations
SEC 2	Companies Act and IPR Laws
	(With practical component)/Any other
GE 5	Business Statistics /
	Commerce
	(From the list of approved Commerce electives for Sem IV)
	Any other
GE 6	Indian Economy/ Any other

SEMESTER V

CATEGORY	PAPER
CC 15	Industrial Management
CC 16	Indian Monetary & Financial System
DSE 1	COMMERCE- Accounting Major I – Income Tax, Service Tax and Goa Value Added Tax OR Cost Accounting Major I – Cost Accounting I OR Business Management Major I – International Marketing Management OR Banking & Financial Services Major I – Modern Banking Operations & Service
DSE 2	COMMERCE- Accounting Major II – Auditing OR Cost Accounting Major II – Cost Accounting II OR Business Management Major II - Retail Management Strategies OR Banking & Financial Services Major II - Bank Management

SEMESTER VI

CATEGORY	PAPER
CC 17	Human Resource Management
CC 18	International Economics
DSE 5	COMMERCE- Accounting Major V – Advanced Company Accounts OR Cost Accounting Major V- Advanced Cost Accounting OR Business Management Major V - Financial Management II OR Banking & Financial Services Major V – Law and Practice of Banking I
DSE 8	COMMERCE (PROJECT)

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SEMESTER I
General Management (CC 1)
(100 Marks – 60 Lectures)

Objective: To acquaint students with the important aspects of management.

Unit I Introduction to management (25 Marks-15 Lectures)

Meaning, features and importance of management. Management and Administration, levels of management, functional areas of management – Materials, Production, Personnel, Purchase, Finance, Sales & Marketing (an overview)

Modern approaches to management - Quantitative, Systems, Contingency approach (an overview) Japanese, American, European Styles of management.

Unit II Decision Making (25 marks-15 Lectures)

Meaning, features, advantages of effective decision making.

Types of Managerial Decisions, Steps in decision making process,

Guidelines for effective decision making, Difficulty in effective decision making,

Rationality and decision making- Meaning, Benefits and Limitations,

Creativity in Decision Making- Meaning, Features, Steps and how to introduce creativity in decision making.

Unit III Managing Change and Conflict Management (25 marks-15 Lectures)

Meaning, Features, Reasons for Change, Change process,

Resistance to Change, Factors effecting Resistance to Change (Individual and Organisational)

Overcoming Resistance to Change.

Organisational Conflicts- Individual Conflicts and Inter group Conflicts.

Conflict Management - meaning and process.

Unit IV Emerging areas in Management (25 marks-15 Lectures)

Green Management – Concept and Importance.

Stress Management- Meaning, Types, Causes and Measures taken.

Supply Chain Management- Meaning, Process.

Logistics Management- Meaning, Features.

References:

1) Hannagan, Tim. *Management Concepts and Practices*. Macmillan India Ltd.
2) Prasad, L.M. *Principles and Practice of Management*. Sultan Chand and Sons.
3) Mamoria, C.B. *Personnel Management*. Himalaya Publishing House.

4) Vasishth, Neeru. *Principles of Management*. Taxmann.
5) Robbins, Stephen and Coulter, Mary. *Management*.
6) Saeed, Khawja Amjad. *Pearson Management cases* (Second Ed). Excel books.
7) Mittal, Sachin., Keshari, Praghya et al. *Managing Businesses Excellence through Vision, Values and Vibrant practices*. Excel books.
8) Kumar, Dipak. & Bhatacharya. *Human Resource Management* (Third Ed). Excel books.
9) P. L. Rao. *Organisation Communication*. Excel books.

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SEMESTER I
Financial Accounting (CC 2)
(100 Marks – 60 Lectures)

Objectives:

- **To acquaint the students on the practical aspects of single entry and depreciation accounting.**
- **To familiarize the students with advanced accounting procedures for equity and preference shares**

Unit I Single Entry (20 Marks – 12 Lectures)

Meaning, features, advantages, limitations, difference between single entry system and double entry system. Computation of profit or loss under Singe entry system–under Conversion Method. Preparation of Total Debtors Account, Total Creditors Account, Bills Receivable Account, Bills Payable Account, Trading and Profit &Loss Account and Balance Sheet.

Unit II Depreciation Accounting (20 Marks – 14 Lectures)

Meaning, causes, need for providing depreciation, AS 6, Methods of depreciation.
Methods of depreciation for practical problems:

a) Change in Method of depreciation (from Straight Line Method to Reducing Balance Method or vice-versa)
b) Sinking Fund Method
c) Insurance Policy Method

Methods for depreciation for theory only:

a) Annuity Method
b) Machine Hour Rate Method
c) Service Hour Method
d) Depletion Method
e) Revaluation Method
f) Sum of Digits Method

Unit III : Issue and Buy-Back of Equity Shares (40 marks, 22 Lectures)

(a) Issue of Shares: Meaning, Kinds of Shares, terms of issues, SEBI guidelines of issue of shares, accounting entries, issue of shares at par and at premium. Under subscription, Oversubscription, pro rata allotment. Calls in arrears, calls in advance, and interest on calls in advance. Forfeiture and re-issue of forfeited shares. Issue of bonus shares and right shares, Book building process (Only theory)

(b) Buy-Back of Equity Shares

Company Law/ Legal Provisions and SEBI guide lines (including related restrictions, power, Notice of the meeting, transfer to capital redemption reserve account and prohibitions of buy back and financial assistance), Compliance of conditions including sources, maximum limits. Accounting for buy back of shares.

Unit IV: Redemption of Preference shares (20 marks, 12 Lectures)

Company Law / Legal Provisions for redemption of preference shares in Companies Act. Sources of redemption including divisible profits and proceeds of fresh issue of shares. Redemption of shares at Par and Premium. Capital Redemption Reserve Account, Bonus issue. Journal entries and the relevant items in the balance sheet

References:

1. Jain, & Narang. *Advanced Accountancy.* New Delhi: Kalyani Publishers.
2. Mukherjee, A., & Hanif, M. (2002). *Modern Accountancy* (Vol. II). New Delhi: Tata McGraw Hill.
3. Raman, A. *Advanced Accountancy.* New Delhi: Himalaya Publishing House.
4. Shukla, M. C., & Grewal, T. S. *Advanced Accounts.* New Delhi: S. Chand & Co .
5. Tulsian, P. C. *Accountancy.* New Delhi: S. Chand & Co.
6. Vinayakam, N., & Charumati, B. *Financial Accounting.* New Delhi: S. Chand.

Guidelines for Question Paper

- One question each from Unit I, Unit II, Unit III and Unit IV.
- One additional question from Unit II and Unit III each.

B.COM.
SEMESTER I
Micro Economics (CC 3)
(100 Marks , 60 Lectures)

Objectives:

1. To acquaint the students with the concepts of microeconomics dealing with Consumer demand and consumer behaviour.
2. To make the student understand the supply side of the market through the production and cost behaviour of firms.
3. To make the student understand different types of market and levels of competition prevailing in the market
4. To familiarize the students with different types of market imperfections and strategies adopted by firms in the imperfect market.

Unit I Demand and Consumer Behaviour (20 Marks, 10 Lectures)

Demand Analysis, Elasticity of demand: price, income and cross. Concepts of revenue: marginal and Average. Revenue under conditions of Perfect and imperfect competition, Consumer Behaviour: Indifference curve analysis of consumer behaviour; Consumer's equilibrium (necessary and sufficient conditions). Price elasticity and price consumption curve, income consumption curve and Engel curve, price change and income and substitution effect.

Unit II Production and Cost (25 Marks, 15 Lectures)

Supply Analysis, Production isoquants, marginal rate of technical substitution, economic region of production, optimal combination of resources, the expansion path, isoclines, returns to scale using isoquants. Cost of Production: Social and private costs of production, long run and short run costs of production. Economies and diseconomies of scale and the shape to the long run average cost. Learning curve and economies of scope.

Unit III Perfect Competition and Monopoly (30Marks, 20 Lectures)

Perfect competition: Assumptions. Equilibrium of the firm and the industry in the short and the long runs, including industry's long run supply curve. Measuring producer surplus under perfect competition. Demand - supply analysis including impact of taxes and subsidy.

Monopoly: Monopoly short run and long run equilibrium. Shifts is demand curve and the absence of the supply curve. Measurement of monopoly power and the rule of thumb for pricing.Horizontal and vertical integration of firms.Degrees of price discrimination.

Unit IV Imperfect Competition (25 Marks, 15 Lectures)

Monopolistic Competition and Oligopoly: Monopolistic competition price and output decision-equilibrium. Monopolistic Competition and economic efficiency, Oligopoly and Interdependence – Cournot's duopoly model, Stackelberg model, kinked demand model.Prisoner's dilemma, collusive oligopoly – price-leadership model – dominant firm, cartels, sales maximization.

References:

1. Pindyck, R.S., D. L. Rubinfeld and P. L. Mehta; Microeconomics, Pearson Education.
2. N. Gregory mankiw, Principles of Micro Economics, Cengage Learning
3. Maddala G.S. and E. Miller; Microeconomics: Theory and Applications, McGraw-Hill Education.
4. Salvatore, D. Schaum's Outline: Microeconomic Theory, McGraw-Hill, Education.
5. H.L. Ahuja, Advanced Economic Theory: Microeconomic Analysis (English) 20th Edition, S Chand Publications.
5. Case and Fair, Principles of Micro Economics, Pearson Education
6. Koutsiyannis, Modern Micro Economic Theory.
7. C Snyder, Microeconomic Theory: Basic Principles and Extensions, Cengage Learning
8. Bilas, Richard A., Microeconomics Theory: A Graphical Analysis, McGraw-Hill Education.
9. Paul A Samuelson, William D Nordhaus, Microeconomics, McGraw-Hill Education.
10. AmitSachdeva, Micro Economics, KusumLata Publishers

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SEMESTER I
Commercial Arithmetics – I (CC 4)
(100 marks - 60 Lectures)

Objectives:

- **To provide basic knowledge of mathematics and its applications in the field of commerce and industry.**
- **To acquaint the students with wide ranging applications of mathematical techniques to commerce, economics and practical situations.**

Unit I Mathematical Logic and Set Theory

(a) Mathematical Logic (10marks - 7 Lectures)

- Logical Statement, Truth value.
- Compound Statement, Negation, Conjunction, Disjunction
- Conditional and Bi-conditional statement
- Truth tables
- Logical equivalence
- Tautology and Contradiction
- Argument, Validity of an argument (using truth table for 2 statements only)

(b) Set Theory (10marks - 6 Lectures)

- Quadratic equation, Solution of general quadratic equation $ax^2 + bx + c = 0$
- Sets: Definition, Representation of sets
- Types of sets: Finite and infinite sets, null sets, singleton set, examples
- Venn diagrams
- Subset, Complement of a set, Union, Intersection and Difference of sets, Power sets
- De Morgan's Law, Verification by examples and Venn diagrams
- Number of elements of a set, Results involving number of sets (upto three sets) and problems based on these results

Unit II Permutations and Combinations (20marks - 15 Lectures)

- Fundamental Principle – examples
- Factorial notation
- Definition of Permutation
- Number of permutations of *n* different things taken *r* at a time
- Permutations with repetition
- Definition of Combination
- Number of combinations of *n* different things taken *r* at a time (no proof for results)

Unit II Progressions and Mathematics of Finance

(a) Progressions (20marks - 10 Lectures)

- Arithmetic Progression (A.P.)
- Definition of A.P.
- Formula for nth term of an A.P.
- Sum of the first n terms of an A.P.
- Business applications of A.P.
- Geometric Progression (G.P.)
- Definition of G.P.
- Formula for nth term of a G.P.
- Sum of the first n terms of a G.P.
- Business applications of G.P.

(b) Mathematics of Finance (25marks - 12 Lectures)

- Simple Interest
- Compound Interest – compounded annually, six monthly, quarterly, monthly and daily
- Nominal and Effective rate of interest
- Present and future value
- Ordinary annuity, Present value of ordinary annuity
- EMI using Interest on reducing balance and Flat Interest rate

Unit IV Determinants and Matrices (15marks - 10 Lectures)

- Determinant - Meaning , Order Minor , Co-factor, Expansion (Order 2 and 3)
- Cramer's Rule
- Matrices - Definition, Notation, Types of matrices
- Algebra of Matrices – Negative, Transpose, Equality, Addition and Subtraction, Scalar multiplication, Matrix multiplication.
- Applications to Business Problems

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SEMESTER I
Spoken English (AECC 1)
(100 Marks, 60 Lectures)

Objectives:

1. **To listen to, understand and convey information**
2. **To listen to and respond appropriately to the contributions of others**
3. **To understand, order and present facts, ideas and opinions**
4. **To articulate experience and express what is thought, felt and imagined**
5. **To communicate clearly and fluently**
6. **To use grammatically correct language**
7. **To use register appropriate to audience and context.**

Learning Outcomes

By the end of the term the student should be able to:

1. Describe a visual or an object
2. Explain and give cause and effect
3. Narrate an experience with descriptive detail
4. Provide relevant information
5. Use alternatives to slang
6. Take an active part in group discussion
7. Elicit and show respect for the views of others
8. Disagree, argue and use persuasive speech in appropriate language

Equipment

Essential

1) An LCD projector in every classroom
2) A Laptop with Internet Facility
3) Wi-fi Broadband. Colleges which do not have this must provide a Dongle at least to the teacher

Optional

4) A large screen SMART TV
5) HD Video Camera (with Hard Disk)
6) Home Theatre
7) The library or AV room has to be updated by purchase of books with CD-Roms and on - line training facilities some of which are listed at the end of this syllabus.
8) A language laboratory, if possible, so that students can use the interactive software and CD-Roms to practice on their own and access online training.
9) Voice Recorders (Cenix costs around Rs 2500 and can record for over 4 hrs...file size small...record speeches/conversation for self evaluation...)
10) External Hard Disks (for massive data storage)
11) A Smart Board

Topics to be covered

- Pronunciation and Enunciation :(Vowels and Consonants and their types) Diction, intonation, phrasing, pausing, emphasis, stress, inflection.
- Grammar, vocabulary and alternatives to slang
- Conversation skills: eg. interviews, chat show 'host-guest' situation
- Presentation skills
- Discussion skills: leading and participating.
- Active listening skills
- Asking and answering questions
- Requests and explanations
- Persuasion and Negotiation
- Expressing opinions
- Giving and getting advice
- Cross - cultural communication

There are also skills of

- ---

Summary

- ---

Chairing

- ---

Sustained explanation

- ---

Keeping to task

Methods

Topics to be taught using interactive teaching and the workshop method.
It is a good idea to ask students to make a list of the different purposes for talk. Some of these purposes are to:
explain describe narrate

explore	analyse	imagine
discuss	argue	persuade

We synthesize in discussion and argument, evaluate in exploring and persuasion and create in narration and imagining.

A note on listening

The whole point of speaking and listening is that it should be interactive. Person A speaks, Person B listens, understands, considers and answers: 'This is so, isn't it….' - Yes, but….'. Perhaps we should call these skills **'Listening - Thinking - Speaking'.** This is the process by which things get done, by which people think through a problem and find a solution.

Some listening is passive. It looks as if it is to some purpose, but the listener may be thinking, "If I look as if I am attentive, then perhaps nobody will challenge me to speak.' It's better than looking dreamily round the room or talking to oneself, but it does not prove anything about the quality of listening. That can only be done if the listener makes a response, such as:

- summing up previous contributions and moving the discussion on;
- answering points from a speaker;
- supporting speakers who have lost the drift of their arguments;
- revisiting what has already been said, but in other words;
- acting as note-taker and clarifying what has been written;
- asking questions after a talk/ video clip/movie/documentary and engaging in a discussion.

Hence if there is no listening, there is no speaking. A student giving a talk must engage in conversation with his listeners at the end. (except perhaps at the end of term exams.) However, questions alone may not reveal a high level of listening.

The list given above includes some challenging listening and speaking skills. It follows that **reading aloud may not be counted as a speaking and listening activity,** although the talk that might precede a reading is valid. It also follows that reading from a script or speaking from memory is not speaking and listening either.

Starting from the beginning: Do my students need practice in speaking and listening? They have enough to talk already!

Maybe so, but there is a difference between informal talk and sustained task completion. Try using some of these exercises just to be sure of the levels you are dealing with in a class. You are looking for clarity, confidence, a minimum of preparation and talking strictly without notes.

1. Give directions from college to……..wherever.
2. Telephone someone to say that you cannot make an appointment and ask for another date.
3. Go to a shop and explain that an article they repaired still doesn't work.

4. Explain a particular function on a computer to a novice.
5. Entertain a visitor to the college for five minutes until the principal is free.
6. Explain to you teacher/Principal why you did something extremely silly, and apologise.
7. Give a two - minute talk to the class and answer questions.
8. Bring an article into school and persuade someone to but it.

(Check these activities 1 to 8 against the list of objectives and learning outcomes to see what sorts of practice they give. What levels of ability might each activity demonstrate? Remember that any one activity may be applied to several skills and may touch on others).

The secret of speaking and listening, or listening - thinking - and speaking, is to do plenty of it.
If you teach informally you would have better control of the situation when no one is at the back or the front and there is no opportunity to hide behind the furniture. If students understand that talk is an essential part of English, they will probably settle down to the activity more easily.

Often group work could be incorporated by dividing the class into groups of about 5-7 so that nobody is discouraged from speaking.

Effective speaking and listening in small groups - teacher circulates, gives occasional prompts but doesn't normally join in. Body language must indicate respect and interest and students then become confident in our presence.

Occasional use of Indianisms are fine as long as they are not very frequent and do not hamper good communication, and are in fact, only used to enhance effective communication. If asked the student is expected to know the alternate phrase in formal/standard English.

Eg. "…….and the tu - tu mei - mei has already begun". - Barkha Dutt on NDTV. i.e ".....and the blame game has already begun".

Process Talk - Process talk is a timed and disciplined period of discussion, monitored by the teacher. Through process talk students learn about topics and their linguistic skills are challenged as they do not speak from notes. The actual aim of process talk is that it is a stepping stone to writing and therefore cannot be assessed. However, it is an invaluable tool for practice in spoken English. Though much of the talk may be halting or disjointed, some students will make their best contributions under these conditions. The bigger the class more may opt out, but the active, sustained participation of a few may be a good way to introduce the Spoken English course at the beginning of the term. The teacher should sum up what has happened at the end of the class. E.g. The topic is 'Elephants'. A video is shown first - National Geographic. (A video contains a vast amount of information and it is unlikely that students remember the same bits.) Then a search engine presented three interesting and informative sites on the internet:

a) www.pbs.org/wnet/nature/elephants - it was accessible, easy to navigate and provided a number of resources. These included: 'life of the elephant', 'tale of the trunk' and 'poaching problems'. There was a long list of links and a bibliography.
b) Another good site was www.elephants.com - an article on how elephants began, with a link to global news and an up-to-date series of news links.
c) www.nczooeletrack.org/diary/loomis-diary/index.html was less immediately useful, but offered a worthwhile and entertaining series of diary entries.

Debates and Group Discussions

You may wish to have students respond to worldwide or local matters that are controversial. In the first session, they could amass arguments for and against and decide where they stand individually. This could lead to a mini debate which could be presented to the class by one of the groups. The issues could be those currently being discussed in the newspapers or magazines. Local issues are often good to use since they may provoke more argument and are often easier to understand. If they touch on moral issues, the argument will be better.

Here are three workshop examples that have worked. The first two are set in Bombay, the last one in Goa.

* A young girl was refused an essential kidney operation because she had taken drugs. The story was in the newspapers. Participants read the article to discover the reasons for the decision and discuss the practical and moral issues.
* A student was expelled from school because of a long and unruly hairstyle which was against the school rules. His influential parents were very angry and spoke to the press. Participants discussed the actions of the school and whether they were necessary. (In recent times we have read of so many cases of children being meted out physical punishment at the hands of teachers in other states. Students would have definite opinions about this and will be eager to talk on the subject.)
* There was a shocking case of senseless bad driving which killed a popular young man. Participants discussed their reactions and the problems of young drivers who have recently passed their tests.

Examples of **Group talk**

Media 1 Students analyse and evaluate the reporting of an incident or issue in more than one newspaper.(e.g.Navhind & Herald; Times Of India & The Indian Express or The Hindu) they examine the factual reporting, the extent to which the news is made dramatic, sad or happy, the differences in language, the headlines, the amount of detail given, and so on
End result : analytical / critical

Media 2 Students plan and design a sales campaign for an item such as crocodile meat, a currently unfashionable garment, or a new type of mobile phone. They decide on how it is to be marketed, the consumers to be targeted, the message by which it will be sold, the content of commercials and the design of the newspaper and magazine ads. There is an oral report to the

class with a layout of visuals or audio-visual plan is they wish. There is an oral presentation to the class.
End result : informative / persuasive

Problem solving Students decide on a group of people, for example, the blind or the arthritic, whom they could help by designing some object that would make some daily jobs easier. Students could actually ask the blind or the arthritic. Institutions that care for such people are often happy to talk to students who care. Egs: gardening tools for the blind and easy to use door handles for the arthritic. Students could discuss, formulate a proposal, design and present their ideas.
End result : Informative / explanatory

Brainstorming This can be used to apply the mind to any problem. The rule is that no suggestion however silly is to be rejected.

Role Plays Students are given five minutes to look at a card explaining a role - play situation and think about what they are going to say. The situations are imaginary but perfectly normal and natural situations. Students play their own age and are not expected to act. They are not expected to deal with unrealistic problems! Although it is a role play the student does not necessarily have to pretend to be someone else though the teacher probably will. For instance, the teacher might play the role of a parent and the student's task could be to try to persuade mom/dad to sanction a large sum of money so that he/she could go on a holiday with friends.

Solo work A valid part of a varied programme of speaking and listening. Careers today may depend on the ability to stand up to train a group of new workers, to give a presentation in front of managers, or to persuade customers to buy gimmicky machines. Sometimes there are prestigious public - speaking or debating competitions entered by perhaps a few of your students. Use the opportunity to train in front of the whole class. Ask the class for feedback. Some students speak with interest and enthusiasm about their work/experiences/hobbies/holidays and perhaps the English department is the best place for debriefing. It is also a good exercise to get students to reteach a lesson they have recently had in another subject, or a new lesson in History or Psychology or……any subject. It gives the others an opportunity to ask questions. Beware: the rest of the class may sometimes know the lesson better than their 'teachers'. You can substitute the word 'presentation' for talk. Students can learn to use the overhead projector or computerised presentation techniques. Presentations can be given in pairs.

Problems during group work:

- The time problem is helped if you accept that most speaking and listening is not solo work but is done in pairs and small groups.
- Noise - 'By all means do speaking and listening, but I don't want to hear a sound!'
- Not everyone is involved.
- Some groups not working well - pecking order.
- Some groups - briefest of answers.
- Unkindness to others whose comments they regard as silly.

Solutions

- THERE WILL ALWAYS BE NOISE.
- Tactfully ensure that the loudest and busiest are not always in charge. Talk to the most active about a possible role in encouraging and bringing out the shy members of the group.
- Keep topics open - never closed. Put someone who is adept at opening a discussion into a group to help others.
- Ensure that it is understood that everyone should be respected for what they say. You can argue but not so the original speaker feels a fool. BE TOUGH ON THIS.

Material the teacher carries **into the class room** should be gleaned from :

- Newspapers
- Documentaries (either shown to the class or seen at home and discussed)
- Video clippings (eg: Language in use , Cambridge ELT 4 VCD's)
- Events - news or cultural (eg: Carnival, Shigmo, festivals, election campaigns, sports, current affairs
- NDTV/ BBC - issues discussed on ' Hard Talk', 'We The People', 'The Big Fight'……
- Films and cinema

Testing and Evaluation

The whole course will be evaluated on the basis of 2 ISAs of 10 marks each

Role play:	10 marks	(6 Hours)
Group Discussions/ Debate:	10 marks	(6 Hours)

SEE Model

I) An Individual Oral Presentation……..(40 Marks)……24 Hours

- candidates will be examined on the following criteria
  - content - 10 marks
  - fluency - 10 marks
  - vocabulary - 10 marks
  - structure - 10 marks
- within each criteria, point descriptors will be clearly agreed upon.
- setting up and use of all aids, if any should be strictly within the time allotted.

II) Pair-Based Activity……20 marks……12 Hours

Candidates will be examined on the following criteria:

Listening skills – 5 marks

Clarity of expression – 5 marks

Responses to partner – 5 marks

Language – 5 marks

III) Group Activity…….. 20 marks……12 Hours

Candidates will be examined on the following criteria:

Leadership qualities – 5 marks

Clarity of expression – 5 marks

Suggesting new ideas – 5 marks

Listening skills– 5 marks

Grade Descriptions for Group Activity (to assist the teacher)

Mark Band 1 **17-20 marks**	Can argue ideas and opinions in persuasive detail without dominating the rest of the group; adept at acting as group leader; usefully refers back to previous points; always looking to suggest new approaches and to move forward; listens sympathetically and considers the views of others fully.
Mark Band 2 **13-16 marks**	Can argue ideas and opinions soundly but may at times overshadow other members of the group; is capable of leading the group but with only partial assurance; refers back to previous points soundly but not entirely successfully; recognises the need to suggest new approaches but implements this only partially; listens with a degree of sympathy for others views but has a tendency to interrupt at times.
Mark Band 3 **9-12 marks**	Frequent but generally brief contributions are made; generally accepts a position of group member rather than facilitator/leader; makes occasional reference to previous points; may help to support new approaches but rarely initiates them; listens carefully and responds briefly but appropriately to others.
Mark Band 4 **5-8 marks**	Brief and infrequent contributions are made; plays a limited part in the group; cannot utilise previous points; follows the general drift of the discussion but struggles to support new approaches; listens inconsistently

	and may even drift away from the discussion
Mark Band 5 **1-4 marks**	Makes only one or two contributions or may offer mostly inappropriate contributions; **plays no real role** in group membership; is largely ignorant of previous points; does not offer support for new approaches; may appear to listen but shows little evidence of listening.
Mark Band 6 **0 marks**	Fails to meet the above criteria.

Grade Descriptions for Pair-based Activity (20 marks)
For this task, marks for each category (Speaking, Listening) should be arrived at.

Speaking – 15 marks	**Listening- 5 marks**		
Mark Band I **13- 15 marks**	Extends the subject matter and elicits responses from the listener; speaks on equal terms with the listener. Employs a wide range of language devices accurately and sometimes eloquently	**Mark Band I** **4.5- 5 marks**	Responds fully to questions and develops prompts; deals confidently and sometimes enthusiastically with alterations in the direction of the conversation.
Mark Band II **10- 12 marks**	Subject matter is organised and expressed competently; attempts to speak on equal terms with the listener but with a varying degree of success. Employs a good range of language devices soundly	**Mark Band II** **3.5 -4 marks**	Responds appropriately and in **some detail to questions and** prompts; deals appropriately with most of the alterations in the directions of the conversation.
Mark Band III **7- 9 marks**	Deals with the subject matter adequately; the listener is generally but not always prominent. Language devices are used safely.	**Mark Band III** **2.5 - 3 marks**	Responds to questions adequately **but deals less effectively with** prompts; alterations in the direction of the conversation are occasionally dealt with.
Mark Band IV **4 - 6 marks**	There is evidence of some sequencing of ideas relating to the subject matter but only inconsistently so; accepts that the listener is in full control of the	**Mark Band IV** **1.5 - 2 marks**	Provides limited response to the questions and struggles with developing prompts; tends to maintain the direction of the conversation.

	conversation. Limited employment of language devices with some inaccuracy.		
Mark Band V **1 - 3 marks**	Simple facts and ideas are expressed with generally unsuccessful attempts at organisation; is barely capable of engaging in a two-way conversation. Not able to employ language devices or devices employed with serious error.	**Mark Band V** **1 mark**	Responds simply or is unable to respond to questions or prompts; cannot recognise alterations in the direction of the conversation.
Mark Band VI **0 marks**	Fails to meet the above criteria.	**Mark Band VI** **0 marks**	Fails to meet the above criteria.

Individual Activity – 40 marks

Mark	**Content & Structure [out of 20]**	**Vocabulary [out of 10]**	**Fluency [out of 10]**
15 - 19 **&** **9-10**	The student demonstrates ability to use a variety of structures accurately and consistently. There may be errors when sophistication is attempted, but the examiner is convinced that the student is confidently in control of the structures used. Full & well organised content.	The student shows enough command of vocabulary to respond with some precision. Shades of meaning are achieved and some sophisticated information/ ideas are communicated. There will be only the occasional misuse of vocabulary.	The student shows sustained ability to maintain a conversation and to contribute at some length. The student can respond to change in direction of the conversation and perhaps initiate new topics. Pronunciation and intonation are appropriate, with only the occasional slip.
16 - 18 **&** **7 - 8**	There may be mostly simple structures, but some more complex sentences will be attempted successfully. There will be some errors but these will not impede communication. Sound use of content.	The student has a sufficient range of vocabulary to convey information and ideas but there is lack of precision. Vocabulary is not wide or varied.	The student responds relevantly to questions and at a length which makes frequent prompting unnecessary. Stress and intonation patterns are generally accurate. Little effort is required by the listener.
13 – 15	The student will be uneasy	Vocabulary conveys	The student makes a real

& **5-6**	and error-prone when venturing beyond simple structures. However, simple accuracy will often be achieved and communication will be maintained. Adequate use of content.	simple ideas and information clearly but lacks precision. There is some searching for words and hesitation when going beyond simplicity.	attempt to respond to questions. S/he may need frequent prompting and will tend to offer one sentence at a time, but keeps conversation going. Some noticeable inaccuracy of stress and intonation, but unlikely to impede communication.
10 – 12 **&** **3-4**	Responses will usually be single words or very simple sentences -with errors. Error will tend to blur but not obscure communication. Content is thin or inconsistently used.	Vocabulary will sometimes be inadequate to convey even simple ideas and there will be frequent pauses.	Responses tend to be brief and widely spaced. The candidate has to be encouraged to go beyond the single word response. Stress and intonation inaccuracy causes some communication difficulty, but candidate can usually be understood by a sympathetic listener.
5 – 9 **&** **1-2**	Single word responses will be the norm and attempts at structured sentences will rarely achieve communication. However, some attempt at a response will be made at points during the interview. Content is mostly undeveloped and/ or very thin.	Enough English words are known to convey occasional snippets of information, but conversation will be very limited and confused.	Responses are so brief and imprecise that little is communicated. Use of single words is the norm, and there will be long gaps. Stress and intonation patterns cause difficulty for even the most sympathetic listener. Repetition is necessary to achieve communication.
0 -5 **&** **0**	Completely limited/no attempt at a response.	Completely limited/no attempt at a response.	No response/inaccuracy of stress and intonation prevents communication even after several repetitions.

In the world of work, a high percentage of communication is by talk, and people are known by the way they use talk to carry out their duties with efficiency, tact or persuasion.
Soon it will be normal to write by speaking into a machine which then prints what we say. It is a brave new world and it is through highly developed speaking skills that we shall be empowered to meet it.

LIST OF BOOKS
ENGLISH VOCABULARY, PRONUNCIATION AND GRAMMAR

English Pronunciation in Use ***Hancock***
(Book+ 4 Audio Cassettes Pack) …… 0- 521-54772-5
or
(Book+ 4 Audio CD's Pack) …….. 0-52154771-7

Better English Pronunciation O' Connor
(Book + Cassettes Set) ……. 0 – 521-78964 – 8

Murphy's English Grammar Raymond Murphy
(Book + CD ROM) …… 0 – 521 – 61663-8
Cambridge Language In Use series ……. Set of 4 VCD's
Cambridge English Pronouncing Dictionary, 16th edition by Daniel Jones (Book with CD ROM) ……. 0 – 521-60062-6

All of the above can be ordered from Foundation Books Pvt.Ltd. CAMBRIDGE UNIV PRESS. www.foundationbooksindia.com (Their books/colleges catalogue has an exhaustive list of books in English Grammar, Pronunciation, Vocabulary, Remedial work, writing speaking, listening)

Plot No. 80 Service Industries, Shirvane, Sector – 1, Nerul, Navi Mumbai-400706.
Tel: 27709172,27713810. Fax: 27709173. email: cupbang@cupind.com

Online Resource – The homepage of NATE (National Assocation Of Teaching English) while a national British association, has many resources which are in effect international.
Series
English Writing Frames – Copiable books and accompanying CD-ROM'S to support weaker and middle ability students. Could be used in used in conjunction with any language/Communication skills course. A systematic resource, with step – by- step practical exercises and photocopiable frames to practice with.

English Writing Frames: Genre by Neild, J (edition 2000) This is available as a book and disk pack ISBN: 184136975
English Writing Frames: Style and Purpose by Neild, J (edition 2000) - also book and disk pack ISBN: 1841636983 Published by Folens Publishing Limited, Unit 20, Apex Business Centre, Boscombe Road, Dunstable, Bedfordshire, LU5 4RL ,U.K www.folens .com

Heinemann English Programme- a thematically arranged four part series. Teacher resource files accompany the set.
Authors : Seely, J & Kitshen, D ISBN: 0435103520
0435103547
0435103563
0435103466
Publisher: Heinemann, Harcourt Education Ltd, Halley Court, Jordan Hill, Oxford, OX2 8EJ, U.K. www.heinemann.co.uk

Speaking and listening by Jones, R -with accompanying cassette ISBN: 0719546699
Publisher : John Murray, Hodder Murray, 338 Euston Road, London, NW1 3BH UK.
www.johnmurray.co.uk
New Hodder English

This is a series of three books. Teachers can find a variety of accessible material to simulate speaking and listening activities as well as writing.

New Hodder English – by Hackman, S; Scott, P & Howe, A (edition 2001)

1. ISBN 034077536X
2. ISBN 0340775378
3. ISBN 0340775386

Publisher Hodder & Stoughton Education, Hodder Deadline, 338 Euston Road, London, NW1 3bh, UK
www.hodderheadline.co.uk

Speaking English Effectively ***by Krishna Mohan and N. P. Singh***
Macmillan India Ltd ISBN: 0333925521

Cambridge UNIV PRESS - – Language In Use
Set of 3 graded VCD's- BEGINNER, PRE-INTERMEDIATE, INTERMEDIATE-
On Line Training and Practice Clarity Language Consultants Ltd
UK Office : PO Box 625, Godalming, GU7 1ZR, UK
Tel: + 44 (0) 8451305627
Fax: + 44 (0) 8451305647
HK Office : PO Box 1763, Sai Kung, Hong Kong
Tel: +852 27911787
Fax: + 852 27916484

Young India Films
1 – F, Lakshmi Bhawan, 609, Mount Road, Chennai – 600006
email: yif@vsnl.com
www.younindiafilms.com
Tel: +044 28295693, 28294160
28293640
Fax: + 044 28292065, 28295303
Mob : 0981022551, 09841056109

Examples of Questions for the ISA and SEE.

I **Role Play -** topics to be given 10 minutes before the commencement of the exam.

1) The Student's role: Your friend
Your role : Yourself

Your Task: You have very strong views about how animals should be treated, which are very different from your friend's. You are in a fast food café. You friend has walked in carrying a brand - new expensive snake - skin handbag/ leather coat and has ordered a double beef burger. You are wearing jute sandals and are carrying a cloth bag and have ordered a veg burger.

OR

2) The Student's Role: A new neighbour who has three very noisy and naughty children.
Your Role: The owner of a house in a quiet street.

Your Task: You are having very real problems with your neighbour. You cannot concentrate during the day on things you want to do and your neighbour's noisy children sleep very late at night keeping you awake. You are working in your garden and a ball came over the fence and hit you on the head. The children started yelling and screaming for you to throw the ball back. Instead you go over to see their parent to discuss the whole matter.

OR

3) Choose any one topic that you are passionate about:
- A book you have read recently
- A film or play you have seen recently that affected you a great deal
- A member of your family, singer, actor, scientist, historical figure who fascinates you
- Travel
- Football or cricket
- Fashion
- School

- College
- Mobile phones

I **Debate/ GD -** Groups of 5 through lots for GD

Groups of six for debate.

1) The Government of Goa should ban on all kinds of plastic bags.

OR

2) Fees charged for college education must be increased so that students of higher education can be provided better facilities, innovative courses and quality teachers.

Pair based activity

Allow students to choose their partners.

1) You in an interviewer - interviewee situation on a popular FM Radio Station. The guest speaker is an aerobics instructor and a keep- fit fanatic who is 62 years old. The interviewer agrees on the wisdom of an active life and a sensible diet but is himself/herself fond of junk food and likes nothing better than staying in bed as late as possible.

OR

2) Have a discussion on hobbies with a new boy/girl who has just joined your college , with whom you are try to make friends.

II - Individual talk/ Presentation

Topics to be displayed on the notice board well in advance of the exam.

Exam to be conducted before the commencement of the written papers. (similar to the manner in which science practicals are conducted.)

Topics (should be such that there is possibility of using audio visual aids/ mounted boards/slides/charts/ maps/graphs **if** the candidate wishes to do so.)

The image of Goa in advertising.
Festivals of India
Folk media of Goa
Indian Mythology
Flora and Fauna of Goa

Computer Application – I

For B.Com. SEMESTER I

GE 1

COURSE CODE : BCOM112	COURSE TITLE : Information Technology(Fundamentals) - I	
Total Marks : 100	Total Credits : 04	Total Contact Hours : 60

Course prerequisites : None

Course objectives : Understand the fundamentals of Information Technology and provide insights into dominant IT Applications and emerging IT Technologies.

Course contents :

Unit		Topic		Weightage	
	Title		**Content**	**Hours**	**Marks %**
	Introduction		Data and Information: Data - Definition, Types of Data, Data Representation, Number system(Decimal & Binary), Coding Schemes(ASCII and UNICODE).	3	30
			Information: Definition, Difference between Data & information, Prerequisites, Information Technology : Definition and components, Need for Information Technology and its advantages.	2	
		C	Role of Information Technology : Business, Education, Manufacturing, Public Sector, Media, Defense Services, and Publication.	2	
		D	Software: Relationship between Hardware and Software, Categories of Software - Examples,	4	

			Operating System - Definition & functions, Examples , Freeware and Open source software- Examples.		
		E	Careers in IT Industry: Analyst, Administrator, Designer, Business process outsourcing, Programmers, Technical Writing etc…	1	
		F	Use of IT in Education and Research: Data analysis, Heterogeneous storage, e-Library, Google Scholar.	3	
		G	Social and Ethical issues in IT: Computer Ethics, Intellectual property rights , Plagiarism , fair use , software licensing , Piracy.	3	
			Student Activity: Explore Data analysis, what-if-analysis and visualization in Excel		
	Multimedia Essentials	A	Introduction: Definition, Components of Multimedia, Uses of Multimedia.	3	25
		B	Multimedia applications: Entertainment, Education, Business, Training, Virtual reality.	2	
		C	**Text -** Fonts & Faces, Using Text in Multimedia, File formats **Images:** Still Images – bitmaps & vectors , image file formats, **Sound:** Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats, **Video:** How video works, Video file formats, **Animation:** Principle of animations, animation techniques, animation file formats.	7	
		D	Making Multimedia: Stages of a multimedia project, Requirements to make good multimedia, Multimedia software and Authoring tools.	4	
			Student Activity: 1. Use any image editing tool such as (GIMP, Inkspace) to design the cover page of Book. 2. Use any two Mp3 tracks of your choice to create a unique composition that is significantly different from either of the original tracks. You are free to experiment. 3. Make a Movie on a given topic with the help Windows Movie Maker.		
	E-Commerce	A	Introduction: Definition, Advantages and disadvantages of transacting online.	2	25
		B	E-commerce Business models: Introduction , key elements of a business model and	4	

			categorizing major E-commerce business models.		
		C	E-payment System: Models and methods of e–payments (Debit Card, Credit Card, Smart Cards, e-money), Payment gateways, Risks involved in e-payments.	4	
		D	Online Banking: Meaning, Concepts, Importance, Electronic Fund Transfer, Automated Clearing House.	3	
		E	M-Commerce : Definition, Services, Advantages & Disadvantages.	1	
			Student Activity : Implement a case study on any popular e-commerce website. Include following details: Introduction to the company, Overview of the products and services available, Basic elements of the company business model - Target market/audience, Revenue model, Competitive environment, Competitive advantage analysis:, Product Promotion Strategies, Financial results if available		
IV	**Overview of Emerging IT Technologies**	A	Cloud Computing: Definition, Examples Types of Cloud Computing – LasS, SasS, PasS, Deployment Models – Private, Public, Community & Hybrid cloud, Advantages and Disadvantages of Cloud Computing.	3	20
		B	Mobile Computing(MC): Definition, Aspects of MC – User Mobility, Device Portability, Applications of MC	2	
		C	Big Data:	4	

			Definition, 4Vs + V, Big data Opportunity: - Financial services, Retail, Advertising and Public relations, Manufacturing Big Data Process, Risks and challenges of Big Data.		
		D	Analytics: Definition, Business Intelligence, Data Mining - Association rule learning, Classification, Cluster Analysis, Regression.	3	
			Student Activity: Create a web form to collect and collate data (usually done for registrations etc..) using Google cloud service.		

Note:

1. IT paper shall carry 04 credits, with no credit for Lab component.
2. There shall be a theory examination of 100 Marks (Internal Assessment – 20 Marks; End Semester Examination – 80 Marks of 2 hrs. duration)
3. There shall be four Theory lectures per week of 1 hour duration per Theory class.

References:

1. Introduction to Information Technology – ITL Education Solutions Limited –Pearson Education

2. Computer fundamentals fourth edition by Pradeep K. Sinha and Priti Sinha BPB publications
3. Information Technology -The breaking wave by Dennis Curtin Tata McGraw-hill edition
4. Frontiers of Electronic Commerce Ravi Kalakota & Andrew B Whinston, Pearson Education.
5. Multimedia in practice, technology & applications, Judith Jeff Coate, PHI
6. Multimedia making it work, Tay Vaughan, 3rd edition, Tata McGraw-Hill
7. Multimedia: Computing, Communications Applications, Ralf Steinmetz and Klara Naharstedt, Pearson.
8. E-Commerce, Kenneth C. Laudon and Carlo Guercio Traver, Pearson Education.
9. E-commerce: Strategy, Technology and Applications ,David Whiteley, , McGraw Hill Education
10. Cloud Computing, http://www.dialogic.com/~/media/products/docs/whitepapers/12023-cloud-computing-wp.pdf

Practical Assignments for Computer Application – I Lab

For B.Com. SEMESTER I

GE 1

COURSE CODE : BCOM112	COURSE TITLE : Information Technology(Fundamentals) – I Lab	
Total Marks : -	Total Credits : -	Total Contact Hours : 30

Course prerequisites : None

Course objectives : To equip students with the healthy practices and efficient use of information technology services , tools and modern devices.

Course contents :

Unit		Topic		Requirements	Weightage
	Title	**#**	**Content**		**Hours**
	Introduction	1	**Operating System Basic** • Installation of Operating System (Demonstration only) • Demonstrate features of any MS Windows based OS and any of the Linux flavor • Add Devices(Printer,Audio,Video drivers)	Operating system such as: • MS Windows 7/8 or • Free and Open source Operating system such as Ubuntu, Mint etc… Appropriate Device Drivers	**2 hours**

		2	**Applications of IT and Unicode** • Check up sites of E-governance (calculate income tax, find voter id details • Enable computer to support regional language, add Keyboard, Use onscreen keyboard, install phonetic keyboard, type in regional language using Unicode	Internet & Internet Browser	**2 hours**
	Multimedia **Essentials**	3	**Word** • Basic features, Formatting, use of Multimedia content in word file, Mail merge, Spell Check, Thesaurus, Security, Page Setup etc…	Word editor such as: • MS Word or • Free Libreoffice Writer	**2 hours**
		4	**Powerpoint** • Creating slides, Formatting, sorting, • Animation, Slide master	Presentation tool such as: • MS Powerpoint or • Free Libreoffice Impress	**2 hours**
		5	**Excel – Data operations** • Use Excel to prepare personal budget for the first quarter of given financial year. Use appropriate charts to provide visual analysis of income and expenditure. • Create a file in Excel that describes a grading system for a class.	Calculation tool such as: • MS Excel or • Free Libreoffice Calc	**2 hours**
		6	**Excel – Data & Financial operations** • Use Excel to perform profit and loss statement, Balance Sheet & Assets for the given data. Make use of separate worksheets for each profit and loss statement, Balance Sheet & Assets. Make use of Financial functions(for example to calculate the depreciation of asset item)		**2 hours**
		7	**Excel – What-if- Analysis**		**2 hours**

			• Excel Use excel to perform, what if analysis of the any given data and provide appropriate visualization of the data analysis		
		8	**Image Manipulation** • Use any image editing tool such as (GIMP, Inkspace) to design the cover page of Book.	Tools such as: • Photoshop/ Coredraw • GIMP, Inkspace	**2 hours**
		9	**Audio Manipulation** • Use any two Mp3 tracks of your choice to create a unique two minute composition that is significantly different from either of the original tracks. You are free to experiment.	Tools such as: • Audacity	**2 hours**
		10	**Video Manipulation** • Make a Movie on a given topic with the help Windows Movie Maker.	Tools such as: • Windows Movie Maker	**2 hours**
	E-Commerce	11	**Online Purchase** • Attempt to purchase a product online from any E-Commerce Site. Proceed till payment gateway. Check digital certificates (such as ebay.in and amazon.com) • Write a review of an E-Commerce Site visited include: Site description, Site Design, ease in navigation, process for purchasing items, security, privacy, compare with competitors, customer service, best features of site etc..	Internet & Internet Browser	**2 hours**
		12	**E-Commerce Web Portal Case Study** An Ecommerce site case study, Include • Target market/audience: who uses this service? • Revenue model: where does the money come from? • Competitive environment: who else	Internet & Internet Browser	**2 hours**

			is competing in this market, or who might enter the market and threaten this company's position? • Competitive advantage analysis: how is your case company attempting to gain an advantage: competing on cost? differentiation? • How are they promoting their products in the marketplace? • How have they been doing - financial results if available?		
IV	**Overview of Emerging IT Technologies**	13	**Advanced web search and translation & Transliteration services** Web search, image search Seach only for pages that contain (ALL the search terms contain the exact phrase you type, contain at least one of the words you type, do NOT contain any of the words you type,written in a certain language, created in a certain file format like ppt, pdf, rtf, doc, xls) Advanced search operators: Include search ("+" search), synonym search, OR search, Domain search, Num range search, other advanced search features (Google, Local language, Technology Search, Date, Occurrences, Domains, Safe search) Use Online translators and transliteration services	Internet & Internet Browser	**2 hours**
		14	**Multiuser Google docs** Create documents, spreadsheets and presentations online Share and collaborate in real time Safely store and organize your work Control who can see your documents	Internet & Internet Browser	**2 hours**
		15	**Cloud Computing** Create web form to collect and collate data (usually done for registrations etc) using Google cloud service	Internet & Internet Browser	**2 hours**

Note:

1. IT lab Component shall carry no credit.
2. There shall be altogether 15 Lab sessions of 2 hours duration per batch of 20 Students.

Information Technology – I (Theory)

B.Com. SEMESTER I

GE 1

Unit wise Marks Distribution

Sem I	Marks Allotted	Sem II	Marks Allotted
Unit I	20-28	Unit I	20-28
Unit II	16-24	Unit II	16-24
Unit III	16-24	Unit III	16-24
Unit IV	16-24	Unit IV	16-24

Question Paper Pattern

Maximum Marks: 80			
Q. 1	Answer the following questions (Any Four/5)	4 * 2 = 08 Marks	4 questions – 3 from Unit I & 1 from Unit IV
Q. 2	Answer the following questions (Any Four/5)	4 * 2 = 08 Marks	4 questions – 2 each from every Unit II & Unit III
Q. 3	Answer the questions (Any 4/5)	4 * 4 = 16 Marks	4 questions –From unit I
Q. 4	Answer the questions (Any 4/5)	4 * 4 = 16 Marks	4 questions –From unit II
Q. 5	Answer the questions (Any 4/5)	4 * 4 = 16 Marks	4 questions –From unit III
Q. 6	Answer the questions (Any 4/5)	4 * 4 = 16 Marks	4 questions –From unit IV

B.COM
SEMESTER II
Introduction to Marketing (CC 5)
(100 Marks- 60 Lectures)

Objective: To develop an understanding of the marketing environment and relevant decisions.

Unit I Introduction to marketing (25 Marks 15 Lectures)

Market concepts-- place concept, area concept demand concept.
Kinds of goods—convenience goods, shopping goods speciality goods.
Marketing concepts - product concept, selling concept, marketing concept, societal marketing concept. Scope of marketing - goods, services, events, organisations etc.

Unit II Marketing Environment and Segmentation (25 Marks 15 Lectures)

Marketing Environment- concept, major environmental forces.
Market segmentation- concept, Bases for segmenting markets.
Consumer behaviour and marketing research
Consumer buying behaviour, factors influencing consumer buyer behaviour.
Marketing research and its importance.

Unit III Marketing decisions (25 Marks 15 Lectures)

Marketing mix decisions-product, price, promotion and physical distribution (in brief).
Sales force management-selection, training, compensation. Areas in physical distribution- Order processing, Inventory, Warehousing and Transportation. Global marketing- Alternative marketing entry strategies.

Unit IV Trends in Marketing (25 Marks 15 Lectures)

Consumerism and need for consumer protection. Social aspects of marketing—social responsibility of marketing, ecological and ethical aspects of marketing. Marketing of Services and its scope.
Direct marketing—Catalog marketing, Kiosk marketing, Telemarketing and On-Line marketing.

References:

1) Kotler, Philip. *Marketing Management.* Prentice Hall.
2) Kotler, P., Keller, K.L. Koshy, A. & Jha. M. (2009). *Marketing Management: A South Asian Perspective*. (Thirteenth Ed). Pearson Education, New Delhi.
3) Gandhi, J.C. *Marketing a Managerial Introduction.* Tata McGraw Hill.
4) Maheshwari, R.P., Jindal, Lokesh, (2011). *Marketing Management Theory and Practice*.
5) Sherlekar, S.A. *Marketing Management*. Himalaya Publishing House.
6) Saxena, Rajan. *Marketing Management*.
7) Ramaswamy & Kumari Nama. *Marketing Management*.

B.COM
SEMESTER II
Financial Statement Analysis & Interpretation (CC 6)
(100 Marks – 60 Lectures)

Course objectives
To develop skills in students to analyze and interpret financial statements from viewpoint of liquidity, solvency, profitability and cash flow of entities and apply the same for decision making.

Unit I Company Final Accounts (Elementary Level) (20 Marks, 15 Lectures)
Preparation of " Statement of Profit and Loss account" and " Balance sheet" as per Schedule III of the Companies Act 2013.

Unit II Nature and Techniques of Financial statement analysis (40 Marks, 18 Lectures)
Nature and Component of Financial Statement, Meaning and Need for Financial Statement Analysis, Traditional & Modern approaches to Financial Statement Analysis, Parties interested in Financial Statement Analysis. Techniques of Financial Statement Analysis**:**

a) Common-size statement analysis
   Meaning, preparation, interpretation, uses, merits and demerits
b) Comparative statement analysis (restricted to 2 years for intra-company and 2 companies for inter-company problems)
   Meaning, preparation, interpretation, uses, merits and demerits
c) Trend analysis
   Meaning, determination, interpretation uses, merits and demerits
   Practical problems to include preparation of Profit & Loss Statement and Balance Sheet as per Schedule III of Companies Act 2013 from the Trial Balance given and prepare common size or Comparative statement.

Unit III Ratio Analysis and Economic Value Added Analysis (20 Marks, 15 Lectures)
(a) Ratio analysis
Meaning, Objectives, Nature of Ratio analysis, Importance & Limitations of ratio analysis, Classification of Ratios - Balance Sheet ratios, Income statement ratios, and Combined ratios, Computation, Analysis and Interpretation of important ratios for measuring – Liquidity, Solvency, Capital Structure, Profitability and Managerial Effectiveness. Overview of ratio analysis in service organization.

(b) Economic Value added (EVA)
Evolution of EVA concept, EVA concept, Market value added, Calculating EVA: The conceptual issues, calculating Net operating profit after tax (NOPAT), Capital employed (CE), weighted average cost of capital (WAC), Importance of EVA, Advantages of EVA, Limitations of EVA

Unit IV Cash Flow Statement (20 Marks, 12 Lectures)

Meaning, Objectives of Cash Flow Statement, Non-cash transactions, Activity classification, Cash and cash equivalents, Direct and indirect method, Preparation and presentation of Cash Flow Statement as per indirect method and IND AS 7

References:

1. Bhirud, S., & Naphade, B. *Management Accounting.* Pune: Diamond Publications.

2. Gupta, S., & Sharma, R. *Financial Management.* New Delhi: Kalyani Publishers.

3. Jain, & Narang. *Advanced Accountancy.* New Delhi: Kalyani Publishers.

4. Madegowda, J. *Management Accounting.* New Delhi: Himalaya Publishing House.

5. Mukherjee, A., & Hanif, M. (2002). *Modern Accountancy* (Vol. II). New Delhi: Tata McGraw Hill.

6. Raman, A. *Advanced Accountancy.* New Delhi: Himalaya Publishing House.

7. Shukla, M. C., & Grewal, T. S. *Advanced Accounts.* New Delhi: S. Chand & Co .

8. Shukla, M., Grewal, T., & Gupta, S. *Advanced Accounts.* New Delhi: S. Chand & Co.

9. Tulsian, P. C. *Accountancy.* New Delhi: S. Chand & Co.

Journals for Study and Reference:

1. The Chartered Accountant: The Institute of Chartered Accountants of India
2. The Management Accountant: The Institute of Cost Accountants of India
3. The Accounting World : ICFAI Hyderabad

Guidelines for setting Question Paper

1. The question paper shall have total of 6 questions of 20 marks each
2. Four questions of 20 marks each to be answered
3. Question No. 1 to be compulsory (should be a practical question)
4. A question may be sub-divided if necessary
5. One question each from Unit I, Unit II, Unit III and Unit IV
6. Two questions each to be asked on unit II and unit III

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SEMESTER II
Managerial Economics (CC 7)
(100 Marks, 60 Lectures)

Objective: The basic objective of this course is to familiarize the students with the approach, concepts and advanced techniques of managerial economics that are applied in business decision making.

Unit I Pricing Decisions (20 Marks, 12 Lectures)

a) **Pricing Methods and Strategies** – Cost based pricing(cost plus, marginal cost & target return pricing), Competition based pricing(penetration, entry deterring and going rate pricing), Product life cycle based pricing(price skimming, packaging, perceived value, loss leader pricing), Cyclical pricing (rigid and flexible pricing),Multi-product pricing, Peak load pricing, Sealed bid pricing, Retail pricing, Administered pricing, Export pricing, International price discrimination, Dumping and transfer pricing.

b) **General considerations and objectives of pricing policy** – Price elasticity of demand and pricing – price forecasting.

Unit II Profit Analysis (20 Marks, 12 Lectures)

a) **Profit**

Meaning, Different concepts, nature, kinds and role of profit; profit policy, profit limiting factors

b) **Break Even Analysis**

Meaning, assumptions, uses, limitations, application, break even chart and calculation of Break-Even Quantity and Break-Even Sales, contribution margin, safety margin, targeted sales volume and expected profits; Profit-volume (P/V)analysis -meaning, chart, assumptions and measurement (Numerical Problems to be included) Profit forecasting: meaning and methods

Unit III Capital Budgeting (30 Marks, 18 Lectures)

a) **Capital budgeting**

Meaning; Nature; Process; Significance; Factors influencing investment decisions; Approaches to determine size of capital budget; Types of projects; steps in capital project evaluation; Methods of project evaluation with numerical problems (Payback period, Average rate of return (ARR), Net Present Value (NPV), Profitability Index(PI) and Internal Rate of Return (IRR) methods); Social cost-benefit analysis (concept, objectives, steps involved and evaluation)

b) **Cost of capital**

Sources of funds for long-term financing; cost of debt, cost of preference share capital, cost of equity capital, cost of retained earnings – the weighted cost of capital (numerical problems to be included)

Unit IV Decision and Risk Analysis in Business (30 Marks , 18 Lectures)

a) Business Decision making – certainty , risk and uncertainty, sources of business risk, steps involved in analysis of risky decisions, risk premiums, risk adjustment

b) Risk and Investment Proposals – measures of incorporating risk(expected value and standard deviation), methods to decide selection of project (the finite-horizon, risk adjusted discount rate, certainty equivalent and decision tree analysis method)

Decisions under uncertainty - Game Theory (Assumptions, Structure, Significance, Limitations and Strategies) – Pure Strategy, Nash Equilibrium, Prisoners' Dilemma, and Applications of Game Theory in Economics. (Numerical problems to be included).

References :

1. Ahuja. H. L. *'Advanced Economic Theory (microeconomic Analysis)'* S. Chand Limited, New Delhi .
2. Geetika, Ghosh. P. & Roy Choudhury. P. *'Managerial Economics'* Tata McGraw Hill Education Pvt Ltd, New Delhi.
3. Indira Gandhi National Open University: School of Management: Managerial Economics- MS/9
4. Mehta, P.L. *'Managerial Economics'*, Sultan Chand & Sons, Educational Publishers, New Delhi.
5. Mithani.D.M. *'Managerial Economics (Theory & Application)'* Himalaya Publishing House,New Delhi.
6. Mukherjee Sampat, *'Business and Managerial Economics'*, New Central Book Agency (P) Ltd., Calcutta.
7. Samuelson, Paul A and Nordhaus, W.P., 'Economics', McGraw Hill, New York.
8. Varshney R.L. & Maheshwari. K.L., *'Managerial Economics'* Sultan Chand & Sons, Educational Publishers, New Delhi.

B.COM.
SEMESTER II
Commercial Arithmetic – II (CC 8)
(100 marks - 60 Lectures)

Unit I The Straight Line **(25marks - 12 hours)**

- Rectangular Cartesian Co-ordinate System
- Distance formula, Section formula (Simple problems only)
- Slope and intercepts of a straight line
- Equations of lines parallel to the axes.
- Equations of lines in slope point form, two point form, slope intercept form, two intercept form
- General equation of a line, Parallel and perpendicular lines
- Intersection of lines
- Graphs of linear equations and inequalities
- Graphical solution of Linear Programming Problems with two variables only

Unit 2 Calculus I

(a) Relations and Functions **(5marks - 4 Lectures)**

- Ordered pair
- Cartesian product
- Relation, Function – Domain, Co-domain, Range.

(b) Limits and Continuity **(5marks - 4 Lectures)**

- Definition
- Operations of finding limits
- Algebra of limits
- Concept of continuity and examples

(c) Derivatives and their Applications **(25 marks - 12 Lectures)**

- Concept of derivatives
- Standard forms
- Algebra of derivatives
- Derivatives of composite functions
- Higher order derivatives
- Applications – Total revenue function, Total cost function, Elasticity of demand and supply
- Increasing and decreasing function/sign of derivative (economic applications)
- Maxima and Minima (economic applications)

Unit III Calculus II

(a) Integration and its Applications **(15marks - 12 Lectures)**

- Definition
- Standard forms x^n, e^x, a^x, $1/x$

- Integral of f(x) + g(x) and kf(x)
- Integral of $(ax+b)^n$, e^{ax+b}, k^{ax+b}, 1/ax+b
- Applications – Total revenue function, Total cost function
- Definite integration
- Area under a curve (formula only)
- Consumer's Surplus and Producer's Surplus

(b) Partial Derivatives (5marks - 4 Lectures)

- Definition
- Partial derivatives of first and second order
- Economic applications: Demand function, Utility function, Production function

Unit IV Commercial Mathematics (20marks - 12 Lectures)

- Ratio
- Proportion
- Percentage
- Discount – Trade Discount, Cash discount, Discount and profit.

References

1. Joshi N. and Chitale S.G., *A New Approach To Mathematical Techniques* , Sheth Publishers
2. Vaidya M.L., Deshpande A.V., Kumtha A.P., *Elementary Business Mathematics*, Vipul Prakashan
3. DikshitAmarnath, Jain Jinendra Kumar, *Business Mathematics*, Himalaya Publishing House
4. GoelAjayand GoelAlka, *Mathematics and Statistics*, Taxmann Allied Services
5. Vaidya M.V., KumthaA. P., *Business Mathematics*, Vipul Prakashan
6. ShahS., *Business Mathematics(for ICWAI International Course),* New Central Book Agency.
7. Abranches, M.E, *Mathematical Techniques*, Gracias Print Arts.

B.COM.
SEMESTER II
Business Communication (AECC 3)
(Modern Communication Skills)
(100 Marks - 60 Lectures)

Course Objectives:

Communication skills have emerged as the most powerful set of skills to possess for accelerating one's career trajectory and for enhancing the quality of life of people in modern times. In a competitive world where efficiency and effectiveness do matter, it is imperative that students learn these skills.

This Course of Modern Business Skills in Business Communication integrates spoken, written, visual and written communication situations and strategies - the way communication actually occurs in a dynamic workplace. Some of the course objectives are:

- **To increase students confidence and ability to communicate orally while using technology.**
- **To improve collaboration and communication skills of students.**
- **To enhance multimedia literacy skills of students.**
- **To build relationships and establish their online social presence.**

UNIT 1: Digital Storytelling [DST] (40 Marks - 23 Lectures)

(Creation of a Digital Story: Workshops for students in small batches of where the basics and software skills needed for DST are imparted; Students are then to individually create a DST and present the same in class)

UNIT 2: Individual Speeches (Impact/ Oratory) and Presentations

(a) Individual Speeches - Pathos / Logos / Ethos / Overcoming Fear / Formulae for Speeches / People (Body Language) / Voice Skills / Audience **(10 Marks - 6 Lectures)**

(b) Creating and Making Individual Presentations - Using Software like Powerpoint / Prezi On-line Zooming Editor / Mind-Mapping Software / Incorporating principles of Zen / Slido:ology / Duarte **(10 Marks - 15 Lectures)**

UNIT 3: Electronic and Web Communications: (20 Marks – 5 Lectures)

a) Using Social Media for Communication [for contributing to a FACEBOOK Group or mailing list created by the teacher for the purpose. This group can be on any topic which helps to improve communication skills.] **(5 Marks)**

b) Creating & Using a Blog or Free Web site **(10 Marks)**

c) Using cell-phones, laptops and other means for e-mail and instant messaging for Business; etiquette involved **(5 Marks)**

UNIT 4 Conducting Effective Meetings (20 Marks - 11 Hours)

(Pedagogy: Role Play - Groups of 6-10 students to conduct a meeting)

Chairpersonship, Protocol (Brief insights into Robert's Rules of Order), Benefits, Notice, Agenda, Drafting Minutes (Discussions /Resolutions)

[10 marks for participation in a Meeting. 5 marks for drafting the Notice and the Agenda for the Meeting. 5 marks for writing the Minutes of the Meeting. The meetings where the students are to be judged can be ones which are organized for the purpose of discussing topics given by the teacher.]

Requirements:

(Essential)

1) An LCD projector in every classroom
2) A Laptop for Facilitator (Desirable)
3) Computers for students
4) Broadband Facility
5) A large screen SMART TV / SMARTBOARD
6) HD Video Camera (with Hard Disk)
7) Home Theatre
8) Software: Pinnacle / Cyberlink / U-lead Video Studio / Buzan's Mind-Mapping / Business-in-a-Box
9)Language Lab / other relevant software as decided by the concerned teacher
10) External Hard Disks
11) A Smart Board

Assessment and Pedagogy:

Continuous Internal Assessment in the proportion to the marks assigned in the syllabus: 100 marks. The teacher may devise appropriate exercises to test the student's skills.

Suggestion: ISA 1 (Individual Speeches)
ISA 2 (Individual Presentations)

References:

1. Digital Storytelling: Guide for Educators, Midge Frazel, International Society for Technology in Education, 2010 ISBN 9781564842596
2. How to Win Friends and Influence People, Dale Carnegie, Pocket Books, 2010 ed.
3. Making Presentations, Tim Hindle, Dorling Kindersley Publishers, 1999 ed. Say it with Presentations, Gene Zelazny, Tata McGraw-Hill Education (2004).
4. Presentation Zen: Simple Ideas on Presentation Design and Delivery (2 nd Edition) (Voices that Matter) Garr Reynolds. 2011
5. Slide:ology: The Art and Science of Creating Great Presentations, Nancy Duarte, 2008. ISBN 0596522347
6. Social Media Marketing for Dummies, Shiv Singh, Stephanie Diamond, Wiley, 2007. ISBN 9781118236307.

Robert's Rules of Order, Robert Henry M., Createspace, 2010, ISBN 978145380715.

Syllabus for Computer Application - II for B.Com. SEMESTER II

GE 2

COURSE CODE : BCOM212	COURSE TITLE : Information Technology(Cyber Security) - II	
Total Marks : 100	Total Credits : 04	Total Contact Hours : 60

Course prerequisites : Information Technology I

Course objectives : To understand the basics of cyber space and accompanying cyber threats and provide the foundation for preparing, detecting and protecting against cyber threats and challenges.

Course contents :

Unit		Topic		Weightage	
	Title		Content	Hours	Marks %
	Basics of Computer Networking		Computer Networking Basics: Definition, Need , Advantages & Disadvantages.	1	30
		B	Transmission Media: Wired & Wireless.	3	
		C	Networking Devices: Repeater, Switch, Router, Gateway.	2	
		D	Network Topology: Bus, Star and mesh – advantages & disadvantages of each.	2	
		E	Types of network: PAN,LAN, MAN, WAN, internet .	2	
		F	IP Addressing : Static Vs Dynamic IP addresses, Public Vs Private IP addresses.	2	

		G	Internet: Basic terms -web page, website, URL, HTTP & HTTPS, ISP, web server, web browser, Cyber Space ,hyperlinks, hypertext, download and upload, online and offline.	2	
		H	Internet applications: WWW, search engine, DNS, Electronic mail(e-mail), File transfer Protocol(FTP), Internet telephony, Video conferencing, Blogs, E-commerce.	2	
		I	Social Networking: Basics, Types of social networking sites –General, Multimedia, Professional, Educational, Importance of Social Networking.	3	
		J	Security in Social networking: Safety tips for socializing (In General & w.r.t. Facebook) Reporting any security breach.	1	
			Student Activity: Analyze the facebook account and report the different safety features provided by facebook for the safety of the users.		
	Cyber Threats	A	Basics: Definition - Cyber Threats , Cyber Attack, Cyber Crime Cyber Attackers – Hackers, Hactivists, Rogue Insiders, States/Nations etc…	2	20
		B	Types of Cyber Attacks: 1. Device compromise 2. Service disruption 3. Data Exfilteration 4. Advance Persistent Threat(APT)	2	
		C	Cyber Attack Artifacts: Viruses, Worms, Trojan Horse, Botnet, Denial of Service (DoS,DDoS), Social Engineering - Phishing, Zero Day Attack, Cyber Stalking, E-Mail Spoofing, Pharming, Cyber Warfare, Cyber Espionage, Cyber Vandalism	4	
		D	Vulnerabilities and Countermeasures: Causes of each cyber-attacks type, Countermeasures to tackle each Cyber Attack artifacts.	4	
			Student Activity: Provide report of any cyber threat(s) faced by		

			you/friends/any other and list the causes and steps taken to counter such attack.		
	Security in Cyber Shopping	A	Online Shopping: Basics – Privacy, Sensitive Personal Information, Advantages & Disadvantages of Online Shopping.	2	25
			Privacy Issues: Cookies and online tracking, Sharing Information when Shopping Online, Password Protection, Privacy Policies.	2	
		B	Problems associated with online shopping: Data Pharming, Hijackers, Spoofing, Online Fraud.	3	
		C	Safety measures in online Shopping: Encryption of Data Authentication (SSL, Digital Signature, Certificates, Hashing) Security Tokens. Steps to safeguard online shopping security and privacy.	5	
		D	Payments Methods: Different payment methods in online transactions, Safety practices, Best payment method(s).	2	
		D	**Student Activity** – Consider any two online shopping sites and compare their features(Products, usability, policy to attract customers, payment methods, safety practices etc…)		
IV	**Cyber Laws**	A	Information Technology Act(ITA) 2000 : Definition and Terminology - Internet Governance, E-Record,	3	25

	and Cyber Forensic		E-Contract, E-Forms, Adjudicating Officer, Affixing Digital signature, Certifying Authority, Sections - Section 43, Section 65.		
		B	Information Technology (Amendment)(ITAA) Act 2008: Terminology - Communication Devices, Electronic Signature, Sections : Section 66 , Section 67, Section 69.	3	
		C	Provisions/Laws related to e-commerce, Issues not covered under ITA & ITAA, Reporting cyber-crimes.	2	
		D	Digital Evidence: Definition, Categories of Evidence, Types of Evidence, Admissibility of Evidence, Forensic Examination Standards.	2	
		E	Forensic Investigation Steps: Evidence Collection, Preserving Digital Evidence – Special Considerations, Recovering Digital Evidence, Documenting Evidence, Documenting Evidence Analysis.	4	
			Student Activity: Make use of any Forensics investigation tools such as		

			winhex and carry following tasks: Cloning and imaging of removable device, Examination of the complete directory structure, calculate hash ,Identification of pictures embedded in documents etc.)	

Note:

1. IT paper shall carry 04 credits, with no credit for lab component.
2. There shall be a theory examination of 100 Marks (Internal Assessment – 20 Marks; End Semester Examination – 80 Marks of 2 hrs. duration)
3. There shall be four theory lectures per week of 1 hour duration per theory class.

References:

1. Introduction to Information Technology – ITL Education Solutions Limited –Pearson Education
2. Data Communications and Networking Tata McGraw Hill Edition B. A. Forouzan
3. Rick Lehtinen and G.T. Gangemi, Computer Security Basics, O'Reillly Media, Inc.; 2nd edition, 2006
4. Wall, David, (2007). Cybercrime: The Transformation of Crime in the Information Age. Polity Publishing
5. Michael Cross, Scene of the Cyber Crime, Syngress Publishing, Elsevier Publishing, 2nd Edition, ISBN 13: 978-1-59749-276-8
6. Chander, Harish, Cyber Laws and IT Protection, ISBN: 978-81-203-4570-6, PHI Learning
7. Facebook, https://www.facebook.com
8. Cyber Laws, http://deity.gov.in/content/cyber-laws
9. X-Ways Forensics ,https://www.x-ways.net/winhex/index-m.html
10. Online Shopping Safety, http://www.trendmicro.com/vinfo/us/security/news/cybercrime-and-digital-threats/eight-ways-to-ensure-a-safe-online-shopping-experience
11. www.cert.org
12. www.nist.gov

Practical Assignments for Computer Application – II Lab for

B.Com. SEMESTER II

GE 2

COURSE CODE : BCOM212	COURSE TITLE : Information Technology(Cyber Security) – II Lab	
Total Marks :	Total Credits :	Total Contact Hours : 30

Course prerequisites : None

Course objectives : To understand the basics of cyber space and accompanying cyber threats and provide the foundation for preparing, detecting and protecting against cyber threats and challenges.

Practical Assignments:

Unit		Topic		Requirements	Weightage
	Title	**#**	**Content**		**Hours**
	Basics of Computer Networking	1	**Networking Basics** • Connecting to Network • Sharing directories • Connecting to shares • Set up a common storage	Networked Devices	**2 hours**
		2	**Advanced Networking** • Identify IP address, ping • Set up a basic firewall • Set up a security level • Setup free online backup	Networked Devices & internet & Web Browser	**2 hours**

		3	**Web browser security, Internet Connectivity & Tracing .** • Configure the web browser for optimized performance and security. • Identify the IP address of the remote website. • Find the public IP address of your device and your ISP. • Find the upload and Download speed. • Use Trace Email Analyzer to get the sender's IP address and track the source.	internet , Web Browser and online Trace Email Analyzer	**2 hours**
		4	**Social Networking & Facebook** • Analyze the facebook account and report the different safety features provided by facebook for the safety of the users.	Internet & Internet Browser	**2 hours**
	Cyber Threats	5	**Virus Threat** • Analyze any system infected with cyber threat list the causes and steps needs to be taken to counter such attack. • Find the techniques viruses use to evade Antivirus Software.	Any Antivirus/ Malware detection tool	**2 hours**
		6	**Spyware - Infection, Collection, Detection, and Eradication** • How spyware infects devices. • Define the indicators of a spyware infection. • Explore how anti-spyware software detects spyware. • Download and install any anti-spyware software on a computer.	Any Antispyware tool	**2 hours**

		7	**Steganography and Steganalysis** **Steganography** • Hide text messages in images with simple commands. • Hide encrypted text messages in images with 4t HIT Lite. • Hide encrypted files in images with JPEG Hide and Seek (JPHS). **Steganalysis** • Given two images, determine which image contains hidden information using tools such as Steganographic studio.	Use following software tools: • 4t HIT Mail Privacy Lite, • JPEG Hide and Seek (JPHS), • Steganographic studio	**2 hours**
		8	**Password Security** • Measure brute force and dictionary cracking times for passwords of varying length and complexity with Proactive Password Auditor (PPA) • Define the characteristics of a strong password. • Study the relationship between password strength and cracking time. • Calculate the total number of unique passwords given password length and number of subunits (letters, digits, or symbols).	Use following software tool: Proactive Password Auditor (PPA)	**2 hours**
		9	**Defense in Depth - Overall Steps for Cyber security of a device(Laptop/Mobile)**		**2 hours**

	Security in Cyber Shopping	10	**Privacy Protection through Cryptography** • Use tools such as Gnu Privacy Guard (GPG) to encrypt, decrypt, sign, and verify files.	Use following software tool: Gnu Privacy Guard (GPG)	**2 hours**
		11	**Security & Privacy** • Download and install Best Free Keylogger (BFK). • Log a computer's keystrokes using BFK. • Research methods to defend against keyloggers. • Explore the ethics of using keyloggers.	Use following software tool: Best Free Keylogger (BFK).	**2 hours**
		12	**Online Shopping** • Consider any two online shopping sites and compare their features(Products, usability, policy to attract customers, payment methods, safety practices etc…)	Internet & Internet Browser	**2 hours**
		13	**Online Banking** • Consider any online banking sites Find the features(Banking services, financial transactions, security practices etc…)	Internet & Internet Browser	**2 hours**
IV	**Cyber Laws and**	14	**Digital Evidence** • Make use of any Forensics investigation tools such as winhex and carry following tasks: • Cloning and imaging of removable device, Examination of the	Use following software tools: • Winhex	**2 hours**

	Cyber Forensic		complete directory structure, calculate hash ,Compare hash after minor file modification etc...)		
		15	**Forensic Investigation Steps** • Make use of any Forensics investigation tools such as winhex and carry detailed forensic investigation steps and prepare the report. Include: • Evidence Collection, • Preserving Digital Evidence – Special Considerations, • Recovering Digital Evidence, • Documenting Evidence, • Documenting Evidence Analysis.	Use following software tools: • Winhex	2

Note:

1. IT lab Component shall carry no credit.
2. There shall be altogether 15 Lab sessions of 2 hours duration per batch of 20 Students.

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SEMESTER III

Business Finance (CC 9)

(100 Marks, 60 Lectures)

UNIT I: Nature and Objectives of Business Finance (25 Marks 15 Lectures)
Meaning of business finance, business finance v/s corporate finance, role of business finance in an organization, principles of business finance, meaning of financial planning, steps in financial planning, significance of financial planning, essential features of a good financial plan, types of financial plan.

UNIT II: Classification of Capital (25 Marks-15 Lectures)
Meaning of Capital, Classification of capital, factors determining capital requirements, meaning, features and sources of fixed capital, factors determining fixed capital requirements, importance of adequate fixed capital; meaning, features and sources of working capital, Factors determining working capital requirements, significance of adequate Working capital, types of working capital

UNIT III: Capitalisation (25 Marks-15 Lectures)
Meaning of capitalization, Theories of capitalization, Cost theory v/s Earnings theory, overcapitalization and under capitalization, meaning, causes, effects and remedies; overcapitalization v/s under capitalization; balanced capitalization, meaning and importance

UNIT IV: Capital Structure (25 Marks–15 Lectures)
Concept of capital structure, Meaning and importance of capital structure, factors affecting capital structure, concept of financial structure, capital gearing, meaning, types and advantages, trading on equity, meaning, types and advantages and limitations.

References:

Books

1. Sharma, R.K. & Gupta, Shashi., K. *Business Organisation and Management*
2. Srivastava, R.M. *Essentials of Business Finance*, Himalaya Publishing House, Kalyani Publications.
3. Singh, Preeti. Investment Management. Himalaya Publishing House
4. Kale, N.G. *Business Organisation.* Manisha Publications.
5. Sontakki C.N., *Business Organisation*, Seth Publishers
6. Gordon, E. & Natarajan, K. Financial Markets and Institutions, Himalaya Publishing House.
7. Sadak, H. *Mutual Funds in India*, Response Books, Sage Publications.

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SEMESTER III
Fundamentals of Cost Accounting (CC10)
(100 Marks, 60 Lectures)

Objective: To familiarize students to elements and methods of cost accounting

Unit I Introduction to Cost Accounting (10 Marks, 6 Lectures)
Concept of cost, Costing, Cost accounting, Objectives, Importance of cost accounting, Cost unit, Cost centre, Classification of cost, Distinction between cost accounting and financial accounting.

Unit II Unit costing (30 Marks, 18 Lectures)
Accounting and control of Waste, Scrap, Spoilage and Defective works Cost sheet and Estimated cost sheet .

Unit III Contract costing (30 Marks , 18 Lectures)
Introduction to relevant Accounting Standard, preparation of contract account for one year, more than one year and contract account with balance sheet.

Unit IV Process costing (30 Marks, 18 Lectures)
Features and application of Process Costing, Elements of Production Cost, Accounting for normal loss, abnormal loss, scrap and abnormal gain. Joint – products and by – products.

References:

1. Jain S. P and K.L. Narang- *Cost Accounting Principles and practice* – Kalyani Publishers, Ludhiana.
2. Bhar, B.K. *Cost Accounting- Methods & Problems ,* Academic Publishers Calcutta 700073.
3. Kishore R. *Cost Accounting*- Taxmann Allied Service Pvt.Ltd.New Delhi.
4. Iyenger, S. P. *Cost Accounting*. S. chand& Co. New Delhi
5. Khana, B. S. & J. M. Pandey- *Practical costing.* S. Chand & Co. New Delhi
6. Khan, M. Y. & P.K. Jain- *Theory and Problems of Management and Cost Accounting*- Tata McGraw Hill Publishing co. Ltd. New Delhi
7. Lal, J. *Cost Accounting.* Tata McGraw –Hill Publishing co. Ltd. New Delhi
8. Nigam, B. & J.C. Jain. *Cost Accounting Principles & Practice.* Prentice- Hall of India Pvt. Ltd., New Delhi

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SEMESTER III
Entrepreneurship Development (CC 11)
(100 Marks- 60 Lectures)

OBJECTIVE: To motivate the students to be self employed. From the syllabus they will get theoretical knowledge on how to start an enterprise of their own. Practical knowledge can be obtained through assignments like writing a project report to obtain finance or interviewing existing entrepreneurs.

UNIT I Introduction (40 Marks-24 Lectures)

a) Definition and concept of entrepreneur
Qualities, Skills and Functions of entrepreneur
b)Origin and development of entrepreneurship.
Theories of entrepreneurship
Role of entrepreneur in economic development
Entrepreneur V/s Intrapreneur, features of Intrapreneurs.
Types of entrepreneurs
Recent trends-sociopreneur, edupreneur, ecopreneur, and agropreneur
Women entrepreneurs. Self Help Groups.

UNIT II Identification of Business Opportunities (20Marks-12 lectures)
SWOT analysis
Environment scanning-meaning and benefits
Factors considered for environment scanning- socio-cultural, economic, technical, demographic, legal and political, geographical and international factors.
Sources and steps involved in identification of business opportunities.
Market research- meaning, need for market research, techniques in market research- field survey techniques, test marketing, Delphi technique, desk research ,observation method and experiment method.

UNIT III Project formulation (20 Marks-12 lectures)
Meaning and concept of project formulation
Stages in project formulation
a)Elements of project formulation-feasibility analysis, techno-economic analysis, project design and network analysis, input analysis, financial analysis.
b)Project Appraisal-concept and features, methods of appraisal-break even analysis, cost benefit analysis, social cost benefit analysis and profitability analysis.
c)Project Selection-meaning,
Factors to be considered for project selection-rawmaterials, credit facilities, market forces, competition, government policy, incentives and subsidies, labour force, capital requirements, infrastructure, profitability .
d)Project report-meaning importance and contents of project report.

UNIT IV Innovation in Entrepreneurship (20 Marks-12 lectures)

Purposeful innovation-unexpected success/failure, process, need, change in demography, industry and market structure, incongruities, change in perception, new knowledge

Principles of purposeful innovation

Incubation Centres-meaning, services and role of incubation centres, study of incubation centres in Goa.

References:

1. Desai, Vasant. *Dynamics of Entrepreneurship Development*
2. Drucker, Peter. *Innovation and Entrepreneurship-Practice and Principles*
3. Mascarenhas, Romeo. *Entrepreneurship Management.* Vipul Prakashan
4. Paul, Jose; Kumar, Ajith. *Entrepreneurship Development and Management.* Himalaya publishing house
5. Khanka, S.S. *Entrepreneurial Development.* Sultan Chand publication
6. Gordon, Natarajan. *Entrepreneurship Development.* Himalaya publishing house
7. Gupta, C.B., Srinivasan *Entrepreneurial Development.* Sultan Chand
8. Pednekar, Achut P. *Entrepreneurship Management.* Himalaya publishing house

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SEMESTER III
Business Laws (SEC 1)
(100 Marks, 60 Lectures)

Objective: To impart basic knowledge of the important business legislations.

Unit 1: The Indian Contract Act, 1872 (30 Marks, 24 Lectures)

a) General principles of contract

i) Contract – meaning, characteristics and kinds
ii) Essentials of a valid contract - Offer and acceptance, consideration, contractual capacity, free consent, legality of objects.
iii) Void agreements
iv) Discharge of a contract – modes of discharge, breach and remedies against breach of contract.
v) Contingent contracts
vi) Quasi - contracts

b) Specific Contracts

i) Contract of Indemnity and Guarantee – meaning, rights and duties of surety,
ii) Contract of Bailment – meaning, rights and duties of Bailor & Bailee
iii) Contract of Agency – meaning, modes of creation of agency, rights & duties of Agent & Principal

Unit II: The Sale of Goods Act, 1930 (20 Marks, 12 Lectures)

i) Contract of sale, meaning and difference between sale and agreement to sell.
ii) Conditions and warranties
iii) Transfer of ownership in goods including sale by a non-owner
iv) Performance of contract of sale
v) Unpaid seller – meaning, rights of an unpaid seller against the goods and the buyer.

Unit III: Arbitration and Conciliation Act, 1996 (25 Marks, 12 Lectures)

i) Introduction
ii) Arbitration
iii) Arbitration Agreement
iv) Arbitral Tribunal and arbitral procedure
v) Jurisdiction of Arbitral Tribunal
vi) Conduct of Arbitral proceedings
vii) Making of Arbitral Award
viii) Termination of Arbitral Proceedings
ix) Conciliation – meaning,
x) Procedure for commencement of proceedings,
xi) Appointment of conciliator,
xii) Conciliation procedure

xii) Role of conciliator,
xiii) Termination of conciliation proceedings
xiv) Status of settlement by conciliator

Unit 4: The Negotiable Instruments Act 1881 (25 Marks, 12 Lectures)

i) Meaning, Characteristics, and Types of Negotiable Instruments: Promissory Note, Bill of Exchange, Cheque
ii) Holder and Holder in Due Course, Privileges of Holder in Due Course.
iii) Negotiation: Types of Endorsements
iv) Crossing of Cheque
v) Bouncing of Cheque

Suggested Readings:

1. M.C. Kuchhal, and Vivek Kuchhal, Business Law, Vikas Publishing House, New Delhi.
2. Avtar Singh, Business Law, Eastern Book Company, Lucknow.
3. Ravinder Kumar, Legal Aspects of Business, Cengage Learning
4. SN Maheshwari and SK Maheshwari, Business Law, National Publishing House, New Delhi.
5. Aggarwal S K, Business Law, Galgotia Publishers Company, New Delhi.
6. Bhushan Kumar Goyal and Jain Kinneri, Business Laws, International Book House
7. Sushma Arora, Business Laws, Taxmann Pulications.
8. Akhileshwar Pathak, Legal Aspects of Business, McGraw Hill Education, 6th ed.
9. P C Tulsian and Bharat Tulsian, Business Law, McGraw Hill Education
10. Sharma, J.P. and Sunaina Kanojia, Business Laws, Ane Books Pvt. Ltd., New Delhi.
11. Business Law *for Management* - by K.R.Bulchandani
12. Business Law - by Prof. Manohar R. Wadhwani
13. Business Law – by S.S. Gulshan, G.K. Kapoor
14. A textbook of Business Law – by P.P.S. Gogna
15. Arbitration and Alternative Dispute Resolution - by Dr. N.V.Paranjape
16. Law of Arbitration and Conciliation - by Dr. Avtar Singh

Note: Latest edition of text books may be used.

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SEMESTER III
Business Statistics– I (GE 3)
(100 Marks - 60 Lectures)

Unit I Data Analysis (15 Lectures -24 marks)

Introduction:Meaning and definition of Statistics,function,scope and limitation of Statistics, Basic Statistical concepts: Population, sample, variate, attribute, parameter and Statistic.

Types of data-Primary and secondary data, Sources and methods of collecting data, classification-univariate frequency distribution and questionnaire design.

Graphs and diagrams-Frequency polygon,frequency curve and ogives, Simple, multiple, subdivided bar diagram, pie chart.

Unit II Summarisation Measures (24 Lectures -40 marks)

Measures of Central Tendency: Meaning, objectives and requirement of a good measure of central tendency, Arithmetic Mean,Mode and Median(with & without grouping),Harmonic Mean(ungrouped data), Quartiles, deciles and percentiles.

Measures of Dispersion: Meaning,objectives and requirement of a good measure of dispersion,absolute and relative measure, Range,quartile deviation, mean deviation,standard deviation, Coefficient of range, , Coefficient of quartile deviation, , Coefficient of mean deviation, Coefficient of variation, Skewness- Karl Pearson's and Bowley's measure and coefficient of Skewness.

Unit III Index Numbers (13 Lectures -18 marks)

Meaning,types, uses and limitations of index numbers, Methods of constructing price and quantity Index numbers by weighted and unweighted methods, Weighted aggregative-Laspeyre's, Paasche's , Fishers and Value index numbers,Weighted average of price relatives, fixed base,chain base,shifting of base, deflating and splicing of Index numbers, cost of living Index numbers.

Unit IV Analysis of Time series (8 Lectures -18 marks)

Components andmodels of Time series, Measurement of trend-semi averages, moving averages, freehand and least square method(linear and non linear).

References:

1. Gupta S.P.,*Statistical Methods*, Sultan Chand & sons.
2. Gupta C.B., *Fundamentals of Statistics*, Himalaya Publishing House.
3. Shah, R.J., *Statistical Methods*.
4. Mazumdar Neeta, *Statistical Techniques*, RajhaunsVitaran.

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SEMESTER III
Economics of Resources (GE 4)
(100 Marks, 60 Lectures)

Objectives:

1.To familiarize the students with concepts and issues in the realm environmental economics and sustainable development.

2. To introduce the students to economics of resources and their use against the background of growing global concerns over the future of the world economy due to the rapid depletion of natural resources

3. To help the students understand the significance of the management of environment and resources for business.

4. To introduce the students to the economics of human resource development

Unit I Economics of the Environment (25 Marks, 15Lectures)

Environmental Economics- definition and meaning; linkages between economy and environment, relevance of environmental economics for business, trade-off between conventional economic output and environmental quality (what is the trade-off, why it occurs, what can be done).Economic efficiency and markets-meaning of economic efficiency and social efficiency, relation between markets and economic and social efficiency, external costs, private and social cost, external benefits, externalities and market failure, over-use of open-access resources. The market approach to environmental problems- internalization of external cost, pollution charges, environmental subsidies, carbon credits(meaning of each, how they work through the market mechanism) Environmental Impact Assessment (EIA) of projects- meaning, benefits.

Unit II Economics of Resources (20 Marks, 12 Lectures)

Definition of resource, classification, meaning and importance of each, Economic development and resource use- optimist and pessimist models- their major conclusions, Sustainable development- definition and meaning.

Unit III Economics of Energy and Water (25 Marks, 15 Lectures)

Economics of energy: meaning of energy; Energy and economic growth, criticality of energy as a resource, energy security, dependence on imports, inflation; Energy availability at the global and national levels, demand-supply gaps, implications, measures to reduce the gap; energy pricing in India; energy audit- meaning, importance; current energy scenario in India .

Economics of water: Economic importance of water; Demand for water- domestic and commercial (industry, agriculture); Global water scarcity; Water scarcity in India- extent, causes, attempted solution; Pricing of water -importance, water pricing in India; Challenges in the water sector-scarcity, sharing of water, pollution, groundwater issues, pricing, water quality…..; National Water Policy- proposed measures to meet challenges.

Unit IV Human Resource Economics (30 Marks ,18 Lectures)

Human resource development- role of education and health in human resource development; Link between education and economic growth and development (productivity, earnings, family size, family health, improved standards of living, adoption of new technology…); benefits of education-direct, indirect, private and social benefits; education as a merit good; expenditure on education in India and its composition (primary, secondary and higher education; public and private).

Link between health and economic growth and development (productivity, earnings, money saved can be spent elsewhere, saving and capital formation, better educational performance of children, smaller families….); determinants of health (income and social status, education, physical environment, health services…) ; health status indicators in India- birth rate, death rate, life expectancy, mortality (infant, child and maternal mortality rates), morbidity; recent trends in health status in India; economic dimension of healthcare - demand and supply of health care; challenges to public health in India; financing of health services - private and public expenditure on health; health insurance.

References:

1. Field, Barry. C. & Field, M. K. 2002. Environmental Economics: An Introduction. McGraw Hill, Singapore.
2. Field, Barry. C. 2001. Natural Resource Economics: An Introduction. McGraw Hill, Singapore.
3. Bhattacharya, R.N. 2001. Environmental Economics: An Indian Perspective. Oxford University Press, New Delhi.
4. Bromley, D. W. 1986. Natural Resource Economics, Policy problems and Contemporary Analysis. Kluwer, Boston.ed.
5. Dorfman, M. R. 1972. Economics of the Environment. W.W. Norton & Co. New York.
6. Dutt, R. and Sundharam, K.P.M. (most recent edition). Indian Economy. Sultan Chand and Co. New Delhi.
7. Hanley, N., J. F. Shogren& B. White. 2001. Environmental Economics in Theory and Practice. Macmillan. London.
8. Hartwick, J. M. &Olewiler, N.D. 1998.The Economics of Natural Resource Use. Harper & Row, Mass., USA. 2nd ed.
9. Hussen, A. 2004. Principles of Environmental Economics. Routledge. London.
10. Karpagam, M. 2001. Environmental Economics. Sterling Publishers. New Delhi.
11. Merret, S. 1997. Introduction to the Economics of Water Resources: An International Perspective. UCL Press.
12. Perman, R. Ma, Y., McGilvray, J. and Common, M. 2003. Natural Resource and Environmental Economics. Pearson Education Ltd.3rd ed.
13. Shankar, U. 2001. Environmental Economics. Oxford University Press. New Delhi.ed.
14. Singh, K. 1994. Managing Common Pool Resources: Principles and Case Studies. Oxford University Press. New Delhi.
15. Singh,K. &Shishodia, A. 2007. Environmental Economics: Theory and Applications. Sage. New Delhi.
16. Thompson, D. 2003. The Economics of Environmental Protection. Winthrop Publishers. Cambridge, Mass.

17. Tietenberg T. H. 1994. EnvironmentalEconomics& Policy. Harper Collins. New York.
18. Tietenberg T. H.2006. Environmental and Natural Resource Economics.Addison- Wesley. New York.7th ed.
19. WHO. 2001. Macroeconomics ad Health: Investing in Health for Economic Development, Report of the Commission on Macroeconomics and Health, WHO.
20. http://www.who.int/macrohealth/action/sintesis 15novingles.pdf
21. Winpenny, J. 1994. Managing Water as an Economic Resource, Routledge
22. The Hindu. Survey of Environment: Various issues.
23. World Resources Institute: World Resources, Annual Reports, Other publications.

Useful websites:

World Water Council: http://www.worldwater council.org

Water Resources Ministry: http:// wrmin.nic.in

World Health Organization: http:// www. who.int

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SEMESTER IV
Fundamentals of Investment (CC 12)
(100 Marks, 60 Lectures)

Objective: To familiarize the students with different investment alternatives, introduce them to the framework of their analysis and valuation and highlight the role of investor protection.

Unit I Investment Environment (30 Marks, 20 Lectures)

The investment decision process, Types of Investments – Commodities, Real Estate and Financial Assets (Equity, Mutual funds, Debt), the Indian securities market, the market participants (Stock exchanges, Stock brokers, Clearing House, Depositories, Depository Participants, FIIs, Domestic institutional investors, Individual investors), Online and offline trading in securities, security market indices, sources of financial information, Concept of return and risk, Impact of Taxes and Inflation on returns.

Unit II Analysis of Equity and Debt Instruments (30 Marks, 20 Lectures)

(a) Fixed Income Securities

Bond features, types of bonds, estimating bond yields, Bond Pricing, types of bond risks, default risk and credit rating, Bond market indices.

(b) **Approaches to Equity Analysis**

Introduction to Fundamental Analysis, Technical Analysis, dividend capitalisation models, and price-earnings multiple approach to equity valuation, Intrinsic value, Price to Book value ratio.

Unit III Portfolio Analysis and Financial Derivatives (20 Marks, 10 Lectures)

Portfolio and Diversification, Portfolio Risk and Return; Mutual Funds; Introduction to Financial Derivatives; Financial Derivatives Markets in India

Unit IV: Investor Protection (20 Marks, 10 Lectures)

Role of SEBI and stock exchanges in investor protection; Investor grievances and their redressal system, insider trading, investor awareness and activism.

References:

1. Jones, C.P. Investments Analysis and Management, Wiley, 8th ed.
2. Chandra, Prasanna. Investment Analysis and Portfolio Management. McGraw Hill Education
3. Rustogi, R.P. Fundamentals of Investment. Sultan Chand & Sons, New Delhi.
4. Vohra N.D. & Bagri B.R., Futures and Options, McGraw Hill Education
5. Mayo. An Introduction to Investment. Cengage Learning.

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SEMESTER IV
Income Tax (Direct Tax) (CC 13)

Marks: 100 **Lectures: 60**

Learning Objective: To provide basic knowledge of concepts, principles and provisions of Income-tax Act, 1961 and the relevant Rules

Unit I : **INTRODUCTION** **(20-25marks, 12 lectures)**

a) BASIC CONCEPTS*:*

Income-u/s 2(24), Person -u/s 2(31), Assessee- u/s 2(7), Assessment- u/s 2(8), Assessment Year- u/s 2(9), Previous Year- u/s 3, Business- u/s 2(13), Company -u/s 2(17), Gross Total Income u/s. 80 (B) (5), Permanent Account Number (PAN)-u/s 139A*.*

b) SCOPE OF INCOME & RESIDENTIAL STATUS**:**

Scope of Total Income u/s 5.

Apportionment of Income between spouses governed by Portuguese Civil Code u/s5A.

Residential Status in India u/s 6: Sections 6(1), 6(6) (a), 6(2), 6(6) (b), 6(3), 6(4).

Practical problems to cover determination of residential status of Individuals only

c) EXEMPTIONS & EXCLUSIONS U/s 10**:**

1. Leave Travel Concession - u/s 10(5).
2. Gratuity–u/s 10(10)(only for theory).
3 . Compensation received at the time of Voluntary Retirement - u/s 10(10C).
4. Amount received under Life Insurance Policy - u/s 10(10D).
5. Payment received from Provident Fund-u/s 10(11), (12).
6. Payment received from approved superannuation fund- u/s 10(13).
7. House Rent Allowance - u/s 10(13A).
8. Special allowance - u/s 10(14):

Conveyance, Daily, Uniform, Helper, Research, Transport, Travelling, Children's Education, & Children's Hostel Expenditure Allowance.

9. Interest on Securities- u/s 10(15).
10. Dividends & Interest on Units - u/s 10(34), (35).

Unit II : COMPUTATION OF INCOME FROM SALARIES: (30-35 Marks, 15 lectures)

Sections 15, 16 & 17 Inclusive of allowances (exclusive of valuation of perquisites)

(Only elementary problems on computation of income from salaries of an individual assessee)

Unit III: COMPUTATION OF PROFITS & GAINS OF BUSINESS OR PROFESSION:

(30-35 Marks, 20 lectures)

Sections: 28,29,30,31,32(excluding Depreciation Rates)

Section 36: Restricted to following clauses:

i. Section 36 (1)(i)- Insurance premium
ii. Section 36 (1)(ii)- Bonus/Commission to employees.
iii. Section 36 (1)(iii)- Interest on Borrowed Capital

iv. Section 36 (1)(iv) - Employer's Contribution to RPF& Approved Superannuation Fund
v. Section 36 (1)(v) - Contribution towards Approved Gratuity Fund
vi. Section 36 (1)(vii) Bad Debts
Section 37(1) - General Deduction
Section 37(2B) - Advertisement Expenses in Souvenir etc. of a political party.
Section 40(a), 40A (2), 40A (3)
Section 43(B) - Disallowance of unpaid liabilities.
Section 44AD & 44AE

Unit IV: (20-25 Marks, 13 lectures)

a) Permissible Deductions under Chapter VI-A

Sections 80 C, 80CCC, 80CCD, 80 CCE, 80D, 80E, 80G, 80TTA, 80U.

b) Computation of total income of an individual assessee.

c) Computation of tax liability of an individual assessee, Rebate under Section 87A.

Books for Study and Reference:

1. Singhania, Vinod K., & Monica Singhania, Student's Guide to Income Tax, University edition, Taxmann Publications Pvt. Ltd,, New Delhi.
2. Ahuja, Girish and Ravi Gupta, Systematic Approach to Income Tax, Bharat Law House, Delhi.
3. Manoharan T.N., Direct Tax Laws, Snow White Publications,
4. Singhania V.K. Students' guide to Income Tax , Taxmann Publications
5. Hariharan.N., Income Tax Law& Practice Vijay Nicole Imprints Pvt.Ltd.
6. Singhania V.K., & Singahania K., Direct Taxes Law & Practice, Taxmann Publications.
7. Mehrotra H.C., Income Tax Law & Practice, Sahitya Bhavan , Agra
8. Prasad B., Income Tax Law & Practice, Wishwa Prakashan
9. Pagare D., Income Tax Law & Practice, Sultan Chand & Sons, New Delhi
10. Gaur V.P., & Narang.D.B., Income Tax Law & Practice, Kalyani Publications.

PATTERN OF QUESTION PAPER

General guidelines**:**

1. The question paper shall have total of 6 questions carrying 80 marks and shall be of 2 hours duration.
2. Four questions of 20 marks each to be answered.
3. Question No. 1 to be compulsory (four short problems of 5 marks each)
4. Any three questions from the remaining five questions to be answered.
5. A question may be sub-divided if necessary.

INCOME TAX (DIRECT TAX)
Semester IV

Duration: 2 Hours Max. Marks: 80

Instructions: (i) Q1. is compulsory
(ii) Answer any 3 from the remaining questions

Q1. Practical type, four sub-questions, carrying 5 marks each, covering the entire syllabus. (Marks-20)

Q2. Practical Question on Unit II i.e. Computation of Income from 'Salaries covering deductions under Chapter VI-A, and computation of tax liability of individual assessees only. (Marks -20)

Q3. Practical Question on Unit III i.e. computation of Profits and Gains from Business or Profession, covering deductions under Chapter VI-A and computation of tax liability of individual assessees only. (Marks-20)

Q4. Answer any four out of the following in relation to the Income Tax Act: (Marks-20)

a. Short Answer type Q. on Unit I
b. Short Answer type Q. on Unit I
c. Short Answer type Q. on Unit II
d. Short Answer type Q. on Unit III
e. Short Answer type Q. on Unit IV

Q5. Answer any four out of the following in relation to the Income Tax Act: (Marks-20)

a. Short Answer type Q. on Unit I
b. Short Answer type Q. on Unit II
c. Short Answer type Q. on Unit II
d. Short Answer type Q. on Unit III
e. Short Answer type Q. on Unit IV

Q6. Answer any four out of the following in relation to the Income Tax Act: (Marks-20)

a. Short Answer type Q. on Unit I
b. Short Answer type Q. on Unit II
c. Short Answer type Q. on Unit III
d. Short Answer type Q. on Unit IV
e. Short Answer type Q. on Unit IV

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SEMESTER IV
ACCOUNTING
Accounting For Service Organizations (CC 14)
(100 Marks – 60 Lectures)

Objectives: To familiarize the students with practical aspects of accounting for service organizations such as banks, general insurance companies, underwriters and hotels

Unit I Accounting for Banking Companies (40 Marks, 18 Lectures)

Meaning of Banking and Banking Company, Brief idea about- Important Legal Provisions affecting the accounts, Different types of Deposits, Different types of Advances, Other Facilities extended to Customers.

Practical problems to cover preparation of Balance Sheet (Form A) and Profit and Loss Account (Form B) in Vertical Form with Separate Schedules.

Unit II Accounting for General Insurance Companies (20 Marks, 18 Lectures)

Types of Insurance, Accounts of General Insurance Company. Final accounts to be prepared as per IRDA and shall comply with the requirement of Schedule B.

Revenue account to be prepared under FORM B-RA.

Profit & Loss A/C to be prepared under FORM B-PL.

Balance Sheet to be prepared under FORM B-BS.

Revenue a/c, P/L A/C Balance sheet to be prepared as per information provided.

Unit III Accounting for Underwriting of Shares and Debentures
(20 Marks, 12 Lectures)

Meaning, types of underwriting, Calculation of liability of Underwriter-Full underwriting – Partial underwriting – Sole underwriters – Joint underwriters – underwriting commission – Journal entries and Ledger Accounts.

Unit IV Accounting for Hotels (20 Marks, 12 Lectures)

Concepts, Visitors Ledger (theory only) and final Accounts of Hotels under sole proprietorship, partnership and joint stock company (in case of company-as per Schedule III, Companies Act 2013).

References:

1. Chowdhary, Chopde, & Pednekar, M. *Financial Accounting, Auditing & Taxation.* Mumbai: Sheth Publishers.
2. Jain, & Narang. *Advanced Accountancy.* New Delhi: Kalyani Publishers.
3. Monga, J. R., & Ahuja, G. *Advanced Accounting* (Vols. I, II). Noida: Mayoor Paperback.
4. Mukherjee, A., & Hanif, M. (2002). *Modern Accountancy* (Vol. II). New Delhi: Tata McGraw Hill.
5. Paul, S. K. *Accountancy* (Vols. I, II). Calcutta: New Central Book Agency.

6. Shukla, M. C., & Grewal, T. S. *Advanced Accounts.* New Delhi: S. Chand & Co .
7. Tulsian, P. C. *Accountancy.* New Delhi: S. Chand & Co.

Websites:
www.icai.org

Question Paper guidelines

- Two questions from Unit I and Unit II each (Banking and insurance)
- One question on preparation of Profit and Loss Statement and the second question to be on preparation of Balance Sheet.
- One question each from Unit III and Unit IV each.

B.COM
SEMESTER -IV
Companies Act and IPR Laws (SEC 2)
(100 Marks, 60 Lectures)

Objective: To impart basic knowledge of the provisions of the Companies Act 2013, The Patents Act, 1970, Indian Copyright Act, 1957, The Trademarks Act, 1999 and The Designs Act, 2000.

UNIT 1: Introduction to Regulatory Framework of Companies (40 Marks, 24 lectures)

Characteristics of a company; lifting of corporate veil; types of companies including one person company, small company, and dormant company; association not for profit; illegal association; formation of company, on-line filing of documents, promoters, their legal position, pre-incorporation contract; on-line registration of a company.

Memorandum of association, Articles of association, Doctrine of constructive notice and indoor management, prospector-shelf and red herring prospectus, misstatement in prospectus, GDR; book-building; issue, allotment and forfeiture of share, transmission of shares, buyback and provisions regarding buyback; issue of bonus shares.

Administration of Company Law [including National Company Law Tribunal (NCLT), National Company Law Appellate Tribunal (NCLAT), Special Courts]

UNIT 2: Management of Companies (20 Marks, 12 Lectures)

Classification of directors, women directors, independent director, small shareholders' director; disqualifications, director identity number (DIN); appointment; Legal positions, powers and duties; removal of directors.

Key managerial personnel; Meetings: Meetings of shareholders and board of directors; Types of meetings, Convening and conduct of meetings, Requisites of a valid meeting, postal ballot, meeting through video conferencing, e-voting.

Committees of Board of Directors - Audit Committee, Nomination and Remuneration Committee, Stakeholders Relationship Committee, Corporate Social Responsibility Committee

UNIT 3: Books of Accounts, Winding-up and Insider Trading (20 Marks, 12 lectures)

Provisions relating to Books of Accounts, Auditors' Appointment, Auditor's Report.

Winding Up: Concept and modes of Winding Up.

Insider Trading and Whistle Blowing: Meaning & legal provisions of insider trading; Whistleblowing: Concept and Mechanism.

Unit 4 : Intellectual Property Rights (20 Marks, 12 Lectures)

Meaning of Intellectual Property, Meaning and Registration of Patent , Patentable Invention, Compulsory Licensing, Remedies in case of Violation of Patent.

Meaning of Design, Registration Procedure of Design, Piracy of Registered Design , Remedies for Violation of Design.

Copyright - Meaning, Registration of Copyright, Infringement of Copyright, Broadcasting Right, Performer's Right.

Trademark - Meaning, Procedure for Registration of Trademark, , Deceptively Similar Mark, , Remedies in Case of Violation of Trademarks and Copyright

References:

1.MCKuchhal, Modern Indian Company Law, ShriMahavir Book Depot (Publishers), Delhi.
2. GK Kapoor and Sanjay Dhamija, Company Law, Bharat Law House, Delhi.
3. Anil Kumar, Corporate Laws, Indian Book House, Delhi
4. ReenaChadha and SumantChadha, Corporate Laws, Scholar Tech Press, Delhi.
5. Avtar Singh, Introduction to Company Law, Eastern Book Company
6. Ramaiya, A Guide to Companies Act, LexisNexis, Wadhwa and Buttersworth.
7. Manual of Companies Act, Corporate Laws and SEBI Guideline, Bharat Law House, NewDelhi,.
8. A Compendium of Companies Act 2013, along with Rules, by TaxmannPublications.
9. Gower and Davies, Principles of Modern Company Law, Sweet & Maxwell
10. Sharma, J.P., An Easy Approach to Corporate Laws, Ane Books Pvt. Ltd., New Delhi
11. Dr. BL Wadhera , Intellectual Property Law, Delhi, Universal Publishing Co. Pvt. Ltd
12.P. Narayanan , Intellectual Property Law, Kolkata, New Delhi, Eastern Law House
13. KashiNath Jena, Intellectual Property Rights, Globalisation and Global Relations , Abhijeet Publications, Delh
14. A V NarsimhaRao , Law of Patents Concepts and Cases , ICFAI Universiy Press

Government of India Websites for Registration of Companies, Patents, Copyright, Trademarks and Designs

1. www.mca.gov.in
2. http://www.ipindia.nic.in/
3. http://copyright.gov.in/

B.COM.
SEMESTER IV
Business Statistics – II (GE 5)
(100 Marks - 60 Lectures)

Unit I Correlation and Regression Analysis (14Lectures -30marks)

Meaning, Types and Methods of studying Correlation, Scatter Diagram, Karl Pearson's Coefficient of Correlation, Spearman's Rank Coefficient of Correlation, Properties of Coefficient of correlation, Linear Regression, Lines of regression and regression coefficients.

Unit II Probability Theory (21Lectures -36 marks)

Elements of Probability-Random Experiments, events, definition of probability, conditional probability, addition and multiplication theorem, Mathematical expectation.
Theoretical Distribution - Random variable, Binomial, Poisson and Normal Distribution.

Unit III Sampling Theory (14Lectures -16 marks)

Methods of sampling- Census and Sample enumeration, Methods of Sampling: Simple Random Sampling, Systematic Sampling, Stratified Sampling, Cluster Sampling, Purposive Sampling, Quota and multi stage sampling (with examples).
Test of Hypothesis and Estimation- Sampling distribution, Standard error, Sample mean and Sample proportion, confidence limits, population mean and population proportion, Procedure for testing of hypothesis, Type I and Type II error, critical region, level of significance, test of significance for large samples.

Unit IV Interpolation and Extrapolation (11Lectures -18marks)

Finite differences, Forward and Backward differences, Forward and Backward difference table, Newton-Gregory forward and backward difference formula for equidistant values of the argument (only applications), Lagrange's Interpolation formula for unequally spaced points (only applications), Shift Operator, Binomial Expansion method to find missing values (maximum 2 missing values).

References:

1. Gupta S.P., *Statistical Methods*, Sultan Chand & sons.
2. Gupta C.B., *Fundamentals of Statistics*, Himalaya Publishing House.
3. Shah R.J., *Statistical Methods*.
4. Mazumdar Neeta, *Statistical Techniques*, RajhaunsVitaran.
5. Sastry S.S., *Introductory Methods of Numerical Analysis*

B.COM
SEMESTER IV
Indian Economy (GE 6)
(100Marks, 60 Lectures)

Objectives:

1.To enable the students to grasp the current economic problems in India.

2. To highlight the important economic sectors and challenges faced by them in the recent years.

3. To acquaint students with the major policy regimes of government to resolve problems in agriculture, industry and service sector of India.

4. To enable students to understand the change in policy focus from central planning to process of market integration of the Indian Economy with other markets in the world.

Unit I Basic Issues in Economic Development (20 Marks, 10Lectures)

Concept and Measures of Development and Underdevelopment; The concept of economic growth and development, India's recent position in the world economy(based on World Bank GNI per capita), Human Development- concept, the Human Development Index – interpretation of indicator and value & rank of the indicator for India in the world context.

Unit II Basic Features of the Indian Economy (20 Marks,10 Lectures)

Composition of national income and occupational structure, per capita income, inflation, unemployment, income distribution, poverty); India's population demographics [infant mortality rate, literacy rate, gender composition-female male ratio(issue of missing women) and age structure- concept of demographic dividend]

Unit III Policy Regimes, Growth, Development& Structural Change (30 marks, 20Lectures)

a) Review of Planning Policy Experience in India.
b) Policies for Agricultural and Rural Development(since Green Revolution till recently).
c) Major Industrial policies under planning- Nehru-Mahalanobis Model and Liberalization, Globalization and Privatization (LPG) model of industrial growth.Evolution of Disinvestment policy of Government.
d) Economic Reforms since 1991 – in banking sector (Narasimham Committee report main suggestions), capital markets,in the external sector, managed exchangerate system, rupee convertibility, in Government's policy on IT services,FDI,FPI entry in domestic sectors.
e) The experience of Growth, Development and Structural Change in different phases ofgrowth and policy regimes across sectors and regions.

Unit IV Sectorial Trends and Issues (30 Marks, 20 Lectures)

a) Agriculture Sector:

Nature of Indian Agriculture; Brief evaluation of the agricultural sector (achievements and problems); Agricultural Finance (organized-NABARD, Cooperative and Commercial banks, Micro finance institutions, unorganized sources- moneylenders, landlords, traders etc.); Agricultural Marketing (defects and corrective measures); Government Policy Measures : Minimum Support

Price, Food Security- PDS, TDPS (only meaning and challenges), National Food Security Act 2013(only rationale).Farmers Suicides, Land Acquisition.

b) Industry and Services Sector:

Present structure of industry in the Indian economy; Composition of the Indian industrial sector (organized & unorganized sector, public & private sector, large, medium, small and micro industrial units); Brief evaluation of the industrial sector (achievements and weaknesses); Challenges facing Indian manufacturing; MSME sector – role in the Indian economy and challenges faced.Meaning of Services, importance of services sector in the Indian economy; important components – Information Technology and IT-enabled Services, trade, tourism and travel, transport, telecommunications, real estate and construction, financial services, healthcare and education (contribution to GDP, employment, export earnings (where relevant));

c) External Sector:

Structure, Performance and Reforms: Foreign Trade and balance ofPayments: Structural Changes and Performance of India's Foreign Trade and Balance ofPayments (value, volume and direction); Export-import policies and their impact on exports and imports.WTO, meaning of major agreements (AOA, MFA,TRIPS, TRIMS etc.) and impact on India (wherever relevant).

References:

1. Ahluwalia I.J. & I.M.D. Little 1998, India's Economic Reforms & Development: Essays for Manmohan Singh, Oxford University Press, Delhi.
2. Dreze Jean and SenAmartya 1996, Indian Economic Development and Social Opportunity, Oxford University Press, Delhi
3. Datt R. and Sundaram K.P.M., 2015, Indian Economy, S. Chand and Co., New Delhi. 71st edition.
4. Ghosh A. (Latest Edition), Indian Economy, World Press, Calcutta.
5. Kapila Raj and Kapila Uma 2001, India's Economy in the 21st Century: Collection of Select Articles, Academic Foundation, Ghaziabad.
6. Mishra S K and Puri V. K. 2015, Indian Economy, Himalaya Publishing Co., Mumbai. 33rd edition.
7. Patel, I.G. 1998 Economic Reforms and Global Change, Macmillan, Delhi.
8. Patnaik, Prabhat. *Some Indian Debates on Planning*. T. J. Byres (ed.). The IndianEconomy: Major Debates since Independence, OUP.
9. Rangarajan, C. and N. Jadhav. *Issues in Financial Sector Reform*. BimalJalan. (ed). *The Indian Economy*. Oxford University Press, New Delhi.
10. Tandon B.B. and Tandon K.K. 2015, Indian Economy, Tata McGraw Hill, New Delhi.

***J*ournals**

1.EPW

2. Yogana

Websites

1.www.indiabudget.nic.in

2. www.rbi.org.in

3. www.finmin.nic.in
4. www.goidirectory.nic.in

B. COM
SEMESTER V
Industrial Management (CC 15)
(100 Marks- 60 Lectures)

Objective: To enable the students to gain understanding of concepts and environment of industrial management.

Unit I Introduction to Industrial Management, Factory Location and Plant Layout (25 Marks-15 Lectures)

Concept of Industrial Management – Industrial Management Process – Importance of Industrial Management. Scientific approach to Industrial Management- Concept, principles and significance of scientific management.
Meaning and factors determining factory location.
Concept, objectives and importance of plant layout, factors influencing layout, types of layout, problems of layout.

Unit II Industrial Productivity and Work Environment (25 Marks-15 Lectures)

Meaning of Productivity: Factors affecting Industrial Productivity – Significance of higher Industrial Productivity –– Suggestions for Productivity improvement-Role of National Productivity Council.
Work environment- Factors affecting Work Environment - Lighting, air, ventilation, temperature, water, sanitation and noise.
Occupational Hazards- Meaning and types - Biological Hazards, Chemical Hazards and Psychological Hazards. Measures to minimize occupational hazards.

Unit III Total Quality Management (25 Marks-15 Lectures)

Concept of TQM – Principles of TQM – Benefits of TQM.
Methods of TQM – Management methods (i) Benchmarking - Meaning, Types of Benchmarking, Steps in Benchmarking Process(ii) Deming Wheel – Steps in Deming Wheel(iii) Just in time-Objectives and Characteristics of Just in Time (iv) Quality Circles-Concept and features of Quality Circles, (v) Six Sigma
Analytical methods – (i) Critical Path Method – Process and advantages of Critical Path Method(ii) Force Field Analysis – Driving and restraining forces, decision making(iii) Failure Mode and Effect Analysis –Meaning and steps in Failure Mode and effect Analysis
ISO-9000-Concept, Standards and guidelines.

Unit IV Industrial Safety and Occupational Health (25 Marks – 15 Lectures)

Definition of safety – Objectives of Safety Management.
Industrial Accidents – Causes of Accidents (a) Mechanical causes (b) Human Causes
Effects of Industrial accidents on employers, workers and society.
Code of practices for accident prevention.
Occupational Health- Concept- Health program in industries – Role of National Institute of Occupational Health(NIOH) - legal provisions regarding health- OHSAS 18000- (Occupational

Health and Safety Standards) - (In brief)

References:

1) Lundy, J. *Effective Industrial Management.* Eurasia Publishing House, New Delhi.
2) Khanna, O.P. *Industrial Engineering and Management.* Dhanpat Rai Publications, New Delhi.
3) Ahuja, K.K. *Industrial Management and Organisational Behaviour.* Khanna Publishers, Delhi.
4) Rao, Thukaram. *Industrial Management.* Himalaya Publishing House, Mumbai.
5) *Aswathappa*, K. *Factory Organisation and Management*. Himalaya Publishing House, Mumbai.
6) Telsang. Martand. *Industrial and Business Management.* S Chand Publications, New Delhi.
7) Deshpande, A.S. *Industrial Organisation and Management.* Vora & Co Publishers,Mumbai.
8) Rao, Sunil S. & Jain R.K., *Industrial Safety, Health and Environment Management Systems.* Khanna Publishers, Delhi.
9) Sarma, A.M., *Industrial Health and Safety Management.* Himalaya Publishing House, Mumbai.
10) Mukherjee, P.N. *Total Quality Management.* Prentice Hall, New Delhi.
11) *Industrial Safety Chronicle*, Quarterly Journal published by National Safety Council.
12) *Productivity*, Quarterly Journal published by National Productivity Council.

B.COM
SEMESTER V
Indian Monetary and Financial System (CC 16)
(100 Marks , 60 Lectures)

Objectives:
(1)To enable the student to get a basic understanding of the components of money supply and the role of the central bank in controlling money supply.
(2) To familiarize the student with the structure and composition of the financial system.
(3) To facilitate an understanding of the functioning of the money and capital markets in an economy.
(3) To provide the students a basic knowledge of financial institutions and to acquaint them with major financial services in India.

Unit I Money and Money Supply (15 Marks,8 Lectures)
Money: Definition; Origin; components of money - currency, coins and credit; RBI indices of money supply; Role of the RBI in the control of money supply - use of instruments (Quantitative - variable reserve requirements, open market operations, bank rate, repo, reverse repo rates and Qualitative credit controls) in expanding and contracting money supply.

Unit II Financial System and its Components (25 Marks, 12 Lectures)
Structure (formal and informal financial system); Composition of the Indian financial system – Financial markets, financial institutions, financial instruments, financial services; Flow of Funds Matrix; Financial system and economic development; an overview of Indian Financial system.

Unit III Financial Markets (30 Marks, 20 Lectures)
Money Market – Features, functions, organization and instruments; Role of central bank in money markets; Indian money market – an overview.
Capital Markets – Features, functions, organization and instruments; Indian debt market; Indian equity market – primary and secondary markets; Role of stock Exchanges in India; SEBI and Investor protection.

Unit IV Financial Institutions and Services (30 Marks, 20 Lectures)
Commercial banking – introduction, its role in project finance and working capital finance; Development Financial Institutions (DFIs) – An overview and role in Indian economy; Life and non-life insurance companies in India; Mutual funds-introduction and their role in capital market development; Non-banking financial companies (NBFCs); Financial services - Merchant banking, underwriting, credit rating, venture capital finance, financial counseling.

References:

1. Mishra S.K &V.K. Puri (2010), *Indian Economy*, Himalaya Publishing House, Mumbai (Latest edition)
2. M.L.Jinghan, *Money, Banking, International Trade and Public Finance*, Vrinda Publications Pvt. Ltd, New Delhi
3. Bharati V Pathak,(2011) , *The Indian Financial System- Markets, Institutions and Services*, Pearson, Delhi
4. M.Y.Khan,(2011*), Indian Financial System*, Tata Mcgraw Hill Education Private Ltd, New Delhi
5. Machiraju H.R,(2010) *Indian Financial System* , Vikas Publishing House, 4th edition
6. Bhole L.M.,(2009) *Financial Institutions and Markets*, Tata McGraw-Hill, New Delhi
7. Bhole L.M (2000) *Indian Financial System*, Chugh Publications, Allahabad
8. Dutt and Sundaram (2015), *Indian Economy*, S Chand Publishers
9. Prasanna, Chandra, *Financial Management: Theory and Practice*, McGraw- Hill Education
10. Clifford Gomez, *Financial Markets, Institutions and Financial Services*, PHI Learning

Latest editions of suggested books to be referred to

Websites

1. https://rbi.org.in
2. www.nseindia.com
3. www.bseindia.com
4. www.sebi.gov.in

B. COM.
SEMESTER V
Accounting
Income Tax, Service Tax and Goa Value Added Tax (DSE 1)
(100 Marks –60 Lectures)

Objective: *To provide an insight into main provisions of the Income Tax Act, 1961, applicable to the 'assessment year' which shall be same as the 'academic year' (e.g .for academic year 2016-17 the assessment year shall be 2016-17) and to impart some basic knowledge about the Service Tax as amended by the current Finance Act up to June 30 of the academic year. and some basic provisions of the Goa Value Added Tax Act, 2005 applicable to the current financial year, as amended up to November 30 of the immediately preceding the current academic year.*

UNIT I: (30-35 Marks, 15 lectures)

a) COMPUTATION OF INCOME FROM HOUSE PROPERTY

Definition of Annual Value u/s. 2(2).
Sections: 22, 23, 24, 25, 25(AA), 25(B), 26, 27

b) COMPUTATION OF CAPITAL GAINS:

Definition of Capital Asset u/s. 2(14) and Transfer u/s. 2(47).
Sections. 45, 47, 48.
Elementary practical problems may be covered for 5 marks on computation of short term and long terms capital gains including exemptions under sections 54, 54B, 54EC, & 54

c) CLUBBING OF INCOME: only for theory

Sections 60, 64(1)(ii), 64(1)(iv), 64(1)(vi), 64(1)(vii),64(1)(viii) & 64(1A)

UNIT II: (30-35 marks, 20 lectures)

a) INCOME FROM OTHER SOURCES

Section 56,57 ,58
Practical problems of Individual assessees only .

b) PERMISSIBLE DEDUCTIONS FROM GROSS TOTAL INCOME UNDER

CHAPTER VI-A:
Sections 80C, 80CCC, 80 CCD, 80CCE, 80CCG,
80D,80DD,80DDB,80E,80EE,80G,80GG, 80QQB,80RRB, 80TTA,80U

Unit III: (20-25 Marks, 15 lectures)

a) COMPUTATION OF TOTAL INCOME AND TAX LIABILITY:

1. Computation of total income of individual assessees only (excluding capital gains) as under:

a. Computation of Income from house property plus computed figures of Income from Salaries and Profits and Gains of Business or Profession

b. Computation of Income from Other Sources (including exemptions & exclusions – practical part) plus computed figures of Income from Salaries and Income from house property) [Note: Since Income from Salaries and profits and gains of Business or Profession are covered in semester IV as part of core course, computed figures of these two heads must be given here]
2. Computation of income tax:
Rates of income tax for individuals and calculation of income tax and cess at these rates (on given income excluding capital gains and casual income like winnings from lotteries etc. having specific rates of tax for 5 marks may be covered. Rebate u/s87A.

c) ADVANCE PAYMENT OF TAX, FILING OF RETURN & ASSESSMENT, SET OFF & CARRY FORWARD OF LOSSES:

i. Advance payment of tax & payment of tax when demanded, section 210 & 211.
ii. Filing of return & assessment of income; Sections 139. 139(1), (3),(4),(5),(9), 140A, 142(1),(2),(3),143(1),(2),(3), Section 144(Reassessment not included)
iii. Set off & carry forward of losses (only for theory)
Sections 70, 71, 71B, 72, 73, 74,74A

Unit IV: INDIRECT TAXES

a) THE GOA VALUE ADDED TAX (VAT) ACT, 2005. (**10-15marks 5 lectures**)

i) DEFINITIONS:
Business, Dealer, Goods, Declared Goods, Input Tax, Manufacture, Out Put Tax, Person, Sale, Sale Price, Turnover, Works-Contract, Taxable Turnover.
ii) Incidence of Tax, Composition of Tax, Net Tax of Registered Dealers, Input Tax Credit, Payment of Tax.

(Note: In case of Goa VAT, small practical problems of 5 marks on computation of taxable turnover, computation of tax thereon, computation of net tax/tax liability etc. of regular dealers as well as dealers in composition may be covered)

b) SERVICE TAX (10-15 Marks, 5 lectures)

A. NEW SERVICE TAX REGIME BASED ON 'NEGATIVE LIST' APPROACH:
Only brief idea about what is 'negative list' (and not the entire list) to be covered.

B. ADMINISTRATION OF THE ACT AND BASIC PROPOSITIONS:
i). The Administration of the Act.
ii) Basic Propositions:
a) Act does not extend to Jammu & Kashmir
b) Same transaction cannot be taxed more than once under different services
c) Composite Services-Abatement

C. MEGA EXEMPTION NOTIFICATION:
1. Services provided to United Nations or an International Organisation.
2. Services provided to Developer / Unit in Special Economic Zone:
(i) Developer
(ii) SEZ
3. Value of Goods and Materials sold by service provider.

4. Threshold Exemption:

- Exemption to Small Service Providers.
- Persons excluded from Exemption Benefit:

i) Person using brand name / trade name of another person.

ii) Where service tax is payable by persons other than service providers.

- Exemption is linked with preceding year's turnover.

New service providers (new services commenced during the year).

D. FURNISHING OF RETURN:

a) Periodicity for Filing of Return, Due Date for Filing of Return, Delay in Filing of Return (fees for late filing of return), Filing of Revised Return, e- filing of Return.

E. RATE OF SERVICE TAX & PAYMENT OF SERVICE TAX:

Rate of service tax, Monthly/Quarterly Payment of Service Tax, Due Dates for Payment of Service Tax, e-payment of Service Tax, Penalty for Failure to pay Service Tax, Interest for Late Payment of Service Tax

Books for Study and Reference:

A. <u>For Income Tax</u>:

	Title	***Author(s)***	***Publisher***
1	Taxmann's Students Guide to Income Tax	Dr. Vinod Singhania & Monica Singhania.	Taxmann Allied Services Pvt. Ltd
2	Systematic Approach To Income Tax, Service Tax & VAT	Dr. Girish Ahuja, Dr. Ravi Gupta	Bharat Law House
3	Student'S Handbook On Income-Tax, VAT & Service Tax	T. N. Manoharan	Snow White Publications Pvt. Ltd
4	Direct Taxes - Law & Practice	Dr. Vinod K Singhania, Dr Kapil Singhania	Taxmann Allied Services Pvt. Ltd.
5	Income Tax Law and Practice	Gaur V P, Narang D B	Kalyani Publications
6	Income Tax Law And Practice	Bhagwati Prasad	Wishwa Prakashan
7	Income Tax Law and Practice	Dinkar Pagare	Sultan Chand & Sons, New Delhi
8	Income Tax Law & Practice	Dr.H.C.Mehrotra	Sahitya Bhavan, Agra,
9	Direct Taxes – practice and Planning	B.B.Lal	Konark Publishers
10	Income Tax -Law & Practice	B.B.Lal and N.Vashisht	Dorling Kindersley(India) Pvt. Ltd., Delhi-110017
11	Practical approach to Income Tax	Girish Ahuja & Ravi Gupta	Bharat Law House

B. **<u>For Service Tax</u>**:

1. Taxmann's Service Tax – By S.S. Gupta, (as amended to-date)- Taxmann Allied Services Pvt. Ltd.
2. Service Tax-Ready Reckoner- By V.S.Datey, Taxmann Allied Services Pvt. Ltd.

B . For Goa VAT:

a. A Guide to Goa VAT – by Sandip P Bhandare & Mangurish Pai Raikar

b. Goa Value Added Tax Manual – by Prabhu Verlekar (C.A)
c. Website: http://www.goacomtax.gov.in/

PATTERN OF QUESTION PAPER

General guidelines:

1. The question paper shall have total of 6 questions carrying 80 marks and shall be of 2 hours duration.
2. Four questions of 20 marks each to be answered.
3. Question No. 1 to be compulsory (should be a practical question)
4. Any three questions from the remaining five questions to be answered.
5. A question may be sub-divided if necessary.

Specific guidelines :

ACCOUNTING: INCOME TAX, SERVICE TAX & GOA VALUE ADDED TAX

Duration : 2 Hours Max. Marks: 80

Instructions: i) Question 1 is compulsory.
ii) Answer any 3 questions from the remaining.

Q. 1. Practical type four sub-questions carrying 5 marks each, covering entire syllabus (one sub-question should be on Unit IV) (Marks-20)

Q. 2. Practical Question on Unit II i.e. computation of Income from house property. (Marks-20)

Q. 3. Practical Question on Unit I
(a) Computation of Income from other sources. (Marks- 15)
(b) Computation of Capital Gains. (Marks-05)

Q. 4. Answer any Four out of the following in relation to the Income Tax Act: (Marks-20)
a) Short Answer type Q. on Unit I
b) Short Answer type Q. on Unit I
c) Short Answer type Q. on Unit II
d) Short Answer type Q. on Unit II
e) Short Answer type Q. on Unit III

Q. 5 Answer any Four out of the following (Marks-20)
a) Short Answer type Q. on Unit I
b) Short Answer type Q. on Unit II
c) Short Answer type Q. on Unit III
d) Short Answer type Q. on Unit III
e) Short Answer type Q. on Unit IV

Q. 6. Answer any four out of the following (Marks -20)
a) Short Answer type Q. on Unit II

b) Short Answer type Q. on Unit III
c) Short Answer type Q. on Unit III
d) Short Answer type Q. on Unit IV
e) Short Answer type Q. on Unit IV

B.COM
SEMESTER V
Cost Accounting – I (DSE 1)
(100 Marks, 60 Lectures)

Objective: To familiarize students to the basic concepts of cost accounting and elements of cost.

Unit I Cost Concepts and Terminology (20 Marks: 10 Lectures)

Concepts of Cost, Costing, Cost accounting – objectives, principles, Importance, Advantages and Limitations of cost accounting system, Role of cost accounting in managerial decisions, Cost classification, Installation of costing system, Distinction between cost accounting and financial accounting.

Unit II Material cost and control (20 Marks, 10 Lectures)

a) Material cost: Meaning of material, Types of material, Procedure for purchase of materials, Calculation of material Purchase price, Types of purchase system – centralised and decentralised, Accounting for material losses – defective, spoilage and pilferage.

b) Material control: Meaning of material control, Dimensions of material control – cost and quantity, Need for control of materials, Essentials of material control, Advantages of material control.

Unit III Stores control (30 Marks, 20 Lectures)

Location and organisation of stores department, Store keeper and functions of store keeper ,Classification and Codification of material, Inventory control system, Perpetual inventory system-Bin card and Stores ledger, Stores register, ABC Method of stores control, Calculation of Stock levels, Economic ordering quantity.

Unit IV Material Issue Pricing and Control (30 Marks, 20 Lectures)

Methods of pricing of material – Specific price method, First in First out, Last in First out, Average pricing methods (Simple average method, Weighted average method), Standard price method, Highest in first out method, Market price method.

References :-

9. Jain S. P and K.L. Narang- *Cost Accounting Principles and practice* – Kalyani Publishers, Ludhiana.
10. Bhar, B.K. *Cost Accounting- Methods & Problems ,* Academic Publishers Calcutta 700073.
11. Kishore R. *Cost Accounting*- Taxmann Allied Service Pvt.Ltd.New Delhi.
12. Iyenger, S. P. *Cost Accounting*. S. chand& Co. New Delhi
13. Khana, B. S. & J. M. Pandey- *Practical costing.* S. Chand & Co. New Delhi

14. Khan, M. Y. & P.K. Jain- *Theory and Problems of Management and Cost Accounting*- Tata McGraw Hill Publishing co. Ltd. New Delhi
15. Lal, J. *Cost Accounting.* Tata McGraw –Hill Publishing co. Ltd. New Delhi
16. Nigam, B. & J.C. Jain. *Cost Accounting Principles & Practice.* Prentice- Hall of India Pvt. Ltd., New Delhi

B.COM
SEMESTER V
International Marketing Management (DSE 1)
(100 Marks 60 Lectures)

Objective: To develop an understanding of the basic concepts of International marketing

Unit 1 Introduction to International Marketing Management (25 Marks 15 Lectures)

Meaning, Features of International Marketing, Distinction between International and Domestic Marketing, Objectives and Importance of International Marketing, Challenges in International Marketing, Importance of International Marketing Research. International Marketing Environment.

Unit 2 Developing International Marketing. (25 Marks 15 Lectures)

International market entry strategies—Licensing, Joint Ventures and Direct Investment
Export Promotion Organisations- Trade Blocks, Free Trade Zones, Special Economic Zones, Export Processing Zones.

Unit 3 International Product and Price Policy. (25 Marks 15 Lectures)

Global Branding, Trademarks, Packaging and Labelling. International Pricing Strategies, Factors affecting International Product Pricing, Dumping and types of Dumping, Price Quotations.

Unit 4 International Distribution and Promotion Policy. (25 Marks 15 Lectures)

Types of International market Intermediaries, Export Marketing Communication Mix. Importance of Export Marketing Communication, International Advertising, Trade Fairs and Exhibitions.

References:

1 Rao, P. S.. *International Business*- Text and Cases. Himalaya Publishing House.
2 Cherunilam, Francis. *International Trade and Export Management.* Himalaya Publishing House.
3 Kotler, Philip; Keller, Kevin Lane et al. *Marketing Management*- A South Asian Perspective. By Pearson Education.
4 Ramaswamy, V.S. & Namakumari. S. *Marketing Management*. MacMillan.
5 R, Philip & Graham, Cateora John. *International Marketing.* Sage Publications.
6 Ahmed, Mehtab et al. *Export Management.* Sheth publishers.
7 Madan, Pankaj et al. *Marketing Management.* Global Vision Publishing House.
8 Sherlekar, S.A. & Sherlekar, V.S. *Global Marketing Management*. Himalaya Publishing House.

B. COM.
SEMESTER V
BANKING & FINANCIAL SERVICES
Modern Banking Operations and Services (DSE 1)
(100 Marks – 60 Lectures)

Objectives: To acquaint the students with various financial services provided by the banks and enable them to understand current issues and emerging trends in modern banking operations.

Unit I An Overview of Banking & Financial Services (25 Marks - 15 Lectures)
Merchant/Investment banking, Leasing, Factoring, Forfaiting, Mutual Funds, Portfolio Management, Wealth Management, Bancassurance, Loan Syndication, Consumer Finance/Retail Banking, Securitization, Stock broking.

Unit II Modern Services in Banking (25 Marks – 15 Lectures)
Demat Account Services, Fund based and Non fund based services and their types, Wholesale Banking Products; International Banking, Requirements of Importers & Exporters, Remittance Services; Universal Banking.: Banking policy practices for MSMES in view of the MSMED Act 2006, Performance and credit rating of bank borrowers, Role and Functions of CIBIL; Fair Practices Code for Debt Collection; Codes of BCSBI.

Unit III Modern Information Technology in Banking
(25 Marks - 15 Lectures)
Bank Computerization – Need & Importance, Special Electromagnetic Cards: Add-on cards, charge cards, smart cards, green card and Kissan cards, MICR cheques, Core banking; Mobile banking apps and security considerations, Risk Concern Areas relating to IT in Banks, Types of Threats in E-banking; Control Mechanism; Computer Audit; Information system Security; Information System Audit; Evaluation Requirements.

Unit IV Current Issues and Emerging Trends (25 Marks – 15 Lectures)
Financial Inclusion: RBI definition, meaning, recommendations of Rangarajan Committee. Pradhan Mantri Jan-Dhan Yojana.
Corporate Governance in banks: Meaning and importance; issues, principles and practices of corporate governance in Indian banks.
Consolidation in banks: Mergers and Acquisitions – Rationale for M&A in Indian banking; a study of post-reform mergers and acquisitions in the Indian banking sector – their objectives, benefits and problems.
Universal Banking – Meaning, rationale, merits & demerits, Green Banking- Meaning, concept and channels, Shadow Banking.

References
1. Basu P. (ed.) (2005): *India's Financial Sector: Recent Reforms, Future Challenges*

2. Bhole L. M. &Mahakud J. (2009): *Financial Institutions and Markets: Structure, Growth & Innovations*, New Delhi, Tata-McGraw Hill, 5e
3. Deva V.(2005): *E-Banking,* New Delhi, Commonwealth
4. Dewan B. (2011): *E-Commerce*, New Delhi, S. Chand
5. Indian Institute of Banking and Finance (2008): *Principles & Practices of Banking*, New Delhi, Macmillan, 2e
6. Joshi V. C. (2004): *E-finance – Log in to the Future*, New Delhi, Response Khan M. Y.(2004): *Indian Financial System*, New Delhi: Tata-McGraw Hill, 4e
7. Nagarajan N. (ed.) (2004): *Bank Economists' Conference, 2002 – Vol. I & II, Indian Banking: Managing Transformation – Structure*, Hyderabad, ICFAI, 1e
8. M Y. Khan, Financial Services, Tata McGraw Hill.
9. Justin P. &Padmalatha S. (2007): Management of Banking & Financial Services, New Delhi, Pearson
10. Rajashekar N. (ed.) (2001): *Banking in the New Millennium*, Hyderabad, ICFAI Whiting D. P.(1994): *Mastering Banking*, London, Macmillan, 2e
11. Rayudu C.S. (2004): *E-Commerce andE-Business*, Mumbai, Himalaya

Journals:-

1. The Indian Banker, published by Indian Banker Association
2. Bank Quest, published by Indian Institute of Banking and Finance
3. RBI Bulletin (Monthly), published by RBI
4. Trends and Progress of Indian Banking (Annual), published by RBI

Websites:-

1. Reserve Bank of India www.rbi.com
2. Indian Institute of Banking and Financewww.iibf.org.in
3. Indian Bankers Associationwww.iba.org.in
4. Institute of Banking Personal Selectionwww.ibps.com
5. Institute of Finance, Banking and Insurance www.ifbi.com

B. COM.
SEMESTER V
DISCIPINE SPECIFIC ELECTIVE
ACCOUNTING
Auditing –I (DSE 2)
(100 Marks – 60 Lectures)

Objective:
The course aims at imparting knowledge about the principles, methods, techniques of auditing and their applications to understand the objective and concepts of auditing to gain working knowledge of generally accepted auditing procedures and of techniques and skills.

Unit I Introduction: (20 Marks-10 Lectures)

- Evolution of audit
- Meaning and Definition
- Scope of Auditing
- Auditing V/s. Accountancy
- Objectives of Auditing – Primary & Secondary
- Various classes of audit (Based on authority, time and scope)
- Qualities of an Auditor
- Basic Principles governing an audit.
- Benefits and limitations of Auditing

Unit II Internal Control System (20 Marks-10 Lectures)

- Meaning – Nature and Objectives of internal Control System
- Procedure for Evaluation of Internal Control System
- Methods for evaluation of internal control system,
  - Internal Control Questionnaire – Meaning, illustrations, merits and demerits
  - Flow chart – meaning, illustrations , merits and de-merits
- Internal Check – Meaning, objectives, merits and demerits
- Internal Audit – Meaning and Significance

UNIT III Audit Process (40 Marks-25 lectures)

(a) Basic Preparations

- Audit plan – Meaning and steps in audit planning
- Audit Programme – Meaning, objectives, contents, merits and limitations.
- Audit evidence - Procedures for obtaining evidence, Sources of evidence, Reliability of audit evidence, Methods of obtaining audit evidence, Physical verification, documentation, direct confirmation, re-computation, Analytical review techniques, and representation by management.
- Audit Working Papers – Purpose, contents, working files – permanent and temporary files, ownership & confidentiality of working papers.

- Audit Note Book- Purpose, content and benefits
- Routine checking
- Audit Sampling - Judgmental and statistical sampling
- Test checking

(b) Vouching, Verification and Valuation

- Vouching – Meaning, objectives
- General procedure for vouching
- General Considerations in audit of payments, receipts, purchases and sales
- Verification-meaning, objectives, verification V/s Vouching
- Valuation-meaning, objectives, Verification V/s. Valuation
- Procedure for Verification & Valuation in general – Verification of inventories with case laws.

(c) **Audit Report**

- Types of audit report, distinction between report and certificate
- Reporting under CARO.

Unit IV Developments in Auditing **(20 Marks, 15 lectures)**

Tax audit
Management audit
Cost audit
VAT audit
Forensic audit
Audit in computerized environment
Peer review

Note.

1. Relevant auditing standards to be covered wherever applicable
2. Syllabus will be revised on regular basis at the beginning of the year to accommodate changes made in auditing standards

References:

1. Aruna Jha, Students guide to auditing. Taxman publication New Delhi.
2. Gupta Kamal: Contemporary Auditing, Tata McGraw-Hill, New Delhi
3. Tandon B. N. Principles of Auditing: S. Chand & Co, New Delhi.
4. Pagare Dinkar: Principles & Practice of Auditing: Sultan Chand, New Delhi
5. Sharma T.R.: Auditing Principle & Problems: Sahitya Bhavan, Agra.
6. Sekhar & Sekhar: Auditing: Vikas Publishing House Ltd., New Delhi.
7. Saxena R. G. & Others: Practical Auditing: Himalaya Publishers, Mumbai.
8. S.D Sharma: Auditing Principles, Taxman publication New Delhi
9. Ravinder Kumar & Virender Sharma: Auditing Principles & Practice: Prentice Hall of India, New Delhi.

B.COM
SEMESTER II
Cost Accounting-II (DSE 2)
(100 Marks , 60 Lectures)

Objective: To familiarize the students to the basic concepts and element of cost - labour cost and overhead.

Unit I Labour cost and Control (20 Marks , 10 Lectures)
Meaning, classification of labour, Time keeping and Time booking, Payroll Accounting, Monetary benefit, Fringe benefits, Overtime Premium, Holiday and Vacation Pay, Idle time, Labour Turnover.

Unit II Labour remuneration (30 Marks , 20 Lectures)
Methods of labour remuneration, Incentive Schemes-Individual and Group, profit sharing, Calculation of Gross wages and Net wages, Individual incentive schemes and Group bonus schemes and Labour cost per unit.

Unit III Overhead classification, Allocation and Apportionment (30 Marks , 20 Hours)
Direct and indirect cost, Classification of overhead cost, Departmentalisation, Allocation and Apportionment of overhead to cost centres, Primary distribution of overhead, secondary distribution of overhead-Direct distribution method, step ladder method, Repeated distribution method, Simultaneous equation method.

Unit IV Overhead absorption (20 Marks , 10 Lectures)
Procedure for accounting of overhead cost, Overhead absorption rates, Actual and predetermined overhead rate, Methods of absorption, Accounting for under- absorption and over- absorption of overhead.

References :-

1. Jain S. P and K.L. Narang- *Cost Accounting Principles and practice* – Kalyani Publishers, Ludhiana.
2. Bhar, B.K. *Cost Accounting- Methods & Problems ,* Academic Publishers Calcutta 700073.
3. Kishore R. *Cost Accounting*- Taxmann Allied Service Pvt.Ltd.New Delhi.
4. Iyenger, S. P. *Cost Accounting*. S. chand& Co. New Delhi
5. Khana, B. S. & J. M. Pandey- *Practical costing.* S. Chand & Co. New Delhi
6. Khan, M. Y. & P.K. Jain- *Theory and Problems of Management and Cost Accounting*- Tata McGraw Hill Publishing co. Ltd. New Delhi
7. Lal, J. *Cost Accounting.* Tata McGraw –Hill Publishing co. Ltd. New Delhi
8. Nigam, B. & J.C. Jain. *Cost Accounting Principles & Practice.* Prentice- Hall of India Pvt. Ltd., New Delhi.

B.COM
SEMESTER – V
Retail Management Strategies (DSE 2)
(100 Marks – 60 Lectures)

Objective: To acquaint students with retail management strategies.

Unit I Retail Major Decisions (25 Marks-15 Lectures)

Product Decisions - 1. Types of Goods 2. Life Cycle of Goods 3. Quality.
Pricing– Price v/s value – Meaning, factors affecting retail pricing
Promotion decisions – Need, objectives and forms.

Unit II Understanding the Retail Consumer (25 Marks-15 Lectures)

Identifying and responding to changing customer profiles
Retail Shopper – Meaning and factors influencing retail shopper. Customer decision-making process. Changing trends among the Indian consumers – Factors responsible.

Unit III Servicing the Retail Consumer (25 Marks-15 Lectures)

Customer Service – Meaning. Standardisation v/s Customisation. Importance of service in retailing, Product enhancement through services – Principles for delivering distinctive services. Managing customer expectations and handling complaints – Meaning, process of handling complaints. Customer loyalty – Meaning. Customer Loyalty Programmes – Meaning and essential features.
Concept of Customer Relationship Management.

Unit IV: Retail Strategy and Implementation (25 Marks-15 Lectures)

Growth strategies: Development, Diversification. Market penetration, Market expansion, Retail format.
Implementing Retail Strategies process- Define the business mission, conduct a situation Audit, Identify strategic opportunities, Evaluate strategic alternatives, Establish specific objectives and allocate resources, Develop a retail mix to implement strategy, Evaluate performance and make adjustments.

Retail Logistics Management – Meaning, importance.
Concept of supply chain management – Retail logistics – Push logistics v/s pull logistics.

References:

1. Pradhan, Swapna. *Retail Management – Text and Cases.* Tata McGraw Hill Publishing, New Delhi.
2. Levy, Michael & Weiz, Barton A. Retailing Management. Tata McGraw Hill Publishing, New Delhi.

3. Gilbert, David. *Retail Marketing Management.* Pearson Education, Delhi.
4. Lucas, George H.; Bush, Robert & Gresham, Larry. *Retailing*. All India Publishers and Distributors, Chennai.
5. Madaan, K.V.S. *Fundamentals of Retailing*. Tata McGraw Hill.
6. Bajaj, Chetan. *Retail Management.* Oxford University Press, Delhi.
7. Vedamani, Gibson. *Retail Management.* Jaico Publishing house, Mumbai.
8. Dawson, John. *International Retail Management*. Jaico Publishing house, Mumbai.
9. Vedamani, Gibson G. *Retail Management: Functional Principles and Practices.* Jaico Publishing house, Mumbai.
10. Singh, Harjit. *Retail Managemen- A Global Perspective.* S. Chand, New Delhi.
11. Gopal V. V. *Retail Management*. The ICFAI university press, Hyderabad.
12. Nair, Suja R. *Retail Management*: Himalaya Publishing house, Mumbai.

B.COM.
SEMESTER VI
BANKING & FINANCIAL SERVICES
Bank Management (DSE 2)
(100 Marks – 60 Lectures)

Objectives: To enable the students understand financial analysis of banks and their treasury operations and further provide an insight into banking services and technology.

Unit I Financial Statement Analysis of Banks (25 Marks - 15 Lectures)
Income-Expenditure Statement of Banks: Items in Income statements and Expenditure Statements and their relative significance. Balance Sheets of Banks: Meaning, components, items on liabilities and assets sides, their relative significance, (Simple Problems on Income statement & balance sheet). Financial disclosure requirements of banks, Additional disclosures prescribed by RBI.

Unit II Asset-Liability Management (25 Marks - 15 Lectures)
Asset-Liability Management: Definition & meaning, need and significance, objectives, benefits; ALM framework in banks in India – ALM Committee, ALM Information system, ALM Process, ALM Techniques and Tools. Credit Management: loan policy and principles of bank lending, Management of Investments: components of bank investments – SLR and non-SLR / approved and non-approved securities, Treasury operations – meaning, importance, trends in India.

Unit III Risk & Resource Management (25 Marks-15 Lectures)
Risk – Meaning; Risk process , Types of risks: liquidity risk, credit risk, market risk ,interest rate risk, currency risk, legal risk , operational risk – meaning, sources, Risk Measurement and Control, Risk management tools, Capital: components of bank's capital; Deposits: pricing of deposits – importance, methods; deposit insurance, Non-deposit sources: components, relative importance

Unit IV Bank Marketing and Customer Redressal Management (25 Marks - 15 Lectures)
Bank marketing: meaning, objectives and importance, 7Ps of marketing of banking and financial services, Marketing Information system, marketing strategies; marketing of banking services in India - emerging trends, Role of DSC and DMA in bank marketing, Tele-marketing, Importance of customer redressal in banks; Customer Grievance Redressal mechanism (Internal and External) – Consumer Protection Act- major provisions, Redressal machinery, types of deficiencies for which banks are liable under the Act, Banking Ombudsman Scheme – Scope of Banking ombudsman, types of complaints, Mechanism of redressal under Ombudsman scheme.

References
Books:-
Gopal V. V. (ed.) (2004): *CRM in Banking: Concepts and Cases*, Hyderabad, ICFAI, 1e Indian Institute of Banking and Finance (2005): *Risk Management*, New Delhi, Macmillan Indian

Institute of Banking and Finance (2009): *Principles & Practices of Banking*, New Delhi, Macmillan, 2e
Joshi V. C. & Joshi V. V. (1998): *Managing Indian Banks – The Challenges Ahead*, New Delhi, Response
Justin P. &Padmalatha S. (2007): Management of Banking & Financial Services, New Delhi, Pearson
Koch T. W. & MacDonald S. S. (2003): *Bank Management*, Singapore, Thomson, South-Western Publishing, 5e
Nagarajan N. (ed.) (2004): *Bank Economists' Conference, 2002 – Vol. I & II, Indian Banking: Managing Transformation – Structure*, Hyderabad, ICFAI, 1e
Satish D. (ed.) (2004): *Currency Risk Management: Concepts and Cases*, Hyderabad, ICFAI,1e
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Vijaychandra Kumar C. (ed.) (2004): *Credit Risk Management: Concepts and Cases*, Hyderabad, ICFAI, 1e
Vijayaragavan G. (2009): *BankCredit Management: Text & Cases*, Mumbai,Himalaya

Journals:-

1. The Indian Banker, published by Indian Banker Association
2. Bank Quest, published by Indian Institute of Banking and Finance
3. RBI Bulletin (Monthly), published by RBI
4. Trends and Progress of Indian Banking (Annual), published by RBI

Websites:-

1) Reserve Bank of India www.rbi.com
2) Indian Institute of Banking and Finance www.iibf.org.in
3) Indian Bankers Association www.iba.org.in
4) Institute of Banking Personal Selection www.ibps.com.
5) Institute of Finance, Banking and Insurance www.ifbi.com

B. COM
SEMESTER VI
Human Resource Management (CC 17)
(100 Marks- 60 Lectures)

Objective: To enable the students to understand and comprehend the vital issues of HRM in a dynamic environment.

Unit I Introduction to Human Resource Management (25 Marks-15 Lectures)
Human Resource Management – Meaning and importance, Human resource planning (HRP) defined, objectives and importance of HRP.

Job Analysis and Design - Process of Job analysis, methods of data collection, concept of job design, factors affecting job design, methods/ techniques of design.

Recruitment, Selection and Placement
Meaning, sources of recruitment and recruitment process, meaning of selection, meaning of placement, Business Process Outsourcing, need for outsourcing, HR Outsourcing Opportunities in India.

Unit II Employee Compensation, Empowerment and Participation (25 Marks-15 Lectures)
Employee Compensation: Concept of Wage - Factors determining Wage Rates- Essentials of a sound Wage system – System of wage payment- (i) Time wage system (ii) Piece wage system, Individual wage incentive plans - Meaning - (i) Halsey Premium Plan (ii) Rowan Plan (iii) Taylor's Differential Piece rate Plan.

Group incentive plans - Meaning- (i) Profit sharing scheme-features, advantages and disadvantages (ii) Co-partnership – features, advantages and limitations. Payment of Bonus, ESOPs.

Employee Empowerment: Meaning, forms of empowerment, barriers to empowerment, empowerment in India: An overview.

Workers Participation in Management: Definition and objectives, forms of workers participation in management.

Unit III Labour Welfare and Trade Union (25 Marks-15 Lectures)
Labour Welfare: Concept and objectives. Labour welfare agencies –Government, Employers and Trade Unions. Labour Welfare Programmes in Industries –Statutory and Non Statutory measures.

Trade Union: Definition and functions of Trade Union - weaknesses and problems of Indian Trade Union- suggestions for healthy growth of Trade Unions in India – Challenges faced by Trade Unions in the light of globalization.

Labour Turnover and Labour Absenteeism: Meaning of labour turnover and absenteeism. Causes and effects of labour turnover and absenteeism, measures to minimize labour turnover and absenteeism.

Unit IV Trends in HRM **(25 Marks-15 Lectures)**

HRM in a changing environment – Changing environment and Challenges before HR manager
Competencies and learning organizations: Employee branding, The need for innovation, creating an innovative organization, managerial roles, creating the innovation culture.
Re - Engineering: The role of HR in Business Process Re-engineering.

References:

1) Lepak, David & Gowan, Mary. *Human Resource Management*. Dorling Kindersley (India).

2) Khanna, S.S. *Human resource Management (Text and Cases)*. S. Chand, New Delhi.

3) Sadri.J, Sadri.S, Nayak.N, *A Strategic Approach to Human Resource Management*, JAICO Publishing House.

4) Davar, R. S. *Personnel Management and Industrial Relations*. Vikas Publication, Noida.

5) Robbins, Stephen P. *Organisational Behaviour*. Pearsons Education, New Delhi.

B.COM
SEMESTER VI
International Economics (CC 18)
(100Marks, 60 Lectures)

Objectives:

1. To enable the students to understand the role of international trade and the importance of trade policy in the current global scenario
2. To enable the students to have an understanding of the importance of investment flows across countries and their dependence on various macroeconomic variables that are of significance in an open economy
3. To acquaint students with the key accounts of the balance of payments, how exchange rates are determined in the markets for foreign exchange and help them understand the connection between balance of payments and exchange rate movements
4. To enable students to be aware of the meaning and significance of regional and multilateral trade negotiations

Unit I International Trade (25 Marks, 15 Lectures)

International trade – meaning and features; Theories of international trade: Classical (comparative advantage), H-O theorem, Product Life Cycle, Technological Gaps, Intra-industry trade; Gains from International trade; Terms of Trade: meaning and 3 concepts (Net Barter, Gross Barter and Income Terms of Trade); Free Trade v/s protectionism; types of protective devices - tariff and non-tariff barriers (exchange control, voluntary export restraints, anti-dumping duties & countervailing duties, social clauses such as labour & environmental standards, sanitary &phyto-sanitary measures and administered protection).

Unit II Balance of Payments & Foreign Exchange Rates (30 Marks, 18 Lectures)

Balance of Payments: Meaning and Structure; Distinction between Balance and Equilibrium; Balance of Trade and Balance of Payments; Disequilibrium – meaning, types and causes; Corrective Measures– exchange rate adjustments (Revaluation and Devaluation), Exchange Control, Trade Measures, Effects of Monetary policy and Fiscal policy on internal and external balance (brief explanation of how the measures work)

Foreign exchange rates: Foreign exchange market – meaning, features and functions; Types of exchange rate systems (fixed, flexible and managed floating – meaning of each); Types of foreign exchange transactions (spot and forward transactions, arbitrage, currency swaps, futures contracts, speculation); Factors influencing short-term exchange rates; Concept of convertibility of Rupee on current account and capital account;Liberalized Exchange Rate Management System (LERMS); Hedging and Exchange rate risk management; Concept of PPP dollar

Unit III International Investment (25 Marks , 15 Lectures)

Foreign Investment – meaning and composition (FDI & FPI), Foreign Direct Investment: Meaning; Determinants of FDI (resources, market size, trade barriers, economic and business environment of the host country), Multinational corporations: meaning and operational characteristics; Entry modes adopted by Multinational Corporations (licensing, franchising, joint ventures/collaborations, wholly-owned subsidiaries, mergers and acquisitions);
Foreign Portfolio Investment: Meaning; Operations of Foreign Institutional Investors; Determinants of FPI (return on investment, level of financial sector development, capital controls, exchange risk); Impact of FPI on capital markets and the exchange rate.

Unit IVMultilateralism and Regional Economic Cooperation (20 Marks , 12 Lectures)

Multilateralism and Regionalism – meaning and distinction; World Trade Organization – objectives, principles, functions and Agreements (Market access, Agreement on Agriculture, TRIPs, TRIMs, GATS, Dispute Settlement); Regional economic cooperation - Meaning and reasons for growth; Forms of regional integration - Preferential Trade Agreement, Free Trade Agreement, Customs Union, Monetary Union, Economic Union; Integration efforts among Countries in Europe, North America and Asia (NAFTA, EU, ASEAN and SAARC)

References:

1. *Bhole, L. M. &Mahakud, J. 2009*, Financial Institutions and Markets: Structure, Growth & Innovations, Tata-McGraw Hill, New Delhi
2. *Cherunilam, F. 2008*, International Economics, Tata McGraw-Hill, New Delhi, *5th Edition*
3. *Cherunilam, F. 2013*, International Business Environment, Himalaya Publishing House, New Delhi, *6th Revised Edition*
4. *Dutt, R. and Sundaram, K.P.M.* ,Indian Economy, S. Chand and Co., New Delhi, *Latest Edition*
5. *Kindleberger, C.P. 1973,* International Economics, Homewood, R.D. Irwin
6. *Krugman, P.R. and Obstfeld, M. 2009,* International Economics: Theory and Policy, Pearson International Edition, Boston MA
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8. *Rajwade, A.V. 2008,* Foreign Exchange International Finance Risk Management, Academic Foundation, New Delhi
9. R. B.I. Reports on Currency Finance
10. *Salvatore, D.L. 1997,* International Economics, Prentice-Hall, Upper Saddle River, N.J.

11. *Sharan, V. 2012*, International Financial Management, PHI Learning Pvt. Ltd., New Delhi
12. *Sodersten, B. & Reed, G. 1994,* International Economics, Palgrave Macmillan, London
13. *SubbaRao, P. 2014*, International Business: Text and Cases, Himalaya Publishing House, New Delhi,*4th Revised Edition*

B.COM
SEMESTER VI
International Economics (CC 18)
(100Marks, 60 Lectures)

Objectives:

1. To enable the students to understand the role of international trade and the importance of trade policy in the current global scenario
2. To enable the students to have an understanding of the importance of investment flows across countries and their dependence on various macroeconomic variables that are of significance in an open economy
3. To acquaint students with the key accounts of the balance of payments, how exchange rates are determined in the markets for foreign exchange and help them understand the connection between balance of payments and exchange rate movements
4. To enable students to be aware of the meaning and significance of regional and multilateral trade negotiations

Unit I International Trade (25 Marks, 15 Lectures)

International trade – meaning and features; Theories of international trade: Classical (comparative advantage), H-O theorem, Product Life Cycle, Technological Gaps, Intra-industry trade; Gains from International trade; Terms of Trade: meaning and 3 concepts (Net Barter, Gross Barter and Income Terms of Trade); Free Trade v/s protectionism; types of protective devices - tariff and non-tariff barriers (exchange control, voluntary export restraints, anti-dumping duties & countervailing duties, social clauses such as labour & environmental standards, sanitary &phyto-sanitary measures and administered protection).

Unit II Balance of Payments & Foreign Exchange Rates (30 Marks, 18 Lectures)

Balance of Payments: Meaning and Structure; Distinction between Balance and Equilibrium; Balance of Trade and Balance of Payments; Disequilibrium – meaning, types and causes; Corrective Measures– exchange rate adjustments (Revaluation and Devaluation), Exchange Control, Trade Measures, Effects of Monetary policy and Fiscal policy on internal and external balance (brief explanation of how the measures work)

Foreign exchange rates: Foreign exchange market – meaning, features and functions; Types of exchange rate systems (fixed, flexible and managed floating – meaning of each); Types of foreign exchange transactions (spot and forward transactions, arbitrage, currency swaps, futures contracts, speculation); Factors influencing short-term exchange rates; Concept of convertibility of Rupee on current account and capital account;Liberalized Exchange Rate Management System (LERMS); Hedging and Exchange rate risk management; Concept of PPP dollar

Unit III International Investment (25 Marks , 15 Lectures)

Foreign Investment – meaning and composition (FDI & FPI), Foreign Direct Investment: Meaning; Determinants of FDI (resources, market size, trade barriers, economic and business environment of the host country), Multinational corporations: meaning and operational characteristics; Entry modes adopted by Multinational Corporations (licensing, franchising, joint ventures/collaborations, wholly-owned subsidiaries, mergers and acquisitions);

Foreign Portfolio Investment: Meaning; Operations of Foreign Institutional Investors; Determinants of FPI (return on investment, level of financial sector development, capital controls, exchange risk); Impact of FPI on capital markets and the exchange rate.

Unit IV Multilateralism and Regional Economic Cooperation (20 Marks , 12 Lectures)

Multilateralism and Regionalism – meaning and distinction; World Trade Organization – objectives, principles, functions and Agreements (Market access, Agreement on Agriculture, TRIPs, TRIMs, GATS, Dispute Settlement); Regional economic cooperation - Meaning and reasons for growth; Forms of regional integration - Preferential Trade Agreement, Free Trade Agreement, Customs Union, Monetary Union, Economic Union; Integration efforts among Countries in Europe, North America and Asia (NAFTA, EU, ASEAN and SAARC)

References:

1. *Bhole, L. M. &Mahakud, J. 2009*, Financial Institutions and Markets: Structure, Growth & Innovations, Tata-McGraw Hill, New Delhi
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3. *Cherunilam, F. 2013*, International Business Environment, Himalaya Publishing House, New Delhi, *6th Revised Edition*
4. *Dutt, R. and Sundaram, K.P.M.* ,Indian Economy, S. Chand and Co., New Delhi, *Latest Edition*
5. *Kindleberger, C.P. 1973,* International Economics, Homewood, R.D. Irwin
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8. *Rajwade, A.V. 2008,* Foreign Exchange International Finance Risk Management, Academic Foundation, New Delhi
9. R. B.I. Reports on Currency Finance
10. *Salvatore, D.L. 1997,* International Economics, Prentice-Hall, Upper Saddle River, N.J.
11. *Sharan, V. 2012*, International Financial Management, PHI Learning Pvt. Ltd., New Delhi
12. *Sodersten, B. & Reed, G. 1994,* International Economics, Palgrave Macmillan, London
13. *SubbaRao, P. 2014*, International Business: Text and Cases, Himalaya Publishing House, New Delhi,*4th Revised Edition*

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SEMESTER VI
ACCOUNTING
Advanced Company Accounts (DSE 5)
(100 Marks – 60 Lectures)

Objective: To develop accounting skills in students to for preparation of financial statements of limited companies and for accounting of transactions in the special circumstances of internal and external reconstruction, redemption debentures and valuation of goodwill and shares.

Unit I: Company Final Accounts (Comprehensive Study): (20 Marks, 16 Lectures)
Preparation of 'Balance Sheet' and 'Statement of Profit and Loss' as per Schedule III of the Indian Companies Act, 2013. (Problems to include 'Notes' required as per Schedule III**).**

Unit II: Internal Reconstruction: (20 Marks, 12 Lectures)
Concept, Treatment of special items, Legal aspects, accounting procedures, Journal entries, Capital Reduction Account and Balance sheet after reconstruction (as per Schedule III).

Unit III: Valuation of Goodwill and Shares: (20 Marks, 14 Lectures)
a) Valuation of Goodwill:
Circumstances under which goodwill is valued, factors affecting value of goodwill, Methods of valuation of Goodwill (Super profit, Future Maintainable Profit and Capitalization of FMP).

b) Valuation of shares:
Meaning and need for Valuation of shares, Factors affecting valuation of shares, Methods of Valuation of Shares:

i) Net Assets Method (or Intrinsic Value Method/Liquidation value Method/Breakup ValueMethod/Asset Backing Method),

ii) Yield Value/Market Value Method: Earning Yield and Dividend Yield,

iii) Fair Value Method.

Unit IV: Mergers, Acquisitions & External Reconstruction : (40 Marks, 18 Lectures)
Concept, Terms, Introduction to IND-AS 14, Calculation of Purchase consideration; Accounting procedures in the books of Vendor company and Purchasing company, Treatment of liquidation expenses, Journal entries , Ledger accounts and Balance sheet (including pooling of interest method and purchase method but exchange of shares method based on valuation of shares to be excluded).

Note: Relevant amendments to the Companies Act to be covered wherever applicable.

References:

1. Agarwal, B., & Gupta, M. *IPCC (Group II) Advanced Accounting Text & Problems - Revised.* Allahbad: Suchita Prakashan.
2. Gupta, R. L., & Radhaswamy, M. *Advanced Acountancy.* New Delhi: Sultan Chand.
3. Jain, & Narang. *Advanced Accountancy.* New Delhi: Kalyani Publishers.
4. Mahajan, S., & Kulkarni, M. *Corporate Accounting.* Pune: Nirali Publication.
5. Mahajan, S., Jagtap, & Zagade, S. *Corporate Accounting.* Pune: Diamond Publication.
6. Monga, J. R., & Ahuja, G. *Advanced Accounting* (Vols. I, II). Noida: Mayoor Paperback.
7. Mukherjee, A., & Hanif, M. (2002). *Modern Accountancy* (Vol. II). New Delhi: Tata McGraw Hill.
8. Paul, S. K. *Accountancy* (Vols. I, II). Calcutta: New Central Book Agency.
9. Shukla, M., Grewal, T., & Gupta, S. *Advanced Accounts.* New Delhi: S. Chand & Co.
10. Tulsian, P. C. *Accountancy.* New Delhi: S. Chand & Co.
11. Tulsian, P. C., & Tulsian, B. *Accounting for CA – IPCC (Group I& II).* New Delhi: S. Chand.

General guidelines for paper setting:

1. Four questions of 20 mark each to be answered.
2. Question No. 1 to be compulsory (All Questions should be practical in nature)
3. Any Three questions from the remaining Five Questions to be answered.

Specific Guidelines for paper setting:

1. Two questions each to be asked on Unit III and Unit IV
2. One question each to be asked on Unit I & Unit II

B.COM.
SEMESTER VI
COST AND MANAGEMENT ACCOUNTING
Advanced Cost Accounting-1 (DSE 5)
(100 Marks , 60 Lectures)

Objective: To provide basic conceptual & working knowledge of various methods of cost accounting

Unit I Job Costing and Batch Costing (30 Marks, 20 Lectures)

Nature, Purpose and Procedure of Job Costing, Recording and Controlling Costs in Job order Costing, Forms used in Job order Costing, Tenders and Quotations, Nature and use of Batch Costing, Determination of Economic batch quantity.

Unit II Operating costing (20 Marks, 10 Lectures)

Meaning, Nature, Basic Principles of Operating Costing – transport, entertainment and hotels.

Unit III Reconciliation of Costing profit with Financial Profit (25 Marks , 15 Lectures)

Need for reconciliation, reasons for disagreements in Profit, procedure for reconciliation

Unit IV Cost Control and Cost Reduction (25 Marks , 15 Lectures)

Meaning, Elements, Scheme and techniques of Cost control, Essentials for success of cost control, meaning of cost reduction, areas of cost reduction, tools and techniques of cost reduction, distinction between cost control and Cost reduction

References:-

1. Jain S. P and K.L. Narang- *Cost Accounting Principles and practice* – Kalyani Publishers, Ludhiana.
2. Bhar, B.K. *Cost Accounting- Methods & Problems ,* Academic Publishers Calcutta 700073.
3. Kishore R. *Cost Accounting*- Taxmann Allied Service Pvt.Ltd.New Delhi.
4. Iyenger, S. P. *Cost Accounting*. S. chand& Co. New Delhi
5. Khana, B. S. & J. M. Pandey- *Practical costing.* S. Chand & Co. New Delhi
6. Khan, M. Y. & P.K. Jain- *Theory and Problems of Management and Cost Accounting*- Tata McGraw Hill Publishing co. Ltd. New Delhi
7. Lal, J. *Cost Accounting.* Tata McGraw –Hill Publishing co. Ltd. New Delhi
8. Nigam, B. & J.C. Jain. *Cost Accounting Principles & Practice.* Prentice- Hall of India Pvt. Ltd., New Delhi

B.COM
SEMESTER VI
DISCIPLINE SPECIFIC ELECTIVE
BUSINESS MANAGEMENT
Financial Management II (DSE 5)
(100 marks- 60 lectures)

Objectives : To familiarize the students with concepts, role and techniques of financial management in firms and provide an insight into various decisions in management of corporate finance.

Unit I Dividend Policy (25 marks-10 lectures)

Meaning of dividend & dividend policy, determinants of dividend policy- dividend payout ratio, stable dividends & the other determinants; forms of dividends (cash dividend, scrip dividend, stock dividend, property dividend). Types of dividend- interim dividend and final dividend. Models in which investment & dividend decisions are related;

1. Walter's model and Gordon's model
2. M.M. Hypothesis (Modigliani and Miller)

UNIT II Cost of Capital & its Measurement (25 marks-15 lectures)

Meaning of cost of capital, importance of cost of capital, types- historical cost, future cost, explicit cost, implicit cost, specific cost and composite cost; measuring cost of capital: cost of Debt, cost of Preference capital, cost of Equity share capital:- (*4 approaches- D/P ratio, E/P ratio, E/P ratio + growth ratio, realized yield approach*); cost of retained earnings and weighted average cost of capital.

UNIT III Capital Budgeting (25 marks- 20 lectures)

Meaning and nature of Capital Budgeting; importance of Capital Budgeting decisions; Capital Budgeting process; kinds of Capital Budgeting decisions (*Accept- reject decisions, mutually exclusive project decisions, capital rationing decision*s); project classification (*mandatory investment, new projects, replacement projects, expansion projects, diversification projects, research and development projects and miscellaneous projects*); investment criteria, methods of appraising capital expenditure proposals :

A. Non discounting criteria

1. Pay Back Period method 2. Average/ Accounting Rate of Return method

B. Discounting criteria

1. Net Present Value method 2. Internal Rate of Return method 3. Profitability Index

UNIT IV Capital Structure Decisions (25 marks – 15 lectures)

A. Meaning of capital structure, importance of capital structure and optimum capital structure, risk – return trade off, capital structure theories:- (*Net Income Approach, Net Operating Income Approach, Traditional Approach*) features of a sound / optimum capital mix, factors determining capital structure.

B. Leverages- meaning and types:

1. Financial leverage & its features
2. Operating leverage & its features
3. Combined leverage

Problems on:

1. Cost of capital and its measurement
2. Capital budgeting – only 3 methods i.e Pay Back Period method, Average/ Accounting Rate of Return method, Net Present Value method.
3. Leverages- Financial leverage, Operating leverage, Combined leverage

Books for study and reference:

1. Chandra, Prasanna. *Financial Management, Theory & Practice*. Tata McGraw Hill
2. Pandey I. M. *Financial Management*. Vikas Publishing House
3. Khan & Jain. *Financial Management.* Tata McGraw Hill
4. Kuchal, S.C. *Financial Management.* Chaitanya Publishing House
5. Sharma & Gupta, Shashi*. Financial Management*. Kalyani Publishers
6. Vanhorne, James C. *Fundamentals Of Financial Management.* Prentice Hall Of India
7. Phatak. *Indian Financial System,*
8. Singh, Preeti. *Investment Management.* Himalaya Publishing House
9. G. Sudarshana, Reddy. *Financial Management- Principles and Practice.* Himalaya Publishing House
10. Tulsian, P.C. *Financial Management.* S. Chand & Co Ltd
11. Shavam, Vyuptakesh*. Fundamentals Of Financial Management*. Pearson

B.COM.
SEMESTER V
DISCIPLINE SPECIFIC ELECTIVE
BANKING AND FINANCIAL SERVICES
Law and Practice of Banking –I (DSE 5)
(100 Marks, 60 Lectures)

Objectives: To introduce the student to the basic principles, practices, rules and procedures of bank lending.

Unit I Principles of Sound Lending Working Capital Assessment and Credit Monitoring (20 marks –Lectures 12)

Credit Appraisal Techniques;Working capital finance and term loan finance –sources, appraisal of proposals for working capital finance, Operating Cycle; Projected Net WC; Turnover Method,Cash Budget; Credit Monitoring & Its Management, Base Rate. Term loan finance consumer finance & calculation on interest on different types of loans (EMI, SI and compound interest) Margins and Drawing Limits, procedures and practices of personal loans, housing loans, education loans, vehicle loans.

Unit II Types of Securities & Modes of Creating Charge (30 marks –Lectures 18)

Types of securities –personal and tangible security, primary and collateral security; suitability and valuation, measures to ensure good title, Escrow Arrangements, Trust and Retention Arrangements. Different modes and methods of creating charge –1. lien, 2. pledge, 3. Hypothecation, 4. Mortgage:- types of mortgage; enforcement of mortgage, 5. assignment, 6. set-off, 7. Guarantees:- Deferred Payment Guarantees :purpose of DPGs; Methods of Payment,Definition and Types of Bank Guarantees; Banker's Duty to honour Guarantee; Precautions to be taken for Issuance of Bank Guarantee, 8. Indemnities. Advances against documents of title to goods, advances against stock exchange securities, advances against Fixed Deposit receipts, advances against insurance policies, advances against supply bills, land and building.

Unit III Bank Documentation (20 marks –Lectures 12)

Need for Documentation, types of documents for loans, other documents and deeds (Mortgage, Pledge, Hypothecation, types of letters (Guarantee, balance confirmation, Letter of undertaking.Stamps (importance & types), legal formalities for documentation, Execution, Attestation, Registration, Effects of Non-registration, precautions to be taken by banks with respect to documentation.

Unit IV Banking Legislation, Supervision and Control (30 marks –Lectures 18)

Need & Role of RBI in Supervision & Control of the commercial Banks in India, Project appraisal and recovery measures: Non legal measures- follow up action- onetime settlement, recovery camps. Legal measures- debt recovery tribunal.*SARFAESI Act 2002:-* Definitions; Regulation & Reconstruction; Enforcement of Security Interest; Offences & Penalties;Miscellaneous Provisions. FEMA (Foreign Exchange Management Act, 1999):- important terms; Powers of RBI,

Regulation and Management; Recovery of Debts due to Banks and Financial Institutions Act, 1993(DRT Act):- Debt Recovery Tribunals Objective of the Act, Constitution of Tribunal, Procedure to be followed Enforcement process. The Legal Services Authorities Act 1987,LokAdalat- Organization; Jurisdiction; Disposal of Cases; Awards.

References

Books

1. K.P. Kandasami, S. Natarajan,R. Parameshwaran:Banking Law and Practise, S. Chand & Co. Ltd, New Delhi.
2. Sukhavinder Mishra: Banking Law and Practise, S. Chand & Co. Ltd, New Delhi.
3. Bedi H.L. &HardikarV.K.: Practical Banking Advances, UBS Publishers New Delhi..
4. Gordon E. Natarajan K.: Banking Theory, Law and Practise, Mumbai Himalaya, 1998.
5. Indian Institute of Banking and Finance: Legal Aspects of Banking, New Delhi, Macmillan 2005.
6. Khubchandanib.s.: practise and law of banking, new delhi, macmillan.2000.
7. Kumar N. & Mittal R.: Banking Law AndPractise, New Delhi Anmol 2002.
8. Reddy P.N. &Appannaiah H.R. : Banking Theory and Practise, Mumbai Himalaya, 4e.
9. Shekhar K.C. &Shekhar L.: Banking Theory and Practise, New Delhi, Vikas Publication.
10. Varshney P.N.: Banking Law and Practise,New Delhi, Sultan Chand & Sons, 2005.
11. Prem Kumar Srivastava, Banking Theory and Practise, Himalaya Publication.
12. Financial Markets & Institutions: Dr. G,V, Kayandepatil, Dr. B.R. Sangale, Dr. G.T. Sangle, Prof. N.C. Pawar.

Journals:-

1. The Indian Banker, published by Indian Banker Association
2. Bank Quest, published by Indian Institute of Banking and Finance
3. RBI Bulletin (Monthly), published by RBI
4. Trends and Progress of Indian Banking (Annual), published by RBI

Websites:-

1) Reserve Bank of India www.rbi.com
2) Indian Institute of Banking and Finance www.iibf.org.in
3) Indian Bankers Association www.iba.org.in
4) Institute of Banking Personal Selection www.ibps.com
5) Institute of Finance, Banking and Insurance www.ifbi.com

COMMERCE ELECTIVES SEMESTER – I

B.COM.
SEMESTER I
Banking I (GE 1)
(100 Marks- 60 Lectures)

Objectives: To acquaint students with basics of banking and structure of banking business in India.

Unit I Introduction to Banking in India (25 Marks-15 Lectures)
Evolution of Banking, Origin of Modern Banking in India, Meaning and Definition of Banking, Structure of Commercial Banking in India- Scheduled and Non-scheduled Banks, Public Sector Banks, Private Banks, Foreign banks and Regional Rural Banks.Systems of Banking - Group and Chain Banking, Unit & Branch Banking, Investment Banking, Mixed Banking and Universal Banking. Central Banking – Reserve Bank of India, Origin and growth – Functions, Bank Nationalization in India.

Unit II Functions of Banks (30 Marks 18 Lectures)
Accepting Deposits-Importance of deposits, Classification& features of deposits-Demand deposits, (Current account deposits, Saving account deposits, Pigmy deposits and Call deposits) Term deposits, (Fixed deposits, Recurring deposits) and Hybrid deposits or Flexi-deposits.**Loans and Advances**-Importance of lending, Principles of lending and Credit Management, Different types of lending facilities in brief -Cash credit, Overdraft. Loans: (Demand loans, Medium term loan and Long term loans)Bills purchased and Bills discounted, project finance, Loan syndication and Bridge loan, Agency and miscellaneous services.

Unit III Types of Customers and their Accounts (25 Marks-15 Lectures)
Types of Individual Customers: Minor, Married Women, Illiterate persons, Hindu Undivided Family. Opening of deposits accounts, Need for identity proof and proof of residence, Know your customers (KYC) norms, Guidelines of the RBI, Introduction, Specimen Signature, Nomination, Pass book, Statement of accounts, Bank slips and documents, Demand draft, Cheque book and Closing of accounts, Non-Resident Accounts- Features of NRO, Foreign Currency Non-Resident (FCNR) account and Non-Resident (External) (NRE) accounts.

Unit- IV Retail Banking &Customer Relationship Management (**20 marks 12 lectures**)
Introduction to Retail Banking – objectives and importance, different retail products offered by banks.Pricing of Retail banking products, Customer Relationship Management in Banking: concept, objectives and importance. Principles of Customer Relationship and customer relationship building strategies.

Reference:
1. Indian Institute of Banking and Finance, Principles and Practices of Banking, (2nd Edition) Macmillan Publication India Limited, New Delhi.

2. Indian Institute of Banking and Finance, Basics of Banking (Know your Banking-I), Taxman Publication Pvt. Ltd. New Delhi.
3. Indian Institute of Banking and Finance, Banking Products and Services, Taxman Publication Pvt. Ltd. New Delhi.
4. B. S. Khubchandani, Practice and Law of Banking, Macmillan Publisher India Ltd. New Delhi.
5. Gordon and Natarajan, Banking Theory, Law and Practice, (21st revision edition) Himalaya Publishing House Ltd., Mumbai
6. Dr. P. K. Srivastava, Banking Theory and Practice, Himalaya Publishing House Ltd. Mumbai.
7. P. N. Varshney, Banking Law and Practice, Sultan Chand and Sons, New Delhi.
8. D.Muraleedharan, Modern Banking Theory and Practice, PHI Learning Pvt.Ltd. New Delhi.
9. K. C. Shekhar and LekshmyShekhar, Banking Theory and Practice, Vikas Publishing House Pvt. Ltd. New Delhi.
10. O. P. Agarwal, Modern Banking In India, Himalaya Publishing House, New Delhi.
11. DR. K. M. Bhattacharya and O. P. Agarwal, Basic of Banking and Finance, Himalaya Publishing House Ltd. Mumbai.
12. H. L. Bediand V. K. Hardikar, Practical Banking and Advances USB Publishers Distribution Ltd. New Delhi.

Journals:

1. RBI bulletins on Banking (Yearly)
2. The Indian Banker, Indian Bank's Association
3. The IUP Journal of Bank Management, IUP publications, Hyderabad
4. IIB Journal, Indian Institute of Banking & Finance.

Website

1. Reserve Bank of India www.rbi.org.in
2. Indian Institute of Banking and Finance www.iibf.org.in
3. Indian Banker, Indian Bank's s Association www.iba.org.in

B. COM.
SEMESTER I
Business Ethics, Corporate Governance and Corporate Social Responsibility (GE 1)
(100 Marks – 60 Lectures)

Objective: To familiarize the students with concept of business ethics, corporate governance and corporate social responsibility.

Unit I Business Ethics (25 Marks, 15 Lectures)
Morality and ethics, business values and ethics , approaches and practices of business ethics, corporate ethics, ethics program, codes of ethics, ethics committee; Ethical Behaviour: Concepts and advantages; Rating Agencies; Green Governance

Unit II Corporate Governance (25 Marks, 15 Lectures)
Conceptual framework of Corporate Governance: Theories & Models, Corporate Governance Reforms. Major Corporate Scandals in India and Abroad: Common Governance Problems Noticed in various Corporate Failures. Codes & Standards on Corporate Governance at international level

Unit III Corporate governance code in India (25 Marks, 15 Lectures)
Governance code applicable to listed companies in India- clause 49 of listing agreement – Board of directors and its composition, code of conduct, Audit committee, Disclosure, related party transactions, remuneration of directors and report on corporate governance

Unit IV Corporate Social Responsibility (CSR) (25 Marks, 15 Lectures)
Concept of CSR, Corporate Philanthropy, Strategic Planning and Corporate Social Responsibility; Relationship of CSR with Corporate Sustainability ; CSR and Business Ethics, CSR and Corporate Governance; CSR provisions under the Companies Act 2013; CSR Committee; CSR Models, Codes, and CSR. Case studies in CSR

References:

1. KV Bhanumurthy and Usha Krishna, *Politics, Ethics and Social Responsibility of Business,* Pearson Education
2. Erik Banks, *Corporate Governance: Financial Responsibility, Controls and Ethics* , Palgrave Macmillan
3. Balasubramanian, N. *A Casebook on Corporate Governance and Stewardship*, McGraw Hill Education
4. Ghosh, B. *Business Ethics and Corporate Governance*, McGraw Hill Education
5. Mandal, S. *Ethics in Business and Corporate Governance* , McGraw Hill Education
6. Tricker, B. *Corporate Governance-Principles, Policies, and Practice (Indian Edition)*, Oxford University Press
7. Mallin, C. *Corporate Governance (Indian Edition),* Oxford University Press

8. Sharma, J.P., *Corporate Governance, Business Ethics, and CSR*, Ane Books Pvt Ltd, New Delhi
9. Sarbanes –Oxley Act of 2002
10. SEBI Listing Guidelines.

B.COM
SEMESTER I
Co - Operative Management and Accounting (GE 1)
(100 Marks, 60 Lectures)

Objective:To introduce the students to the basic principles of Co-operatives and various aspects of accounting and management of co-operatives.

Unit I Introduction to Co-operation (20 Marks, 12 Lectures)
Origin, Meaning and objectives of co-operatives, Emergence of co-operative movement in India, Development and growth of co-operatives, Co-operative principles and values, Difference between co-operative and other forms of organisations, Co-operatives under Five year Plans, Rural credit survey Report and its salient features, Role of co-operatives in socio-economic development and present scenario of co-operatives in India and in Goa.

Unit II Co-operative Institutions (30 Marks, 18 Lectures)
Different types of co-operatives and their salient features- Co-operatives banks, Credit co-operatives, Consumer co-operatives, Primary agriculture credit co-operatives, Dairy co-operatives, Sugar co-operatives, Housing co-operatives, Transport service co-operatives, Case studies of co-operative institutions.

Unit III Management of Co-operative Institutions (30 Marks,18 Lectures)
Role of management in the development of co-operative organisations, Conceptual framework of management, Management process, Unique features of co-operative management, Professional management for co-operatives- meaning and importance, leadership in co-operative organisations, Management of co-operatives in foreign countries – Japan, Germany, Italy and china. Apex bodies- National Co-operative Union of India (NCUI), National Co-operative Development Corporation (NCDC), International Co-operative Alliance (ICA) - features and objectives.Co-operative societies Act 1912,Multi-state co-operative Societies Act and Goa State Co-operative societies Act 2005 – features and objectives.

Unit IV Accounting and Auditing (20 Marks, 12 Lectures)
Special features of co-operative accounting, Books of accounts and Registers, Preparation of final accounts of Consumer Cooperative Societies, Housing Cooperative Societies and Cooperative Credit Societies - Distribution of Profits Appointment of auditor and audit procedures, Audit report and its contents.

References:

1. Drivedi R.C. *'Democracy' in Co-operative movement – An Indian profile*.
2. Hajela T.N. *'Principles, Problems and Practice of Co-operations'.*
3. KamatG.S 'New *Dimension of Co-operative Management*' Himalaya Publishing House New Delhi.

4. Nakkirans, *Co-operative Management Principles and Techniques,* Deep and Deep publications, New Delhi.
5. Sah A.K.,*Professional Management for Co-operatives.*
6. K.K. Taimani, *Co-operative Organisation and Management.*
7. B.C.Mehta, '*Consumer Co-operative in India.*
8. K.R. Kulkarni (1965) *'Theory and Practice of Co-operatives in India and Abroad,*Vol II (Part II), the co-operators bank depot, Bombay.
9. R.D. Bedi (1995) *Theory History and Practice of Co-operation*,R.Lall book depot Meerat.
10. P.R. Dubhashi (1970),*Principles and philosophy of co-operartions*: Vaikunth Mehta national Institute of Co-operative Management Pune.
11. T.P.Rajmanohar and V. Balaji (2008) *Indian Co-operatives Issues and Experiences*: ICFAI University Press Hyderabad.
12. N. Ajith Kumar (2002) *Co-operation*, Himalaya Publishing House, Mumbai.
13. C.B. Mamoria and R.D. Saksema (1972) *Co-perationin Foreign lands*, KitabMAhalAllahbad.
14. B.S. Mathur (1990) *Co-operations in India,*SahityaBhavan Agra.
15. Sharda V. (2004), *The Theory of Co-operations,*Himalaya Publishing House.
16. C. Dinesh (1970), *Co-operations Leadership and Management*, Vaikunth Mehta National Institute of Co-operative Management –Pune.
17. R.D. Agarwal (1977) *Co-operative Management Principles Policies and Practices,*Vaikunth Mehta Training Research, Pune.
18. L.P. Singh (2000),*Co-operatives Marketing in India and Abroad*, Himalaya Publishing.
19. S.L. Goel (1979) *Principles, Problems and Prospects of Co-operative Administration*, Sterling Publications, New Delhi.
20. Y. Ramakrishna (2009),*Management of Co-operatives,*Jaico Publishing House New Delhi.
21. Martin A. Abrahamsen (1976), *Co-operative Business Enterprises,*McGraw- Hill New York.
22. K.K.Saxena(1974), *Evolution of Co-operative thought*, Somaiya Publications, Bombay.

B.COM.
SEMESTER-I
Principles of Insurance (GE 1)
(100 Marks-60 Lectures)

Objectives: To introduce to students the concepts in risk management and insurance and practices in Life and General insurance.

Unit I Risk Management (20 Marks-10 lectures)
Basic concept of risk, Risk versus Uncertainty, Types of risks, Risk management-meaning, features, importance, process, principles of risk management, methods of handling risks.Meaning of Insurance, Insurance terminology, Reinsurance.

Unit II Introduction to Insurance Business (25 Marks-10 lectures)
Brief history of insurance in India, Insurance contract, functions and importance of insurance, Principles of insurance, difference between insurance and wagering agreement, IRDA Act1999-constitution of IRDA, objectives, functions, duties and powers of regulator, Role of insurance in Economic Development, benefits of insurance to society.

Unit III Life Insurance Business (25 Marks-20 lectures)
Life Insurance-Meaning, features, benefits, objectives of Life Insurance, Contents of life insurance policy, Documentation in life insurance contracts, procedure for issuing life policy, Types of Life Insurance policies (Term policy, whole life, endowment, money back, children, women,group insurance, pension plans,unit linked insurance), An overview of Lump Sum Policies, Installment/Annuity policies, Rider benefits, Public & private sector companies in Life insurance Business in India, Pradhan Mantri Jeevan JyotiYojana 2015.

Unit IV General Insurance Business (30 Marks-20 lectures)
Brief history of General Insurance in India, Need and Advantages, Fire Insurance-Meaning, features, types of fire insurance policies, Marine Insurance-meaning, features, risks covered, types of policies and types of marine insurance contracts. Motor vehicles insurance-Need, features and different types of policies. Health, Liability, Personal accident, Engineering, Fidelity, Theft, Baggage, Travel insurance: Meaning, objectives and advantages.Difference between Life &General insurance. Public & private sector companies in General insurance Business .PradhanMantriSurakshaBimaYojana 2015.

References:
Books

1. Dr. Periaswamy, Principles and Practice of Insurance, Himalaya Publishing House
2. Dr. P.K.Gupta, Insurance and Risk Management- Himalaya Publishing House
3. Reddy and Murali Krishna, Risk Management-Ramakrishna, Discovery Publishing House, New Delhi
4. DrP.K.Gupta, Fundamentals and Insurance- Himalaya Publishing House

5. C.Tyagi and MadhuTyagi, Insurance Law and Practice- Atlantic Publishers and Distributors
6. Arthur, C.andC.William Jr., Risk Management and Insurance, McGraw Hill
7. JyotsnaSethi and Nishwan Bhatia, Elements of Banking and Insurance, PHI Learning

Journals:

1. Journal of Insurance and Risk Management, Birla Institute of management & Technology
2. The Journal of Insurance Institute of India, Insurance Institute of India

Websites:

1. www.insuranceinstituteofindia.com
2. www.irdai.gov.in

B.COM

SEMESTER I

Marketing Management (GE 1)

(100 Marks – 60 Lectures)

Objective: To introduce the students to the basics of marketing management.

Unit I Introduction to Marketing (25 Marks- 15 Lectures)

Concept of marketing and importance

Product Planning & Decisions

Product planning – Meaning, new product development process, reasons for new product development and reasons for product failure. Product Life Cycle (PLC) - meaning, stages and implications.

Branding - concept and strategies, essentials of a good brand name.

Packaging – Meaning and essentials. Labeling – Meaning and importance.

Unit II Pricing (25 Marks-15 Lectures)

Meaning, importance and factors influencing pricing. Major pricing methods – cost, demand, competition. Pricing policies - Skimming pricing, Penetration pricing, Geographical, Leader pricing, Psychological pricing.

Unit III Promotion (25 Marks-15 Lectures)

Advertising - Meaning, objectives, role and limitations of advertising.

Sales promotion - Meaning, importance of sales promotion, major tools of sale promotion.

Personal selling –Meaning and steps. Public relations - Meaning and tools.

Unit IV Marketing Logistics (25 Marks-15 Lectures)

Physical distribution – Meaning and elements. Channels of distribution – Meaning and types, factors influencing choice of channels. Distribution channel policies.

References:

1) Kotler, Philip. Armstrong Gary. *Principles of Marketing.* Prentice-Hall.
2) Gandhi, J.C. *Marketing a Managerial Introduction*. Tata McGraw Hill.
3) Kotler, Keller, Koshy & Jha. *Marketing Management - A South Asian Perspective*. Thirteenth International Ed. Pearson, Delhi.
4) Karunakaran, K. *Marketing Management - Text and cases in Indian context*. Himalaya Publishing House, Mumbai.
5) Banerjee, Mrityunjoy. *Essentials of Modern Marketing*. Oxford & IBH Publishing.
6) Ramaswamy, V.S., Namakumari, S. *Marketing Management Planning Implementation & Control*. MacMillan, India.
7) Stanton, William; Etzel Michael & Walker Bruce. *Fundamentals of Marketing*. McGraw Hill International.

B. COM.
SEMESTER I
Management of Micro, Small and Medium Enterprises (GE 1)
(100 Marks- 60 Lectures)

OBJECTIVE: To motivate the students to be self employed. From the syllabus they will get theoretical knowledge on how to start an enterprise of their own. Practical knowledge can be obtained through assignments on various units from the syllabus.

UNIT I Steps in Setting-up a MSME (30 Marks-20 lectures)

Concept of MSME, definition of MSME in India, Characteristics of MSMEs Evolution of MSME, Role and significance of MSMEs in economic development, Challenges and opportunities of MSME in India

a) Selection of a product –factors to be considered while selecting a product
b) Preparation of project report
c) Selection of form of ownership-meaning of Sole proprietorship, Partnership, Company, HUF, Co-operative society and factors to be considered for selection of form of ownership.
d) Selection of site-factors to be considered and different sites available
e) Designing capital structure-factors to be considered
f) Quotation for machinery or equipment
g) Provisional Registration of SSI- procedure in detail and its importance
h) Obtaining NOC and other statutory licenses from pollution board, food and drug department, municipality, health, factories and boilers.
i) Apply for power/water connection
j) Recruitment, Selection and Training of staff an overview
K) Procurement of inputs
l) Trial and commencement of commercial production.
m) Permanent registration-procedure in detail and its importance

UNIT II Functional areas of Management (25 Marks-15 lectures)

a) Production management: factors influencing choice of technology.
Material management- Purchasing- need and importance, Inventory Control-need and importance.
b) Marketing Management: factors affecting choice of channels, Problems faced by SSI units and remedies to overcome the problems.
c) Financial Management: Fixed and Working capital- factors considered, sources and management of fixed and working capital. Problems faced by SSI units.
d) Man power requirements- unskilled, semi-skilled, skilled, contract and casual workers. Sources of recruitment in SSI units, problems faced(labour turnover, labour absenteeism, labour shortage, maintenance of workers).

UNIT III Institutional Support to Entrepreneurs and Industrial Sickness (25 Marks-15 lectures)

SIDO, MSMEDI, NSIC, GIDC, EDC, DIC, GHRSSIDC, KVIC, EDI-India, NIESBUD, SIDBI, SFC, DRDA, GCCI and commercial banks (objectives, functions/schemes)

Meaning, Need and Issues of Incentives. Incentives and Subsidies offered by Government of Goa and incentives and subsidies offered by Central Government. PMRY scheme, CMRY scheme, Seed Capital Assistance Scheme, Horticulture kiosk scheme in brief.
Industrial Sickness-Meaning, Symptoms, Causes, Consequences of Industrial Sickness, Remedial measures taken including government's role.

UNIT IV Social Responsibilities of Entrepreneurs (20 Marks- 10 lectures)

Social responsibilities of entrepreneurs- towards owners, employees, shareholders, customers, government, suppliers, competitors, society and environment. Arguments for and against social responsibilities

References:

1. Desai, Vasant. *Dynamics of Entrepreneurship Development*
2. Kale, Ahmed. *Industrial Organisation and Management*
3. Mascarenhas, Romeo. *Entrepreneurship Management,* Vipul Prakashan
4. Paul, Jose & Kumar Ajith. *Entrepreneurship Development and Management.* Himalaya publishing house
5. Khanka, S.S. *Entrepreneurial Development.* Sultan Chand publication
6. Gordon, Natarajan. *Entrepreneurship Development.* Himalaya publishing house
7. Gupta, C.B., Srinivasan. *Entrepreneurial Development.* Sultan Chand
8. Pednekar, Achut P. *Entrepreneurship Management.* Himalaya publishing house.

COMMERCE ELECTIVES SEMESTER-II

B.COM.
SEMESTER II
Banking II (GE 2)
(100 Marks- 60 Lectures)

Objective: To provide an insight to banker-customer relationship, banking technology, bank financials and regulations.

Unit I Banker-Customer Relationship (20 Marks-15 Lectures)

General relationship between banker and customer, Special features of banker-customer relationship, Banker as a debtor, creditor, trustee agent, consultant, bailee, and lessor, Obligation to honour cheques, to maintain secrecy of customer accounts, obligation of immediate credit of outstation cheques. Banker's Rights: Banker's Lien, Right to Set-off, Right of appropriation of accounts, Right to charge interest/commission, Right of assignment, termination of relationship, Paperless banking, branchless banking, Day-wise banking, global banking, priority banking.

Unit - II Technology in Banking (25 marks and 15 lectures)

Electronic Banking - Introduction, Impact of information technology on banking, Conventional systems: Demand drafts & pay orders and their clearing, drawbacks/difficulties of these systems. Electronic fund transfer system: RTGS, NEFT & SWIFT. Electronic Clearing Systems (ECS).Debit & Credit cards, Automated Teller Machines (ATMs), HWAK, PIN, Signal storage and Retrieval, Core Banking, Telephone Banking, Mobile banking, Internet banking,. Recent trends and developments in banking technology: CTS; Note & Coin Counting & Vending Machines; Microfiche; Banking payment intermediaries –RUPAY, VISA, Mastercard etc. Components & Modes of Transmission; Emerging trends in banking Communication, Networks for Banking. Funds Transfer Systems.

Unit III Financial Statement Analysis of Banks (30 Marks- 20 Lectures)

Meaning and Significance of Financial Statements, Financial Statements of banks, Assets and Liabilities of a Bank, Revenue and Expense of a Bank, Bank Financial / Performance Analysis Ratios – CAMELS approach: Capital Adequacy Ratios, CD Ratio, Assets Quality Ratios, Profitability Ratios, Liquidity Ratios and Productivity Ratios, Practical problems on ratios.

Unit IV An Overview of Banking Regulations (25 Marks-10 Lectures)

Banking Regulation Act, 1949 – objectives and functions, Reserve Bank of India Act, 1934 Objectives and functions.The Securitization and Reconstruction of Financial Assets and Enforcement of Security Act 2002- objectives and functions. A brief introduction to: Ombudsman Act, Credit Information Bureau (India) Ltd., Reforms in banking sector (Second generation reforms), Negotiable Instruments - Features of negotiable instruments, Promissory notes, Cheques and other instruments. Types of Cheques – Bearer and Crossed cheques (General Crossing and Special Crossing). Endorsements of cheques: meaning and importance.

References:

Books

1. Indian Institute of Banking and Finance, Principles and Practices of Banking, (2nd Edition) Macmillan Publication India Limited, New Delhi.
2. Indian Institute of Banking and Finance, Basics of Banking (Know your Bankin), Taxman Publication Pvt. Ltd. New Delhi.
3. Indian Institute of Banking and Finance, Banking Products and Services, Taxman Publication Pvt. Ltd. New Delhi.
4. B. S. Khubchandani, Practice and Law of Banking, Macmillan Publisher India Ltd. New Delhi.
5. Gordon and Natarajan, Banking Theory, Law and Practice, (21st revision edition) Himalaya Publishing House Ltd., Mumbai
6. Dr. P. K. Srivastava, Banking Theory and Practice, Himalaya Publishing House Ltd.Mumbai.
7. P. N. Varshney, Banking Law and Practice, Sultan Chand and Sons, New Delhi.
8. D.Muraleedharan,Modern Banking Theory and Practice, PHI Learning Pvt.Ltd. New Delhi.
9. K. C. Shekhar and LekshmyShekhar, Banking Theory and Practice, Vikas Publishing House Pvt. Ltd. New Delhi.
10. O. P. Agarwal, Modern Banking in India, Himalaya Publishing House, New Delhi.
11. DR. K. M. Bhattacharya and O. P. Agarwal, Basic of Banking and Finance, Himalaya Publishing House Ltd. Mumbai.
12. H. L. Bediand V. K. Hardikar, Practical Banking and Advances USB Publishers Distribution Ltd. New Delhi.

Journals

1. RBI bulletins on Banking (Yearly)
2. The Indian Banker, Indian Bank's Association
3. The IUP Journal of Bank Management, IUP publications, Hyderabad
4. IIB Journal, Indian Institute of Banking & Finance.

Website

1. Reserve Bank of India www.rbi.org.in
2. Indian Institute of Banking and Finance www.iibf.org.in
3. Indian Banker, Indian Bank's s Association www.iba.org.in

B.COM
SEMESTER II
Customer Relationship Management (GE 2)
(100 marks- 60 Lectures)

Objective: To acquaint students to the analytical and strategic aspects of CRM.

Unit I Introduction to CRM (25 marks- 15 Lectures)

Consumer behaviour and organizational buying behaviour - concept and differences.
Relationship Marketing - concept, CRM - Meaning, overview of CRM process, benefits to customer and organization. Relationship Value of customers- factors influencing relationship value.
Customer Service/Sales Profile- Customer Pyramid, Hourglass, Hexagon. Pitfalls of Customer Service/ Sales Profile.
CRM typical business touch points, CRM capabilities and customer life cycle.

Unit II Creating Customer Value and Loyalty (25 marks- 15 Lectures)

Customer Lifetime Value - Meaning and measurement concepts, Customer Equity -concepts.
Customer Loyalty, Customer Profitability, Customer Pyramid-concepts.
The 4 A's framework and Customer Focus.
Customer Complaints-nature of consumer action, types of complainers.

Unit III Customer Databases & Database Marketing (25 marks- 15 Lectures)

Collecting customer data- Customer databases – sources. Data warehouses and data mining.
Identifying information- Privacy and CRM programmes.
Analysing customer data and identifying target customers. Limitations of database marketing and CRM.
E-CRM, operational CRM (a) Sales Force Automation (SFA), (b) Customer Service and Support (CSS), (c) Enterprise Marketing Automation (EMA), (d) Integrated CRM.
E-CRM Technology Dimensions - Utility.

Unit IV Developing CRM Programmes (25 marks- 15 Lectures)

Increasing the value of customer base - Strategies.
Steps in attracting and retaining customers.
Customer Retention - strategies and levels -financial, social, customization and structural bonds.
Internal Marketing- concept.

References:

1. Kotler; Keller; Koshy & Jha. *Marketing Management-A South Asian Perspective*. Pearson Education.
2. Zeithaml, Valarie & Bitner, Mary Jo. *Services Marketing - Integrating Customer Focus Across The Firm*. McGraw Hill.
3. Karunakaran. *Marketing Management-Text and Cases in Indian Context*. Himalaya Publishing House.

4. Levy, Michael & Weitz, Barton. *Retail Management*.Tata McGraw Hill.
5. Zeithaml, Valarie; Bitner, Mary Jo & Gremler, Pandit. *Services Marketing-Integrating Customer Focus Across The Firm.* McGraw Hill.
6. P.T. Joseph S.J. *E-Commerce-An Indian Perspective*. Prentice Hall.
7. Mann Puja Walia, Niddhi. *E-Commerce*. MJP Publishers.
8. Venugopal, Vasanti & N., Raghu V. *Services Marketing*. Himalaya Publishing House.
9. Anderson, Kristin & Kerr, Carol. *Customer Relationship Management*. McGraw Hill.

B.COM.
SEMESTER-II
Practice of Insurance (GE 2)
(100 Marks-60 Lectures)

Objectives: To introduce the students to processes and intermediaries in claim management and insurance marketing and familiarize them with emerging concepts in insurance industry.

Unit I Claim Management (25 Marks-15 lectures)

Introduction-meaning of grace days, nomination, assignment, surrender value, Paid up value, foreclosure. Importance of claim management, OECD Guidelines on best practices in claim management, Claims Management in Life Insurance-Maturity and Death claims (documentation required and settlement). Repudiation of claim in Life Insurance, General Insurance- claim procedure for general insurance, procedure for claims in fire, marine and motor vehicle insurance, Claim settlement ratio.

Unit II Insurance Intermediaries (25 Marks-15 lectures)

Insurance Agents - Definition of an Agent, functions and responsibility of an agent, prerequisites for agents success, procedure for becoming an agent, methods of remunerating agents, agents regulations, agency as a profession, insurance ethics, TPA, Surveyors.

Unit III Insurance Marketing (25 Marks-15 lectures)

Marketing of insurance products- objectives, scope, importance, Marketing Mix, Distribution channels - Traditional and modern (Online insurance, Bancassurance) Marketing strategies of insurance companies.

Unit IV Emerging Concepts in Insurance Industry (25 Marks-15 lectures)

Rural Insurance-need and potential for rural insurance, Different rural insurance policies - objectives and benefits/ schemes-Aqua culture, Cattle, Farmers Package, Fish, Floriculture, Horticulture and poultry insurance. An overview of Social Insurance & Unemployment insurance, Double insurance.

References

Books

1. DrPeriaswamy,Principles and Practice of Insurance, Himalaya Publishing House
2. DrP.K.Gupta, Insurance and Risk Management- Himalaya Publishing House
3. Reddy and Murali Krishna,Risk Management-Ramakrishna, Discovery Publishing House, New Delhi
4. Dr P.K.Gupta, Fundamentals and Insurance- Himalaya Publishing House
5. C.Tyagi and MadhuTyagi, Insurance Law and Practice- Atlantic Publishers and Distributors
6. Arthur, C.andC.William Jr., Risk Management and Insurance, McGraw Hill
7. JyotsnaSethi and Nishwan Bhatia, Elements of Banking and Insurance, PHI Learning.

Journals:

1. Journal of Insurance and Risk Management, Birla Institute of management & Technology
2. The Journal of Insurance Institute of India, Insurance Institute of India

Websites:
1. www.insuranceinstituteofindia.com
2. www.irdai.gov.in
3. www.niapune.com

B. COM.
SEMESTER II
Production Management (GE 2)
(100 Marks – 60 Lectures)

Objective:

To acquaint students with the basic concepts of production management, some key decisions and functions relating to production that have a bearing on the performance and profitability of a business.

Unit I Introduction to Production (25 Marks 15 Lectures)

a) Meaning of production, production management and operations management. Importance of production function. Production planning and control – meaning and scope.
b) Plant layout – features, principles of a good plant layout. Importance of layout. Types of layout – product layout, process layout, group technology/combined layout.
Service facility layout – design of services and service processes.
Special arrangements for particular types of plants.
Arrangements of other facilities – location of receiving and shipping departments, storage, inspection, maintenance, employee facilities.

Unit II Purchasing and Material Handling (25 Marks 15 Lectures)

Purchasing - Meaning, importance (overview), purchasing cycle – steps. Purchasing policy – make or buy decisions.
Material handling – Materials and Materials handling – meaning. Material management – objectives.
Material handling costs – Cost of owning and cost of operating – concept.

Unit III Inventory Management and Control (25 Marks 15 Lectures)

Meaning of Inventory control and importance. Factors influencing inventory management.
Inventory control techniques – selective Inventory control, ABC analysis, HML analysis, FNSD analysis, VED analysis, SDE analysis.
Economic Order Quantity (EOQ) and Just-in-time (JIT) – concepts.

Unit IV Value Analysis (25 Marks 15 Lectures)

Meaning of Value, Value analysis. Steps in value analysis programme – selection of products for value analysis, identifying the functions, evaluation of function by comparison, developing alternatives.
Fundamental tools of value analysis programme. Design analysis and cost analysis.
Advantages and limitations of value analysis.

References:

1. Atul Sharma, Neetu Sharma *Production Management.* Vayu Education of India.
2. Ashwathappa & Bhat *Production and Operations Management.* Himalaya Publishing House.
3. Bedi Kanishka *Production and Operations Management.* Oxford Higher Education.
4. Chary, S. N. *Production and Operations Management.* Tata McGraw Hill.

5. Everette E. Adam, Jr. Ronald J. Ebert *Production and Operations Management.* Prentice Hall India.
6. Kothari, C. R. *An Introduction to Operational Research.* Vikas Publishing House.
7. Rao Thukarm M. E. *Production and Operations Management.* New Age International Publishers.
8. Singh, S. P. *Production and Operations Management.* S. Chand.
9. Singhal, R. K. *Production Management.* Katson Books.
10. Starr Martin. K. *Production and Operations Management.* Cengage Learning India.
11. Telsang, M. T. *Production Management.* S. Chand.

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SEMESTER II
Services Marketing – I (GE 2)
(100 MARKS - 60 LECTURES)

Objective: To familiarize the students with the concepts and processes in Services Marketing.

Unit I Introduction to Services (25 marks 15 Lectures)

Services- meaning and definition, Role of service sector in an economy, Service sector in India- an overview, importance of service sector in India

Service components- physical product, service product, service environment and service delivery,

Difference between goods and services, Classification/ types of services,

Factors responsible for growth of service sector,

Unit II Marketing Mix for Services (25 marks 15 Lectures)

Product Mix- service product- meaning, levels of service product (core level, expected level, augmented level and potential level)

Price Mix- meaning, special issues of pricing in a service sector

Place Mix- meaning, major issues-

i. Choice of location – meaning and factors.
ii. Choice of channels- Direct channels, Indirect channels- role of service intermediaries -agents and brokers, franchising, Electronic channels.

Promotion Mix- meaning, guidelines for managing service promotion.

People Mix- meaning, types of service personnel.

Process Mix- meaning, types of service processes.

Physical Evidence- meaning, components.

Unit III Customer Satisfaction (25 marks 15 Lectures)

Customer Expectations- meaning, types.

The Zone of Tolerance – meaning, variability.

Customer Satisfaction- meaning, States of satisfaction, Factors affecting customer satisfaction.

Unit IV Service Delivery and Customer Retention (25 marks 15 Lectures)

Service Delivery- i) Service culture- meaning, ii) Critical importance of service employees in service delivery- Services Triangle- meaning and concept; employee satisfaction.

iii) Major roles played by customers in service delivery.

Service Quality-meaning, components of service quality, service quality dimensions

Gap model of service quality- 5 gaps and strategies for each gap.

Service Encounters- meaning, importance, types of encounters.

Customer retention- meaning

Service Failure and recovery – meaning, service recovery strategies.

Service Guarantees – meaning and benefits.

References:

1. Zeithaml, Valarie & Bitner, Mary Jo. *Services Marketing.* Tata McGraw Hill.
2. Clow, Kenneth E. & Kurtz, David L. *Services Marketing- Operation, Management and Strategy*, (Second ed). Biztantra.
3. Woodruffe, Helen. *Services Marketing.* MacMillan.
4. Srinivasan, R. *Services Marketing – The Indian Context*. Prentice Hall.
5. Rust, Roland; Zahorik, Anthony & Keiningham, Timothy. *Services Marketing.* Eastern Press, Bangalore.
6. Shankar, Ravi. *Services Marketing – The Indian Perspective*. Excel Books.
7. Venugopal, Vasanti. *Services Marketing.* Himalaya Publications.

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SEMESTER II
Tourism and Hospitality Management (GE 2)
(100 Marks – 60 Lectures)

Objective: To acquaint the students with the fundamentals of tourism and hospitality management.

Unit 1: Introduction to Tourism **25 marks, 15 Lectures**

Definition and meaning of tourism and tourism related terms - Tour, Tourist, Tourism Market, Tourism Resources, Tourism Product, Travel agent, Tour operator. Nature, Characteristics and Importance of tourism. Tourism Product, Features of Tourism Product, Type of Tourism Products, Difference between Tourism Products and other products, the 5 A's of tourism product: Attraction, Accessibility, Accommodation , Amenities and Affordability.

Unit 2: Types and Forms of Tourism **25 marks, 15 lectures**

Types of tourism: Domestic, International; Inbound, Outbound, Inter-regional, Intra-regional Forms: - Leisure, Business, Cultural, Religious, Sports, Medical, Adventure, Eco Tourism, Green Tourism, Heritage tourism, Sustainable Tourism, Cultural Tourism, Agri-Tourism and Rural tourism. Factors affecting the growth of tourism, demand and supply factors for tourism, motivations in Tourism - Push and Pull factors Constituents of tourism industry: Primary Constituents: Accommodation, Food, Transport, Intermediaries, Government Organizations; Secondary Constituents: Shops and Emporiums, Handicrafts and Souvenirs.

Unit 3: Tourism and its Impacts **25 marks, 15 lectures**

Economic impacts of tourism: income and employment, multipliers of tourism, balance of payments, foreign exchange etc; Socio-cultural impacts of tourism: cultural exchange among nations and international understanding; Ecological and environmental impacts of tourism, garbage, habitat destruction, pollution etc. Political impacts-Ethics and Legislation, Sustainable Development- Environmental Impact Analysis, Issues from the perspective of different stakeholders (government, local people, tourists and tourism businesses).

Unit 4: Hospitality and its related sectors **25 marks, 15 lectures**

Origin, growth and nature of Hospitality Industry, Factors affecting Hospitality and Tourism Industry, Employment Opportunities in Hospitality Industry, Various sectors comprising the hospitality industry - lodging/accommodation, event planning, theme parks, transportation, cruises, Tourism and Hospitality in 21st century – Global gaming and Casino operations – Recent trends

References

1. Bhatia, A.K.: Tourism Development, Principles and practices: Sterling Publishers (P) Ltd.
2. Fletcher, J., Fyall, A., Gilbert, D., Wanhill, S., Tourism Principles and Practice, Pearson New International Edition, 2013.
3. Bhatt, H., *Hospitality and Tourism Management,* Commonwealth Publishers, New Delhi.

Journals

1. Journal of Hospitality and Tourism Research (JHTR), Sage Publications, jht.sage pub.com
2. Journal of Hospitality and Tourism Management, Elsevier,www.journals.elsevier.com
3. Journal of Hospitality and Tourism, www.johat.org
4. International Journal of Tourism Research, Wiley Online, onlinelibrary.wiley.com
5. Journal of Hospitality and Tourism Management, www.sciencedirect.com

SEMESTER – III

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SEMESTER II
Business Environment –I (GE 3)
(100 Marks-60 Lectures)

Objective: To familiarize students about different aspects of business environment and its impact on business activities.

Unit I Business and its Environment (25 marks -15 Lectures)

Meaning, definition, scope, nature and goals of business; contemporary characteristics of modern business; Business environment – meaning, importance and features; Components of business environment– micro and macro; Social responsibilities of business

Internal environment- value system, vision, mission and objectives, nature and structure of management, internal power relationship, company image.

External environment –Micro - Consumer / Customer , Competitors , Organization , Market , Suppliers , Intermediaries , Public. Macro – Demographic, Economic, Political, Legal, Socio – Cultural , Technological , physical and Global environment.

Unit II Socio-Cultural and Demographic Environment (30 marks -18 Lectures)

Culture- meaning, definition and characteristics- Organizational Culture – meaning and importance-Effect of socio-cultural environment on Business-Family system, marriages, Religion and caste, ethics, purchases, attitude to work, languages and global business.

Social groups such as caste, class & nouveau riche - their impact on business; Customs, traditions and values and their impact on business

Demographic environment - meaning and composition; Need of demographic studies for business

Migration - meaning, reasons for migration, impact of migration (positive and negative)

Unit III Natural and Technological Environment (20 marks -12 Lectures)

Natural environment – meaning and composition; impact of natural environment on business.

Technological Environment- Technology- modern and Indigenous technology -meaning and importance – Innovation and technology-sources of technological dynamics- Features of technology-status of technology in India- management of technology in India-Impact of technology on business-globalization and transfer of technology- Information technology-role of Information technology in development of global business, E-business in India, Technology Park – meaning & objectives.

Unit IV Political Environment (25 marks -15 Lectures)

Meaning, Role of Government in Business (regulatory, entrepreneurial, planning and promotional) Components of political environment - political systems, political stability, international relations, government bureaucracy and its role, special interest groups and their

impact on business, State Intervention in Business, Local self government -meaning, objectives, functions; Activities of Panchayat /Municipality and their impact on business.

References:

1. Misra, S.K. & Puri, V.K. (2007) Economic environment of Business, Himalaya Publishing House, Delhi
2. Menon, Lydia & Mallya, Prita, Business Environment
3. Cherunillam, Francis Business Environment, Himalaya Publishing House
4. Ashwathappa, K, Business Environment, Himalaya Publishing House
5. Dutt & Sundaram, Indian Economy, S. Chand & Company
6. Jain & Varma- Business Environment, Sahitya Bhavan, Agra.

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SEMESTER IV
Business Environment –II
(100 Marks-60 Lectures)

Objective: To introduce the students to elements and composition of economic, legal and international environment of business and also aims to bring about awareness of business environment in Goa.

Unit I Economic Environment of Business (30 Marks – 18 Lectures)

Meaning and components of economic environment of business, - Economic systems, Economic planning, Economic policies, Economic legislation, controls and regulations

Economic systems -capitalism, socialism and mixed economy- meaning and features

Economic planning in India- Objectives of planning and main provisions of current five Year plan, NITI Ayog.

Economic policies -fiscal, monetary, industrial policy, Import-Export policy, investment policy (including foreign investment policy) and employment policy –meaning and objectives.

Make in India policy and business.

Unit II Legal Environment of Business (20 Marks – 12 Lectures)
Meaning and components of legal environment; impact of legal environment on business

Environment Protection Act1986 – objectives and major provisions

Consumer Protection Act 1986 – Objectives and major provisions, Consumer Redressal Agencies; Jurisdiction and powers

Right to Information Act (RTI) 2005- Definition and meaning of information, public Authority, right to information and record- objectives of the Act- scope of right to information—exemption—public Information officer - procedure for seeking information, fees and response time, appeals, penalty provisions, case studies.

Unit III International Environment and India (20 Marks – 12 Lectures)
Overview of Industrial policy of India till 1990- new industrial policy-objectives and features, globalization- liberalization- privatization (meaning) and - Foreign capital- meaning, need - Multi-national Corporation-merits and demerits-case studies on MNCs in Goa.
International events and its impact on Indian industry

The International Finance Corporation's Ease of Doing Business Index - composition of the index; India's performance on the index and each of the components.

Unit IV Business Environment in Goa (**30 Marks – 18 Lectures)**

Brief introduction of industrialization in Goa- Current Status of the Goan economy- Goa's current performance on important economic and socio-economic indicators-Industrial policy in Goa - Introduction, objectives and thrust areas- Industrial Estates in Goa -Industry associations- meaning and need- Goa Chamber of Commerce and Industry (GCCI) and Goa State Industries Association (GSIC) -objectives and functions and major activities.
Environmental issues and Goan Industry
Local self government in Goa -meaning, objectives, functions; Activities of Panchayat /Municipality and their impact on business.
Environmental movements in Goa-meaning of environmental movement, movements related to mining, tourism and construction -their objectives and activities.
Case study on CSR in Goa.

References

1. Agarwal, P.N. (2001) A comprehensive History of Business India, Tata McGraw-Hill Publisher Company Limited, New Delhi.
2. Konoria, S.S. Ed (1990) Footprints of Enterprises, Federation of Indian Chamber & Commerce, New Delhi
3. Misra, S.K. & Puri, V.K. (2007) Economic environment of Business, Himalaya Publishing House, Delhi
4. Menon, Lydia & Mallya, Prita, Business Environment
5. Cherunillam, Francis Business Environment, Himalaya Publishing House
6. Ashwathappa, K, Business Environment, Himalaya Publishing House
7. Dutt & Sundaram, Indian Economy, S. Chand & Company
8. Goa Panchayat Raj Act
9. Right to Information Act 2005

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1. Envfor.nic.in/legis/env1.html
2. www.ncdrc.nic.in/11.html
3. www.iitb.ac.in/legal/RTI-Act.pdf

B.COM
SEMESTER-III
Fundamentals of Rural Marketing (GE 3)
(100 Marks – 60 Lectures)

Objective: To introduce students to the subject of rural marketing and issues related to rural markets.

Unit I Introduction to Rural Marketing: (25 Marks- 15 Lectures)

Concepts of rural market and rural marketing. Rural market – Profile. Tapping the rural market – need, how to identify the potential of rural market. Factors leading to growth of rural markets. Distinction between rural and urban marketing.

Unit II Rural Marketing Environment and segmentation for Rural Markets (25 Marks- 15 Lectures)

Rural marketing environment – Meaning, forces and their influence on rural marketing operations. Rural market segmentation – Meaning and bases – geographical, demographic, socio cultural, economic, behavioural.

Unit III Rural Consumer and Demand (25 Marks- 15 Lectures)

Profile of rural consumer – characteristics, attitudes and behaviour. Rural consumer demand – buying pattern and influences.

Unit IV Rural Marketing – Problems and opportunities. (25 Marks-15 Lectures)

Problems of Rural Marketing - Brand building in rural India – fake brands market – (use case study examples). Strategy to counter fake brands, Rural marketing opportunities. Cooperative marketing – concept. Micro-finance - concept and service providers.

References:

1. Sinha, A. *Rural Consumer Behaviour*. Sonali Publications, New Delhi.
2. Srivastava, P. K. *Marketing Management in a Developing Economy*, Bangalore.
3. Nair, N. Rajan & Varma, M. M. *Marketing Management*, New Delhi.
4. Mathur, U. C. *Rural Marketing*. Excel Books.
5. Velayudhan, Sanal Kumar. *Rural Marketing: Targeting the non-urban consumer.* Response Books, SAGE Publications.
6. Singh, Sukhpal. *Rural Marketing*.Vikas Publishers.
7. Rajagopal. *Managing Rural Business*. Wheeler Publications, New Delhi.
8. Gopalaswamy. *Rural Marketing.* Wheeler Publications, New Delhi.
9. Kamat, Minouti S. & Krishnamoorthy, R. *A Textbook on Rural Marketing*. Himalaya Publishing House.

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SEMESTER III (GE 3)
Indian Capital Markets
(100 Marks – 60 Lectures)

Objective: To provide a comprehensive understanding of various operations, issues and developments in Indian capital markets.

Unit I Introduction to Indian Securities Markets (25 Marks-15 Lectures)

Meaning of securities, role of securities markets, structure of securities markets and market segments, Capital market instruments, Capital market participants and intermediaries, Role of SEBI in Indian capital markets, Reforms in Indian Capital Markets, Major issues in Indian capital markets, Investor protection, Recent developments in Indian capital markets.

Unit II Primary Markets (25 Marks-15 Lectures)

(a) Structure: Nature and functions of primary market, Categories of issuers in primary markets, Regulatory framework for primary markets, Types of investors in primary markets, Types of public issues – IPO, FPO, private placement and offer for sale, Public issue process and Book-Building, Allotment of shares.

(b) Merchant banking: Meaning, nature and functions, Merchant Banking in India, Role in issue management, Classification and regulation of merchant bankers by SEBI.

Unit III Secondary Markets (25 Marks-15 Lectures)

Role and functions of secondary markets, Market structure and participants in secondary markets, Listing – Process and advantages; Stock market indices (BSE Sensex, NSE Nifty, sectoral indices) – Composition and computation – Overview of international exchanges and indices; Trading and settlement mechanism in Indian stock exchanges – BSE, NSE; Role of Clearing House, Internet trading, Risk management systems for secondary markets, Rights, obligations and grievance redressal mechanism for investors in secondary markets.

Unit IV Derivatives Markets (25 Marks-15 Lectures)

Key concepts with regard to derivatives, types of derivative products and their features, structure of the derivative markets, trading and settlement of derivatives, regulatory and risk management process for derivatives, use of derivatives in speculation, hedging and risk management, costs, benefits and risks of derivatives, key derivative market indicators.

References:

1. Chakrabarti, R., & De, S. (2010). *Capital Markets in India.* New Delhi: Sage Response.
2. Gordon, E., & Natarajan, K. (2015). *Financial Markets and Services* (Ninth ed.). New Delhi: Himalaya Publishing House.
3. Gurusamy, S. (2009). *Capital Markets* (Second ed.). New Delhi: Tata McGraw Hill.

4. Pandian, P. (2013). *Security Analysis and Portfolio Management* (Second ed.). New Delhi: Vikas Publishing House.

5. Patwari, D., & Bhargava, A. (2006). *Options & Furtures: An Indian Perspective.* New Delhi: Jaico Publishing House.

6. Ramesh Babu, G. (2014). *Capital Market in India.* New Delhi: Concept Publishing Co.

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www.equitymaster.com
www.shodhganga.inflibnet.ac.in
www.capitalmarket.com

B.COM
SEMESTER IV
APPLIED COMPONENT
Financial Services
(100 Marks – 60 Lectures)

Objective: To develop an understanding of salient features and mechanisms of important financial services and recent developments and issues in Indian financial services sector.

Unit I Introduction to Financial Services (25 Marks- 15 Lectures)

Meaning of Financial Services, Classification and types of financial services - asset/fund-based services and fee-based/advisory services, Importance of financial services; Constituents of financial services market, Growth and development of financial services in India, Problems of financial services sector in India.

Unit II Depository Services (25 Marks- 15 Lectures)

Meaning, Need for a depository system, Functions of a depository, Depositories in India - CDSL, NSDL; Depository participants (DPs) - Functions of Depository Participant – Dematerialization, Re-materialization, Account Opening, Transmission and nomination, Trading and settlement, Pledge and hypothecation, Corporate actions.

Unit III Mutual Funds (25 Marks- 15 Lectures)

Concept, Advantages and disadvantages of mutual fund investing, Structure of mutual funds in India, Classification of mutual funds, Mutual fund terminologies – Scheme, Portfolio, Net Asset Value (NAV), Load, Management fees; Portfolio management process of mutual funds, History and growth of mutual funds in India, SEBI regulations on mutual funds, AMFI.

Unit IV Credit Rating & Securitization Services (25 Marks- 15 Lectures)

(a) Credit Rating - meaning, rating methodology, importance of credit rating; credit rating agencies in India CRISIL, CARE, ICRA, Small & Medium Enterprises Rating Agency (SMERA).
(b) Securitization - Meaning, Features, Mechanism, Types, Benefits of Securitization, Process of Securitization, Issues in Securitization

References:

1. Gordon, E., & Natarajan, K. (2015). *Financial Markets and Services* (Ninth ed.). New Delhi: Himalaya Publishing House.
2. Gurusamy, S. (2009). *Financial Services* (Second ed.). New Delhi: Tata McGraw Hill.
3. Khan, M. Y. (2010). *Financial Services* (Fifth ed.). New Delhi: Tata McGraw Hill.

4. Pathak, B. (2009). *The Indian Financial System: Markets, Institutions and Services* (Second ed.). New Delhi: Pearson Education.

5. Ramesh Babu, G. (2005). *Financial Services in India.* New Delhi: Concept Publishing Company.

Journals:

International Journal of Financial Services Management
Journal of Private Equity
Journal of Applied Finance
Finance India
Indian Journal of Finance
Vikalpa

Websites:

http://financialservices.gov.in/
https://vcexperts.com/

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SEMESTER III
Business Finance
(100 Marks, 60 Lectures)

UNIT I: Nature and Objectives of Business Finance (25 Marks 15 Lectures)

Meaning of business finance, business finance v/s corporate finance, role of business finance in an organization, principles of business finance, meaning of financial planning, steps in financial planning, significance of financial planning, essential features of a good financial plan, types of financial plan.

UNIT II: Classification of Capital (25 Marks-15 Lectures)

Meaning of Capital, Classification of capital, factors determining capital requirements, meaning, features and sources of fixed capital, factors determining fixed capital requirements, importance of adequate fixed capital; meaning, features and sources of working capital, Factors determining working capital requirements, significance of adequate Working capital, types of working capital

UNIT III: Capitalisation (25 Marks-15 Lectures)

Meaning of capitalization, Theories of capitalization, Cost theory v/s Earnings theory, overcapitalization and under capitalization, meaning, causes, effects and remedies; overcapitalization v/s under capitalization; balanced capitalization, meaning and importance

UNIT IV: Capital Structure (25 Marks–15 Lectures)

Concept of capital structure, Meaning and importance of capital structure, factors affecting capital structure, concept of financial structure, capital gearing, meaning, types and advantages, trading on equity, meaning, types and advantages and limitations.

References:

Books

8. Sharma, R.K. & Gupta, Shashi., K. *Business Organisation and Management*
9. Srivastava, R.M. *Essentials of Business Finance*, Himalaya Publishing House, Kalyani Publications.
10. Singh, Preeti. Investment Management. Himalaya Publishing House
11. Kale, N.G. *Business Organisation.* Manisha Publications.
12. Sontakki C.N., *Business Organisation*, Seth Publishers
13. Gordon, E. & Natarajan, K. Financial Markets and Institutions, Himalaya Publishing House.
14. Sadak, H. *Mutual Funds in India*, Response Books, Sage Publications.

B.COM
SEMESTER IV
FUNDAMENTALS OF INVESTMENT (CC)
(100 Marks, 60 Lectures)

Objective: To familiarize the students with different investment alternatives, introduce them to the framework of their analysis and valuation and highlight the role of investor protection.

Unit I Investment Environment (30 Marks, 20 Lectures)

The investment decision process, Types of Investments – Commodities, Real Estate and Financial Assets (Equity, Mutual funds, Debt), the Indian securities market, the market participants (Stock exchanges, Stock brokers, Clearing House, Depositories, Depository Participants, FIIs, Domestic institutional investors, Individual investors), Online and offline trading in securities, security market indices, sources of financial information, Concept of return and risk, Impact of Taxes and Inflation on returns.

Unit II Analysis of Equity and Debt Instruments (30 Marks, 20 Lectures)

(c) Fixed Income Securities

Bond features, types of bonds, estimating bond yields, Bond Pricing, types of bond risks, default risk and credit rating, Bond market indices.

(d) **Approaches to Equity Analysis**

Introduction to Fundamental Analysis, Technical Analysis, dividend capitalisation models, and price-earnings multiple approach to equity valuation, Intrinsic value, Price to Book value ratio.

Unit III Portfolio Analysis and Financial Derivatives (20 Marks, 10 Lectures)

Portfolio and Diversification, Portfolio Risk and Return; Mutual Funds; Introduction to Financial Derivatives; Financial Derivatives Markets in India

Unit IV: Investor Protection (20 Marks, 10 Lectures)

Role of SEBI and stock exchanges in investor protection; Investor grievances and their redressal system, insider trading, investor awareness and activism.

References:

1. Jones, C.P. *Investments Analysis and Management*, Wiley, 8th ed.
2. Chandra, Prasanna. *Investment Analysis and Portfolio Management.* McGraw Hill Education
3. Rustogi, R.P. *Fundamentals of Investment*. Sultan Chand & Sons, New Delhi.
4. Vohra N.D. & Bagri B.R., *Futures and Options,* McGraw Hill Education
5. Mayo. An *Introduction to Investment*. Cengage Learning.

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SEMESTER V
DISCIPLINE SPECIFIC ELECTIVE
BUSINESS MANAGEMENT
Financial Management
(100 marks- 60 lectures)

Objectives : To familiarize the students with concepts, role and techniques of financial management in firms and provide an insight into various decisions in management of corporate finance.

UNIT I An Introduction to Financial Management (25 marks-10 lectures)

Meaning of Financial Management, scope and objectives of Financial Management, profit maximization v/s wealth maximization; Role & responsibilities of Financial Manager, measuring shareholders value creation, International Financial Management – meaning, forms of financial capital, importance, merits.

UNIT II Cost of Capital & its Measurement (25 marks-15 lectures)

Meaning of cost of capital, importance of cost of capital, types- historical cost, future cost, explicit cost, implicit cost, specific cost and composite cost; measuring cost of capital: cost of Debt, cost of Preference capital, cost of Equity share capital:- (*4 approaches- D/P ratio, E/P ratio, E/P ratio + growth ratio, realized yield approach*); cost of retained earnings and weighted average cost of capital.

UNIT III Capital Budgeting (25 marks- 20 lectures)

Meaning and nature of Capital Budgeting; importance of Capital Budgeting decisions; Capital Budgeting process; kinds of Capital Budgeting decisions (*Accept- reject decisions, mutually exclusive project decisions, capital rationing decision*s); project classification (*mandatory investment, new projects, replacement projects, expansion projects, diversification projects, research and development projects and miscellaneous projects*); investment criteria, methods of appraising capital expenditure proposals :

C. Non discounting criteria
2. Pay Back Period method 2. Average/ Accounting Rate of Return method
D. Discounting criteria
2. Net Present Value method 2. Internal Rate of Return method 3. Profitability Index

UNIT IV Capital Structure Decisions (25 marks – 15 lectures)

C. Meaning of capital structure, importance of capital structure and optimum capital structure, risk – return trade off, capital structure theories:- (*Net Income Approach, Net Operating Income Approach, Traditional Approach*) features of a sound / optimum capital mix, factors determining capital structure.
D. Leverages- meaning and types:
4. Financial leverage & its features
5. Operating leverage & its features

6. Combined leverage

Problems on:

4. Cost of capital and its measurement
5. Capital budgeting – only 3 methods i.e Pay Back Period method, Average/ Accounting Rate of Return method, Net Present Value method.
6. Leverages- Financial leverage, Operating leverage, Combined leverage

Books for study and reference:

12. Chandra, Prasanna. *Financial Management, Theory & Practice*. Tata McGraw Hill
13. Pandey I. M. *Financial Management*. Vikas Publishing House
14. Khan & Jain. *Financial Management.* Tata McGraw Hill
15. Kuchal, S.C. *Financial Management.* Chaitanya Publishing House
16. Sharma & Gupta, Shashi*. Financial Management*. Kalyani Publishers
17. Vanhorne, James C. *Fundamentals Of Financial Management.* Prentice Hall Of India
18. Phatak. *Indian Financial System,*
19. Singh, Preeti. *Investment Management.* Himalaya Publishing House
20. G. Sudarshana, Reddy. *Financial Management- Principles and Practice.* Himalaya Publishing House
21. Tulsian, P.C. *Financial Management.* S. Chand & Co Ltd
22. Shavam, Vyuptakesh*. Fundamentals Of Financial Management*. Pearson

BCOM
SEMESTER VI
DISCIPLINE SPECIFIC ELECTIVE
BUSINESS MANAGEMENT
Financial Management
(100 Marks- 60 Lectures)

UNIT I Dividend Policy (25 marks-15 lectures)

Meaning of dividend & dividend policy, determinants of dividend policy- dividend payout ratio, stable dividends & the other determinants; forms of dividends (cash dividend, scrip dividend, stock dividend, property dividend). Types of dividend- interim dividend and final dividend. Models in which investment & dividend decisions are related;

3. Walter's model and Gordon's model
4. M.M. Hypothesis (Modigliani and Miller)

UNIT II: Working Capital Management (25 marks-15 lectures)

Nature & concept of working capital, importance of working capital, types of working capital, determinants of working capital, sources of working capital (in brief), estimation and computation of working capital.

UNIT III : Management of Cash. (25 marks-15 lectures)

A. Cash management- introduction, objectives; motives of holding cash, factors determining cash needs, strategies employed to manage cash needs, techniques for speedy cash collection and techniques for slowing disbursements. Preparation of cash budget. (simple problems on the Receipt and Payments method)
B. Receivables management- introduction, objectives of Receivables management, cost associated with accounts receivables, factors influencing the size of receivables; decision areas in Receivables management- credit policies, credit terms and collection policies.

UNIT IV Inventory management (25 marks-15 lectures)

Introduction, objectives, motives of holding inventory, cost & benefits of holding inventory, techniques of inventory ,management-

1. ABC analysis
2. EOQ (problems on the formula method)
3. VED analysis
4. Various levels of stores: (a). re order level (b). minimum level (c) maximum level (d) average level
5. Inventory turnover ratio
6. Just in time (JIT) inventory control system- objectives, features, advantages.

<u>Problems on</u>

1. Estimation of working capital
2. Cash budget (simple problems on the Receipt and Payments method)
3. Techniques of inventory management- EOQ & various levels of inventory.

Books for study and reference:

1. Chandra, Prasanna. *Financial Management, Theory & Practice*. Tata McGraw Hill
2. Pandey I. M. *Financial Management*. Vikas Publishing House
3. Khan & Jain. *Financial Management.* Tata McGraw Hill
4. Kuchal, S.C. *Financial Management.* Chaitanya Publishing House
5. Sharma & Gupta, Shashi*. Financial Management*. Kalyani Publishers
6. Vanhorne, James C. *Fundamentals Of Financial Management.* Prentice Hall Of India
7. Phatak. *Indian Financial System,*
8. Singh, Preeti. *Investment Management.* Himalaya Publishing House
9. G. Sudarshana, Reddy. *Financial Management- Principles and Practice.* Himalaya Publishing House
10. Tulsian, P.C. *Financial Management.* S. Chand & Co Ltd
11. Shavam, Vyuptakesh*. Fundamentals Of Financial Management*. Pearson

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SEMESTER – III
Retail Management (GE 3)
(100 Marks – 60 Lectures)

Objective: To acquaint students with the basic concepts of retailing and its application in current marketing scenario.

Unit I Introduction (25 Marks-15 Lectures)

Retailing – Meaning, Factors responsible for growth. Functions/Role of a retailer.

Retail Life Cycle – Meaning and stages. Retail scenario in global and Indian context - including FDI in retail, multi-channel retailing.

Unit II Retail Formats (25 Marks-15 Lectures)

Retail Formats - Concept. Types of Retail Stores – on the basis of

a) Form of Ownership – Independent retailer, chain retailer, franchising, lease departments, consumer co-operatives.

(b) Merchandise Offered – Convenience stores, Super markets, Hyper Markets and Malls, Specialty Stores, Department Stores, Off - Price Retailers, Factory Outlets, Catalog Showrooms.

(c) Non-Store Retailing – Direct Selling, Mail Order, Telemarketing, Automated Vending.

Unit III Store Location (25 Marks-15 Lectures)

Meaning and importance of store location. Types of location – a) Free Standing (b) Part of Business District (c) Part of the shopping centre (d) Other Retail locations

Steps involved in choosing a retail location - 1. Market identification 2. Determining the market potential – Elements to be considered 3. Identification of alternate sites (including Factors) 4. Selection of site (including factors).

Unit IV Store Design and Layout (25 Marks-15 Lectures)

Store Design – Meaning and importance. Objectives of a Good Store Design. Exterior Store Design – Meaning and components. Interior Store Design – Meaning and components. Store layout – Meaning and types of layouts – a) Grid Layout (b) Racetrack layout (c) Freeform layout. Layout Selection – Factors to be considered. Space Planning – Meaning and concept of Planogram. Visual Merchandising – Meaning and methods of display. Detecting and Preventing Shoplifting – Meaning and measures to reduce shoplifting. Employee Theft – Meaning and measures to reduce employee theft.

References:

1. Pradhan, Swapna. *Retail Management* – Text and Cases.Tata McGraw Hill Publishing, New Delhi.
2. Levy, Michael & Weiz, Barton. A *Retailing Management.* Tata McGraw Hill Publishing, New Delhi.

3. Gilbert, David. *Retail Marketing Management*. Pearson, Delhi.
4. Lucas, George H.; Bush, Robert & Gresham, Larry. *Retailing*. All India Publishers and Distributors, Chennai.
5. Madaan, K.V.S. *Fundamentals of Retailing*. Tata McGraw Hill.
6. Bajaj, Chetan. *Retail Management.* Oxford university press, New Delhi
7. Vedamani, Gibson. *Retail Management*. Jaico Publishing house, Mumbai
8. Dawson, John. *International Retail Management*. Jaico publishing house, Mumbai
9. Vedamani, Gibson G. *Retail Management: Functional Principles and Practices*, Jaico Publishing house, Mumbai
10. Singh, Harjit. *Retail Management*- a Global perspective. S. Chand, New, Delhi.
11. Gopal, V. V. *Retail Management.* The ICFAI University press, Hyderabad.
12. Nair, Suja R. *Retail Management*. Himalaya Publishing house, Mumbai.

OTHERS ELECTIVE SEMESTER-III

B.COM.
SEMESTER II
Business Communication II (GE 3)
(Business and Public Communication)
(100 Marks, 60 Lectures)

Course Objectives:

- **To make students aware of their Constitutional rights and duties and how they can use their communication skills actively for the betterment of society.**
- **To familiarize students with a basic understanding of the process of writing for business.**
- **To develop an ability to use writing in practical business and public situations.**

Unit I Right to Information **(25 Marks - 22 Lectures)**

Learning about the nature, function and social relevance of Right of Information and thereafter undertaking an activity involving:

a) Student's proposal to ask an RTI of public importance
b) Writing/ Filing of application before Public Information Officer
c) Preparing a report containing the findings of the RTI

Note: A group of maximum 10 students should be formed of which 1 student is to file the application, it will carry 10 marks. The remaining 15 marks are for theory.
The 10 marks component of this unit can be an ISA.

Unit II Report Writing **(15 Marks - 8 Lectures)**

Report Writing: Meaning, Importance, Types, Formats, Structure of long and short reports.

Unit III Personnel Letters and Interviews

(a) Interview Skills, Job Applications and Creating Online and Offline CVs, Using Job Boards, Web Researching, **(15 Marks, 8 Lectures)**

(b) References and Testimonials, Appointment, Promotion and Resignation letters, Office Orders and Notices, Memorandums. **(15 Marks, 8 Lectures)**

Unit IV Business Letters, Representations and Press Releases

(a) Business Letters: Purchase letters: Inquiry, Quotations, Orders, Tenders, Complaint & Sales Letters. **(15 Marks, 8 Lectures)**

(b) Drafting of Representations / Petitions, Press Releases and Articles for the Press. **(15 Marks, 6 Lectures)**

Guidelines for Conduct of examination

1. One ISA of 10 Marks (Written Test)
2. Writing / Filing RTI

Books for Study and Reference:

1) *Right Information Act*, 2005: A Primer , Tata McGraw Hill, 2006

2) *How to Write Reports and Proposals*, 2nd Edition, Viva Books Pvt Ltd, 2010.

3) *Mastering Communication*, 5th Edition, Nicky Stanton, Palgrave Macmillan, 2009.

4) *Business Correspondence and Report Writing*, R C Sharma, Krishna Mohan, Tata McGraw-Hill Education, 2010.

5) *Business Letters for Busy People*, 4th Edition, John A Carey, Barnes and Noble.

www.ebooks-share.net/business-letters-for-busy-people
www.rti.gov.in

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SEMESTER III
Computer Application for Business-I (GE 3)

Total Credits: 04 Theory : 3 Credits Practical: 1 Credits
LECTURES : 3 per week of 1 hr each (Total Lectures: 45)
Practical : 1 Practical Lab session of 2 hrs each per week per batch
(Batch of 10-15 students) (Total Practical sessions: 15)
Max. Marks : 75T + 25P = 100

Objectives:

- To provide advanced computer skills and knowledge for commerce students
- To enhance the students' understanding of usefulness of information technology tools for business operations
- To become familiar with the processes needed to develop, report, and analyze business data
- To learn how to use and apply Excel and Excel add-ins to solve business problems

Theory:

Unit I: Concepts of Data Processing and analysis 15 Lectures (22 Marks)

a. Data Processing – Steps involved in data processing, advantages of computers in data processing , file management concepts- standard methods of organizing data, file management system, file types: transaction & master, file organization techniques – sequential, direct, indexed sequential
b. Data analysis and forecasting - importance of data analysis in business, Data forecasting – its need , benefits of data forecasting , use of forecast formula, statistical and financial functions.
c. Data Integration: concept and how it works
d. Management Information Systems – An Overview – Concept, Elements – Structure – Computerized MIS – Approaches of MIS Development – Pre-requisites of an Effective MIS – MIS and Decision Support Systems – MIS and Information Resource Management

Unit II: Creating Business Spreadsheet 8 Lectures (10 Marks)

a. Spreadsheet concepts, Managing worksheets; Formatting, Entering data, Editing, and Printing a worksheet; Handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs
b. Generally used Spreadsheet functions: Mathematical, Statistical, Financial, Logical, Date and Time, Lookup and reference, Database, and Text functions
c. Creating spreadsheet in the area of: Loan and Lease statement; Ratio Analysis; Payroll statements; Capital Budgeting; Depreciation Accounting; Graphical representation of data; Frequency distribution and its statistical parameters; Correlation and Regression
d. Meaning and Advantages of macros

Unit III:

Database Management System 12 Lectures (16 Marks)

a. Database Designs for Accounting and Business Applications: Reality- Expressing the Application; Creating Initial design in Entity Relationship(ER) Model; Transforming ER Model to Relational data model concepts; Implementing RDM design using an appropriate DBMS.
b. SQL and Retrieval of Information: Basic Queries in SQL; Embedded Queries in SQL; Insert, Delete and Update statements in SQL
c. DBMS Software: Environment; Tables; Forms; Queries; Reports; Modules;
d. Applying DBMS in the areas of Accounting, Inventory, HRM and its accounting, Managing the data records of Employees, Suppliers and Customers.

Unit IV: Overview of Business Analytics 10 Lectures (12 Marks)

a. Introduction to Analytics: Business analytics – meaning and basic concepts. (Refer Reference 6)

b. Visualization/ Data Issues: Organization/sources of data, Importance of data quality , Dealing with missing or incomplete data , Data Classification (Refer Reference 7)

c. Introduction to Data Mining: Meaning, basic concepts, data mining process

REFERENCE

1. Computer Fundamentals by Pradeep K. Sinha and Priti Sinha
2. www.howstuffworks .com
3. Database systems – Bipin Desai
4. Excel manual and latest reference books
5. Access manual and latest reference books
6. Davenport article - “Competing on Analytics” , LaValle et al. article - “Analytics: The New Path to Value”
7. Davenport and Harris article - “The Dark Side of Customer Analytics”
8. Ramesh Behl : Information Technology for Management, Tata McGraw Hill Education Private Ltd.
9. Jerome Kanter : Managing with Information, Prentice Hall of India

Note:

1. There shall be a theory examination of 75 Marks (Internal Assessment – 15 Marks; End Semester Exam – 60 Marks) of 2 hrs duration
2. There shall be three lectures per theory class.

List of Practical Assignments for Computer Applications For Business – I(Lab) for B.Com. Sem III

PRACTICALS:

1. Advanced Spreadsheet (MS-Excel or any similar open source software)

a. Result representation of data using spreadsheet

b. What-if analysis, Logical tests(nested if functions), Goal seek,

c. Representing results graphically

d. Filtering, advanced filters, sorting and conditional formatting data

e. Data validation techniques, Hyperlinks,

f. Pivot table, Scenarios

g. Summing through the sheets,

h. Getting external data files into Excel

i. Macros - creation, editing and deletion of macros

j. Assignments to be given on the following topics: to prepare and analyse Loan and Lease statement; Ratio Analysis; Payroll statements; Capital Budgeting; Depreciation Accounting; Graphical representation of data; Frequency distribution and its statistical parameters; Correlation and Regression

2. Database Management System (Ms- Access or any similar open source software)

a. Creation of tables, forms, reports, queries using two tables

3. Business Analytics(Using Spreadsheet or Statistical Package such as Gretel/SPSS)

a. Assignments to analyze data available from IndiaStat.com such as Analysis of demographic data, environment data, public expenditure

b. Analyze data from annual reports of Companies and banks

Note:

1. There shall be a practical examination of 25 Marks at the end of each semester (Practical- 20 Marks and Work Book- 5 Marks) and duration of Examination shall be 2 Hrs.
2. There shall be 1 Practical Lab session per batch per week to be taught in computer Lab.

Question Paper Pattern

Sem III		Sem IV	
Unit I	22Mrks	Unit I	14Mrks
Unit II	10Mrks	Unit II	22Mrks
Unit III	16Mrks	Unit III	15Mrks
Unit IV	12Mrks	Unit IV	09Mrks

Q.1 Answer the following (any 5/6) (5 X 2=10Mks.)

Q.2.

a	I	OR	x	I	4MARKS
b	I		y	I	6MARKS

Q.3

a	I	OR	x	I	4MARKS
b	I		y	I	6MARKS

Q.4

a	I	OR	x	I	4MARKS
b	I		y	I	6MARKS

Q.5

a	I	OR	x	I	4MARKS
b	I		y	I	6MARKS

Q.6

a	I	OR	x	I	4MARKS
b	I		y	I	6MARKS

COMMERCE ELECTIVES SEMESTER-IV

B.COM
SEMESTER IV
Business Research Methods (GE 5)
(100 Marks – 60 Lectures)

Objectives: To develop analytical skills in students to undertake research in various domains of commerce and business.

Unit I Introduction (20-25 Marks, 15 Lectures)

Meaning of business research, Importance of business research, Types of business research, Process of business research, Identification of research problem, Review of literature, Formulation of research hypothesis, Research design – Meaning, Types of research design.

Unit II Sampling Theory (15-20 Marks, 10 Lectures)

Population and sample study, Sampling considerations, Sample design, Sampling techniques, Sampling errors.

Unit III Data Collection and Data Analysis (30-40 Marks, 25 Lectures)

(a) Data Collection: Sources of data – Primary sources, Secondary sources, Attitude measurement scale, Questionnaire designing, Interview techniques, Data coding.

(b) Data Analysis: Tabulation and graphs, Descriptive statistics – Measures of central tendency, Measures of dispersion, Skewness and Kurtosis, Correlation, Regression, Parametric tests - ANOVA, t-tests (Independent sample t-test, Paired samples t-test), Non-parametric tests – Chi-Square test, Mann-Whitney U Test, Wilcoxon test, Analysis of scale data.

(Relevant softwares may be used)

Unit IV Research Report (10-15 Marks, 10 Lectures)

Types of research report, Essentials of research report, Principles of writing, Writing of findings, conclusion, suggestions/recommendations, Bibliography and Reference styles, Document formatting, Plagiarism.

References:

1. Chawla, D., & Sondhi, N. *Research Methodology: Concepts and Cases.* New Delhi: Vikas Publishing House.
2. Cooper, D., & Schindler, P. *Business Research Methods.* New Delhi: Tata McGraw Hill.
3. Gupta, S. C. *Fundamentals of Statistics.* New Delhi: Himalaya Pubishign House.
4. Krishnaswami, O., & Ranganathan, M. *Methodology of Research in Social Sciences.* New Delhi: Himalaya Publish House.
5. Levin, & Rubin. *Statistics for Management.* New Delhi: Prentice Hall.
6. Malhotra, N., & Dash, S. *Marketing Research: An Applied Orientation* (Sixth ed.). New Delhi: Pearson Education.

7. Sachdeva, P. K. (2010). *Business Research Methodology.* New Delhi: Prentice Hall.

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SEMESTER IV
Business Environment –II (GE 5)
(100 Marks-60 Lectures)

Objective: To introduce the students to elements and composition of economic, legal and international environment of business and also aims to bring about awareness of business environment in Goa.

Unit I Economic Environment of Business (30 Marks – 18 Lectures)

Meaning and components of economic environment of business, - Economic systems, Economic planning, Economic policies, Economic legislation, controls and regulations

Economic systems -capitalism, socialism and mixed economy- meaning and features

Economic planning in India- Objectives of planning and main provisions of current five Year plan, NITI Ayog.

Economic policies -fiscal, monetary, industrial policy, Import-Export policy, investment policy (including foreign investment policy) and employment policy –meaning and objectives.

Make in India policy and business.

Unit II Legal Environment of Business (20 Marks – 12 Lectures)

Meaning and components of legal environment; impact of legal environment on business

Environment Protection Act1986 – objectives and major provisions

Consumer Protection Act 1986 – Objectives and major provisions, Consumer Redressal Agencies; Jurisdiction and powers

Right to Information Act (RTI) 2005- Definition and meaning of information, public Authority, right to information and record- objectives of the Act- scope of right to information—exemption—public Information officer - procedure for seeking information, fees and response time, appeals, penalty provisions, case studies.

Unit III International Environment and India (20 Marks – 12 Lectures)

Overview of Industrial policy of India till 1990- new industrial policy-objectives and features, globalization- liberalization- privatization (meaning) and - Foreign capital- meaning, need - Multi-national Corporation-merits and demerits-case studies on MNCs in Goa.

International events and its impact on Indian industry

The International Finance Corporation's Ease of Doing Business Index - composition of the index; India's performance on the index and each of the components.

Unit IV Business Environment in Goa (30 Marks – 18 Lectures)

Brief introduction of industrialization in Goa- Current Status of the Goan economy- Goa's current performance on important economic and socio-economic indicators-Industrial policy in Goa - Introduction, objectives and thrust areas- Industrial Estates in Goa -Industry associations-meaning and need- Goa Chamber of Commerce and Industry (GCCI) and Goa State Industries Association (GSIC) -objectives and functions and major activities.

Environmental issues and Goan Industry

Local self government in Goa -meaning, objectives, functions; Activities of Panchayat /Municipality and their impact on business.
Environmental movements in Goa-meaning of environmental movement, movements related to mining, tourism and construction -their objectives and activities.
Case study on CSR in Goa.

References

1. Agarwal, P.N. (2001) A comprehensive History of Business India, Tata McGraw-Hill Publisher Company Limited, New Delhi.
2. Konoria, S.S. Ed (1990) Footprints of Enterprises, Federation of Indian Chamber & Commerce, New Delhi
3. Misra, S.K. & Puri, V.K. (2007) Economic environment of Business, Himalaya Publishing House, Delhi
4. Menon, Lydia & Mallya, Prita, Business Environment
5. Cherunillam, Francis Business Environment, Himalaya Publishing House
6. Ashwathappa, K, Business Environment, Himalaya Publishing House
7. Dutt & Sundaram, Indian Economy, S. Chand & Company
8. Goa Panchayat Raj Act
9. Right to Information Act 2005

Websites:

1. Envfor.nic.in/legis/env1.html
2. www.ncdrc.nic.in/11.html
3. www.iitb.ac.in/legal/RTI-Act.pdf

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SEMESTER IV
E-Commerce and E-Accounting (GE 5)
(100 Marks, 60 Lectures)

Objective: To familiarize the students with concepts and practical aspects of e-commerce and e-accounting.

Unit I Introduction to E-Commerce and M-Commerce (20 Marks, 10 Lectures)

a) Introduction to E-Commerce

Meaning & Definitions of E-Commerce, Components of E-Commerce – E-Markets, Electronic Data Interchange (EDI), Internet-Commerce, Categories of E-Commerce – B2B, B2C, C2C, B2G, C2G, Meaning & Definition of E-Business, E-Business Models, Revenue Models in E-Commerce, Advantages & Limitations of E-Commerce, International Nature of E-Commerce.

b) **Introduction to M-commerce**

Meaning & Definition of M-Commerce, Devices Used in M-Commerce, Applications of M-Commerce, Advantages & Limitations of M-Commerce.

Unit II E-Marketing, E-CRM and E-SCM (20 Marks, 15 Lectures)

(a) E-Marketing: Meaning & definitions of e-marketing, features of e-marketing, setting up of e-marketing **-** creating e-commerce websites, types of e-commerce websites, essentials of e-commerce websites, digital & online advertising & promotions, forms of digital & online advertising and promotions, web communities, e-branding, e-marketing strategies

(b) E-Customer Relationship Management (E-CRM) and E-Supply Chain Management (E-SCM):
(i) Meaning & definition of E-CRM, phases of E-CRM, applications of E-CRM, (ii) Meaning & definition of E-SCM, E-SCM technologies, components of E-SCM

Unit III Electronic Payment Systems (10 Marks, 10 Lectures)

Meaning & definitions of e-payment system, e-payment systems in India including fund transfers, different forms of e-payments – debit cards, credit cards, e-cash, e-wallets, e-cheque, online payment categories, requirements of e-payment system, risks in e-payment system

Unit IV: E- Accounting (50 Marks, 25 Lectures)

Maintaining accounts, creation of vouchers and recording of transactions, preparation of ledger accounts, cash book, bank book, preparation of reports, Trial balance, Profit & Loss account and Balance Sheet using any one accounting package

References:

1. Whitely, D. *E-Commerce Strategy, Technology & Implementation,* New Delhi:Tata McGraw Hill

2. Kalakota, R. Whinston, A. *Frontiers of Electronic Commerce* New Delhi: Pearson Education Inc.

3. Bhaskar, B. *Electronic Commerce Framework, Technologies & Applications* New Delhi: Tata McGraw Hill

4. Turban, E., King, D. Lee, J. *Electronic Commerce 2010 - A Managerial Perspective* Springer Publisher

5. Chakrobarti, R. *Asian Managers Handbook of E-Commerce* New Delhi: Tata McGraw Hill

6. Rayudu, C. *E-Commerce E-Business*, New Delhi: Himalaya Publishing House

7. Joseph, P. *E-Commerce – An Indian Perspective*, New Dlehi: Prentice Hall India Pvt. Ltd.

8. Schneider, G. *E-Commerce Strategy, Technology & Implementation*, Delmar Cengage Learning

9. Pandey, U., Srivastava, R. Shukla, S. *E-Commerce and its applications*, New Delhi: S.Chand & Company Ltd.

10. Bajaj, K. & Nag, D., *E- Commerce*, New Delhi: Tata McGraw Hill

11. Murthy, C. S. *E-Commerce Concepts, Models & Strategies*, New Delhi: Tata McGraw Hill

Guidelines for conduct of Practical

1. One batch for practical should be 15 – 20 students. In any case, batch should not exceed 20 students

2. One computer should be provided per student. In any case, not more than two students per computer

3. Licensed Accounting Package should be purchased by the respective colleges

4. A separate Computer Lab. with sufficient computers should be provided for commerce students

5. Students should maintain a journal for practical. Journal should have an Index with Date, Particulars and Remarks column

6. The transactions are to be recorded in the journal and below that details like type of voucher, details of account creation if any with group/subgroup, calculation of amounts, should be noted.

7. After completing each assignment, the student should get the same initialed by the concerned teacher.

8. Completed journal should be submitted by the students for assessment to the teacher concerned.

Guidelines for Conduct of examination

1. One ISA of 10 Marks on Unit I (Written Test)

2. One ISA of 10 Marks on Unit II (Consisting of 5 Marks for Maintenance of Journal and 5 Marks for Viva-voce on practical. Viva-voce can be conducted after the assessment of journal. Five questions may be asked to each student carrying one mark each)

3. Semester End Examination of 40 Marks on Unit I, Unit II & Unit III. (Theory Paper)
4. Duration of Theory paper to be 11/2 Hour
5. Semester End Examination of 40 Marks on Unit IV (Practical Examination)
6. Duration of Practical Examination to be One Hour
7. There shall be combined passing and no separate head of passing

Guidelines for Paper Setting (Theory Paper)

1. Question paper to be of 40 marks
2. Six questions of 10 marks each are to be included
3. Question No. 1 to be compulsory
4. Any Three questions from remaining Five questions to be answered
5. One question each on Unit I a, b, Unit II a, b(i), b(ii) and Unit III to be asked.

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SEMESTER IV
Event Management (GE 5)
(100 Marks – 60 Lectures)

Objective: To introduce to the students the concepts and operations in event management industry.

Unit 1: Introduction to Event Management **25 Marks, 15 Lectures**

Introduction, Growth of event management industry, Event management industry in India, Principles of event management, Size of Events – Mega events, Regional events, Major events, Minor events; Types of Events – Sporting, Entertainment, art and culture, Commercial, marketing and promotion events, Meetings, Exhibitions, Festivals, Family and Fund raising events; Issues in event management, Event evaluation, Event risks and laws.

Unit 2: Event Planning **25 Marks, 15 Lectures**

Concept and designing of events, Preparing event proposal, Critical path and function sheets, Event pricing and management fees, Client meetings and event contracts, Planning and management of event team and crew, Planning event resources, Event protocol, Event itinerary, Event planning tools and emerging technology.

Unit 3: Event Production **25 Marks, 15 Lectures**

Event production concepts and requirements, Identifying event vendors, Negotiations and contracts with vendors, Scheduling and Checklists, Venue management – Selection, Staging, Lights and sound, Audio-Visual, Event safety and security.

Unit 4: Event Marketing and Financing **25 Marks, 15 Lectures**

Event marketing mix, Event branding, Event publicity, public relations and communication, Event sponsorship, Event budgets and cost sheet, Financial control in events, Profit analysis of events, Computer applications in event financing and control.

References:

1. Allen, J. (2009). *Event Planning* (Second ed.). Ontario: John Wiley & Sons.

2. Bowdin, G., Allen, J., O'Toole, W., & McDonnell, I. (2011). *Events Management* (Third ed.). New York: Routledge.

3. Chaturvedi, A. (2009). *Event Management: A Professional and Developmental Approach.* New Delhi: Global India Publications.

4. Gaur, S. S., & Saggere, S. V. (2003). *Event Marketing and Management.* Noida: Vikas Publishing House.

5. Shone, A., & Perry, B. (2004). *Successful Event Management: A Practical Handbook.* London: Thomson Learning.

6. Wagen, L. V., & Carlos, B. R. (2009). *Event Management for Tourism, Cultural, Business, and Sporting Events.* New Delhi: Pearson Educationl.

Journals:

International Journal of Event Management Research
International Journal of Event Management and Festivals
International Journal of Hospitality and Event Management

B.COM.
SEMESETER IV
Financial Management I (GE 5)
(100 Marks- 60 Lectures)

Objective: To enable the students understand theoretical and practical aspects of long term and short term financial decisions pertaining to dividend and working capital management.

UNIT I An Introduction to Financial Management (25 marks-15 lectures)

Meaning of Financial Management, scope and objectives of Financial Management, profit maximization v/s wealth maximization; Role & responsibilities of Financial Manager, measuring shareholders value creation, International Financial Management – meaning, forms of financial capital, importance, merits.

Unit II: Working Capital Management (25 marks-15 lectures)

Nature & concept of working capital, importance of working capital, types of working capital, determinants of working capital, sources of working capital (in brief), estimation and computation of working capital.

Unit III : Management of Cash. (25 marks-15 lectures)

C. Cash management- introduction, objectives; motives of holding cash, factors determining cash needs, strategies employed to manage cash needs, techniques for speedy cash collection and techniques for slowing disbursements. Preparation of cash budget. (simple problems on the Receipt and Payments method)

D. Receivables management- introduction, objectives of Receivables management, cost associated with accounts receivables, factors influencing the size of receivables; decision areas in Receivables management- credit policies, credit terms and collection policies.

Unit IV Inventory management (25 marks-15 lectures)

Introduction, objectives, motives of holding inventory, cost & benefits of holding inventory, techniques of inventory ,management-

1. ABC analysis
2. EOQ (problems on the formula method)
3. VED analysis
4. Various levels of stores: (a). re order level (b). minimum level (c) maximum level (d) average level
5. Inventory turnover ratio
6. Just in time (JIT) inventory control system- objectives, features, advantages.

<u>Problems on</u>

1. Estimation of working capital
2. Cash budget (simple problems on the Receipt and Payments method)
3. Techniques of inventory management- EOQ & various levels of inventory.

References:

1. Chandra, Prasanna. *Financial Management, Theory & Practice*. Tata McGraw Hill
2. Pandey I. M. *Financial Management*. Vikas Publishing House
3. Khan & Jain. *Financial Management.* Tata McGraw Hill
4. Kuchal, S.C. *Financial Management.* Chaitanya Publishing House
5. Sharma & Gupta, Shashi*. Financial Management*. Kalyani Publishers
6. Vanhorne, James C. *Fundamentals Of Financial Management.* Prentice Hall Of India
7. Phatak. *Indian Financial System,*
8. Singh, Preeti. *Investment Management.* Himalaya Publishing House
9. G. Sudarshana, Reddy. *Financial Management- Principles and Practice.* Himalaya Publishing House
10. Tulsian, P.C. *Financial Management.* S. Chand & Co Ltd
11. Shavam, Vyuptakesh*. Fundamentals Of Financial Management*. Pearson

B.COM.
SEMESTER-IV
Practices in Rural Marketing (GE 5)
(100 Marks – 60 Lectures)

Objective: To enable students to gain a deeper understanding of the functioning of rural markets.

Unit I Distribution in Rural Markets (25 Marks- 15 Lectures) Physical distribution management in rural markets – problems in distribution, Typical marketing channels in rural markets – Emerging channels of distribution including e-distribution. Role of wholesalers & retailers. Problems in channels of distribution

Unit II Promotion and Communication in Rural Markets. (25 Marks- 15 Lectures) Meaning and objectives of promotion in rural markets. Constraints in promotion and marketing communication in rural areas. Media mix for rural market – Formal and informal media

Unit III Developing Sales Force for Rural Markets. (25 Marks- 15 Lectures)
Rural sales policy. Role/ activities of a sales person. Qualities of a successful rural salesman. Prospects and problems faced by sales personnel in rural markets, Call planning.

Unit IV Agricultural Marketing (25 Marks- 15 Lectures) Agricultural Marketing – Meaning, importance and essentials of effective agricultural marketing- in brief. Marketing of agricultural goods v/s manufactured goods. Role of government and other organizations in marketing agricultural products. Role of agricultural marketing in economic development. Problems and challenges in agricultural marketing.

References:

1. Sinha, A. *Rural Consumer Behaviour*. Sonali Publications, New Delhi.
2. Srivastava, P. K. *Marketing Management in a Developing Economy.* Sterling Publishers, New Delhi.
3. Nair, N. Rajan & Varma, M. M. *Marketing Management.* Sultan Chand & Sons, New Delhi.
4. Mathur, U. C. *Rural Marketing*.Excel Books.
5. Velayudhan, Sanal Kumar. *Rural Marketing: Targeting the non-urban consumer*. Response Books, SAGE Publications.
6. Sukhpal Singh. *Rural Marketing*. Vikas Publishers.
7. Rajagopal, *Managing Rural Business.* Wheeler Publications, New Delhi.
8. Gopalaswamy, *Rural Marketing.* Wheeler Publications, New Delhi.
9. Kamat, Minouti S. & Krishnamoorthy, R. *A Textbook on Rural Marketing*. Himalaya Publishing House.

OTHER ELECTIVE SEMESTER-IV

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SEMESTER IV

Computer Application for Business-II (GE 5)

Total Credits: 04 Theory : 3 Credits Practical: 1 Credits
LECTURES : 3 per week of 1 hr each (Total Lectures: 45)
Practical : 1 Practical Lab session of 2 hrs each per week per batch
(Batch of 10-15 students) (Total Practical sessions: 15)
Max. Marks : 75T + 25P = 100

Objectives:

- To familiarise the student with various applications of Information and Communication technologies in business
- To enable the student to become familiar with the mechanism for conducting business transactions through electronic means
- To provide skills and knowledge to create a maintain a website for business

Theory:

Unit I: Internet technology 8 Lectures (14 Marks)

a. Introduction to computer networks : Introduction- need, advantages, disadvantages, types of networks, types of transmission media, Internetworking devices-bridges, routers, gateways, IP addressing: why IP address, basic format of IP address- IPV4, IPV6, Protocols - HTTP, HTTPS, FTP, DNS, Email
b. Applications on Internet: search engines ,browsers, blogs, social networking - types and applications

Unit II: Ecommerce theory 20 Lectures (22 Marks)

a. Introduction to E-Commerce: Scope, Definitions, Trade Cycles
b. The Value Chain, Supply Chain, Porter's Value Chain
c. Electronic data Interchange (EDI): Introduction, definition and benefits, technology standards, Communication, implementation, agreements, EDI and business.
d. E-Commerce models- categorizing major E-commerce business models(B2B,B2C,C2C), introduction , key elements a business model
e. E –Governance Models: (G2B, G2C, C2G, G2G), Challenges to E – Governance, Strategies and tactics for implementation of E – Governance Case Study

f. E-payment System: Models and methods of e–payments (Debit Card, Credit Card, Smart Cards, e-money), digital signatures (procedure, working), payment gateways, risks involved in e-payments.
g. E-Commerce applications in various industries: banking, insurance, payment of utility bills, online marketing, e-tailing (popularity, benefits, problems and features), online services (financial, travel and career), auctions, online learning, publishing and entertainment, Online shopping (amazon, snapdeal, alibaba, flipkart, etc.)

Unit III: ERP 10 Lectures(15 Marks)

a. Introduction: Traditional information model, Introduction to an enterprise, What is an ERP?, Reasons for growth of ERP market, Advantages and Disadvantages of ERP
b. Introduction to business modules: finance, manufacturing, Human resource, materials management, sales and distribution, Limitations of ERP,
c. ERP and e-Commerce

Unit IV : Security and Encryption (7 Lectures) (9 marks)

a. Need and concepts, the e-commerce security environment- dimension, definition and scope of e- security
b. Security threats in the E-commerce environment - security intrusions and breaches, attacking methods like hacking, sniffing, cyber-vandalism etc.
c. Technology solutions- Encryption security channels of communication, protecting networks and protecting servers and clients

Note:

3. There shall be a theory examination of 75 Marks (Internal Assessment – 15 Marks; End Semester Exam – 60 Marks) of 2 hrs duration
4. There shall be three lectures per theory class.

REFERENCE

1. Web technology- Kahate
2. Introduction to Information Technology – ITL Education Solutions Limited, Pearson Education
3. E-Commerce: Strategy, Technologies and Applications By David Whitely, Tata McGraw Hill Edition. I
4. Kalakota and Whinston, Frontiers of Electronic commerce, Pearson Education Asia.
5. S Sadagopan, “ERP a Management Prospective” Tata McGraw Hill Publishing Company Limited, New Delhi 1999
6. Alexis Leon , “ERP Demystified”, Tata McGraw Hill Publishing Company Limited, New Delhi 2000
7. Kenneth C. Laudon and Carlo Guercio Traver, *E-Commerce*, Pearson Education

8. Bharat Bhaskar, *Electronic Commerce: Framework, Technology and Application, 4th Ed.,* McGraw Hill Education
9. PT Joseph, *E-Commerce: An Indian Perspective*, PHI Learning
10. KK Bajaj and Debjani Nag, *E-commerce,* McGraw Hill Education
11. TN Chhabra, *E-Commerce,* Dhanpat Rai & Co.
12. Sushila Madan, *E-Commerce,* Taxmann
13. TN Chhabra, Hem Chand Jain, and Aruna Jain, An Introduction to HTML, Dhanpat Rai & Co .

List of Practical Assignments for Computer Applications For Business – II(Lab) for B.Com. Sem IV

PRACTICALS:

1. Designing, building and launching e-commerce website:

- A systematic approach involving decisions regarding selection of hardware, software, outsourcing vs. in house development of a website, updating website, uploading content on the website using FTP tools

2. Mini-Project in ERP Implementation
   Case study – Studying ERP implementation in any business firm
   Report preparation and submission – report shall include ERP introduction, life cycle as followed by the Business firm under study – pre-evaluation screening, package evaluation, project planning phase, gap analysis, reengineering, configuration, implementation team training, testing, going live, end user training, post implementation.

Note:

1. There shall be a practical examination of 25 Marks at the end of each semester (Practical-20 Marks and Work Book- 05 Marks) and duration of Examination shall be 2 Hrs.

UNIVERSITY OF MUMBAI
No. UG/34 of 2018-19

CIRCULAR:-

Attention of the Principals of the affiliated Colleges and Directors of the recognized Institutions in Science & Technology Faculty is invited to this office Circular No. UG/02 of 2016-17, dated 21st April, 2016 relating to syllabus of the Bachelor of Science (B.Sc.) degree course.

They are hereby informed that the recommendations made by the Board of Studies in Zoology at its meeting held on 9th April, 2018 have been accepted by the Academic Council at its meeting held on 5th May, 2018 **vide** item No. 4.31 and that in accordance therewith, the revised syllabus as per the (CBCS) for the S.Y.B.Sc. in Zoology (Sem - III & IV) has been brought into force with effect from the academic year 2018-19, accordingly. (The same is available on the University's website www.mu.ac.in).

(Dr. Dinesh Kamble)
I/c REGISTRAR

MUMBAI–400 032
22nd June, 2018

To

The Principals of the affiliated Colleges & Directors of the recognized Institutions in Science & Technology Faculty. (Circular No. UG/334 of 2017-18 dated 9th January, 2018.)

A.C/4.31/05/05/2018

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No. UG/ 34 -A of 2018 MUMBAI-400 032 22nd June, 2018

Copy forwarded with Compliments for information to:-

1) The I/c Dean, Faculty of Science & Technology,
2) The Chairman, Board of Studies in Zoology,
3) The Director, Board of Examinations and Evaluation,
4) The Director, Board of Students Development,
5) The Co-Ordinator, University Computerization Centre,

(Dr. Dinesh Kamble)
I/c REGISTRAR

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AC- 05/05/2018
Item No. 4.31

UNIVERSITY OF MUMBAI

Program: S.Y.B. Sc.

Course: Zoology

Syllabus for Semester III & IV

(Choice Based Credit System with effect from the academic year 2018-2019)

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S. Y. B. Sc. Syllabus Framing Committee

Sr. No.	Name	Address	Status
1	Dr. Anita Jadhav readersmailbox@rediffmail.com	Head & Associate Prof., Department of Zoology, ICL College, Vashi, Navi-Mumbai	I/C Chairperson, BoS in Zoology
2	Mr. Vinayak Dalvie dalvie@gmail.com	Head & Associate Prof., Mithibai College, Vile Parle (W), Mumbai-56	Chief Coordinator
3	Dr. Gulabrao B. Raje drgbraje@rediffmail.com	Head & Associate Prof., Department of Zoology, D. B. J College, Chiplun, Dist: Ratnagiri	Coordinator
4	Capt. Nilima S. Prabhu nilsprabhu@rediffmail.com	Assistant Prof., Department of Zoology, S.S. &L.S. Patkar College, Goregaon, Mumbai-62	Convenor USZO301& USZO401
5	Dr. Dilip K. Kakavipure dlpkakavipure@gmail.com	Associate Prof., Depsartment of Zoology, BNN College, Bhiwandi, Dist: Thane	Convenor USZO302& USZO402
6	Mr. Venkatesh Hegde drvnhegde@rediffmail.com	Assistant Prof., Department of Zoology, Mithibai College, Vile Parle (W), Mumbai-56	Convenor USZOE303A & USZOE403A (Elective 1)
7	Dr. Surekha Manoj Gupta gupta.surekha@yahoo.com	Assistant Prof., Department of Zoology, G. N. Khalsa College, Matunga, Mumbai-19	Convenor USZOE303B& USZOE403B (Elective 2)
8	Dr. Shaheda Rangoonwala shaheda.rangoonwala@gmail.com	Principal, V. N. College, Murud Janjira, Dist: Raigad	Co-Convenor USZO301 & USZO401
9	Dr. Shashibhal M. Pandey pandey.shashibhal@gmail.com	Assistant Prof., Department of Zoology, CHM College, Ulhasnagar-3	Co-Convenor USZO302 & USZO402
10	Dr, Leena Murlidharan leena.doctor@gmail.com	Associate Prof., Department of Zoology, VKK Menon College, Bhandup (E), Mumbai -42	Co-Convenor USZOE303A & USZOE403A (Elective 1)
11	Dr. Shirley Bless Agwuocha shirley_bless@rediffmail.com	Assistant Prof., Department of Zoology, Thakur College of Science & Com., Kandivali (E)	Co-Convenor USZOE303A & USZOE403A (Elective 1)
12	Dr. Nisar Shaikh nisargmmwc@gmail.com	Principal, DRT's A. E. Kalsekar Degree College, Kausa Mumbra, Dist: Thane -12	Co-Convenor USZOE303B& USZOE403B (Elective 2)
13	Dr. Sushant Mane sushantmane@yahoo.com	Assistant Prof., Department of Zoology, Wilson College, Girgaon, Mumbai-7	Member USZO301 & USZO401
14	Dr. Meena Poonja meenaprasad123@gmail.com	Assistant Prof., Department of Zoology, CHM College, Ulhasnagar-3	Member USZO301 & USZO401
15	Mr. T. V. Bicheesh Balan bicheesh@gmail.com	Assistant Prof., Department of Zoology, Mithibai College, Vile Parle (W), Mumbai-56	Member USZO301 & USZO401

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16	Mr. Nandu R. Hedulkar hedulkar@gmail.com	Head & Assistant Prof., Department of Zoology, Anandibai Raorane College, Vaibhavwadi, Dist: Sindhudurg	Member USZO302 & USZO402
17	Dr. Pratiksha P. Sawant sawant.pratiksha52@gmail.com	Associate Prof., Department of Zoology, S.P.K. College, Sawantwadi, Dist: Sindhudurg	Member USZO302 & USZO402
18	Dr. Kamran Abbas kamranabbas14@gmail.com	Head & Associate Prof., Department of Zoology, GMM College, Bhiwandi, Dist: Thane	Member USZO302 & USZO402
19	S/Lt. (Dr.) Kantilal Hiridas Nagare birlasparc11@gmail.com	Assistant Prof., Department of Zoology, Birla College, Kalyan, Dist: Thane -421304	Member USZOE303A & USZOE403A (Elective 1)
20	Mr. Nikhil Disoria nikhil.disoria@gmail.com	Assistant Prof., Department of Zoology, National College, Bandra (W), Mumbai -50	Member USZOE303A & USZOE403A (Elective 1)
21	Dr. Minakshi Gurav minakshi.gurav@ruparel.edu	Assistant Prof., Department of Zoology, Ruparel College, Mahim, Mumbai -16	Member USZOE303B& USZOE403B (Elective 2)
22	Dr. Harish T. Babar harishbabar@gmail.com	Assistant Prof., Department of Zoology, D. B. J College, Chiplun, Dist: Ratnagiri- 415605	Member USZOE303B& USZOE403B (Elective 2)

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3. Pedagogy
4. Tables of Courses, Topics, Credits and Workload
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7. Practical Syllabus for Semester III (Course codes: USZOP3)
8. References and Additional Reading (Course code: USZO301-USZOE303B)
9. Theory Syllabus for Semester IV (Course codes: USZO401-USZOE403B)
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PREFACE

Holistic development of students is the main purpose of the curriculum. While this is attempted through prescribing dynamic and updated curricular inputs, the new course that will be effective from the academic year 2018- 2019, will follow the Semester mode. The main aim of the revision of syllabus was to modify it to meet the unique requirements of students, up gradation of knowledge in the subject of zoology and to inculcate the skill of reasoning. The contents of the syllabus have been drawn-up to accommodate the widening horizons of the discipline of Biological Sciences. All possible attempts have been made to update the syllabus by incorporating current and most recent developments in various branches of Zoological Sciences, nevertheless, classical zoology also has been given due weightage. Introduction of an elective paper in zoology will also provide a glimpse of its application. Inclusion of research methodology to the undergrads is the highlight of the course. I am sure that these revised syllabi will cater to better understanding of the subject and beyond.

I appreciate and congratulate the entire team of syllabus framing for the co-operation, tireless work and wish them success.

Chairperson,
Ad-hoc Board of Studies in Zoology

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PREAMBLE

As a traditional procedural norm of the University of Mumbai, it is the Board of Studies that includes various disciplines, which revive the syllabi after completion of a cycle of five years. Due to rapid advancement in technology, new ideas and concepts, and an ocean of information being generated every day that necessitates updating the students in this present era of exponential information and knowledge. However, in the former practice of syllabus revision, students were unable to imbibe new ideas and concepts as there was limited scope of including them within the syllabi that was theoretical with poor applicability

Looking at the employment generating potential and need of trained human resource in various service sectors in our state, it was became imperative to make a breakthrough from the traditional practice of revising syllabus; and instead giving an opportunity to the stakeholders to adapt and acclimatize with the changes around them and imbibe knowledge which shall enable them to develop entrepreneurship and / or employment avenues and opportunities after pursuing the coveted degree.

With this intention, the Board of Studies in Zoology took decision to put before the S. Y. B. Sc. Zoology students one elective, so that they can study topics of their interest. Board of Studies in Zoology is the only Board in the University that has offered two electives for the S. Y. B. Sc. students and safeguarded their career. Further, BoS formulated Four Syllabus Review Committees (one per course with composition of 01 Convenor and 04 Members). All the committee members worked extensively and exhaustively; and prepared draft of the syllabus. The said draft was uploaded on the website of University of Mumbai for public criticism. The invited opinions were thereby incorporated in the syllabus to make it versatile and student friendly with high applicability. Further, the draft syllabus was re-discussed in the workshop where several teachers and students contributed their views to improve it. In the academic year 2016-17, new syllabus was introduced but it is revived immediately after two years with inclusion of new concepts and techniques. Due care is taken to make the syllabus interdisciplinary, flexible and choice based. All the member teachers have tried their level best to come out with “Need Based Syllabus” that may spark motives in all the stakeholders. We hope that the stakeholders will enjoy the learning of this syllabus in the classrooms, laboratories and on the field.

Dr. G. B. Raje
Coordinator

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PEDAGOGY

While disseminating the content of the present syllabus, it is imperative and expected that the facilitator is well versed or/and develops their Pedagogical Content Knowledge (PCK),which would include aspects like content, methodology, evaluation and so on. At the onset, the facilitator may include various topic-specific instructional strategies, employing the use of organizers (topic announcement in advance, making models, flip charts, photography, etc). Learning of topics on chromosomes, nucleic acids, cell biology, biomolecules, physiological processes are hence revised, and during the presentations by the learner, the facilitator is able to gauge the preconceptions and learning disabilities. Any misunderstanding of basic concepts can thus be clarified such as 'difference between gene and allele'. Peer teaching is another aspect of pedagogy which takes into account participative learning thus enhancing the learning of the content and making it enjoyable, for example, the use of 'Punnet squares' for working out the crosses in various illustrations on monohybrid and dihybrid ratios, problems based on inheritance, pedigree analysis, molecular biology etc. A declarative learning strategy, which employs the use of familiar contexts and analogies, illustrative diagrams, questioning techniques, discussions, may be used for topics like multiple alleles, polygenic inheritance, DNA testing for paternity issues, scientific attitude, methodology, scientific writing etc. This would enhance the relevance of these topics and engender motivation, thereby balancing the blend of content and pedagogy in teaching. The syllabus includes practical investigations, individual or group student experiments, simulations to assist learners in visualizing and /or internalizing the concepts and processes. The learner could be encouraged to organize field trips, nature trails and treks in and around the ecosystems like lakes, beaches, sanctuaries, national-parks etc. for learning topics like ethology and conservation, amazing animals, applied zoology, pollution and other such, where sensitization, awareness and action are to be invoked within the learner. Visits to museums, and an interdisciplinary approach with various departments like geology, history, geography, chemistry, psychology, medicine would bring about a multi and cross approach to learning concepts such as paleontological evidences, nucleic acids, physiological processes, biomolecules, holistic health and neurological and genetic diseases . ICT enabled learning is the need of the hour and could include screening of documentaries, videos, animations, PPT's, and the use of social media such as Whatsaap, Instagram, Facebook be employed for impactful and continued learning. Facilitators can upload the teaching material, videos of lectures, links to websites for not only enhancing but also focusing and developing the topics of interest by the learner by way of self-study. More importantly, the syllabus endeavours to develop life skills by discovering and

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honing entrepreneurial skills of the learner. To accomplish this purpose, visits to apiary, vermicomposting units, and dairy could be encouraged, also interviews with various entrepreneurs, officials of funding agencies must be undertaken to comprehend the nuances of business. Also small projects on various entrepreneurial aspects like setting up vermicomposting bins and aquaria, sale of the vermicompost or setting up an ornamental fish farms, innovations in dairy products and its sale could be encouraged in the campuses. The elective papers are so construed that the learner is driven to gain knowledge, experience through activity-based assignments, and projects, which would enhance entrepreneurial skills, a logical understanding and analysis of business functions.

Capt. Nilima Prabhu
Dr. Dilip Kakavipure
Mr. Venkatesh Hegde
Dr. Surekha Gupta
Convenors

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Syllabus for S. Y. B. Sc. Course: ZOOLOGY
Credit Based Semester and Grading System
(To be implemented from the Academic Year 2018-2019)

SEMESTER – III

COURSE CODE	UNIT	TOPIC	CREDITS	LECTURES /WEEK
USZO301	I	Fundamentals of Genetics	2	1
	II	Chromosomes and Heredity		1
	III	Nucleic Acids		1
USZO302	I	Nutrition and Excretion	2	1
	II	Respiration and Circulation		1
	III	Control and Coordination of Life Processes, Locomotion and Reproduction		1
USZOE303A ELECTIVE 1	I	Ethology	2	1
	II	Parasitology		1
	III	Economic Zoology		1
USZOE303B ELECTIVE 2	1	Maintenance of Aquarium	2	1
	II	Agricultural, Household Pests and their Control		1
	III	Amazing Animals		1
USZOP3		Practicals based on all three courses	03	**9**

<u>Important Note:</u> College may choose either Elective 1 or Elective 2 for Semester III and Semester IV as their third course depending on the preference selected by majority of the students and endorsed by Head of the Department of Zoology and the Principal of the college.

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SEMESTER IV

COURSE CODE	UNIT	TOPIC	CREDITS	LECTURES /WEEK
USZO401	I	Origin and Evolution of Life	2	1
	II	Population Genetics and Evolution,		1
	III	Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research		1
USZO402	I	Cell Biology	2	1
	II	Endomembrane System		1
	III	Biomolecules		1
USZOE403A ELECTIVE 1	I	Comparative Embryology	2	1
	II	Aspects of Human Reproduction		1
	III	Pollution and its Effect on Organisms		1
USZOE403B ELECTIVE 2	I	Dairy Industry	2	1
	II	Sericulture		1
	III	Aquaculture		1
USZOP4		Practicals based on all three courses	03	9

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UNIT WISE DISTRIBUTION OF SYLLABUS

Semester III				Semester IV			
Course 5	**Course 6**	**(Elective 1) Course 7A**	**(Elective 2) Course 7B**	**Course 8**	**Course 9**	**(Elective 1) Course 10A**	**(Elective 2) Course 10B**
Unit 1 Fundamentals of Genetics	**Unit 1** Nutrition & Excretion	**Unit 1** Ethology	**Unit 1** Maintenance of Aquarium	**Unit 1** Origin & Evolution of Life	**Unit 1** Cell Biology	**Unit 1** Comparative Embryology	**Unit 1** Dairy Industry
Unit 2 Chromosomes & Heredity	**Unit 2** Respiration & Circulation	**Unit 2** Parasitology	**Unit 2** Agricultural & Household Pests& their Control	**Unit 2** Population Genetics & Evolution	**Unit 2** Endomembrane System	**Unit 2** Aspects of Human Reproduction	**Unit 2** Sericulture
Unit 3 Nucleic Acids	**Unit 3** Control and Coordination of Life Processes, Locomotion & Reproduction	**Unit 3** Economic Zoology	**Unit 3** Amazing Animals	**Unit 3** Scientific Attitude, Methodology, Scientific Writing & Ethics in Scientific Research	**Unit 3** Biomolecules	**Unit 3** Pollution & its Effects on Organisms	**Unit 3** Aquaculture
Practical (USZO P3)	**Practical (USZO P3)**	**Practical (USZO P3)**	**Practical (USZO P3)**	**Practical (USZO P4)**	**Practical (USZO P4)**	**Practical (USZO P4)**	**Practical (USZO P4)**

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SEMESTER III

Sr. No.	USZO301 (Course-V)	No. of lectures allotted	Learning pleasure
	Fundamentals of Genetics, Chromosomes and Heredity, Nucleic acids		
	Unit 1: Fundamentals of Genetics	**15L**	**25hrs**
	Objectives: ➢ *To introduce basic terms of genetics.* ➢ *To develop conceptual clarity of Mendelian principles of inheritance and other forms and pattern of inheritance*		
	Desired outcome: ➢ *Learner would comprehend and apply the principles of inheritance to study heredity.* ➢ *Learner will understand the concept of multiple alleles, linkage and crossing over.*		
1.1	**Introduction to Genetics** • Definition, Scope and Importance of Genetics. • Classical and Modern concept of Gene (Cistron, Muton, Recon). • Brief explanation of the following terms: Allele, Wild type and Mutant alleles, Locus, Dominant and Recessive traits, Homozygous and Heterozygous, Genotype and Phenotype, Genome.	**02L**	**02hrs**
1.2	**Mendelian Genetics** • Mendelian Genetics: Monohybrid & Dihybrid Cross, Test Cross, Back Cross, Mendel's Laws of Inheritance, Mendelian Traits in Man. • Exceptions to Mendelian inheritance: Incomplete dominance, Co-dominance, Lethal Genes, Epistasis - Recessive, Double recessive, Dominant and Double dominant. • Chromosome theory of inheritance. • Pedigree Analysis-Autosomal dominant and recessive, X- linked dominant, and recessive.	**08L**	**12hrs**

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1.3	**Multiple Alleles and Multiple Genes** • Concept of Multiple Alleles, Coat colour in rabbit, ABO and Rh blood group system • Polygenic inheritance with reference to skin colour and eye colour in humans. • Concept of Pleiotropy.	**03L**	**06hrs**
1.4	**Linkage and Crossing Over** • Linkage and crossing over, Types of crossing over, Cytological basis of crossing over.	**02L**	**05hrs**
	Unit: 2: Chromosomes and Heredity	**15L**	**26hrs**
	Objectives: ➢ *To familiarize the learners with the structure, types and classification of chromosomes.* ➢ *To introduce the concept of sex determination and its types, sex influenced and sex-limited genes.*		
	Desired outcome: ➢ *Learner will comprehend the structure of chromosomes and its types.* ➢ *Learner will understand the mechanisms of sex determination.* ➢ *Learner would be able to correlate the disorders linked to a particular sex chromosome.*		
2.1	**Chromosomes** • Types of Chromosomes–Autosomes and Sex chromosomes • Chromosome structure - Heterochromatin, Euchromatin • Classification based on the position of centromere • Endomitosis, Giant chromosomes- Polytene and Lampbrush chromosomes and Significance of Balbiani rings	**04L**	**08hrs**

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2.2	**Sex- determination** • Chromosomal Mechanisms: XX-XO, XX-XY, ZZ-ZW • Sex determination in Honey bees: Haplo-diploidy • Sex determination in *Drosophila*- Genic balance theory, Intersex, Gynandromorphs • Parthenogenesis • Hormonal influence on sex determination- Freemartin and Sex reversal. • Role of environmental factors- *Bonelia* and Crocodile • Barr bodies and Lyon hypothesis	**07L**	**10hrs**
2.3	**Sex linked, sex influenced and sex-limited inheritance.** • X-linked: Colour-blindness, Haemophilia • Y-linked: Hypertrichosis • Sex-influenced genes • Sex-limited genes	**04L**	**08hrs**
	Unit: 3 Nucleic acids	**15L**	**30hrs**
	Objectives: ➢ *To introduce the learner to the classical experiments proving DNA as the genetic material.* ➢ *To introduce the learner the structure of nucleic acids and the concept of central dogma of molecular biology.* ➢ *To familiarize the learner with the concept of gene expression and regulation.*		
	Desired outcome: ➢ *Learner will understand the importance of nucleic acids as genetic material.* ➢ *Learner would comprehend and appreciate the regulation of gene expressions.*		
3.1	**Genetic material** • Griffith's transformation experiment, Avery-Macleod &McCarty	**07L**	**14hrs**

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	experiment and Hershey Chase experiment of Bacteriophage infection • Chemical composition and structure of nucleic acids • Double helix nature of DNA, Solenoid model of DNA • Types of DNA – A, B, Z & H forms • DNA in Prokaryotes - Chromosomal and Plasmid • Extra nuclear DNA - Mitochondria and Chloroplast • RNA as a genetic material in virus • Types of RNA: Structure and function		
3.2	**Flow of genetic information in a eukaryotic cell** • DNA Replication • Transcription of mRNA • Translation • Genetic code	**05L**	**08hrs**
3.3	**Gene expression and regulation** • One gene-one enzyme hypothesis /one polypeptide hypothesis • Concept of Operon • Lac Operon	**03L**	**08hrs**

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	SEMESTER – III		
Sr. No	**USZO302 (COURSE-VI)**	**No. of lect allotted**	**Learning pleasure**
	Nutrition and Excretion, Respiration and Circulation, Control and Coordination of Life Processes, Locomotion and Reproduction		
	Unit: 1 Nutrition and Excretion	**15L**	**23hrs**
	Objectives: ➢ *To introduce the concepts of physiology of nutrition, excretion and osmoregulation.* ➢ *To expose the learner to various nutritional apparatus, excretory and osmoregulatory structures in different classes of organisms.*		
	Desired outcome: ➢ *Learner would understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy.* ➢ *Learner would be able to correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.*		
1.1	Comparative study of nutritional apparatus (structure and function): Amoeba, Hydra, Cockroach, Amphioxus, Pigeon, Ruminants.	**05L**	**06hrs**
1.2	Physiology of digestion in man.	**02L**	**04hrs**
1.3	Comparative study of excretory and osmoregulatory structures and functions. a) Amoeba -Contractile vacuole b) Planaria -Flame cells c) Cockroach- Malpighian tubules	**05L**	**08hrs**
1.4	Categorization of animals based on principle nitrogenous excretory products	**01L**	**01hrs**
1.5	Structure of kidney, uriniferous tubule and physiology of urine formation in man	**02L**	**04 hr**

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	Unit: 2 Respiration and Circulation	**15L**	**27hrs**
	Objectives: ➢ *To introduce the concepts of physiology of respiration and circulation* ➢ *To expose the learner to various respiratory and circulatory organs in different classes of organisms.*		
	Desired outcome: ➢ *Learner would understand the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy.* ➢ *Learner will be able to correlate the habit and habitat of animals with respiratory and circulatory organs.*		
2.1	Comparative study of respiratory organs (structure and function): Earthworm, Spider, Any bony fish (Rohu */ Anabas /Clarius)*, Frog and Pigeon.	**03L**	**06hrs**
2.2	Structure of lungs and physiology of respiration in man	**02L**	**03hrs**
2.3	Comparative study of circulation: (a) Open and Closed type, (b) Single and Double type.	**02L**	**04hrs**
2.4	Types of circulating fluids- Water, Coelomic fluid, Haemolymph, Lymph and Composition of blood	**02L**	**03hrs**
2.5	Comparative study of hearts (structure and function): Earthworm, Cockroach, Shark, Frog, Crocodile and Pigeon.	**04L**	**07hrs**
2.6	Structure and mechanism of working of heart in man.	**02**	**04hrs**
	Unit: 3 Control and Coordination, Locomotion and Reproduction	**15L**	**25hrs**
	Objectives: ➢ *To introduce the concepts of physiology of control and coordination, locomotion and reproduction.* ➢ *To expose the learner to various locomotory and reproductive structures in different classes of organisms.*		
	Desired outcome: ➢ *Learner would understand the process of control and coordination by nervous and endocrine regulation.*		

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	➢ *Learner would be amazed by various locomotory structures found in the animal kingdom.* ➢ *Learner would be acquainted with various reproductive strategies present in animals.*		
3.1	**Control and co-ordination** • Irritability in *Paramoecium*, nerve net in *Hydra*, nerve ring and nerve cord in earthworm. • Types of neurons based on the structure and function. • Conduction of nerve impulse: Resting potential, Action potential and Refractory period • Synaptic transmission	**05L**	**08hrs**
3.2	**Movement and Locomotion** Locomotory organs- structure and functions; a. Pseudopodia in Amoeba (Sol- Gel theory), Cilia in *Paramoecium* b. Wings and legs in cockroach c. Tube feet in starfish d. Fins of fish	**04L**	**08hrs**
3.3	Structure of striated muscle fibre in human and sliding filament theory	**02L**	**02hrs**
3.4	**Reproduction** **a. Asexual Reproduction**- Fission, Fragmentation, Gemmule formation and Budding **b. Sexual reproduction** i. Gametogenesis ii. Structure of male and female gametes in human iii. Types of fertilization iv. Oviparity, Viviparity, Ovo-viviparity	**04L**	**07hrs**

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	SEMESTER III		
	USZOE1303 (COURSE-VIIA) ELECTIVE 1		
	Ethology, Parasitology, Economic Zoology	**15L**	**26hrs**
	Unit: 1 Ethology		
	Objectives: ➢ *To equip learner with a sound knowledge of how animals interact with one another and their environment.* ➢ *To enable the learner to understand different behavioural patterns.*		
	Desired Outcome: ➢ *Learner would gain insight into different types of animal behaviour and their role in biological adaptations.* ➢ *Learner would be sensitized to the feelings which are instrumental in social behaviour.*		
1.1	**Introduction to Ethology:** • Definition, History and Scope of Ethology • Animal behaviour : Innate and Learned behaviour • Types of learning: Habituation, Imprinting and Types of imprinting - Filial and sexual, Classical conditioning • Instrumental learning and insight learning.	**04L**	**06hrs**
1.2	**Aspects of animal behaviour:** • Communication in bees and ants • Mimicry and colourations • Displacement activities, Ritualization • Migration in fish, schooling behaviour • Habitat selection, territorial behaviour.	**07L**	**12hrs**
1.3	**Social behaviour:** • Social behaviour in primates-Hanuman langur • Elements of socio-biology: Altruism and Kinship	**04L**	**08hrs**

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	Unit: 2 Parasitology	15L	27hrs
	Objectives: ➢ *To acquaint the learner with the concepts of parasitism and its relationship in the environment.* ➢ *To introduce the learner to modes of transmission of parasites.*		
	Desired Outcome: ➢ *Learner would understand the general epidemiological aspects of parasites that affect humans and take simple preventive measures for the same.* ➢ *Learner would comprehend the life cycle of specific parasites, the symptoms of the disease and its treatment.*		
2.1	**Introduction to Parasitology and Types of Parasites** • Definitions: Parasitism, Host, Parasite, Vector-biological and mechanical • Types of parasite- Ectoparasite, Endoparasite and their subtypes • Parasitic adaptations in Ectoparasites and Endoparasites • Types of host: Intermediate and definitive, reservoir	**03L**	**06hrs**
2.2	**Host-parasite relationship and host specificity** • Different types of host- parasite relationship, structural specificity, physiological specificity and ecological specificity	**02L**	**06hrs**
2.3	**Life cycle, pathogenicity, control measures and treatment** • *Entamoeba histolytica, Fasciola hepatica, Taenia solium, Wuchereria bancrofti*	**04L**	**06hrs**
2.4	**Morphology, life cycle, pathogenicity, control measures and treatment** • Head louse (*Pediculus humanus capittis*), Mite (*Sarcoptes scabei)*, Bed bug (*Cimex lectularis)*	**02L**	**06hrs**
2.5	**Parasitological significance** • Zoonosis- Bird flu, Anthrax, Rabies and Toxoplasmosis	**04L**	**03hrs**

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	Unit 3 Economic Zoology	**15L**	**24hrs**
	Objectives: ➢ *To disseminate information on economic aspects of animals like apiculture, vermiculture and dairy science.* ➢ *To encourage young learner for self-employment.*		
	Desired Outcome: ➢ *Learner would gain knowledge on animals useful to mankind and the means to make the most of it.* ➢ *Learner would learn the modern techniques in animal husbandry.* ➢ *Learner would pursue entrepreneurship as a career.*		
3.1	**APICULTURE**	**06L**	**08hrs**
3.1.1	**Methods of bee keeping and management** • Introduction to different species of honey bees used in apiculture. • Selection of flora and bees for apiculture. • Advantages and disadvantages of traditional and modern methods of apiculture. • Pests and Bee enemies- Wax moth, wasp, black ants, bee-eaters, king crow and disease control		
3.1.2	**Economic importance** • Honey- Production, chemical composition and economic importance • Bee wax- Composition and economic importance. • Role of honey bee in pollination.		
3.2	**VERMICULTURE**	**04L**	**08hrs**
3.2.1	**Rearing methods, management and economic importance** • Introduction to different species of earthworms used in vermiculture. • Methods of vermiculture. • Maintenance and harvesting		

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	• Economic importance: Advantages of vermiculture, demand for earthworms; market for vermicompost and scope for entrepreneurship.		
3.3	**DAIRY SCIENCE**	**05L**	**08hrs**
3.3.1	**Dairy development in India** • Role of dairy development in rural economy, employment opportunities		
3.3.2	**Dairy Processing** • Filtration, cooling, chilling, clarification, pasteurization, freezing		
3.3.3	**Milk and milk products** • Composition of milk • Types of milk: a) Buffalo milk b) Cow milk (A1 &A2) • Whole milk and toned milk • Milk products		

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	SEMESTER III		
	USZOE2303 (COURSE-VIIB) – ELECTIVE 2		
	Maintenance of Aquarium, Agricultural and Household pests and their control , Amazing animals	**15L**	**26hrs**
	Objectives: ➢ *To develop skills for maintenance of aquarium and budgeting for setting up an aquarium and ornamental fish farm.* ➢ *To study the biology of ornamental fishes, its food and feeding and their transportation.*		
	Desired Outcome: ➢ *Learner will develop skills for maintenance of aquarium and become familiar with the budgeting aspects for setting up an ornamental fish farm.* ➢ *Learner will derive knowledge about the biology of ornamental fishes, its food and feeding habits and their transportation.*		
	Unit.1 Maintenance of Aquarium		
1.1	Introduction and scope.	**02L**	**04hrs**
1.2	Exotic and Endemic species.	**02L**	**06hrs**
1.3	Biology of aquarium fishes: • Guppy • Molly • Gold fish	**02L**	**08hrs**
1.4	Common characters and sexual dimorphism of marine fishes: • Anemone fish • Butterfly fish	**02L**	**06hrs**

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1.5	Food and feeding: • Live fish feed • Formulated fish feed	**02L**	**04hrs**
1.6	Fish transportation: i) Handling ii) Packing iii)Transport	**03L**	**05hrs**
1.7	General maintenance of aquarium and budget for setting up an ornamental fish farm.	**02L**	**04hrs**
	Unit: 2 Agricultural pests and their control	**15L**	**27hrs**
	Objectives: ➢ *To study different types of pests.* ➢ *To comprehend various aspects of agricultural and household pests and their economic implications.* ➢ *To learn about the different pest control measures and plant protection appliances.*		
	Desired Outcome: ➢ *Learner will gain information on the different types of pests and comprehend various aspects of agricultural and household pests and its economic implications.* ➢ *Learner will derive knowledge of pest control measures and appliances used for plant protection against pests.*		
2.1	Introduction and concept of pest	**02L**	**06hrs**
2.1.1	Types of pests: • Agricultural: Locust • Household: Bed bug • Stored grains: Flour beetle • Structural: Termites • Veterinary: Tick • Forestry: Grasshopper	**03L**	**06hrs**

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2.2	Major insect pests of agricultural importance (Life cycle, nature of damage and control measures). a) Jowar stem borer b) Brinjal fruit borer c) Aphids d) Rice weevil e) Pink bollworm	**03L**	**06hrs**
2.3	Other pests: Rats, bandicoots, crabs, snails, slugs, birds and squirrels	**02L**	**06hrs**
2.4	Pest control measures: i) Cultural control ii) Physical control iii) Mechanical control iv) Chemical control v) Biological control, vi) Concept of IPM	**03L**	**03hrs**
2.5	Plant protection appliances: Rotary duster, knapsack sprayer and cynogas pump, hazards of pesticides and antidotes.	**02L**	**03hrs**
	Unit 3 Amazing animals	**15L**	**24hrs**
	Objectives: ➢ *To comprehend the concept of life timeline, and the natural history of some amazing animals.* ➢ *To kindle interest and yearning to study amazing animals.*		
	Desired Outcome: ➢ *Learner would understand the concept of life time-line.* ➢ *Learner will gain knowledge of and develop various skills while studying amazing animals.*		
3.1	Natural History a) Introduction and life timeline b) Butterflies the flying jewels- Blue Mormon, Striped tiger c) Herpetofauna of India- Flying frog, Fan Throated	**04L**	**08hrs**

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	lizard and Gharial d) Feathered Bipeds: Kingfisher, Drongo e) Mammals of India: Malabar giant squirrel		
3.2	The world's most amazing animals (emphasis should be given only on amazing aspects) a) Octopus b) Spider c) Mudskipper d) Flying fish e) Pebble toad f) Strawberry poison frog g) Komodo dragon h) Lesser flamingo i) Great white pelican j) Spatule-tailed hummingbird k) Cheetah	**05L**	**10hrs**
3.3	Five most incredible animals discovered within the last decade a) The Purple (joker) crab, b) The African dwarf saw-shark (stabbing shark), c) The Psychedelic (crime fighting) gecko, d) The Matilda viper e) The Myanmar snub-nosed monkey	**03L**	**5hrs**
3.4	Marvels of Animals a) Mantis shrimp: Fastest punch b) Homing in Pacific salmon c) Sperm whale: Mechanism of deep sea diving.	**03L**	**08hrs**

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	PRACTICAL SEMESTER III
	Practical USZOP3 (Course - V)
1	Extraction and detection of DNA
2	Extraction and detection of RNA
3	Mounting of Barr bodies
4	Study of polytene chromosome
5	Study of mitosis- temporary squash preparation of Onion root tip
6	Detection of blood groups and Rh factor
7	Problems in Genetics a) Monohybrid/ Dihybrid Cross: b) X- linked inheritance: c) Multiple Alleles
8	Chromosome morphology: (photograph to be provided)
9	Pedigree analysis
10	Problems based on molecular biology

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	SEMESTER III
	Practical USZOP3 (Course - VI)
1	Urine analysis—Normal and Abnormal constituents
2	Detection of ammonia excreted by fish from aquarium water
3	Detection of uric acid from excreta of birds
4	Study of striated and non-striated muscle fibre
5	Study of nutritional apparatus (Amoeba, Hydra, Earthworm, Pigeon, Ruminant stomach)
6	Study of respiratory structures: a. Gills of bony fish and cartilaginous fish b. Lungs of frog c. Lungs of mammal d. Accessory respiratory structure in *Anabas* / *Clarius* e. Air sacs of Pigeon
7	Study of locomotory organs (Amoeba, Bivalve, Cockroach, Starfish, Fish, and Bird).
8	Study of different types of hearts (Cockroach, Shark, Frog, Garden lizard, Crocodile and Mammal).
9	Study of permanent slides on Reproduction: (a) Sponge gemmules, (b) Hydra budding, (c) T.S. of mammalian testis, (d) T.S. of mammalian ovary.

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	SEMESTER III
	Practical USZOE1P3 (Course - VIIA) Elective I
1	Extraction of casein from milk and its qualitative estimation
2	Preparation of paneer from given milk sample
3	Measurement of density of milk using different samples by Lactometer
4	Study of Honey Bee: a) Life Cycle of Honey Bee and Bee Hive b) Mouthparts of Honey Bee c) Legs of Honey Bee d) Sting Apparatus of Honey Bee
5	Study of ethological aspects: a) Warning colouration b) Animal instinct c) Imprinting d) Communication in animals: Chemical signals and Sound signals e) Displacement activities in animals: Courtship and mating behaviour in animals and Ritualization
6	Study of Protozoan parasites: a. *Trypanosoma gambiense* b. *Giardia intestinalis*
7	Study of Helminth parasites: a. *Ancylostoma duodenale* b. *Dracunculus medinensis*
8	Parasitic adaptations: Scolex and mature proglottid of Tapeworm
9	Study of Ectoparasites: a) Leech b)Tick c)Mite
10	Project- Suggested topics on economic zoology (e.g. Apiculture/ Sericulture/ Lac culture / Vermicompost technique / Construction of artificial beehives /Animal husbandry/ Aquaculture / any other)

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	SEMESTER III
	Practical USZOE2P3 (Course - VIIB) Elective 2
1	Maintenance of Aquarium– Equipments required for setting up of aquarium – types of filter, type of gravel, aerator pump, lighting, nets, different species of aquatic plants and ornamental fishes.
2	Types of pest – Agricultural-aphids, Household-cockroaches, housefly, Structural-termites, Stored grains- borer, Veterinary- fleas, Forestry- caterpillar.
3	Other pests- a) Invertebrates -nematodes, leech, snails, slugs. b) Vertebrates-rats, birds
4	Types of pest control –a) Physical b) Biological c) Electronic d) Insecticides, Rodenticides and Special Treatments
5	Hybrid animals- a) Liger b) Wholphin c) Zebroid d) Savannah cat
6	Most incredible animals in last decades – a) Joker crab b) Snub nose monkey c) Matilda viper
7	Endangered animals of India – a) Amboli bush frog b) Indian egg- eating snake (Wester mann's snake) c) Spoon- billed sandpiper d) Snow leopard
8	A project on aquarium setting in laboratory / vermicomposting.
9	A field visit to study the natural flora and fauna; and submission of report with photographs.

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***Note-** The practicals may be conducted by using preserved specimens/permanent slides authorized by the wild life and such other regulating bodies though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/simulations/ models etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for conducting practicals mentioned here in above.

N.B:

I) It is pertinent to note that we have to adhere strictly to the directions as given in the UGC Circular F14-4/2006 (CPP-II).

II) Apart from the Institutional Animal Ethics Committee (IAEC) and any other Committee appointed by a Competent Authority/Body from time to time, every college should constitute the following Committees:

1) A Committee for the Purpose of Care and Supervision of Experimental Animals (CPCSEA)

2) A Dissection Monitoring Committee (DMC) to ensure that no dissections or mountings are done, using animals

Composition of DMC shall be as follows:

i) Head of the Concerned Department (Convener/Chairperson)

ii) Two Senior Faculty Members of the concerned Department

iii) One Faculty of related department from the same College

iv) One or two members of related department from neighboring colleges.

USE OF ANIMALS FOR ANY EXPERIMENT/DISSECTION/MOUNTING IS BANNED. SIMULATIONS, AUTHORISED PERMANENT SPECIMENS/SLIDES, CHARTS, MODELS AND OTHER INNOVATIVE METHODS ARE ENCOURAGED.

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Semester –III

REFERENCE BOOKS AND ADDITIONAL READING

USZO301 (COURSE-V)

1. Principles of Genetics. Gardner, E. J., Simmons, M.J and Snustad, D.P. John Wiley and Sons
2. Concepts of Genetics. Klug, W. S., Cummings M. R., Spencer, C.A. Benjamin Cummings
3. Genetics- A Molecular Approach. Russell, P. J Benjamin Cummings
4. Genetics: Analysis of Genes and Genomes. Daniel L., Hartl, Elizabeth W. Jones Jones & Bartlett Publishers
5. Introduction to Genetic Analysis. Griffiths, A. J. F., Wessler. S.R., Lewontin, R.C. and Carroll, S. B. W. H. Freeman and Co
6. Cell Biology Genetics, Molecular Biology Evolution and Ecology Verma P. S. and Agrawal P.K., 9th edition, S. Chand Publication, New Delhi
7. Principles of Genetics – Eight edition- Eldon john Gardner, Michael J. Simmons, D. Peter Snustad
8. Genetics- Weaver, Hedrick, third edition, McGraw Hill Education
9. Genetics A Mendelian approach Peter J. Russel, Pearson Benjamin Cummings
10. Genetics A conceptual approach, Benjamin A. Pierce, Southwestern University, W.H. Freeman and company, New York
11. Genetics, Third Edition, Monroe W. Strickberger
12. Genetics from gene to genome, third edition, Leeland H. Hartwell, Leeroy Hood, Michael 7. L. Goldberg, Ann E. Reynolds, Lee M. Silver, McGraw Hill Education

USZO302 (COURSE-VI)

1. Vertebrate Zoology Volume I- Jordan and Verm , S. Chand and Co.
2. Invertebrate Zoology Volume II- Jordan and Verma , S. Chand and Co.
3. Invertebrate Zoology- Majupuria T. C., NaginS.and Co.
4. Chordate Zoology- Dhami P. S. and Dhami J. K., R. Chand and Co.
5. Invertebrate Zoology- Dhami P. S. and Dhami J. K., R. Chand and Co.
6. Introduction to Vertebrates- Moore Cambridge University- Low Priced Edition.
7. Zoology- Miller S. A. and Harley J. B., Tata McGraw Hill.
8. Modern Textbook of Zoology, Invertebrates, Kotpal R. L

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9. Biological Science, Taylor D.J., Stout G.W., Green N.P.O, Soper R., Cambridge University Press.

USZOE1303 (COURSE-VIIA)

1. Animal Behaviour- David McFarland
2. Animal Behaviour- Mohan Arora
3. Animal Behaviour- Reena Mathur
4. An introduction to Animal Behaviour- Dawkins
5. Animal Behaviour-Agarwal
6. Animal Behaviour- Tinbergen
7. Biology of Insects- 1992 Saxena S. C. Oxford and IBH Publishing Co New Delhi. Bombay. Calcutta
8. Bee and Bee Keeping- Roger A. Morse, Cornell University Press London
9. Vermiculture Technology - Clive A. Edwards, Norman Q. Arancon and Rhonda Sherman
10. Parasitology- Chatterjee K. D., Chatterjee Medical Publishers.
11. Medical Parasitology- Arora
12. Textbook of Medical Parasitology-.C.K Jayaram Paniker, Jaypee Brothers.
13. A text book of Parasitology- Kochhar S. K. Dominant Pub. & Dis, New Delhi.
14. Essentials of Parasitology- Gerald D. Schmidt: Universal Bookstall, New Delhi.
15. Introduction to Parasitology- Sharma P. N. and Ratnu L.S., Chand S & Co. Pvt. Ltd.
16. Introduction to Parasitology- Chandler and Read John Wiley & Sons
17. Economic Zoology Biostatistics and Animal behaviour – S. Mathur, Rastogi Publicatons.
18. Economic Zoology- Shukla G.S. & Upadhyay V. B., Rastogi Publications.
19. A handbook on Economic Zoology, S. Chand & Co.

USZOE2303 (COURSE-VIIB)

1. A General textbook of entomology -- A D Imms. Asia Publication.
2. Agricultural insect pests and their control. V.B. Awasthi. Scientific Publication.
3. A manual of practical entomology. – M. M. Trigunayat. Scientific Publication.
4. Applied Entomology – Alaka Prakash and Fennemore. New Age Publishers.
5. Applied Entomology – Awasthi. Scientific Publication.
6. A Text book of insect morphology, physiology and endocrinology – Tembhare D. B.– Chand Publication
7. Entomology and Pest Management –Larry P. Pedigo. Pearson Education.

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8. Forensic Entomology-The utility of Arthropods in legal investigations. –Jason H. Byrd and James L. Castner. CRC Press.
9. General and applied Entomology – David and Ananthakrishnan. Tata McGraw Hill
10. Insect endocrinology and physiology – Tembhare D B – S Chand publication.
11. Insect Jewelry by Roger D. Akre., Laurel D. Hansen, and Richards S. Zack: in Summer (1991). (Online available as research article).
12. Insect Year Book of Agriculture- American Agriculture Department Publication.
13. Economic Zoology- Shukla G.S. & Upadhyay V. B., Rastogi Publications.
14. A handbook on Economic Zoology, S. Chand & Co.
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16. Milk and dairy products in human nutrition: production, composition and health. John Wiley & Sons, Park, Y. W., & Haenlein, G. F. (Eds.). (2013).
17. Dairy development in India: An appraisal of challenges and achievements. Concept Publishing Company, Venkatasubramanian, V., Singh, A. K., & Rao, S. V. N. (2003).
18. Dairy Development in The New Millennium (The Second White Revolution). Deep and Deep Publications, Shrivastava, J. S. M. (2008).
19. http://listverse.com/2012/12/03/10-amazing-animal-abilities/
20. www.toptenz.net/top-10-amazing-animals-discovered-within-the-last-decade.php
21. dailynewsdig.com/top-10-amazing-animal-hybrids.
22. https://www.pinterest.com/pin/16044142395584735/
23. www.naturalhistorymag.com/
24. https://naturalhistory.si.edu/.

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SEMESTER IV

Sr. No	USZO401 (COURSE-VIII)	No. of lect allotted	Learning pleasure
	Origin and Evolution of Life, Population Genetics and Evolution, Scientific Attitude, Methodology, Scientific Writing and Ethics in Scientific Research		
	Unit 1: Origin and Evolution of Life	**15L**	**30hrs**
	Objective: ➢ *To impart scientific knowledge about how life originated on our planet*		
	Desired outcomes: ➢ *Learner will gain insights into the origin of life.* ➢ *Learner will analyse and critically view the different theories of evolution.*		
1.1	**Introduction** • Origin of the Universe • Chemical evolution - Miller-Urey experiment, Haldane and Oparin theory • Origin of life • Origin of eukaryotic cell	**05L**	**10hrs**
1.2	**Evidences in favour of organic evolution** • Evidences from geographical distribution, palaeontology, anatomy, embryology, physiology and genetics	**04L**	**08hrs**
1.3	**Theories of organic evolution** • Theory of Lamarck • Theory of Darwin and Neo- Darwinism • Mutation Theory • Modern synthetic theory • Weismann's Germplasm theory	**06L**	**12hrs**

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	Unit: 2: Population Genetics and Evolution	15L	28hrs
	Objective: ➢ *To develop an understanding of genetic variability within a population and learn as to how the change in the gene pool leads to evolution of species*		
	Desired outcomes: ➢ *Learner would understand the forces that cause evolutionary changes in natural populations* ➢ *Learner would comprehend the mechanisms of speciation* ➢ *Learner will be able to distinguish between microevolution, macroevolution and megaevolution*		
2.1	**Introduction to Population genetics** • Definition • Brief explanation of the following terms: Population, Gene pool, Allele frequency, Genotype frequency, Phenotype frequency, Microevolution	**01L**	**03hrs**
2.2	**Population genetics** • Hardy- Weinberg Law • Factors that disrupt Hardy Weinberg equilibrium: Mutation, Migration (gene flow), Non-random mating (inbreeding, inbreeding depression, assortative mating(positive and negative), disassortative mating, Genetic drift (sampling error, fixation, bottleneck effect and founder effect) • Natural Selection: Patterns of Natural Selection-Stabilizing selection, Directional selection (examples: peppered moth, antibiotic resistance in bacteria, pesticide resistance) and Disruptive selection	**05L**	**08hrs**
2.3	**Evolutionary genetics** • Genetic variation: Genetic basis of variation-mutations and recombination (crossing over during meiosis, independent assortment of chromosomes during meiosis and random union of gametes during fertilization) • Nature of genetic variations: Genetic polymorphism, Balanced polymorphism, Mechanisms that preserve balanced polymorphism-	**07L**	**13hrs**

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	Heterozygote advantage and frequency dependent selection, • Neutral variations • Geographic variation (Cline) • Species concept: Biological species concept and evolutionary species concept • Speciation and Isolating mechanisms**:** Definition and modes of speciation (allopatric, sympatric, parapatric and peripatric) • Geographical isolation • Reproductive isolation and its isolating mechanisms (prezygotic and postzygotic)		
2.4	Macroevolution and megaevolution: Concept and Patterns of macroevolution (stasis, preadaptation /exaptation, mass extinctions, adaptive radiation and coevolution), Megaevolution	**02L**	**04hrs**
	Unit: 3 Scientific Attitude Methodology, Scientific Writing and Ethics in Scientific Research	**15L**	**32hrs**
	Objective: ➢ *To inculcate scientific temperament in the learner*		
	Desired outcome: ➢ *The learner would develop qualities such as critical thinking and analysis* ➢ *The learner will imbibe the skills of scientific communication and he/she will understand the ethical aspects of research*		
3.1	**Process of science:** • A dynamic approach to investigation: The Scientific method, Deductive reasoning and inductive reasoning, Critical thinking, Role of chance in scientific discovery (serendipity) • Scientific research: Definition, difference between method and methodology, characteristics, types • Steps in the Scientific method: Identification of research problem, formulation of research hypothesis, testing the hypothesis using experiments or surveys, preparing research/study design including	**04L**	**10hrs**

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	methodology and execution (appropriate controls, sample size, technically sound, free from bias, repeat experiments for consistency), documentation of data, data analysis and interpretation, results and conclusions • Dissemination of data: Reporting results to scientific community (publication in peer- reviewed journals, thesis, dissertation, reports, oral presentation, poster presentation) • Application of knowledge: Basic research, Applied research and Translational research		
3.2	**Scientific writing:** • Structure and components of a research paper: preparation of manuscript for publication of research paper- title, authors and their affiliations, abstract, keywords and abbreviations, introduction, material and methods, results, discussion, conclusions, acknowledgement, bibliography; figures, tables and their legends	**04L**	**10hrs**
3.3	**Writing a review paper** • Structure and components of review • Report writing and types of report • Computer application: Plotting of graphs, Statistical analysis of data. Internet and its application in research-Literature survey, online submission of manuscript for publication	**03L**	**05hrs**
3.4	**Ethics** • Ethics in animal research: The ethical and sensitive care and use of animals in research, teaching and testing, approval from Dissection Monitoring Committee (DMC) • Ethics in clinical research: Approval from clinical research ethics committee or/and informed consent	**03L**	**05hrs**
3.5	**Plagiarism**	**01L**	**02hrs**

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	SEMESTER IV		
Sr. No.	**USZO402 (Course - IX)**	**No. of lectures allotted**	**Learning pleasure**
	Unit 1: Cell Biology	**15L**	**24hrs**
	Objective: ➢ *To study the structural and functional organization of cell with an emphasis on nucleus, plasma membrane and cytoskeleton.*		
	Desired outcome: ➢ *Learner would acquire insight into the composition of the transport mechanisms adopted by the cell and its organelles for its maintenance and composition of cell*		
1.1	**Introduction to cell biology** • Definition and scope • Cell theory • Generalized prokaryotic, eukaryotic cell: size, shape and structure	**02L**	**04hrs**
1.2	**Nucleus** • Size, shape, number and position • Structure and functions of interphase nucleus • Ultrastructure of nuclear membrane and pore complex • Nucleolus: general organization, chemical composition & functions • Nuclear sap/ nuclear matrix • Nucleocytoplasmic interactions	**05L**	**06hrs**
1.3	**Plasma membrane** • Fluid Mosaic Model • Junctional complexes • Membrane receptors • Modifications: Microvilli and Desmosomes	**04L**	**08hrs**
1.4	**Transport across membrane** • Diffusion and Osmosis • Transport: Passive and Active • Endocytosis and Exocytosis	**02L**	**04hrs**
1.5	**Cytoskeletal structures** • Microtubules: Composition and functions • Microfilaments: Composition and functions		

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	Unit: 2: Endomembrane System	**15L**	**28hrs**
	Objective: ➢ *To acquaint the learner with ultrastructure of cell organelles and their functions*		
	Desired outcome: ➢ *Learner would appreciate the intricacy of endomembrane system.* ➢ *Learner would understand the interlinking of endomembrane system for functioning of cell*		
2.1	**Endoplasmic reticulum (ER):** General morphology of endomembrane system, ultrastructure, types of ER and biogenesis of ER • Functions of Rough Endoplasmic Reticulum (RER) and Smooth Endoplasmic Reticulum (SER)	**01L**	**03hrs**
2.2	**Golgi complex:** Ultrastructure of Golgi complex, functions of Golgi complex (protein glycosylation, lipid and polysaccharide metabolism, protein sorting and secretion, Golgi Anti-Apoptotic Protein -GAAP)	**06L**	**10hrs**
2.3	**Lysosomes:** Origin, occurrence, polymorphism and functions; Peroxisomes: Origin, morphology & functions	**03L**	**5hrs**
2.4	**Mitochondria:** Ultrastructure, chemical composition, functions of mitochondria and bioenergetics (Chemical energy & ATP, Kreb's cycle, respiratory chain and oxidative phosphorylation)	**05L**	**10hrs**
	Unit: 3 Biomolecules	**15L**	**30hrs**
	Objective: ➢ *To give learner insight into the structure of biomolecules and their role in sustenance of life.*		
	Desired outcome: ➢ *The learner will realize the importance of biomolecules and their clinical significance.*		
3.1	**Biomolecules**: Concept of micromolecules and macromolecules	**02L**	**05hrs**

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3.2	**Carbohydrates:** • Definition classification, properties and isomerism, glycosidic bond • Structure of Monosaccharides (glucose and fructose); Oligosaccharides (lactose and sucrose); Polysaccharides (cellulose, starch, glycogen and chitin) • Biological role and clinical significance	**04L**	**08hrs**
3.3	**Amino Acids and Proteins:** • Basic structure, classification of amino acids, • Essential and Non-essential amino acids, Peptide bond, • Protein conformation: Primary, Secondary, Tertiary, Quaternary • Types of proteins – Structural (collagen) and functional proteins (haemoglobin) • Biological role and clinical significance	**05L**	**08hrs**
3.4	**Lipids:** • Definition, classification of lipids with examples, ester linkage • Physical and chemical properties of lipids • Saturated and unsaturated fatty acids • Essential fatty acids; Triacylglycerols; Phospholipids (lecithin and cephalin); Steroids (cholesterol) • Biological role and clinical significance	**04L**	**05hrs**
3.5	**Vitamins**: • Water soluble vitamins (e.g. Vit C, Vit B_{12}) • Lipid soluble vitamins (e.g. Vit A, Vit D) • Biological role and clinical significance	**02L**	**04hrs**

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	SEMESTER IV		
	USZOE1403 (Course-XA) Elective 1		
	Comparative Embryology, Aspects of Human Reproduction, Pollution and its effect on organisms		
	UNIT 1: Comparative Embryology	**15L**	**25hrs**
	Objective: ➢ *To acquaint the learner with key concepts of embryology.*		
	Desired Outcome: ➢ *Learner will be able to understand and compare the different types of eggs and sperms* ➢ *Learner will be able to understand and compare the different pre- embryonic stages*		
1.1	Types of Eggs- Based on amount and distribution of yolk	03L	4hrs
1.2	Structure and Types of Sperm	02L	4hr
1.3	Types of Cleavages	02L	4hrs
1.4	Types of Blastulae	02L	4hrs
1.5	Types of Gastrulae	02L	4hrs
1.6	Coelom -Formation and types	04L	6hrs
	UNIT 2: Aspects of Human Reproduction	**15L**	**30 hrs**
	Objectives: ➢ *To acquaint the learners with different aspects of human reproduction.* ➢ *To make them aware of the causes of infertility, techniques to overcome infertility and the concept of birth control*		
	Desired Outcome: ➢ *Learners will able to understand human reproductive physiology* ➢ *Learners will become familiar with advances in ART and related ethical issues.*		
2.1	**Human reproductive system and hormonal regulation** • Anatomy of human male and female reproductive system	02L	4hrs

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	• Hormonal regulation of reproduction and impact of age on reproduction - menopause and andropause		
2.2	**Contraception & birth control** • Difference between contraception and birth control • Natural Methods: Abstinence, rhythm method, temperature method, cervical mucus or Billings method, coitus interruptus, lactation amenorrhea • Artificial methods **:** Barrier methods, hormonal methods, intrauterine contraceptives, sterilization, termination, abortion	02L	4hrs
2.3	**Infertility** **Female infertility:** • **Causes -** Failure to ovulate; production of infertile eggs; damage to oviducts (oviduct scarring and Pelvic inflammatory disease -PID, TB of oviduct), Uterus (TB of uterus and cervix) • **Infertility associated disorders -** Endometriosis, Polycystic Ovarian Syndrome (PCOS), Primary ovarian failure (POF),Sexually Transmitted Infections (STIs) - gonorrhoea, chlamydia, syphilis and genital herpes; Antibodies to sperm; Genetic causes- recurrent abortions • **Role of endocrine disruptors**	04L	8hrs
2.5	**Treatment of infertility** • Removal /reduction of causative environmental factors • Surgical treatment • Hormonal treatment- fertility drugs • Assisted Reproductive Technology (ART) - *In vitro* fertilization (IVF); Embryo transfer (ET); Intra-Fallopian transfer (IFT), Gamete Intra-Fallopian Transfer (GIFT) &Intra-Zygote Transfer (ZIFT); Intra-cytoplasmic Sperm Injection (ICSI) with ejaculated sperm and sperm retrieved from testicular biopsies; Testicular sperm extraction (TESE).	04L	8hrs

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	• Sperm bank, cryopreservation of gametes and embryos • Surrogacy		
	UNIT3: Pollution and its effect on organisms	**15L**	**27hrs**
	***Objective*:** ➢ *To provide a panoramic view of impact of human activities leading to pollution and its implications.*		
	Desired Outcome: ➢ *The learners will be sensitized about the adverse effects of pollution and measures to control it.*		
3.1	**Air Pollution** • Types and sources of air pollutant • Effects of air pollution on organisms, its control and abatement measures	03L	6hrs
3.2	**Water Pollution** • Types and sources of water pollutant • Effects of water pollution on organisms, its control and abatement measures	03L	6hrs
3.3	**Soil Pollution** • Types and sources of soil pollutant • Effects of soil pollution on organisms, its control and abatement measures	03L	4hrs
3.4	**Sound pollution** • Different sources of sound pollution • Effects of sound pollution on organisms, its control and abatement measures	01L	3hrs
3.5	**Pollution by radioactive substances**	01L	2hrs
3.6	**Pollution by solid wastes** • Types and sources, • Effects of solid waste pollution, its control and abatement measures	02L	4hrs
3.7	**Pollution –** Climate Change and Global Warming	02L	2hrs

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	USZOE2403 (Course-XB) Elective 2		
	Dairy Industry, Sericulture and Aquaculture		
	UNIT 1: Dairy Industry	**15L**	**30hrs**
	Objectives: ➢ *To comprehend the functioning of various aspects of dairy industry.* ➢ *To study different indigenous and exotic cattle breeds including buffalo breeds of India.* ➢ *To develop an understanding of the different systems of breeding and various aspects dealing with housing of dairy animals.*		
	Desired Outcome: ➢ *Learner would gain knowledge on the functioning of various aspects of dairy industry, indigenous, exotic cattle and buffalo breeds in India.* ➢ *Learner will study different systems of breeding and gain information regarding various aspects pertaining to housing of dairy animals.*		
1.1	Indian Cattle breeds – Origin, distribution, distinguishing characters and economic uses: • Malvi • Hariyana • Deoni • Red sindhi • Khillari	02L	4hrs
1.2	Exotic breeds - Origin, distribution, distinguishing characters and economic uses: • Jersy • Holstein	02L	4hr
1.3	Indian buffalo breeds - Origin, distribution, distinguishing	02L	4hrs

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	characters and economic uses: • Nagpuri • Bhadawari • Murrah • Jafrabadi		
1.4	Systems of inbreeding and crossbreeding	03L	6hrs
1.5	Maintenance of dairy farm	02L	4hrs
1.6	Weaning of calf, castration and dehorning	02L	4hrs
1.7	Diseases and control	02L	4hrs
	UNIT 2: Sericulture	**15L**	**30 hrs**
	Objectives: ➢ *To comprehend the functioning of sericulture industry and its scope in India.* ➢ *To study the varieties of silk-worms and host plants.* ➢ *To critically study the life history and rearing of Bombyx mori, harvesting, processing of cocoon, production of silk and diseases afflicting silk-worms.*		
	Desired Outcome: ➢ *Learner would understand the basics of the functioning of sericulture industry and its scope in India.* ➢ *Learner shall gain knowledge on the varieties of silk-worms, host-plants and aspects on silk extraction and the diseases afflicting silk-worms.*		
2.1	Introduction and scope of sericulture	02L	4hrs
2.2	Varieties of silk worm, host plants	02L	4hrs
2.3	Life history and rearing of *Bombyx mori*	02L	8hrs
2.4	Harvesting and processing of cocoon	02L	4hrs

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2.5	Reeling and extraction of silk	03L	4hrs
2.6	Diseases and control measures	03L	4hrs
	UNIT3: Aquaculture	**15L**	**27hrs**
	Objectives: ➢ *To comprehend various kinds of aquaculture practices and its scope as fishery resource in India.* ➢ *To study various techniques employed in aquaculture practices*		
	Desired Outcome: ➢ *Learner shall understand the aquaculture practices and the scope of fishery in India.* ➢ *Learner would gain knowledge of various techniques employed in aquaculture practices.*		
3.1	**Pisciculture:** • Definition and scope of fishery resources in India • Finfish culture – monoculture and polyculture • Role of exotic fishes in polyculture • Cage culture • Fish seed transport • Fish diseases -- symptoms and control	05L	6hrs
3.2	**Prawn/shrimp culture:** Sources, seed, culture methods – • Giant fresh water prawn (*Macrobrachium rosenbergii*) • White shrimp (*Penaeus vannamei*)	05L	6hrs
3.3	**Pearl culture:** • Pearl producing species and their distribution • Pearl culture methods • Composition of pearl	05L	4hrs

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	SEMESTER IV
	Practical USZOP4 (Course - VIII)
1	Study of population density by Line transect method & Quadrant method and calculate different diversity indices. • Index of Dominance • Index of frequency • Rarity Index • Shannon Index • Index of species diversity
2	Study of prokaryotic cells (bacteria) by Crystal violet staining technique
3	Study of eukaryotic cells (WBCs) from blood smear by Leishman's stain
4	Identification and study of fossils: • Arthropods: Trilobite • Mollusca: Ammonite • Aves: Archaeopteryx
5	Identification of : • Allopatric speciation (Cyprinodont species) • Sympatric speciation (Hawthorn fly and Apple maggot fly) • Parapatric speciation (Snail)
6	Bibliography/ Abstract writing
7	Preparation of Power Point Presentation based on research paper.

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	SEMESTER IV
	Practical USZOP4 (Course - IX)
1	Study of permeability of cell through plasma membrane (osmosis in blood cells)
2	Measurement of cell diameter by occulometer (by using permanent slide)
3	Qualitative tests for carbohydrates (Molisch's test, Benedicts test, Barfoed's test, Anthrone test)
4	Qualitative tests for protein (Ninhydrin test, Biuret test, Millon's test, Xanthoproteic test)
5	Qualitative test for lipids (Solubility test, Sudan III test)
6	Study of rancidity of lipids by titrimetric method
7	Ultrastructure of cell organelles (Electron micrographs) of: • Nucleus • Endoplasmic reticulum (Smooth and Rough) • Mitochondria. • Golgi apparatus • Lysosomes
8.	Study of clinical disorders due to carbohydrates, proteins and lipid imbalance (Photograph to be provided / symptoms to be given and disorder to be identified): • Hyperglycemia • Hypoglycemia • Anemia • Kwashiorkar • Marasmus • Fatty Liver

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	SEMESTER IV
	Practical USZOE1P4 (Course - XA)
1	Study of air microflora.
2	Estimation of dissolved oxygen from the given water sample.
3	Estimation of salinity by refractometer from the given water sample.
4	Estimation of conductivity by conductometer from the given water sample.
5	Study of physical properties of soil: temperature, moisture and texture
6	Study of chemical properties of soil- pH, organic matter
7	Study of sound pollution monitoring device
8	Detection of pregnancy from given sample of urine
9	Study of birth control measures applicable to humans – IUD, condom and hormonal pills.
10	Study of the following permanent slides, museum specimens and materials • Mammalian sperm and ovum • Types of Egg– fish, frog and hen • Cleavage, blastula and gastrula (Amphioxus, Frog and Bird)
11	Review writing based on programmes telecast by Doordarshan, Gyandarshan, UGC programmes or other media sources
12	Study of natural ecosystem and field report of the visit

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	SEMESTER IV
	Practical USZOE2P4 (Course - XB) – Elective 2
1	Estimation and comparison of protein content in Cow and Buffalo milk sample
2	Estimation and comparison of fat content in Cow and Buffalo milk sample
3	Preparation of falooda
4	Preparation of caramel custard
5	Restraining devices used in cattle farming- Halters, gags, bull-rings, muzzles, cradle, crush and ropes.
6	Study of life cycle of *Bombyx mori*
7	Study of commercially important fishery. (Catla, Rohu, Catfish, Mackeral, Pomfret, Bombay duck, Prawn/Shrimp, Crab, Lobster, Edible oyster)
8	Study of Crustacean fishery – common characters and sexual dimorphism in lobster (*Panulirus spp.*), prawn (*Penaeus spp.*), crab (*Scylla spp.*)
9	Visit to dairy farm /aquaculture/ fish landing centre/fishery institute and submit report of the same

For Additional and Latest Information on the topics, various Web Sites can be visited.

Note: The practicals may be conducted by using specimens authorised by the wildlife and such other regulating authorities though it is strongly recommended that the same should be taught by using photographs/audio-visual aids/ simulations / models, etc. as recommended by the UGC and as envisaged in the regulations of the relevant monitoring bodies. No new specimens, however, shall be procured for conducting practicals mentioned here in above.

 # There shall be at least one excursion / field trip.

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N. B:

I) It is pertinent to note that we have to adhere strictly to the directions as given in the UGC Circular F14-4/2006 (CPP-II).

II) Apart from the Institutional Animal Ethics Committee (IAEC) and any other Committee appointed by a Competent Authority/Body from time to time, every college should constitute the following Committees:

1) A Committee for the Purpose of Care and Supervision of Experimental Animals (CPCSEA) and
2) A Dissection Monitoring Committee (DMC)

Composition of DMC shall be as follows:

i) Head of the Concerned Department (Convener/Chairperson)
ii) Two Senior Faculty Members of the concerned Department
iii) One Faculty of related department from the same College

One or two members of related department from neighboring colleges

USE OF ANIMALS FOR ANY EXPERIMENT/DISSECTION/MOUNTING IS BANNED. SIMULATIONS, AUTHORISED PERMANENT SPECIMENS/SLIDES, CHARTS, MODELS AND OTHER INNOVATIVE METHODS ARE ENCOURAGED.

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Semester IV
References and additional reading

USZO401 (COURSE-VIII)

1. Theory of Evolution- Smith, Cambridge Press, and Low price Ed
2. Evolution - Strickberger, CBS publication
3. Evolution- P. S. Verma and Agarwal
4. Introduction to Evolution by Moody
5. Biology. E. P. Solomon, L. R. Berg, D. W. Martin, Thompson Brooks/Cole
6. Biology -The Unity and Diversity of Life**.** C. Starr, R. Taggart, C. Evers, L. Starr, Brooks/Cole Cengage learning International Edition
7. Research Methodology, Methods and Techniques- by C.R. Kothari, Wiley Eastern Ltd. Mumbai
8. Practical research planning and design 2nd edition- Paul D Leedy, Macmilan Publication

USZO402 (COURSE - IX)

1. Cell Biology, Singh and Tomar, Rastogi Publication.
2. Cell and Molecular Biology, E.D.P De Robertis and E.M.R Robertis, CBS Publishers and Distributors.
3. The cell, A molecular approach, Goeffrey M. Coper ASM Press Washington D.C.
4. A textbook of cytologym Suruchi Tyagi Dominant Publishers and Distributors New Delhi.
5. Cell and molecular biology, Gupta P. K., Rastogi Publication, India.
6. Cell Biology, Pawar C.B. Himalaya publication
7. Molecular Biology of the cell, (6th ed) by the Insertus
8. Principles of Biochemistry, 2005, 2nd and 3rd edn. Lehninger A.L. Nelson D.L. and Cox M.M ,
9. Biochemistry, Dushyant Kumar Shrma, 2010, Narosa Publishing house PVT.Ltd.
10. Fundamentals of Biochemistry, Dr AC Deb, 1983, New Central Book Agency Ltd.
11. A Textbook of Biochemistry, 9th edition, Dr. Rama Rao A.V.S.S and Dr A Suryalakshmi.
12. Biochemistry- G Zubay, Addison Wesley, 1983
13. Biochemistry, L Stryer, 3rd/4th/5th ed, 1989, Freeman and Co. NY
14. Harper's Biochemistry,1996, 26th edition, Murray R.K. Granner D.K. Mayes P.A. Rodwell V.M. Hall international USA
15. Outline of Biochemistry, 1976, E.E. Conn and P.K. Stumpf. John Wiley and Sons USA

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USZOE1403 (COURSE-XA)

References of Elective 1

1. Developmental Biology- 5th Edition, Scot F. Gilbert, Sinauer Associates Inc.
2. Developmental Biology- Subramoniam T., Narosa Publishers.
3. Developmental Biology-BerrilN.J., Tata McGraw –Hill Publication.
4. Essential Reproduction-Martin H. Johnson, Wiley-Blackwell Publication.
5. Chick Embryology- Bradley M. Pattern.
6. Embryology-Mohan P. Arora.
7. Chordate Embryology-Dalela,Verma and Tyagi
8. Human Anatomy and Physiology. E. L. Marieb, Pearson Education Low Price Edition
9. Biological Science. Taylor, Green and Stout. Cambridge Publication
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USZOE2403 (COURSE-XB)

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7. Outlines of Dairy Technology Sukumar De Oxford University Press, New delhi
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10. Dairy plant engineering and management Tufail Ahmed Kitab Mahal
11. Latest Aquaculture, Principles and Practices by Pillay T.V.R. – Fishing New Books (1988).
12. Course Manual in Fishing Technology by Latha Shenoy, CIFE, Versova, Mumbai.
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MARKING SCHEME OF EXAMINATION (THEORY)

(a) External assessment of one hundred (100) marks per course per semester should be conducted as per the following skeleton question paper pattern.

(c) One practical examination of fifty (50) marks per course each should be conducted at the end of every semester.

SKELETON- EXAMINATION PATTERN FOR THE ABOVE SYLLABUS

All Questions are compulsory

Figures to the right indicate full marks

Draw neat and labeled diagrams wherever necessary

Time: 3 hours **Total Marks: 100**

Q1	Objective questions*	20 marks
Q.2.	UNIT 1 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.3.	UNIT 2 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.4.	UNIT 3 a. Answer any one of the two (10 marks) b. Answer any two out of the four (5 marks each)	20 marks
Q.5.	Answer any four out of six Unit 1 - (Two notes of five marks each) Unit 2 - (Two notes of five marks each) Unit 3- (Two notes of five marks each)	20 marks

***Note:** For Question No. 01 it is recommended to have objective questions on all units, such as –

(a) Match the column (b) MCQ

(c) Give one word for (d) True and False

(e) Define the term (f) Answer in one sentence

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PRACTICAL (SEMESTER III)

USZOP3 (Course - V)

Skeleton-Practical Examination Question Paper Pattern

Time: 2hrs 30 min **Marks: 50**

Major Question **15**

Q1. Extraction and detection of DNA

OR

Q1. Extraction and detection of RNA

Minor Question **07**

Q2. Mounting of Barr bodies / Polytene chromosomes

OR

Q2. Study of mitosis-Temporary squash preparation of Onion root tip

OR

Q2. Detection of blood groups and Rh factor

Q3. Problems based on Genetics and Molecular biology
(Transcription /Genetic code) (01 problem each) **10**

Q4. Identification **08**

A. Chromosome morphology

B. Pedigree analysis

Q5. Viva **05**

Q6. Journal **05**

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PRACTICAL (SEMESTER III)

USZOP3 (Course - VI)

Skeleton-Practical Examination Question Paper Pattern

Time: 2hrs 30 min **Marks: 50**

Major Question 15

Q1. Urine analysis—Normal and abnormal constituents

Minor Question 10

Q2. Detection of ammonia excreted by fish in aquarium water

OR

Q2. Detection of uric acid from excreta of Birds

OR

Q2. Mounting of striated and non-striated muscle fibre

Q3. Identification 15

a. Nutritional apparatus

b. Respiratory structures

c. Locomotory organs

d. Study of hearts

e. Permanent slides on reproduction

Q4. Viva 05

Q5. Journal 05

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PRACTICAL (SEMESTER III)

USZOE1P3 (Course - VIIA) – Elective 1

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min **Marks: 50**

Major Question 12

Q1. Extraction of casein from milk and its qualitative detection

OR

Q1. Preparation of paneer from the given milk sample.

OR

Q1. Measurement of density of different samples of milk by lactometer

Minor Question (Sketch and label) 08

Q2. Life cycle of honey bee

OR

Q2. Mouthparts of honey bee

OR

Q2. Legs of honey bee

OR

Q2. Sting apparatus of honey bee

Q3. Identify and describe as per instructions 15

a. Ethology
b. Protozoan parasite
c. Helminth parasite
d. Ectoparasite
e. Parasitic adaptation

Q4. a) Project submission 06

b) Viva based on project 04

Q5. Journal 05

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PRACTICAL (SEMESTER III)

USZOE2P3 (Course - VIIB) – Elective 2

Skeleton-Practical Examination Question Paper Pattern

Time: 2 hrs 30min **Marks: 50**

Major Question 15

Q1. Identification (5 Marks each)

a) Aquarium equipment.

b) Type of pest (Any insect)

c) Other pest

Q.2. Identification (3 Marks each) 15

a) & b) Types of pest control

c) Hybrid animal

d) Incredible animal

e) Endangered animal

Q.3. Submission of photographs of any five amazing animals with description. 05

Q4. a) Project submission 06

b) Viva based on project 04

Q5. Journal 05

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PRACTICAL (SEMESTER IV)

USZOP4 (Course - VIII)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min **Marks: 50**

Major Question

Q1. Study Population density by Line transect or Quadrant method and calculate Biodiversity Indices. (Any 2) **12**

Minor Question **08**

Q2. Prepare a smear to show prokaryotic cell.

OR

Q2. Prepare a smear to show eukaryotic cell.

Q3. Identify and describe as per instructions. **08**

a) Fossil b) Speciation

Q4. From the given article, prepare the bibliography/ abstract. **06**

Q5. Submission of power point presentation. **06**

Q6. Viva. **05**

Q.7. Journal. **05**

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PRACTICAL (SEMESTER IV)

USZOP4 (Course - IX)

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min **Marks: 50**

Major Question 15

Q1. Study of osmosis in R.B.Cs.

OR

Q1. Measurement of cell diameter by occulometer using permanent slide.

Minor Question 10

Q2. Qualitative tests for carbohydrates (Molisch's test, Benedicts test, Fehling's test, Anthrone test)

OR

Q2. Qualitative tests for protein (Ninhydrin test, Biuret test, Millon's test, Xanthoprotein test)

OR

Q2. Qualitative test for lipid (Solubility test, Sudan III test)

OR

Q2. Estimation of rancidity of lipids by titrimetric method

Q3. Identify and describe as per instructions 15

- Ultrastructure of cell organelles (a, b & c)
- Clinical disorders (d & e)

Q4. Viva 05

Q5. Journal 05

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PRACTICAL(SEMESTER IV)

USZOE1P4 (Course - XA) – Elective 1

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min **Marks: 50**

Major Question 12

Q1. Estimation of Dissolved Oxygen from the given water sample.

OR

Q1. Detection of pregnancy from given sample of urine.

OR

Q1. Determination of organic matter from the given soil sample.

Minor Question 08

Q2. Estimation of salinity by refractometer from the given water sample

OR

Q2. Estimation of conductivity by conductometer from the given water sample

OR

Q2. Determination the pH of the given soil sample

OR

Q2. Determine the texture of the given soil sample

Q3. Identify and describe as per instructions 15

- Permanent slides (a &b)
- Birth control measure (c)
- Fishery (d & e)

Q4. a) Field report submission 06

b)Viva based on field report 04

Q5. Journal 05

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PRACTICAL (SEMESTER IV)

USZOE2P4 (Course - XB) Elective 2

Skeleton -Practical Examination Question Paper Pattern

Time: 2 hrs 30 min **Marks: 50**

Major Question 15

Q1.Comparison of protein content from cow and buffalo milk

OR

Q.1 Comparison of fat content from cow and buffalo milk

Minor Question 08

Q.2 Preparation of falooda

OR

Q.2 Preparation of caramel custard

Q.3 Identification (3 marks each) 12

a) Restraining device

b) Any stage of life cycle of *Bombyx mori*

c) Commercial fishery

d) Crustacean fishery

Q4. a) Project submission 06

b) Viva based on project 04

Q5. Journal 05

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MODEL QUESTION BANK SEMESTER III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZO301 (COURSE - V)

Unit1 (10 Marks)

1. Define genetics and explain its scope and importance.
2. Explain Mendel's laws of inheritance
3. Describe in detail the monohybrid cross and state the Mendelian principle of inheritance derived from it. Add a note on Co-dominance
4. Describe in detail dihybrid cross and state the Mendelian principles of inheritance derived from it
5. Discuss in brief inheritance of Mendelian phenotypic traits in humans.
6. Describe incomplete dominance with a suitable example
7. Describe Co-dominance with a suitable example
8. What is epistasis? Give a detailed account of double dominant epistasis
9. What is epistasis? Give a detailed account of recessive epistasis
10. What is epistasis? Give a detailed account of dominant epistasis
11. What is epistasis? Give a detailed account of double recessive epistasis
12. Explain the pattern of inheritance of recessive and dominant lethal alleles
13. Explain the inheritance of multiple alleles with the help of a suitable example
14. Describe polygenic inheritance with reference to skin colour and eye colour in man
15. Compare pleiotropy and polygenic inheritance
16. Explain the phenomenon of linkage with respect to Morgan's Experiment. Add a note on the differences between complete and incomplete linkage
17. Describe the pattern of inheritance of blood group and Rh factor in man
18. Explain the cytological basis and molecular mechanisms of crossing over
19. Explain pedigree analysis of X-linked recessive traits

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Unit1 (5 Marks)

1. Describe the classical concept of gene
2. Explain the modern concept of gene
3. Differentiate between (Any two):
   - (a) Genotype and phenotype of an organism
   - (b) Dominant and recessive traits
   - (c) Gene and genome
   - (d) Homozygous and heterozygous
   - (e) Monohybrid and Dihybrid cross
   - (f) Incomplete Dominance and Co-dominance
   - (g) Multiple alleles and Polygenes
   - (h) Test cross and Backcross
4. Write a note on the chromosome theory of inheritance
5. Describe co-dominance with a suitable example
6. Give an account of the symbols used in human Pedigree analysis
7. Characteristics of autosomal dominant traits
8. Characteristics of X-linked recessive traits
9. Characteristics of autosomal recessive traits
10. Characteristics of X-linked dominant traits
11. Intermediate lethal alleles
12. Explain the inheritance of skin colour in humans
13. Write a note on pleiotropy.

Unit 2 (10 Marks)

1. Explain the structure of eukaryotic chromosome

2. Classify chromosomes on the basis of the position of centromere

3. Explain any two mechanisms of chromosomal basis of sex determination

4. Explain the inheritance of colour blindness in man

5. Explain sex determination in honey bee and *Drosophila*

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Unit 2 (5 Marks)

1. Describe the terms euchromatin and heterochromatin
2. Write a note on polytene chromosomes
3. Write a note on Lampbrush chromosomes
4. Write a note on salivary gland chromosome of Drosophila
5. Write a note on Balbiani rings
6. Explain endomitosis
7. Write a note on Gynandromorphs
8. Explain the role of environment on sex determination
9. Explain the role of hormones in sex determination
10. Explain hypertrichosis
11. Differentiate between sex limited and sex influenced genes
12. Differentiate between human X and Y chromosomes
13. Differentiate between autosomes and sex chromosomes
14. Write a note on Lyons hypothesis
15. What are Barr bodies? Give a scientific reason that Barr bodies are present only in women and not in men
16. Give a scientific reason that Y chromosome is a sex determining chromosome in man
17. Explain parthenogenesis
18. Give scientific reason that the X-linked genes affect males more than females in human being

Unit 3 (10 marks)

1. Describe Griffith's transformation experiment
2. Explain Avery, Macleod, McCarty's experiment
3. Give an account of Hershey Chase experiment of bacteriophage infection
4. Write a note on types of DNA
5. Explain RNA as a genetic material
6. Describe the process of DNA replication
7. Explain in detail the process of transcription
8. Explain in detail the process of translation
9. What is gene expression? Describe the regulation of genes with lac *operon* model

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Unit 3 (5 Marks)

1. Chemical composition of nucleic acid
2. A and B DNA
3. Plasmid
4. Function of rRNA
5. Function of mRNA
6. Function of tRNA
7. Genetic code
8. One gene-one enzyme hypothesis
9. Concept of operon
10. ZDNA
11. H DNA
12. Chromosomal DNA in prokaryotes
13. Mitochondrial DNA
14. DNA in chloroplast

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MODEL QUESTION BANK SEMESTER – III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception.

USZO302 (COURSE-VI)

Unit 1 (10 Marks)

1. Explain in detail the digestive system of cockroach.
2. Describe the digestive system of pigeon.
3. With the help of a labeled diagram describe the structure and functions of ruminant stomach.
4. Explain the physiology of digestion in cockroach.
5. Give an account of the enzymes involved in the process of digestion in cockroach.
6. With the help of a labeled diagram describe the structure of mammalian kidney.
7. Give a detailed account of process of urine formation in man.

Unit 1 (5 Marks)

1. Write a note on nutritional apparatus in amoeba.
2. Describe briefly gastrovascular cavity in hydra.
3. Write a note on wheel-organ of Amphioxus.
4. Write a note on structure of ruminant stomach.
5. Write short note on digestion of proteins with respect to man.
6. Write short note on digestion of carbohydrates with respect to man
7. Write short note on digestion lipids with respect to man
8. Write short note contractile vacuoles in protozoa.
9. Write a note on flame cells.
10. Describe briefly excretory and osmoregulatory structures in cockroach.
11. Diagrammatic representation of structure of mammalian kidney.
12. Write a note on Ammonotelic organisms.
13. Write a note on Ureotelic organisms.
14. Write a note on Uricotelic organisms.
15. Schematic diagram of ultrafiltration in mammalian kidney.

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Unit 2 (10 Marks)

1. Describe briefly air sacs in pigeon.
2. Describe briefly the process of cellular respiration inhuman
3. Describe briefly the process of respiration inhuman
4. Give a brief account of types of circulating fluids present in animals.
5. Describe briefly mechanism of working of heart.
6. Describe briefly the heart of shark/fish.
7. Describe briefly the heart of frog.
8. Describe briefly heart of crocodile.
9. Give a brief account of heart of man.

Unit 2 (5 Marks)

1. Write short note on cutaneous respiration.
2. Write a note on book lungs in spider.
3. Explain the structure of gills of bony fish
4. Describe briefly lungs as respiratory organs in frog.
5. Describe briefly lungs as respiratory organs in man.
6. Write short note on open circulation.
7. Write short note on closed circulation.

8 Write a note on heart of cockroach

10. Write a note on heart of earthworm

Unit 3(10 Marks)

1. Describe different types of neurons on the basis of structure and function.
2. Explain conduction of nerve impulse.
3. Briefly describe synaptic transmission.
4. Explain Sol-Gel theory of amoeboid movement.
5. Describe ciliary movement in *Paramecium*.
6. Give an account on types of wings in insects.
7. Describe different types of fins in fishes.
8. Describe sliding filament theory.
9. Describe briefly asexual reproduction in animals.
10. Describe the structure and function of tube feet.

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11. Describe spermatogenesis.
12. Describe oogenesis.
13. Describe briefly the structure of mammalian gametes.
14. Give a brief on types of fertilization.

Unit 3 (5 Marks)

1. Write a note on irritability in *Paramecium*.
2. Write a note on resting potential of nerve membrane.
3. Write a note on action potential of nerve membrane.
4. Describe different types of neurons on the basis of structure.
5. Describe briefly different types of neurons on the basis of functions.
6. Describe the structure of synapse.
7. Describe striated muscle fibre.
8. Describe the structure of cilia.
9. Give an account on types of legs in insects.
10. Write a note on ovo-viviparity.
11. Write a note on viviparity.
12. Write a note on oviparity.
13. Describe the structure of mammalian egg.
14. Describe the structure of mammalian sperm.
15. Describe the formation of gemmule in sponges.
16. Write a note on budding as asexual reproduction in animals.

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MODEL QUESTION BANK SEMESTER – III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception.

USZOE1303 (COURSE - VIIA) – Elective 1

Unit 1 (10 marks each)

1. How do honey bees communicate for foraging?
2. What is classical conditioning? Explain with an example.
3. What is imprinting? Explain different types of imprinting.
4. What do you mean by animal learning? Describe any two types of learning.
5. Describe the various ways in which ants communicate.
6. What is the significance of mimicry and warning coloration?
7. What is mimicry? Explain different types of mimicry with examples.
8. What is displacement activity? In what situations do displacement activities occur? Explain with examples.
9. Comment on any two aspects of non-human primate social behaviour.

Unit 1 (5 marks)

i. Mimicry
ii. Innate learning
iii. Acquired learning
iv. Warning colouration
v. Imprinting
vi. Classical Conditioning
vii. Territorial behaviour
viii. Schooling behaviour
ix. Altruism
x. Kinship
xi. Displacement activities
xii. Ritualization

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Unit 2 (10 Marks)

1. Give an account of the life history and pathogenecity of the parasite causing amoebic dysentery.
2. Describe the life history of *Taenia solium.*
3. Give an account of parasitic adaptive features of *Taenia solium*.
4. Give an account of the life history of *Fasciola hepatica.*
5. Give an account of the life history of filarial worm and discuss its pathogenic effects.
6. Describe the life history of bedbug and suggest some control measures.
7. Give an account of the life history of *Sarcoptes scabiei.*
8. Give an account of the life history of head louse *Pediculus.*
9. What is bird flu? How it spreads and what are its symptoms?
10. How would you control the transmission of anthrax among humans?
11. How is anthrax transmitted to man?

Unit 2 (5 Marks)

1. Describe the structure of *E. histolytica.*
2. Write a brief note on amoebiasis.
3. Write a short note on pathogenecity of *E. histolytica*.
4. Briefly describe the life cycle of *E. histolytica*.
5. Illustrate the complete life history of *T. solium* with the help of diagram only.
6. What is the effect of *Fasciola* on the hosts?
7. Describe the life cycle of *Wuchereria bancrofti*.
10. What is host specificity?
11. What are the signs and symptoms of bird flu?
12. How is rabies transmitted in human?
13. What are the preventive measures to be taken to prevent infection of rabies virus?
14. What is toxoplasmosis and what are its causes?
15. Write notes on:
    i. Parasitic adaptations in endoparasites
    ii. Cysticercus or bladder worm.
    iii. Pathogenecity of *Wuchereria*
    iv. Control measures of bedbug.
    v. Types of hosts

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Unit 3 (10 Marks)

1. What does the modern method of apiculture include? Explain in brief.
2. How is an artificial bee hive constructed?
3. How do you select the flora and bee species for apiculture?
4. Enumerate the advantages of vermiculture
5. Describe any two methods of vermiculture.
6. Describe the processing of raw milk.
7. Write a brief note on Type A1 and A2 cow milk.

Unit 3 (5 Marks)

1. State the economic importance of honey and beeswax.
2. What are the disadvantages of the indigenous method of apiculture?
3. How does the wax moth cause damage to the honey comb?
4. Name any two bee enemies and explain how they harm the bees.
5. Give an account of the commonly found species of honey bee in India.
6. What are the advantages of the modern method of apiculture?
7. Which type of flora is beneficial for apiculture?
8. Which type of bee is suitable for apiculture?
9. What is the chemical composition of honey?
10. What is the suitable material for culturing earthworms?
11. What are the advantages of processing dairy products?
12. What is whole milk and toned milk? How is toned milk prepared?

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MODEL QUESTION BANK SEMESTER – III

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception.

USZOE2303 (COURSE - VIIB)

Unit 1 10 mark each

1. Give a brief account on exotic species used in aquarium.
2. Give a brief account on endemic species used in aquarium.
3. Give sexual dimorphism in fresh water fishes along with examples.
4. Give sexual dimorphism in marine water fishes along with examples.
5. Give a brief account on feed used in aquarium.
6. Give a brief account on fish transportation in aquarium.

Unit 2 (10 mark each)

1. Explain agricultural pests along with suitable example.
2. Explain household pests along with suitable example.
3. Explain stored grains pests along with suitable example.
4. Explain structural pests along with suitable example.
5. Explain veterinary pests along with suitable example.
6. Explain forestry pests along with suitable example.

Unit 3(10 mark questions):

1. Give a brief account on Blue Mormon butterfly and Striped Tiger butterfly
2. Describe the behaviour of Octopus and spider as most dedicated mothers in the world.
3. Describe marvellous characters of fan throated lizard and flying frog.
4. Describe marvellous characters of Mantis shrimp.
5. Give a brief account on Malabar giant squirrel
6. Describe marvellous characters of the Purple (Joker) crab and lesser flamingo.
7. Describe marvellous characters of the Stabbing Shark and Crime fighting gecko.
8. Describe marvellous characters of the Gharial and the Matilda Viper

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Unit 1 (5 Marks)

Write short note on:-

1. Budgeting for setting up of an aquarium
2. Fish packing
3. Formulated fish feed
4. Gold fish
5. Molly
6. Guppy

Unit 2(5 Marks)

Write short note on:-

1. Jowar stem borer
2. Brinjal fruit borer
3. Aphids
4. Rice weevil.
5. Non-insect pests
6. Cultural control of pests
7. Physical control of pests
8. Mechanical control of pests
9. Chemical control of pests
10. Biological control of pests
11. Concept of IPM

Unit 3(5 Marks)

Write short note on the amazing characters in following amazing animals.

1. Blue Mormon butterfly
2. Striped Tiger butterfly
3. Mudskipper
4. Komodo dragon
5. Pebble toad
6. Lesser flamingo
7. Great white pelican
8. Drongo

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9. Malabar giant squirrel
10. Cheetah
11. Octopus

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MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZO401 (COURSE - VIII)

Unit 1 (10 Marks)

1. Write explanatory notes on: 1. Lamarckism 2. Darwinism and Neo Darwinism 3. Mutation Theory 4. Modern Synthetic theory 5. Weismann's germplasm theory
2. Discuss evidences in favour of organic evolution by giving examples of geographical distribution
3. Discuss evidences in favour of organic evolution by giving examples based on genetic studies.
4. Discuss evidences in favour of organic evolution by giving examples based on physiological studies.
5. Give a brief account on the origin of eukaryotic cell

Unit 1 (5 Marks)

1. Describe Miller-Urey experiment simulating Chemical evolution.
2. Describe chemical evolution as postulated by the Haldane and Oparin theory
3. Write short notes on: 1. Mutation Theory 2. Modern Synthetic theory

Unit 2 (10 Marks)

1. Define the term 'population genetics'. Describe in brief the various evolutionary forces that tend to disturb genetic equilibrium and introduce changes in the gene pool of a population
2. State Hardy Weinberg's law of equilibrium and discuss its salient features
3. Give an account of the different factors involved in speciation
4. Describe the different types of speciation
5. Explain the role of geographic isolation in the development of new species
6. Explain the role of reproductive isolation in the development of new species
7. Discuss the pre-zygotic barriers responsible for reproductive isolation

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8. Discuss the post-zygotic barriers which lead to reproductive isolation
9. Describe the sources of genetic variation in natural populations
10. Explain the nature and extent of genetic variation within populations
11. Describe the mechanisms that preserve balanced polymorphisms
12. Describe the salient features of microevolution
13. Compare and contrast microevolution and macroevolution
14. Explain the salient features of macroevolution
15. Give an account of the different patterns of macroevolution
16. Elaborate on the role of adaptive radiation and extinction in macroevolution
17. What do you understand by the term natural selection? Describe the different types of natural selection with suitable examples
18. What is megaevolution? Explain the mechanism of megaevolution using a suitable example

Unit 2(5 Marks)

1. Explain the term ‘gene pool’. How does evolution operate via the gene pools of populations?
2. Differentiate between:
    - **a.** Allopatric and Sympatric speciation
    - **b.** Biological and evolutionary species
    - **c.** Microevolution and macroevolution
    - **d.** Stabilizing selection and disruptive selection
3. Explain stabilizing selection with the help of a suitable example
4. How does the example of sickle cell allele illustrate heterozygote advantage?
5. How does frequency-dependent selection affect genetic variation within a population over time?
6. Write short notes on:
    - **a.** Role of mutations in evolution
    - **b.** Role of migration in evolution
    - **c.** Non-random mating
    - **d.** Role of natural selection in evolution
    - **e.** Genetic drift

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f. Bottleneck effect

g. Founder effect

h. Directional evolution in peppered moth

i. Evolution of Antibiotic resistance in bacteria

j. Geographic variation

k. Genetic polymorphism

l. Parapatric speciation

m. Adaptive radiation

7. What is the biological species concept? What are its limitations? How does it differ from the evolutionary species concept?
8. Explain the concept of coevolution using suitable examples

Unit 3 (10 Marks)

1. Describe briefly, the steps towards preparing a research design
2. Describe literature survey, collection of data and its analysis
3. What is a patent and how is it obtained?
4. Write an account on application of statistics in research

Unit 3 (5 Marks)

1. Define research. State the difference between research method and research methodology
2. Write a note on computer application in research
3. Describe briefly identification of research problem and formulation of research hypothesis
4. Write a note on abstract writing?
5. Write a note on plagiarism?
6. Write a note on bibliography?
7. Write a short note on ethics in scientific research

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MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZO402 (COURSE - IX)

Unit 1 (10 Marks)

1. Explain prokaryotic cell.
2. Explain Eukaryotic cell.
3. Give an account of cell theory.
4. Describe the ultrastructure of nuclear membrane.
5. State the chemical composition and functions of nucleolus.
6. Describe nucleocytoplasmic interactions.
7. Describe fluid mosaic model of plasma membrane.
8. Give an account of active and passive transport
9. Describe various modifications of plasma membrane
11. Explain endocytosis and exocytosis
12. Give an account on cell permeability
13. Differentiate prokaryotic and eukaryotic cell

Unit 1 (5 Marks)

Write a short note on:

1. Virus
2. Nuclear matrix
3. Number and position of nucleus.
4. Nucleolus
5. Membrane receptors

Unit 2 (10 Marks)

1. Write a note on structural organization & importance of endomembrane system.
2. Describe ultrastructure of Endoplasmic Reticulum
3. Describe the types and functions of ER.
4. Give an account of ultrastructure and functions of Golgi complex.
5. Write an essay on functions of Golgi complex.

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6. Give an account of polymorphism in lysosomes.
7. Write an essay on peroxisomes.
8. Describe the structure and chemical composition of mitochondria.
9. Write a note on mitochondria as powerhouse of the cell.
10. Describe the major functions of mitochondria.

Unit 2 (5 Marks)

1. Importance of endomembrane system
2. Write a short note on biogenesis of endomembrane system
3. Functions of Rough Endoplasmic Reticulum
4. Functions of Smooth Endoplasmic Reticulum
5. Structure of Golgi complex
6. Chemical composition of Golgi complex
7. Lipid & polysaccharide metabolism in Golgi complex
8. Secretion and protein sorting by Golgi complex
9. Write a brief note on GAAP
10. Write a brief note on protein glycosylation by Golgi complex
11. Origin and functions of lysosomes
12. Write a short note on peroxisomes
13. Structure of mitochondria
14. Chemical composition of mitochondria
15. Write a short note on ATP
16. Write a short note on glycolysis
17. Write a short note on Kreb's cycle
18. Write a short note on oxidative phosphorylation

Unit 3 (10 Marks)

1. Explain the concept of micromolecules and macromolecules.
2. Define carbohydrate. Add a note on its classification.
3. What are carbohydrates? Classify carbohydrate with suitable examples.
4. Explain with suitable example monosaccharide and disaccharide.
5. Discuss the properties of carbohydrates.
6. Explain oligosaccharides with suitable examples.

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7. What are polysaccharides? How are they classified? Write the structures of glycogen and heparin/ chitin and heparin.
8. Discuss about chemical structure of the monosaccharides / disaccharides.
9. What are amino acids? Classify amino acids based on functional group.
10. Give an account of primary and secondary structure of proteins.
11. Write an account on tertiary and quaternary structure of proteins.
12. Describe the structure of saturated and unsaturated fatty acids.
13. What are fatty acids? Add a note on types of fatty acids.
14. Describe the structure and functions of water soluble vitamins.
15. Describe the structure and functions of lipid soluble vitamins.

Unit 3 (5 Marks)

1. Write a short note on monomers and polymers.
2. Write note on properties of carbohydrates.
3. Give an account of polysaccharides.
4. With suitable example explain glycosidic bond.
5. Explain the linkage in lactose and sucrose.
6. Give the biological importance of carbohydrates.
7. What are essential and nonessential amino acids?
8. Give an account of properties of amino acids.
9. Define and explain peptide bond with suitable example.
10. Explain the different types of proteins with suitable examples.
11. Explain the biological role of proteins.
12. Peptide bond
13. Types of fatty acids.
14. Biological role of lipids
15. Sterols
17. Describe properties of lipids.
18. Discuss the clinical significance of protein / carbohydrate.
19. Write short note on clinical significance of lipids.
20. Write a note on isomerism in carbohydrates/amino acids.
21. Describe the structure and functions of vitamin A/ vitamin B/ vitamin C/ vitamin D.

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MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZOE1403 (COURSE - XA) – Elective 1

Unit-1 (10 Marks)

1) Classify the different types of eggs.
2) Briefly explain types and structure of sperms (any two animals).
3) Define cleavage Explain types of cleavages.
4) Give brief account on various types of blastulae.
5) What is gastrulation? Explain gastrulation in frog.
6) Give an account of process of coelom formation and its types

Unit-1 (5 Marks)

1) Draw neat labeled diagram and explain any one of the following:
   (Microlecithal, Alecithal, Homolecithal, Heterolecithal, Isolecithal, Telolecithal, Centrolecithal, Discoidal).
2) Explain structure of sperm of frog/ reptile/ bird/ mammal.
3) Short note on holoblastic cleavage/ meroblastic cleavage.
4) Short note on equal or unequal cleavage.
5) Short note on discoblastula /coeloblastula.
6) Short note on centroblastula /amphiblastula /stereoblaastula,
7) Explain the process of coelom formation
8) Explain the process of gastrulation.

Unit 2 (10 Marks)

1. Describe male reproductive system and its hormonal regulation.
2. Describe female reproductive system and its hormonal regulation.
3. Define reproduction. Explain the hormonal regulation of reproduction.
4. What is contraception? Explain different methods of contraception.
5. Explain the various measures of birth control.
6. Define infertility and explain the causes of female infertility.
7. What are the causes of male infertility?
8. Explain the hormonal treatment for infertility using drugs.

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9. Describe the methods of treatment of infertility.
10. Give a brief account of infertility related disorders.
11. What are sperm banks? Add a note on cryopreservation of sperms.
12. What is testicular biopsy? Explain Testicular sperm extraction (TESE), Pronuclear stage transfer (PROST).
13. What are the steps involved in Embryo transfer (ET) and / Intra-fallopian transfer (IFT)/IVF? Add a note on its ethics.

Unit 2 (5 Marks)

1. Write a note on impact of age on reproductive stage –
    a. Menopause
    b. Andropause
2. Write a note on amenorrhea.
3. How does sterilization act as a method of contraception?
4. Write a note on birth control.
5. What is the difference between natural and artificial methods of contraception?
6. How is T.B. a cause of female infertility?
7. What are the genetic causes of infertility?
8. Write a note on STD's as infertility related disorders?
9. What are the roles of endocrine disruptions in infertility?
10. Explain the role of the following in infertility:
    a. Gonorrhoea
    b. Syphilis
    c. Genital Herpes
    d. Chlamydia
11. Write a note on treatment of infertility by removal of causative environmental factors.

Unit 3 (10 Marks)

1. What are the causes, effects and control measures for air pollution?
2. What are the causes, effects and control measures for water pollution?
3. What are the causes, effects and control measures for soil pollution?
4. What are the causes, effects and control measures for sound pollution?
5. Define air pollution and give an account of hazardous air pollutants.

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6. What is ocean littering? Explain in detail the causes and control measures for ocean littering?
7. Describe the alteration of metabolism of micro-organisms due to soil pollution.
8. Explain sound pollution along with its measurement and permissible limits.
9. Give a brief account of methods to control gaseous / particulate matters.
10. What is pollution? Add notes on:
    a. Effect of air pollution on vegetation.
    b. Effect of sound pollution on animals.

Unit 3 (5 Marks)

1. Explain the effects of air pollution on human beings.
2. What are different types of pollutants that cause air pollution?
3. Write short notes on:
    a. Ozone depletion
    b. Green house gases
    c. Global warming
    d. Acid rain
    e. Sonic boom
    f. Acoustic zoning
4. Explain the effect of thermal pollution on biodiversity.
5. Write a note on ionizing radiation
6. How is oil spill becomes a cause of water pollution / ocean littering?
7. How do pesticides and fertilizers contaminate water?
8. How can oil be retracted back from sea / ocean?
9. What are the effects of soil pollution on food chain?
10. What are the auditory / non – auditory effects of sound pollution?

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MODEL QUESTION BANK SEMESTER - IV

Question bank is suggestive. The paper setters are free to modify the questions or include new questions to the best of their perception

USZOE2403 (COURSE - XB) – Elective 2

Unit 1 (10 Marks)

1. Give in brief different indigenous breed of cattle with a suitable example.
2. Give in brief different exotic breeds of cattle with a suitable example.
3. Give in brief different breed of buffalo with a suitable example.
4. Give in brief different housing types in dairy farm.
5. Explain different types of diseases in cattle and add a note on its control.

Unit 1(05 Marks)

Write short note on

1. Malvi
2. Hariyana
3. Deoni
4. Red sindhi
5. Khillari
6. Jersy
7. Holstein
8. Nagpuri
9. Bhadawari
10. Murrah
11. Jafrabadi
12. Weaning of calf
13. Castration
14. Dehorning
15. Cleaning and sanitation.

Unit 2 (10 Marks)

1. Give in brief life history of silkworm.
2. Give in brief reeling and extraction of silk.
3. Give in brief diseases and control measures in sericulture.

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4. Give in brief harvesting and processing of cocoon.

Unit 2 (5 Marks)

1. Varieties of silkworm
2. Rearing of silkworm
3. Silk extraction
4. Host plants for sericulture

Unit 3 (10 Marks)

1. Give an account on pisciculture, add a note on finfish culture
2. Explain monoculture with respect to aquaculture
3. Explain polyculture with respect to polyculture
4. Give an account on fresh water prawn culture
5. Give an account on pearl culture.

Unit 3 (5 Marks)

Write short notes on:-

1. Composition of pearl
2. White shrimp culture
3. Cage culture
4. Fish diseases
5. Symptoms of diseases
6. Control of diseases

----------The End----------

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Academic Council 11/06/2018
Item No:

UNIVERSITY OF MUMBAI

Syllabus for T.Y.B.Sc.

Programme: B.Sc.

Subject: Information Technology

with effect from the academic year

2018 – 2019

Semester – 5			
Course Code	**Course Type**	**Course Title**	**Credits**
USIT501	Skill Enhancement Course	Software Project Management	2
USIT502	Skill Enhancement Course	Internet of Things	2
USIT503	Skill Enhancement Course	Advanced Web Programming	2
USIT504	Discipline Specific Elective (Any One)	Artificial Intelligence	2
USIT505		Linux System Administration	
USIT506	Discipline Specific Elective (Any One)	Enterprise Java	2
USIT507		Next Generation Technologies	
USIT5P1	Skill Enhancement Course Practical	Project Dissertation	2
USIT5P2	Skill Enhancement Course Practical	Internet of Things Practical	2
USIT5P3	Skill Enhancement Course Practical	Advanced Web Programming Practical	2
USIT5P4	Discipline Specific Elective Practical (Any One)*	Artificial Intelligence Practical	2
USIT5P5		Linux Administration Practical	
USIT5P6	Discipline Specific Elective Practical (Any One)*	Enterprise Java Practical	2
USIT5P7		Next Generation Technologies Practical	
		Total Credits	**20**

(All the practical mentioned in the syllabi are compulsory as per the courses chosen)

Semester – 6			
Course Code	**Course Type**	**Course Title**	**Credits**
USIT601	Skill Enhancement Course	Software Quality Assurance	2
USIT602	Skill Enhancement Course	Security in Computing	2
USIT603	Skill Enhancement Course	Business Intelligence	2
USIT604	Discipline Specific Elective (Any One)	Principles of Geographic Information Systems	2
USIT605		Enterprise Networking	
USIT606	Discipline Specific Elective (Any One)	IT Service Management	2
USIT607		Cyber Laws	
USIT6P1	Skill Enhancement Course Practical	Project Implementation	2
USIT6P2	Skill Enhancement Course Practical	Security in Computing Practical	2
USIT6P3	Skill Enhancement Course Practical	Business Intelligence Practical	2
USIT6P4	Discipline Specific Elective Practical (Any One)*	Principles of Geographic Information Systems Practical	2
USIT6P5		Enterprise Networking Practical	
USIT6P6	Skill Enhancement Course Practical	Advanced Mobile Programming	2
		Total Credits	**20**

***The choice of Practical course is based on the theory Course. For Semester V, USIT504, USIT505, USIT506 and USIT507, the practical courses are USIT5P4, USIT5P5 USIT5P6, USIT5P7. For Semester VI, USIT604, USIT605 the practical courses are USIT6P4, USIT6P5 respectively. Practical Course USIT6P6 is compulsory.**

SEMESTER VI

B. Sc. (Information Technology)		Semester – VI	
Course Name: Software Quality Assurance		**Course Code: USIT601**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction to Quality:** Historical Perspective of Quality, What is Quality? (Is it a fact or perception?), Definitions of Quality, Core Components of Quality, Quality View, Financial Aspect of Quality, Customers, Suppliers and Processes, Total Quality Management (TQM), Quality Principles of Total Quality Management, Quality Management Through Statistical Process Control, Quality Management Through Cultural Changes, Continual (Continuous) Improvement Cycle, Quality in Different Areas, Benchmarking and Metrics, Problem Solving Techniques, Problem Solving Software Tools. **Software Quality:** Introduction, Constraints of Software Product Quality Assessment, Customer is a King, Quality and Productivity Relationship, Requirements of a Product, Organisation Culture, Characteristics of Software, Software Development Process, Types of Products, Schemes of Criticality Definitions, Problematic Areas of Software Development Life Cycle, Software Quality Management, Why Software Has Defects? Processes Related to Software Quality, Quality Management System Structure, Pillars of Quality Management System, Important Aspects of Quality Management.	**12**
II	**Fundamentals of testing:** Introduction, Necessity of testing, What is testing? Fundamental test process, The psychology of testing, Historical Perspective of Testing, Definitions of Testing, Approaches to Testing, Testing During Development Life Cycle, Requirement Traceability Matrix, Essentials of Software Testing, Workbench, Important Features of Testing Process, Misconceptions About Testing, Principles of Software Testing, Salient Features of Good Testing, Test Policy, Test Strategy or Test Approach, Test Planning, Testing Process and Number of Defects Found in Testing, Test Team Efficiency, Mutation Testing, Challenges in Testing, Test Team Approach, Process Problems Faced by Testing, Cost Aspect of Testing, Establishing Testing Policy, Methods, Structured Approach to Testing, Categories of Defect, Defect, Error, or Mistake in Software, Developing Test Strategy, Developing Testing Methodologies (Test Plan), Testing Process, Attitude Towards Testing (Common People Issues), Test Methodologies/Approaches, People Challenges in Software Testing, Raising Management Awareness for Testing, Skills Required by Tester,	**12**

	Testing throughout the software life cycle, Software development models, Test levels, Test types, the targets of testing, Maintenance testing	
III	**Unit Testing: Boundary Value Testing:** Normal Boundary Value Testing, Robust Boundary Value Testing, Worst-Case Boundary Value Testing, Special Value Testing, Examples, Random Testing, Guidelines for Boundary Value Testing, **Equivalence Class Testing:** Equivalence Classes, Traditional Equivalence Class Testing, Improved Equivalence Class Testing, Edge Testing, Guidelines and Observations. **Decision Table–Based Testing:** Decision Tables, Decision Table Techniques, Cause-and-Effect Graphing, Guidelines and Observations, **Path Testing:** Program Graphs, DD-Paths, Test Coverage Metrics, Basis Path Testing, Guidelines and Observations, **Data Flow Testing:** Define/Use Testing, Slice-Based Testing, Program Slicing Tools.	**12**
IV	**Software Verification and Validation:** Introduction, Verification, Verification Workbench, Methods of Verification, Types of reviews on the basis od Stage Phase, Entities involved in verification, Reviews in testing lifecycle, Coverage in Verification, Concerns of Verification, Validation, Validation Workbench, Levels of Validation, Coverage in Validation, Acceptance Testing, Management of Verification and Validation, Software development verification and validation activities. **V-test Model:** Introduction, V-model for software, Testing during Proposal stage, Testing during requirement stage, Testing during test planning phase, Testing during design phase, Testing during coding, VV Model, Critical Roles and Responsibilities.	**12**
V	**Levels of Testing:** Introduction, Proposal Testing, Requirement Testing, Design Testing, Code Review, Unit Testing, Module Testing, Integration Testing, Big-Bang Testing, Sandwich Testing, Critical Path First, Sub System Testing, System Testing, Testing Stages. **Special Tests:** Introduction, GUI testing, Compatibility Testing, Security Testing, Performance Testing, Volume Testing, Stress Testing, Recovery Testing, Installation Testing, Requirement Testing, Regression Testing, Error Handling Testing, Manual Support Testing, Intersystem Testing, Control Testing, Smoke Testing, Adhoc Testing, Parallel Testing, Execution Testing, Operations Testing, Compliance Testing, Usability Testing, Decision Table Testing, Documentation Testing, Training testing, Rapid Testing, Control flow graph, Generating tests on the basis of Combinatorial Designs, State Graph, Risk Associated with New Technologies, Process maturity level of Technology, Testing Adequacy of Control in New technology usage, Object Oriented Application Testing, Testing of Internal Controls, COTS Testing, Client Server Testing, Web Application Testing, Mobile Application Testing, eBusiness eCommerce Testing, Agile Development Testing, Data Warehousing Testing.	**12**

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Software Testing and Continuous Quality Improvement	William E. Lewis	CRC Press	Third	2016
2	Software Testing: Principles, Techniques and Tools	M. G. Limaye	TMH		2017
3.	Foundations of Software Testing	Dorothy Graham, Erik van Veenendaal, Isabel Evans, Rex Black	Cengage Learning	3rd	
4.	Software Testing: A Craftsman's Approach	Paul C. Jorgenson	CRC Press	4th	2017

B. Sc. (Information Technology)		Semester – VI	
Course Name: Security in Computing		**Course Code: USIT602**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Information Security Overview** : The Importance of Information Protection, The Evolution of Information Security, Justifying Security Investment, Security Methodology, How to Build a Security Program, The Impossible Job, The Weakest Link, Strategy and Tactics, Business Processes vs. Technical Controls. **Risk Analysis**: Threat Definition, Types of Attacks, Risk Analysis. **Secure Design Principles**: The CIA Triad and Other Models, Defense Models, Zones of Trust, Best Practices for Network Defense.	**12**
II	**Authentication and Authorization**: Authentication, Authorization **Encryption**: A Brief History of Encryption, Symmetric-Key Cryptography, Public Key Cryptography, Public Key Infrastructure. **Storage Security**: Storage Security Evolution, Modern Storage Security, Risk Remediation, Best Practices. **Database Security**: General Database Security Concepts, Understanding Database Security Layers, Understanding Database-Level Security, Using Application Security, Database Backup and Recovery, Keeping Your Servers Up to Date, Database Auditing and Monitoring.	**12**
III	**Secure Network Design**: Introduction to Secure Network Design, Performance, Availability, Security. **Network Device Security**: Switch and Router Basics, Network Hardening. **Firewalls**: Overview, The Evolution of Firewalls, Core Firewall Functions, Additional Firewall Capabilities, Firewall Design. **Wireless Network Security**: Radio Frequency Security Basics, Data-Link Layer Wireless Security Features, Flaws, and Threats, Wireless Vulnerabilities and Mitigations, Wireless Network Hardening Practices and Recommendations, Wireless Intrusion Detection and Prevention, Wireless Network Positioning and Secure Gateways.	**12**
IV	**Intrusion Detection and Prevention Systems**: IDS Concepts, IDS Types and Detection Models, IDS Features, IDS Deployment Considerations, Security Information and Event Management (SIEM). **Voice over IP (VoIP) and PBX Security**: Background, VoIP Components, VoIP Vulnerabilities and Countermeasures, PBX, TEM: Telecom Expense Management. **Operating System Security Models**: Operating System Models, Classic Security Models, Reference Monitor, Trustworthy Computing, International Standards for Operating System Security.	**12**

V	**Virtual Machines and Cloud Computing**: Virtual Machines, Cloud Computing. **Secure Application Design**: Secure Development Lifecycle, Application Security Practices, Web Application Security, Client Application Security, Remote Administration Security. **Physical Security**: Classification of Assets, Physical Vulnerability Assessment, Choosing Site Location for Security, Securing Assets: Locks and Entry Controls, Physical Intrusion Detection.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	The Complete Reference: Information Security	Mark Rhodes-Ousley	McGraw-Hill	2nd	2013
2.	Essential Cybersecurity Science	Josiah Dykstra	O'Reilly	Fifth	2017
3.	Principles of Computer Security: CompTIA Security+ and Beyond	Wm.Arthur Conklin, Greg White	McGraw Hill	Second	2010

B. Sc. (Information Technology)		Semester – VI	
Course Name: Business Intelligence		**Course Code: USIT603**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Business intelligence:** Effective and timely decisions, Data, information and knowledge, The role of mathematical models, Business intelligence architectures, Ethics and business intelligence **Decision support systems:** Definition of system, Representation of the decision-making process, Evolution of information systems, Definition of decision support system, Development of a decision support system	**12**
II	**Mathematical models for decision making:** Structure of mathematical models, Development of a model, Classes of models **Data mining:** Definition of data mining, Representation of input data , Data mining process, Analysis methodologies **Data preparation**: Data validation, Data transformation, Data reduction	**12**
III	**Classification**: Classification problems, Evaluation of classification models, Bayesian methods, Logistic regression, Neural networks, Support vector machines **Clustering:** Clustering methods, Partition methods, Hierarchical methods, Evaluation of clustering models	**12**
IV	**Business intelligence applications:** **Marketing models**: Relational marketing, Sales force management, **Logistic and production models**: Supply chain optimization, Optimization models for logistics planning, Revenue management systems. **Data envelopment analysis**: Efficiency measures, Efficient frontier, The CCR model, Identification of good operating practices	**12**
V	**Knowledge Management:** Introduction to Knowledge Management, Organizational Learning and Transformation, Knowledge Management Activities, Approaches to Knowledge Management, Information Technology (IT) In Knowledge Management, Knowledge Management Systems Implementation, Roles of People in Knowledge Management **Artificial Intelligence and Expert Systems:** Concepts and Definitions of Artificial Intelligence, Artificial Intelligence Versus Natural Intelligence, Basic Concepts of Expert Systems, Applications of Expert Systems, Structure of Expert Systems, Knowledge Engineering, Development of Expert Systems	**12**

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Business Intelligence: Data Mining and Optimization for Decision Making	Carlo Vercellis	Wiley	First	2009
2.	Decision support and Business Intelligence Systems	Efraim Turban, Ramesh Sharda, Dursun Delen	Pearson	Ninth	2011
3.	Fundamental of Business Intelligence	Grossmann W, Rinderle-Ma	Springer	First	2015

B. Sc. (Information Technology)		Semester – VI	
Course Name: Principles of Geographic Information Systems		**Course Code: USIT604 (Elective I)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**A Gentle Introduction to GIS** **The nature of GIS:** Some fundamental observations, Defining GIS, GISystems, GIScience and GIApplications, Spatial data and Geoinformation. **The real world and representations of it:** Models and modelling, Maps, Databases, Spatial databases and spatial analysis **Geographic Information and Spatial Database** **Models and Representations of the real world** **Geographic Phenomena:** Defining geographic phenomena, types of geographic phenomena, Geographic fields, Geographic objects, Boundaries **Computer Representations of Geographic Information:** Regular tessellations, irregular tessellations, Vector representations, Topology and Spatial relationships, Scale and Resolution, Representation of Geographic fields, Representation of Geographic objects **Organizing and Managing Spatial Data** **The Temporal Dimension**	**12**
II	**Data Management and Processing Systems** **Hardware and Software Trends** **Geographic Information Systems:** GIS Software, GIS Architecture and functionality, Spatial Data Infrastructure (SDI) **Stages of Spatial Data handling:** Spatial data handling and preparation, Spatial Data Storage and maintenance, Spatial Query and Analysis, Spatial Data Presentation. **Database management Systems:** Reasons for using a DBMS, Alternatives for data management, The relational data model, Querying the relational database. **GIS and Spatial Databases:** Linking GIS and DBMS, Spatial database functionality.	**12**
III	**Spatial Referencing and Positioning** **Spatial Referencing:** Reference surfaces for mapping, Coordinate Systems, Map Projections, Coordinate Transformations	**12**

	Satellite-based Positioning: Absolute positioning, Errors in absolute positioning, Relative positioning, Network positioning, code versus phase measurements, Positioning technology **Data Entry and Preparation** **Spatial Data Input:** Direct spatial data capture, Indirect spatial data captiure, Obtaining spatial data elsewhere **Data Quality:** Accuracy and Positioning, Positional accuracy, Attribute accuracy, Temporal accuracy, Lineage, Completeness, Logical consistency **Data Preparation:** Data checks and repairs, Combining data from multiple sources **Point Data Transformation:** Interpolating discrete data, Interpolating continuous data	
IV	**Spatial Data Analysis** **Classification of analytical GIS Capabilities** **Retrieval, classification and measurement:** Measurement, Spatial selection queries, Classification **Overlay functions:** Vector overlay operators,Raster overlay operators **Neighbourhood functions:** Proximity computations, Computation of diffusion, Flow computation, Raster based surface analysis **Analysis:** Network analysis, interpolation, terrain modeling **GIS and Application models:** GPS, Open GIS Standards, GIS Applications and Advances **Error Propagation in spatial data processing:** How Errors propagate, Quantifying error propagation	**12**
V	**Data Visualization** **GIS and Maps, The Visualization Process** **Visualization Strategies: Present or explore?** **The cartographic toolbox:** What kind of data do I have?, How can I map my data? **How to map?:** How to map qualitative data, How to map quantitative data, How to map the terrain elevation, How to map time series **Map Cosmetics, Map Dissemination**	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Principles of Geographic Information Systems-An Introductory Text Book	Editors: Otto Huisman and Rolf A.	The International Institute of Geoinformation Science and Earth Observation	Fourth	2009

2.	Principles of Geographic Information Systems	P.A Burrough and R.A.McDonnell	Oxford University Press	Third	1999
3.	Fundamentals of Spatial Information Systems,	R.Laurini and D. Thompson,	Academic Press		1994
4.	Fundamentals of Geographic Information Systems	Michael N.Demers	Wiley Publications	Fourth	2009
5.	Introduction to Geographic Information Systems	Chang Kang-tsung (Karl),	McGrawHill	Any above 3rd Edition	2013 7th Edition
6.	GIS Fundamentals: A First Text on Geographic Information Systems	Paul Bolsatd	XanEdu Publishing Inc	5th Edition	

B. Sc. (Information Technology)		Semester – VI	
Course Name: Enterprise Networking		**Course Code: USIT605 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**General Network Design:** Network Design Methodology, Architectures for the Enterprise, Borderless Networks Architecture, Collaboration and Video Architecture, Data Center and Virtualization Architecture, Design Lifecycle: Plan, Build, Manage Plan Phase Build Phase Manage Phase Prepare, Plan, Design, Implement, Operate, and Optimize Phases Prepare Phase Plan Phase Design Phase Implement Phase Operate Phase Optimize Phase Summary of PPDIOO Phases Project Deliverables Design Methodology Identifying Customer Design Requirements Characterizing the Existing Network Steps in Gathering Information Network Audit Tools Network Checklist Designing the Network Topology and Solutions Top-Down Approach Pilot and Prototype Tests Design Document **Network Design Models:** Hierarchical Network Models Benefits of the Hierarchical Model, Hierarchical Network Design, Core Layer, Distribution Layer, Access Layer, Hierarchical Model Examples, Hub-and-Spoke, Design Collapsed Core, Design Enterprise Architecture Model, Enterprise Campus Module, Enterprise Edge Area, E-Commerce Module, Internet Connectivity Module, VPN/Remote Access, Enterprise WAN, Service Provider Edge Module, Remote Modules, Enterprise Branch Module, Enterprise Data Center Module, Enterprise Teleworker Module, High Availability Network Services, Workstation-to-Router Redundancy and LAN, High Availability Protocols, ARP Explicit Configuration, RDP, RIP, HSRP, VRRP, GLBP, Server Redundancy, Route Redundancy, Load Balancing, Increasing Availability, Link Media Redundancy	**12**
II	**Enterprise LAN Design:** LAN Media, Ethernet Design Rules, 100Mbps Fast Ethernet Design Rules, Gigabit Ethernet Design Rules, 1000BASE-LX Long-Wavelength Gigabit Ethernet, 1000BASE-SX Short-Wavelength Gigabit Ethernet, 1000BASE-CX Gigabit Ethernet over Coaxial Cable, 1000BASE-T Gigabit Ethernet over UTP 86, 10 Gigabit Ethernet Design Rules, 10GE Media Types, EtherChannel, Comparison of Campus Media LAN Hardware, Repeaters, Hubs, Bridges, Switches, Routers, Layer 3 Switches, Campus LAN Design and Best Practices Best Practices for Hierarchical Layers, Access Layer Best Practices, Distribution Layer Best Practices, Core Layer Best Practices, STP Design Considerations, STP Toolkit, PortFast,	**12**

	UplinkFast, BackboneFast, Loop Guard, Root Guard, BPDU Guard, BPDU Filter, VLAN and Trunk Considerations, Unidirectional Link Detection (UDLD) Protocol, Large-Building LANs, Enterprise Campus LANs, Edge Distribution, Medium-Size LANs, Small and Remote Site LANs, Server Farm Module, Server Connectivity Options, Enterprise Data Center Infrastructure, Campus LAN QoS Considerations, Multicast Traffic Considerations, CGMP, IGMP Snooping. **Data Center Design:** Enterprise DC Architecture, Data Center Foundation Components, Data Center Topology Components, Data Center Network Programmability, SDN, Controllers, APIs, ACI, Challenges in the DC, Data Center Facility Aspects, Data Center Space, Data Center Power, Data Center Cooling, Data Center Heat, Data Center Cabling, Enterprise DC Infrastructure, Data Center Storage, Data Center Reference Architecture, Defining the DC Access Layer, Defining the DC Aggregation Layer, Defining the DC Core Layer, Security in the DC, Fabric Extenders, Virtualization Overview, Challenges, Defining Virtualization and Benefits, Virtualization Risks, Types of Virtualization, Virtualization Technologies, VSS, VRF, vPC, Device Contexts, Server Virtualization, Server Scaling, Virtual Switching, Network Virtualization Design Considerations, Access Control, Path Isolation, Services Edge, Data Center Interconnect, DCI Use Cases, DCI Transport Options, DCI L2 Considerations, Load Balancing in the DC, Application Load Balancing, Network Load Balancing.	
III	**Wireless LAN Design:** Wireless LAN Technologies, WLAN Standards, ISM and UNII Frequencies, Summary of WLAN Standards, Service Set Identifier, WLAN Layer 2 Access Method, WLAN Security, Unauthorized Access, WLAN Security Design Approach, IEEE 802.1X-2001 Port-Based Authentication, Dynamic WEP Keys and LEAP, Controlling WLAN Access to Servers, WLAN Authentication, Authentication Options, WLAN Controller Components, WLC Interface Types, AP Controller Equipment Scaling, Roaming and Mobility Groups, Intracontroller Roaming, Layer 2 Intercontroller Roaming, Layer 3 Intercontroller Roaming, Mobility Groups, WLAN Design, Controller Redundancy Design: Deterministic vs. Dynamic, N+1 WLC Redundancy, N+N WLC Redundancy, N+N+1 WLC Redundancy, Radio Management and Radio Groups, RF Groups, RF Site Survey, Using EoIP Tunnels for Guest Services, Wireless Mesh for Outdoor Wireless, Mesh Design Recommendations, Campus Design Considerations, Power over Ethernet (PoE), Wireless and Quality of Service (QoS), Branch Design Considerations, Local MAC, REAP, Hybrid REAP, Branch Office Controller Options. **WAN Technologies and the Enterprise Edge:** WAN and Enterprise Edge Overview, Definition of WAN, WAN Edge Module, Enterprise	**12**

	Edge Modules, WAN Transport Technologies, ISDN, ISDN BRI Service, ISDN PRI Service, Digital Subscriber Line, Cable, Wireless, Frame Relay, Time-Division Multiplexing, Metro Ethernet, SONET/SDH, Multiprotocol Label Switching (MPLS), Dark Fiber, Dense Wavelength-Division Multiplexing, Ordering WAN Technology and Contracts, WAN and Edge Design Methodologies, Response Time, Throughput, Reliability, Bandwidth Considerations, WAN Link Categories, Optimizing Bandwidth Using QoS, Queuing, Traffic Shaping and Policing, Classification, Congestion Management, Priority Queuing, Custom Queuing, Weighted Fair Queuing, Class-Based Weighted Fair Queuing, Low-Latency Queuing, Traffic Shaping and Policing, Link Efficiency, Window Size, DMZ Connectivity, Segmenting DMZs, DMZ Services, Internet Connectivity, Centralized Internet (Branch) vs. Direct Internet (Branch), High Availability for the Internet Edge, VPN Network Design. **WAN Design** Traditional WAN Technologies Hub-and-Spoke Topology Full-Mesh Topology Partial-Mesh Topology Point-to-Point Topology Remote Site Connectivity Enterprise VPN vs. Service Provider VPN Enterprise Managed VPN: IPsec IPsec Direct Encapsulation Generic Routing Encapsulation IPsec DMVPN IPsec Virtual Tunnel Interface Design GETVPN Service Provider–Managed Offerings ,Metro Ethernet Service Provider VPNs: L2 vs. L3 ,Virtual Private Wire Services VPWS L2 VPN Considerations ,Virtual Private LAN Services VPLS L2 VPN Considerations ,MPLS, MPLS Layer 3 Design Overview MPLS L3 VPN Considerations ,VPN Benefits WAN Backup Design WAN Backup over the Internet Enterprise WAN Architecture Cisco Enterprise MAN/WAN Enterprise WAN/MAN Architecture Comparison ,Enterprise WAN Components Comparing Hardware and Software Enterprise Branch Architecture Branch Design Branch Connectivity Redundancy for Branches Single WAN Carrier vs. Dual WAN Carriers Single MPLS Carrier Site ,Dual MPLS Carriers Hybrid WAN: L3 VPN with IPsec VPN ,Internet for Branches Flat Layer 2 vs. Collapsed Core ,Enterprise Branch Profiles Small Branch Design Medium Branch Design Large Branch Design Enterprise Teleworker Design ,ISRs for Teleworkers	
IV	Internet Protocol Version 4 Design,IPv4 Header ToS IPv4 Fragmentation IPv4 Addressing ,IPv4 Address Classes Class A Addresses Class B Addresses ,Class C Addresses Class D Addresses Class E Addresses ,IPv4 Address Types IPv4 Private Addresses NAT ,IPv4 Address Subnets Mask Nomenclature IP Address Subnet Design Example Determining the Network Portion of an IP Address Variable-Length Subnet Masks, Loopback Addresses IP Telephony Networks ,IPv4 Addressing Design Goal of IPv4 Address Design , Plan for Future Use of IPv4 Addresses , Performing Route Summarization , Plan for a	**12**

	Hierarchical IP Address Network , Private and Public IP Address and NAT Guidelines , Steps for Creating an IPv4 Address Plan Case Study: IP Address Subnet Allocation , Address Assignment and Name Resolution , Recommended Practices of IP Address Assignment , BOOTP DHCP DNS , Internet Protocol Version 6 Design, IPv6 Header IPv6 Address Representation IPv4-Compatible IPv6 Addresses IPv6 Prefix Representation IPv6 Address Scope Types and Address Allocations IPv6 Address Allocations IPv6 Unicast Address Global Unicast Addresses Link-Local Addresses , Unique Local IPv6 Address Global Aggregatable IPv6 Address , IPv4-Compatible IPv6 Address IPv6 Anycast Addresses , IPv6 Multicast Addresses IPv6 Mechanisms ICMPv6 , IPv6 Neighbor Discovery Protocol IPv6 Name Resolution , Path MTU Discovery IPv6 Address-Assignment Strategies , Manual Configuration SLAAC of Link-Local Address , SLAAC of Globally Unique IPv6 Address DHCPv6 , DHCPv6 Lite IPv6 Security IPv6 Routing Protocols RIPng OSPFv3 , BGP4 Multiprotocol Extensions (MP-BGP) for IPv6 , IPv6 Addressing Design , Planning for Addressing with IPv6 , Route Summarization with IPv6 IPv6 Private Addressing IPv6 for the Enterprise IPv6 Address Allocation , Partly Linked IPv4 Address into IPv6, Whole IPv4 Address Linked into IPv6 IPv6 Addresses Allocated Per Location and/or Type , IPv4-to-IPv6 Transition Mechanisms and Deployment Models , Dual-Stack Mechanism IPv6 over IPv4 Tunnels , Protocol Translation Mechanisms IPv6 Deployment Models , Dual-Stack Model Hybrid Model Service Block Model ,IPv6 Deployment Model Comparison IPv6 Comparison with IPv4 ,OSPF, BGP, Route Manipulation, and IP Multicast,OSPFv2 OSPFv2 Metric OSPFv2 Adjacencies and Hello Timers , OSPFv2 Areas OSPF Area Design Considerations OSPF Router Types OSPF DRs LSA Types Autonomous System External Path Types OSPF Stub Area Types Stub Areas Totally Stubby Areas , NSSAs Virtual Links OSPFv2 Router Authentication , OSPFv2 Summary OSPFv3 OSPFv3 Changes from OSPFv2, OSPFv3 Areas and Router Types OSPFv3 LSAs OSPFv3 Summary BGP BGP Neighbors eBGP iBGP Route Reflectors Confederations BGP Administrative Distance , BGP Attributes, Weight, and the BGP Decision Process BGP Path Attributes Next-Hop Attribute Local Preference Attribute Origin Attribute Autonomous System Path Attribute MED Attribute Community Attribute Atomic Aggregate and Aggregator Attributes Weight BGP Decision Process , BGP Summary , Route Manipulation PBR Route Summarization Route Redistribution Default Metric OSPF Redistribution Route Filtering Transit Traffic Routing Protocols on the Hierarchical Network Infrastructure IP Multicast Review , Multicast Addresses Layer 3 to Layer 2 Mapping IGMP , IGMPv1 IGMPv2 IGMPv3 CGMP IGMP Snooping , Sparse Versus Dense Multicast Multicast Source and Shared	

	Trees PIM PIM-SM PIM DR Auto-RP PIMv2 Bootstrap Router , DVMRP IPv6 Multicast Addresses	
V	Managing Security Network Security Overview Security Legislation Security Threats Reconnaissance and Port Scanning Vulnerability Scanners Unauthorized Access Security Risks Targets Loss of Availability Integrity Violations and Confidentiality Breaches , Security Policy and Process Security Policy Defined , Basic Approach of a Security Policy Purpose of Security Policies, Security Policy Components Risk Assessment , Risk Index Continuous Security Integrating Security Mechanisms into Network Design Trust and Identity Management , Trust Domains of Trust Identity Passwords Tokens Certificates , Network Access Control Secure Services Encryption Fundamentals Encryption Keys VPN Protocols , Transmission Confidentiality Data Integrity Threat Defense , Physical Security Infrastructure Protection Security Management Solutions Security Solution Network Security Platforms , Trust and Identity Technologies Firewall Fundamentals , Types of Firewalls Next-Gen Firewalls NAT Placement , Firewall Guidelines Firewall ACLs , Identity and Access Control Deployments Detecting and Mitigating Threats IPS/IDS Fundamentals IPS/IDS Guidelines , Threat Detection and Mitigation Technologies , Threat-Detection and Threat-Mitigation Solutions , FirePOWER IPS Security Management Applications , Security Platform Solutions Security Management Network Integrating Security into Network Devices IOS Security , ISR G2 Security Hardware Options Securing the Enterprise , Implementing Security in the Campus Implementing Security in the Data Center Implementing Security in the Enterprise Edge Network Management Protocols, Simple Network Management Protocol SNMP Components , MIB SNMP Message Versions SNMPv1 SNMPv2 SNMPv3 , Other Network Management Technologies RMON , RMON2 NetFlow Compared to RMON and SNMP , CDP LLDP Syslog	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	CCDA200-310Official Cert Guide	ANTHONY BRUNO, CCIE No. 2738 STEVE JORDAN, CCIE No. 11293	**Cisco Press**		
2.	Network Warrior	Gary A Donabue	**O Reilly**	2nd	2011

B. Sc. (Information Technology)		Semester – VI	
Course Name: IT Services Management		Course Code: USIT606 (Elective I)	
Periods per week (1 Period is 50 minutes),		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	**IT Service Management:** Introduction, What is service management? What are services? Business Process, Principles of Service management: Specialisation and Coordination, The agency principle, Encapsulation, Principles of systems, The service Life Cycle, Functions and processes across the life cycle. **Service Strategy Principles:** Value creation, Service Assets, Service Provider Service Structures, Service Strategy Principles. **Service Strategy:** Define the market, Develop the offerings, Develop Strategic Assets, Prepare for execution. **Challenges, Critical Success factors and risks:** Complexity, Coordination and Control, Preserving value, Effectiveness in measurement, Risks.	12
II	**Service Design:** Fundamentals, **Service Design Principles:** Goals, Balanced Design, Identifying Service requirements, identifying and documenting business requirements and drivers, Design activities, Design aspects, Subsequent design activities, Design constraints, Service oriented architecture, Business Service Management, Service Design Models **Service Design Processes:** Service Catalogue Management, Service Level Management, Capacity Management, Availability Management, IT Service Continuity Management, Information Security Management, Supplier Management **Challenges, Critical Success factors and risks:** Challenges, Risks	12
III	**Service Transition:** Fundamentals, **Service Transition Principles:** Principles Supporting Service Transition, Policies for Service Transition **Service Transition Processes:** Transition planning and support, Change Management, Service Asses Configuration Management, Service and Deployment Management, Service Validation and Testing, Evaluation, Knowledge Management. **Challenges, Critical Success factors and risks:** Challenges, Critical Success factors, Risks, Service Transition under difficult Conditions.	12
IV	**Service Operation:** Fundamentals, **Service Operation Principles:** Functions, groups, teams, departments and divisions, Achieving balance in service operations, Providing service, Operation staff involvement in service design and service transition, Operational Health, Communication, Documentation	12

	Service Operation Processes: Event Management, Incident Management, Request fulfilment, Problem Management, Access Management, Operational activities of processes covered in other lifecycle phases. **Challenges, Critical Success factors and risks:** Challenges, Critical Success factors, Risks	
V	**Continual Service Improvement(CSI) Principles:** CSI Approach, CSI and organizational change, Ownership, CSI register, External and Internal drivers, Service level management, Knowledge management, The Deming cycle, Service Measurement, IT governance, Frameworks, models, standards and quality Systems, CSI inputs and outputs. **CSI Process:** The seven step improvement process. **CSI Methods nad Techniques:** Methods and techniques, Assessments, benchmarking, Service Measurement, Metrics, Return on Investment, Service reporting, CSI and other service management processes, **Organising for CSI:** Organisational development, Functions, roles, Customer Engagement, Responsibility model - RACI, Competence and training. **Technology considerations:** Tools to support CSI activities. **Implementing CSI:** Critical Considerations for implementing CSI, The start, Governance, CSI and organisational change, Communication Strategy and Plan	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	ITIL v3 Foundation Complete Certification Kit				2009
2.	ITIL v3 Service Strategy		OGC/TSO		
3.	ITIL v3 Service Transition		OGC/TSO		
4.	ITIL v3 Service Operation		OGC/TSO		
5.	ITIL Continual Service Improvement		TSO	2011	2011

B. Sc. (Information Technology)		Semester – VI	
Course Name: Cyber Laws		**Course Code: USIT607 (Elective I)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Power of Arrest Without Warrant Under the IT Act, 2000:** A Critique, Crimes of this Millennium, Section 80 of the IT Act, 2000 – A Weapon or a Farce? Forgetting the Line Between Cognizable and Non-Cognizable Offences, Necessity of Arrest without Warrant from Any Place, Public or Otherwise, Check and Balances Against Arbitrary Arrests, Arrest for "About to Commit" an Offence Under the IT Act: A Tribute to Draco, Arrest, But NO Punishment! **Cyber Crime and Criminal Justice: Penalties, Adjudication and Appeals Under the IT Act, 2000:** Concept of "Cyber Crime " and the IT Act , 2000, Hacking, Teenage Web Vandals, Cyber Fraud and Cyber Cheating, Virus on the Internet, Defamation, Harassment and E-mail Abuse, Cyber Pornography, Other IT Act Offences, Monetary Penalties, Adjudication and Appeals Under IT Act , 2000, Network Service Providers, Jurisdiction and Cyber Crime, Nature of Cyber Criminality, Strategies to Tackle Cyber Crime and Trends, Criminal Justice in India and Implications on Cyber Crime.	**12**
II	**Contracts in the Infotech World:** Contracts in the Infotech World, Click-Wrap and Shrink-Wrap Contract: Status under the Indian Contract Act, 1872, Contract Formation Under the Indian Contract Act, 1872, Contract Formation on the Internet, Terms and Conditions of Contracts. **Jurisdiction in the Cyber World:** Questioning the Jurisdiction and Validity of the Present Law of Jurisdiction, Civil Law of Jurisdiction in India, Cause of Action, Jurisdiction and the Information Technology Act,2000, Foreign Judgements in India, Place of Cause of Action in Contractual and IPR Disputes, Exclusion Clauses in Contracts, Abuse of Exclusion Clauses, Objection of Lack of Jurisdiction, Misuse of the Law of Jurisdiction, Legal Principles on Jurisdiction in the United State of America, Jurisdiction Disputes w.r.t. the Internet in the United State of America.	**12**
III	**Battling Cyber Squatters and Copyright Protection in the Cyber World:** Concept of Domain Name and Reply to Cyber Squatters, Meta-Tagging, Legislative and Other Innovative Moves Against Cyber Squatting, The Battle Between Freedom and Control on the Internet, Works in Which Copyright Subsists and meaning of Copyright, Copyright Ownership and Assignment, License of Copyright, Copyright Terms and Respect for Foreign Works, Copyright	**12**

	Infringement, Remedies and Offences, Copyright Protection of Content on the Internet; Copyright Notice, Disclaimer and Acknowledgement, Downloading for Viewing Content on the Internet, Hyper-Linking and Framing, Liability of ISPs for Copyright Violation in the Cyber World: Legal Developments in the US, Napster and its Cousins: A Revolution on the Internet but a Crisis for Copyright Owners, Computer Software Piracy.	
IV	**E-Commerce Taxation: Real Problems in the Virtual World:** A Tug of War on the Concept of 'Permanent Establishment', Finding the PE in Cross Border E-Commerce, The United Nations Model Tax Treaty, The Law of Double Taxation Avoidance Agreements and Taxable Jurisdiction Over Non-Residents, Under the Income Tax Act, 1961, Tax Agents of Non-Residents under the Income Tax Act,1961 and the Relevance to E-Commerce, Source versus Residence and Classification between Business Income and Royalty, The Impact of the Internet on Customer Duties, Taxation Policies in India: At a Glance. **Digital Signature, Certifying Authorities and E-Governance:** Digital Signatures, Digital Signature Certificate, Certifying Authorities and Liability in the Event of Digital Signature Compromise, E-Governance in India: A Warning to Babudom!	**12**
V	**The Indian Evidence Act of 1872 v. Information Technology Act, 2000:** Status of Electronic Records as Evidence, Proof and Management of Electronic Records; Relevancy, Admissibility and Probative Value of E-Evidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages, Other Amendments in the Indian Evidence Act by the IT Act, Amendments to the Bankers Books Evidence Act, 1891 and Reserve Bank of India Act, 1934. **Protection of Cyber Consumers in India:** Are Cyber Consumers Covered Under the Consumer Protection Act? Goods and Services, Consumer Complaint, Defect in Goods and Deficiency in Services, Restrictive and Unfair Trade Practices, Instances of Unfair Trade Practices, Reliefs Under CPA, Beware Consumers, Consumer Foras, Jurisdiction and Implications on cyber Consumers in India, Applicability of CPA to Manufacturers, Distributors, Retailers and Service Providers Based in Foreign Lands Whose Goods are Sold or Services Provided to a Consumer in India. Amendments in Indian IT Act 2000	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Cyber Law Simplified	Vivek Sood	TMH Education		2001
2.	Cybersecurity Law	Jeff Kosseff	Wiley		2017

B. Sc. (Information Technology)		Semester – VI	
Course Name: Project Implementation		**Course Code: USIT6P1**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

The details are given in Appendix – I

B. Sc. (Information Technology)		Semester – VI	
Course Name: Security in Computing Practical		Course Code: USIT6P2	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	-

Practical No	Details
1	**Configure Routers**
a	OSPF MD5 authentication.
b	NTP.
c	to log messages to the syslog server.
d	to support SSH connections.
2	**Configure AAA Authentication**
a	Configure a local user account on Router and configure authenticate on the console and vty lines using local AAA
b	Verify local AAA authentication from the Router console and the PC-A client
3	**Configuring Extended ACLs**
a	**Configure, Apply and Verify an Extended Numbered ACL**
4	**Configure IP ACLs to Mitigate Attacks and IPV6 ACLs**
a	Verify connectivity among devices before firewall configuration.
b	Use ACLs to ensure remote access to the routers is available only from management station PC-C.
c	Configure ACLs on to mitigate attacks.
d	Configuring IPv6 ACLs
5	**Configuring a Zone-Based Policy Firewall**
6	Configure IOS Intrusion Prevention System (IPS) Using the CLI
a	Enable IOS IPS.
b	Modify an IPS signature.
7	**Layer 2 Security**
a	Assign the Central switch as the root bridge.
b	Secure spanning-tree parameters to prevent STP manipulation attacks.
c	Enable port security to prevent CAM table overflow attacks.
8	**Layer 2 VLAN Security**
9	**Configure and Verify a Site-to-Site IPsec VPN Using CLI**

10	**Configuring ASA Basic Settings and Firewall Using CLI**
a	Configure basic ASA settings and interface security levels using CLI
b	Configure routing, address translation, and inspection policy using CLI
c	Configure DHCP, AAA, and SSH
d	Configure a DMZ, Static NAT, and ACLs

B. Sc. (Information Technology)		Semester – VI	
Course Name: Business Intelligence Practical		Course Code: USIT6P3	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	-

Practical No	Details
1	Import the legacy data from different sources such as (Excel , SqlServer, Oracle etc.) and load in the target system. (You can download sample database such as Adventureworks, Northwind, foodmart etc.)
2	Perform the Extraction Transformation and Loading (ETL) process to construct the database in the Sqlserver.
3	a. Create the Data staging area for the selected database. b. Create the cube with suitable dimension and fact tables based on ROLAP, MOLAP and HOLAP model.
4	a.Create the ETL map and setup the schedule for execution. b. Execute the MDX queries to extract the data from the datawarehouse.
5	a. Import the datawarehouse data in Microsoft Excel and create the Pivot table and Pivot Chart. b. Import the cube in Microsoft Excel and create the Pivot table and Pivot Chart to perform data analysis.
6	Apply the what – if Analysis for data visualization. Design and generate necessary reports based on the data warehouse data.
7	Perform the data classification using classification algorithm.
8	Perform the data clustering using clustering algorithm.
9	Perform the Linear regression on the given data warehouse data.
10	Perform the logistic regression on the given data warehouse data.

The BI tools such as Tableau / Power BI / BIRT / R / Excel or any other can be used.

B. Sc. (Information Technology)		Semester – VI	
Course Name: Principles of Geographical Information System Practical		**Course Code: USIT6P4 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

Practical No	Details
0	Familiarizing Quantum GIS: Installation of QGIS, datasets for both Vector and Raster data, Maps.
1	Creating and Managing Vector Data: Adding vector layers, setting properties, formatting, calculating line lengths and statistics
2	Exploring and Managing Raster data: Adding raster layers, raster styling and analysis, raster mosaicking and clipping
3	Making a Map, Working with Attributes, Importing Spreadsheets or CSV files Using Plugins, Searching and Downloading OpenStreetMap Data
4	Working with attributes, terrain Data
5	Working with Projections and WMS Data
6	Georeferencing Topo Sheets and Scanned Maps Georeferencing Aerial Imagery Digitizing Map Data
7	Managing Data Tables and Saptial data Sets: Table joins, spatial joins, points in polygon analysis, performing spatial queries
8	Advanced GIS Operations 1: Nearest Neighbor Analysis, Sampling Raster Data using Points or Polygons, Interpolating Point Data
9	Advance GIS Operations 2: Batch Processing using Processing Framework Automating Complex Workflows using Processing Modeler Automating Map Creation with Print Composer Atlas
10	Validating Map data

B. Sc. (Information Technology)		Semester – VI	
Course Name: Advanced Networking Practical		**Course Code: USIT6P5 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

Practical No	Details
1	**Configuring OSPF – I**
a	Single-Area OSPF Link Costs and Interface Priorities
b	Multi-Area OSPF with Stub Areas and Authentication
2	**Configuring OSPF – II**
a	OSPF Virtual Links and Area Summarization
b	OSPF over Frame Relay
3	**Redistribution and Administrative Distances**
a	Redistribution Between RIP and OSPF
b	Manipulating Administrative Distances
4	**BGP**
a	Configuring BGP with Default Routing
b	Using the AS_PATH Attribute
c	BGP Route Reflectors and Route Filters
5	**IPv6**
a	Configuring OSPF for IPv6
b	Configuring 6to4 Tunnels
6	**VLANs and EtherChannel**
a	Static VLANS, VLAN Trunking, and VTP Domains and Modes
b	Configuring EtherChannel
7	**Spanning Tree Protocol**
a	Spanning Tree Protocol (STP) Default Behavior
b	Modifying Default Spanning Tree Behavior
8	**VLAN and Spanning Tree**
a	Per-VLAN Spanning Tree Behavior
b	Multiple Spanning Tree

9	**Internal VLAN Routing**
a	Inter-VLAN Routing with an External Router
b	Inter-VLAN Routing with an Internal Route Processor
10	**Configure NAT Services**

B. Sc. (Information Technology)		Semester – VI	
Course Name: Advanced Mobile Programming Practical		Course Code: USIT6P6	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Practical No	Details
1	**Introduction to Android, Introduction to Android Studio IDE, Application Fundamentals:** Creating a Project, Android Components, Activities, Services, Content Providers, Broadcast Receivers, Interface overview, Creating Android Virtual device, USB debugging mode, Android Application Overview. Simple "Hello World" program.
2	**Programming Resources** Android Resources: (Color, Theme, String, Drawable, Dimension, Image),
3	**Programming Activities and fragments** Activity Life Cycle, Activity methods, Multiple Activities, Life Cycle of fragments and multiple fragments.
4	**Programs related to different Layouts** Coordinate, Linear, Relative, Table, Absolute, Frame, List View, Grid View.
5	**Programming UI elements** AppBar, Fragments, UI Components
6	**Programming menus, dialog, dialog fragments**
7	**Programs on Intents, Events, Listeners and Adapters** The Android Intent Class, Using Events and Event Listeners
8	**Programs on Services, notification and broadcast receivers**
9	**Database Programming with SQLite**
10	**Programming threads, handles and asynchronized programs**
11	**Programming Media API and Telephone API**
12	**Programming Security and permissions**
13	**Programming Network Communications and Services (JSON)**

APPENDIX – 1

Project Dissertation Semester V and Project Implementation Semester VI

Chapter 1 to 4 should be submitted in Semester V in spiral binding. These chapter have also to be included in Semester VI report. Semester VI report has to be hard bound with golden embossing. Students will be evaluated based on the dissertation in semester V and dissertation and viva voce in Semester VI.

I. OBJECTIVES

- Describe the Systems Development Life Cycle (SDLC).
- Evaluate systems requirements.
- Complete a problem definition.
- Evaluate a problem definition.
- Determine how to collect information to determine requirements.
- Perform and evaluate feasibility studies like cost-benefit analysis, technical feasibility, time feasibility and Operational feasibility for the project.
- Work on data collection methods for fact finding.
- Construct and evaluate data flow diagrams.
- Construct and evaluate data dictionaries.
- Evaluate methods of process description to include structured English, decision tables and decision trees.
- Evaluate alternative tools for the analysis process.
- Create and evaluate such alternative graphical tools as systems flow charts and state transition diagrams.
- Decide the S/W requirement specifications and H/W requirement specifications.
- Plan the systems design phase of the SDLC.
- Distinguish between logical and physical design requirements.
- Design and evaluate system outputs.
- Design and evaluate systems inputs.
- Design and evaluate validity checks for input data.

- Design and evaluate user interfaces for input.
- Design and evaluate file structures to include the use of indexes.
- Estimate storage requirements.
- Explain the various file update processes based on the standard file organizations.
- Decide various data structures.
- Construct and evaluate entity-relationship (ER) diagrams for RDBMS related projects.
- Perform normalization for the unnormalized tables for RDBMS related projects
- Decide the various processing systems to include distributed, client/server, online and others.
- Perform project cost estimates using various techniques.
- Schedule projects using both GANTT and PERT charts.
- Perform coding for the project.
- Documentation requirements and prepare and evaluate systems documentation.
- Perform various systems testing techniques/strategies to include the phases of testing.
- Systems implementation and its key problems.
- Generate various reports.
- Be able to prepare and evaluate a final report.
- Brief the maintenance procedures and the role of configuration management in operations.
- To decide the future scope and further enhancement of the system.
- Plan for several appendices to be placed in support with the project report documentation.
- Decide the various processing systems to include distributed, client/server, online and others.
- Perform project cost estimates using various techniques.
- Schedule projects using both GANTT and PERT charts.
- Perform coding for the project.
- Documentation requirements and prepare and evaluate systems documentation.
- Perform various systems testing techniques/strategies to include the phases of testing.
- Systems implementation and its key problems.
- Generate various reports.
- Be able to prepare and evaluate a final report.
- Brief the maintenance procedures and the role of configuration management in operations.
- To decide the future scope and further enhancement of the system.
- Plan for several appendices to be placed in support with the project report documentation.

- Work effectively as an individual or as a team member to produce correct, efficient, well-organized and documented programs in a reasonable time.
- Recognize problems that are amenable to computer solutions, and knowledge of the tool necessary for solving such problems.
- Develop of the ability to assess the implications of work performed.
- Get good exposure and command in one or more application areas and on the software
- Develop quality software using the software engineering principles
- Develop of the ability to communicate effectively.

II. Type of the Project

The majority of the students are expected to work on a real-life project preferably in some industry/ Research and Development Laboratories/Educational Institution/Software Company. Students are encouraged to work in the areas listed below. However, it is ***not mandatory*** for a student to work on a real-life project. The student can formulate a project problem with the help of her/his Guide and submit the project proposal of the same. **Approval of the project proposal is mandatory**. If approved, the student can commence working on it, and complete it. Use the latest versions of the software packages for the development of the project.

III. SOFTWARE AND BROAD AREAS OF APPLICATION

FRONT END / GUI Tools	.Net Technologies,Java
DBMS/BACK END	Oracle, SQL Plus, MY SQL, SQL Server,
LANGUAGES	C, C++, Java, VC++, C#, R,Python
SCRIPTING LANGUAGES	PHP,JSP, SHELL Scripts (Unix), TcL/TK,
.NET Platform	F#,C#. Net, Visual C#. Net, ASP.Net
MIDDLE WARE (COMPONENT) TECHNOLOGIES	COM/DCOM, Active-X, EJB
UNIX INTERNALS	Device Drivers, RPC, Threads, Socket programming
NETWORK/WIRELESS TECHNOLOGIES	-

REALTIME OPERATING SYSTEM/ EMBEDDED SKILLS	LINUX, Raspberry Pi, Arduino, 8051
APPLICATION AREAS	Financial / Insurance / Manufacturing / Multimedia / Computer Graphics / Instructional Design/ Database Management System/ Internet / Intranet / Computer Networking-Communication Software development/ E-Commerce/ ERP/ MRP/ TCP-IP programming / Routing protocols programming/ Socket programming.

IV. Introduction

The project report should be documented with scientific approach to the solution of the problem that the students have sought to address. The project report should be prepared in order to solve the problem in a methodical and professional manner, making due references to appropriate techniques, technologies and professional standards. The student should start the documentation process from the first phase of software development so that one can easily identify the issues to be focused upon in the ultimate project report. The student should also include the details from the project diary, in which they will record the progress of their project throughout the course. The project report should contain enough details to enable examiners to evaluate the work. The important points should be highlighted in the body of the report, with details often referred to appendices.

1.1 PROJECT REPORT:

Title Page

Original Copy of the Approved Proforma of the Project Proposal

Certificate of Authenticated work

Role and Responsibility Form

Abstract

Acknowledgement

Table of Contents

Table of Figures

CHAPTER 1: INTRODUCTION

1.1 Background

1.2 Objectives

1.3 Purpose, Scope, and Applicability

1.3.1 Purpose

1.3.2 Scope

1.3.3 Applicability

1.4 Achievements

1.5 Organisation of Report

CHAPTER 2: SURVEY OF TECHNOLOGIES

CHAPTER 3: REQUIREMENTS AND ANALYSIS

3.1 Problem Definition

3.2 Requirements Specification

3.3 Planning and Scheduling

3.4 Software and Hardware Requirements

3.5 Preliminary Product Description

3.6 Conceptual Models

CHAPTER 4: SYSTEM DESIGN

4.1 Basic Modules

4.2 Data Design

4.2.1 Schema Design

4.2.2 Data Integrity and Constraints

4.3 Procedural Design

4.3.1 Logic Diagrams

4.3.2 Data Structures

4.3.3 Algorithms Design

4.4 User interface design

4.5 Security Issues

4.6 Test Cases Design

The documentation should use tools like star UML, Visuo for windows, Rational Rose for design as part of Software Project Management Practical Course. The documentation should be spiral bound for semester V and the entire documentation should be hard bound during semester VI.

CHAPTER 5: IMPLEMENTATION AND TESTING

5.1 Implementation Approaches

5.2 Coding Details and Code Efficiency

5.2.1 Code Efficiency
5.3 Testing Approach
5.3.1 Unit Testing
5.3.2 Integrated Testing
5.3.3 Beta Testing
5.4 Modifications and Improvements
5.5 Test Cases

CHAPTER 6: RESULTS AND DISCUSSION
6.1 Test Reports
6.2 User Documentation
CHAPTER 7: CONCLUSIONS
7.1 Conclusion
7.1.1 Significance of the System
7.2 Limitations of the System
7.3 Future Scope of the Project
REFERENCES
GLOSSARY

APPENDIX A

APPENDIX B

V. EXPLANATION OF CONTENTS

Title Page
Sample format of Title page is given in Appendix 1 of this block. Students should follow the given format.
Original Copy of the Approved Proforma of the Project Proposal
Sample Proforma of Project Proposal is given in Appendix 2 of this block. Students should follow the given format.

Certificate of Authenticated work

Sample format of Certificate of Authenticated work is given in Appendix 3 of this block. Students should follow the given format.

Role and Responsibility Form

Sample format for Role and Responsibility Form is given in Appendix 4 of this block.
Students should follow the given format.

Abstract

This should be one/two short paragraphs (100-150 words total), summarising the project work. It is important that this is not just a re-statement of the original project outline. A suggested flow is background, project aims and main achievements. From the abstract, a reader should be able to ascertain if the project is of interest to them and, it should present results of which they may wish to know more details.

Acknowledgements

This should express student's gratitude to those who have helped in the preparation of project.

Table of Contents: The table of contents gives the readers a view of the detailed structure of the report. The students would need to provide section and subsection headings with associated pages. The formatting details of these sections and subsections are given below.

Table of Figures: List of all Figures, Tables, Graphs, Charts etc. along with their page numbers in a table of figures.

Chapter 1: Introduction

The introduction has several parts as given below:

Background: A description of the background and context of the project and its relation to work already done in the area. Summarise existing work in the area concerned with the project work.

Objectives: Concise statement of the aims and objectives of the project. Define exactly what is going to be done in the project; the objectives should be about 30 /40 words.
Purpose, Scope and Applicability: The description of Purpose, Scope, and Applicability are given below:

• Purpose: Description of the topic of the project that answers questions on why this project is being done. How the project could improve the system its significance and theoretical framework.
• Scope: A brief overview of the methodology, assumptions and limitations. The students should answer the question: What are the main issues being covered in the project? What are the main functions of the project?
• Applicability: The student should explain the direct and indirect applications of their work. Briefly discuss how this project will serve the computer world and people.
Achievements: Explain what knowledge the student achieved after the completion of the work. What contributions has the project made to the chosen area? Goals achieved - describes the degree to which the findings support the original objectives laid out by the project. The goals may be partially or fully achieved, or exceeded.

Organisation of Report: Summarising the remaining chapters of the project report, in effect, giving the reader an overview of what is to come in the project report.

Chapter 2: Survey of Technologies

In this chapter Survey of Technologies should demonstrate the students awareness and understanding of Available Technologies related to the topic of the project. The student should give the detail of all the related technologies that are necessary to complete the project. The should describe the technologies available in the chosen area and present a comparative study of all those Available Technologies. Explain why the student selected the one technology for the completion of the objectives of the project.

Chapter 3: Requirements and Analysis

Problem Definition: Define the problem on which the students are working in the project.

Provide details of the overall problem and then divide the problem in to sub-problems. Define each sub-problem clearly.

Requirements Specification: In this phase the student should define the requirements of the system, independent of how these requirements will be accomplished. The Requirements Specification describes the things in the system and the actions that can be done on these things. Identify the operation and problems of the existing system.

Planning and Scheduling: Planning and scheduling is a complicated part of software development. Planning, for our purposes, can be thought of as determining all the small tasks that must be carried out in order to accomplish the goal. Planning also takes into account, rules, known as constraints, which, control when certain tasks can or cannot happen. Scheduling can be thought of as determining whether adequate resources are available to carry out the plan. The student should show the Gantt chart and Program Evaluation Review Technique (PERT).

Software and Hardware Requirements: Define the details of all the software and hardware needed for the development and implementation of the project.

• Hardware Requirement: In this section, the equipment, graphics card, numeric co-processor, mouse, disk capacity, RAM capacity etc. necessary to run the software must be noted.

• Software Requirements: In this section, the operating system, the compiler, testing tools, linker, and the libraries etc. necessary to compile, link and install the software must be listed.

Preliminary Product Description: Identify the requirements and objectives of the new system. Define the functions and operation of the application/system the students are developing as project.

Conceptual Models: The student should understand the problem domain and produce a model of the system, which describes operations that can be performed on the system, and the allowable sequences of those operations. Conceptual Models could consist of complete Data Flow Diagrams, ER diagrams, Object-oriented diagrams, System Flowcharts etc.

Chapter 4: System Design

Describes desired features and operations in detail, including screen layouts, business rules, process diagrams, pseudocode and other documentation.

Basic Modules: The students should follow the divide and conquer theory, so divide the overall problem into more manageable parts and develop each part or module separately. When all modules are ready, the student should integrate all the modules into one system. In this phase, the student should briefly describe all the modules and the functionality of these modules.

Data Design: Data design will consist of how data is organised, managed and manipulated.

• Schema Design: Define the structure and explanation of schemas used in the project.

• Data Integrity and Constraints: Define and explain all the validity checks and constraints provided to maintain data integrity.

Procedural Design: Procedural design is a systematic way for developing algorithms or procedurals.

• Logic Diagrams: Define the systematical flow of procedure that improves its comprehension and helps the programmer during implementation. e.g., Control Flow Chart, Process Diagrams etc.

• Data Structures: Create and define the data structure used in procedures.

• Algorithms Design: With proper explanations of input data, output data, logic of processes, design and explain the working of algorithms.

User Interface Design: Define user, task, environment analysis and how to map those requirements in order to develop a “User Interface”. Describe the external and internal components and the architecture of user interface. Show some rough pictorial views of the user interface and its components.

Security Issues: Discuss Real-time considerations and Security issues related to the project and explain how the student intends avoiding those security problems. What are the security policy plans and architecture?

Test Cases Design: Define test cases, which will provide easy detection of errors and mistakes with in a minimum period of time and with the least effort. Explain the different conditions in which the students wish to ensure the correct working of the project.

Chapter 5: Implementation and Testing

Implementation Approaches: Define the plan of implementation, and the standards the students have used in the implementation.

Coding Details and Code Efficiency: Students not need include full source code, instead, include only the important codes (algorithms, applets code, forms code etc). The program code should contain comments needed for explaining the work a piece of code does. Comments may be needed to explain why it does it, or, why it does a particular way.

The student can explain the function of the code with a shot of the output screen of that program code.

• Code Efficiency: The student should explain how the code is efficient and how the students have handled code optimisation.

Testing Approach: Testing should be according to the scheme presented in the system design chapter and should follow some suitable model – e.g., category partition, state machine-based. Both functional testing and user-acceptance testing are appropriate. Explain the approach of testing.

• Unit Testing: Unit testing deals with testing a unit or module as a whole. This would test the interaction of many functions but, do confine the test within one module.

• Integrated Testing: Brings all the modules together into a special testing environment, then checks for errors, bugs and interoperability. It deals with tests for the entire application. Application limits and features are tested here.

Modifications and Improvements: Once the students finish the testing they are bound to be faced with bugs, errors and they will need to modify your source code to improve the system. Define what modification are implemented in the system and how it improved the system.

Chapter 6: Results and Discussion

Test Reports: Explain the test results and reports based on the test cases, which should show that the project is capable of facing any problematic situation and that it works fine in different conditions. Take the different sample inputs and show the outputs.

User Documentation: Define the working of the software; explain its different functions, components with screen shots. The user document should provide all the details of the product in such a way that any user reading the manual, is able to understand the working and functionality of the document.

Chapter 7: Conclusions

Conclusion: The conclusions can be summarised in a fairly short chapter (2 or 3 pages). This chapter brings together many of the points that would have made in the other chapters.

Limitations of the System: Explain the limitations encountered during the testing of the project that the students were not able to modify. List the criticisms accepted during the demonstrations of the project.

Future Scope of the Project describes two things: firstly, new areas of investigation prompted by developments in this project, and secondly, parts of the current work that was not completed due to time constraints and/or problems encountered.

REFERENCES

It is very important that the students acknowledge the work of others that they have used or adapted in their own work, or that provides the essential background or context to the project. The use of references is the standard way to do this. Please follow the given standard for the references for books, journals, and online material. The citation is mandatory in both the reports.

E.g:

Linhares, A., & Brum, P. (2007). Understanding our understanding of strategic scenarios: What role do chunks play? *Cognitive Science*, *31*(6), 989-1007. https://doi.org/doi:10.1080/03640210701703725

Lipson, Charles (2011). Cite right : A quick guide to citation styles; MLA, APA, Chicago, the sciences, professions, and more (2nd ed.). Chicago [u.a.]: University of Chicago Press. p. 187. ISBN 9780226484648.

Elaine Ritchie, J Knite. (2001). *Artificial Intelligence, Chapter 2 , p.p 23 - 44.* Tata McGrawHill.

GLOSSARY

If you the students any acronyms, abbreviations, symbols, or uncommon terms in the project report then their meaning should be explained where they first occur. If they go on to use any of them extensively then it is helpful to list them in this section and define the meaning.

APPENDICES

These may be provided to include further details of results, mathematical derivations, certain illustrative parts of the program code (e.g., class interfaces), user documentation etc.

In particular, if there are technical details of the work done that might be useful to others who wish to build on this work, but that are not sufficiently important to the project as a whole to justify being discussed in the main body of the project, then they should be included as appendices.

VI. SUMMARY

Project development usually involves an engineering approach to the design and development of a software system that fulfils a practical need. Projects also often form an important focus for discussion at interviews with future employers as they provide a detailed example of what the students are capable of achieving. In this course the students can choose your project topic from the lists given in Unit 4: Category-wise Problem Definition.

VII. FURTHER READINGS

1. Modern Systems Analysis and Design; Jeffrey A. Hoffer, Joey F. George, Joseph,S. Valacich; Pearson Education; Third Edition; 2002.
2. ISO/IEC 12207: Software Life Cycle Process
(http://www.software.org/quagmire/descriptions/iso-iec12207.asp).
3. IEEE 1063: Software User Documentation (http://ieeexplore.ieee.org).
4. ISO/IEC: 18019: Guidelines for the Design and Preparation of User Documentation for Application Software.
5. http://www.sce.carleton.ca/squall.
6. http://en.tldp.org/HOWTO/Software-Release-Practice-HOWTO/documentation.html.
7. http://www.sei.cmu.edu/cmm/

PROFORMA FOR THE APPROVAL PROJECT PROPOSAL

(Note: All entries of the proforma of approval should be filled up with appropriate and complete information. Incomplete proforma of approval in any respect will be summarily rejected.)

PNR **No.: ……** Roll no**: _____**

1. Name of the Student
   _____
2. Title of the Project
   _____
3. Name of the Guide
   _____
4. Teaching experience of the Guide _____
5. Is this your first submission? Yes ☐ No ☐

Signature of the Student Signature of the Guide

Date: …… Date: …….

Signature of the Coordinator

Date: ……

(All the text in the report should be in times new roman)

TITLE OF THE PROJECT

(NOT EXCEEDING 2 LINES, 24 BOLD, ALL CAPS)

A Project Report (12 Bold)
Submitted in partial fulfillment of the
Requirements for the award of the Degree of (size-12)

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)(14 BOLD, CAPS)

By(12 Bold)

Name of The Student (size-15, title case)
Seat Number (size-15)

Under the esteemed guidance of (13 bold)
Mr./Mrs. Name of The Guide (15 bold, title case)
Designation (14 Bold, title case)

COLLEGE LOGO

DEPARTMENT OF INFORMATION TECHNOLOGY(12 BOLD, CAPS)
COLLEGE NAME (14 BOLD, CAPS)
(Affiliated to University of Mumbai) (12, Title case, bold, italic)
CITY, PIN CODE(12 bold, CAPS)
MAHARASHTRA (12 bold, CAPS)
YEAR (12 bold)

COLLEGE NAME (14 BOLD, CAPS)
(Affiliated to University of Mumbai) (13, bold, italic)
CITY-MAHARASHTRA-PINCODE(13 bold, CAPS)

DEPARTMENT OF INFORMATION TECHNOLOGY (14 BOLD, CAPS)

College Logo

CERTIFICATE (14 BOLD, CAPS, underlined, centered)

This is to certify that the project entitled, **"Title of The Project "**, is bonafied work of **NAME OF THE STUDENT** bearing Seat.No: (**NUMBER**) submitted in partial fulfillment of the requirements for the award of degree of BACHELOR OF SCIENCE in INFORMATION TECHNOLOGY from University of Mumbai. (12, times new roman, justified)

Internal Guide (12 bold) **Coordinator**

(Don't write names of lecturers or HOD)

External Examiner

Date: **College Seal**

COMPANY CERTIFICATE (if applicable)

(Project Abstract page format)

Abstract (20bold, caps, centered)

Content (12, justified)

Note: Entire document should be with 1.5 line spacing and all paragraphs should start with 1 tab space.

ACKNOWLEDGEMENT

(20, BOLD, ALL CAPS, CENTERED)

The acknowledgement should be in times new roman, 12 font with 1.5 line spacing, justified.

(Declaration page format)

DECLARATION (20 bold, centered, allcaps)

Content (12, justified)

I here by declare that the project entitled, "**Title of the Project**" done at **place where the project is done**, has not been in any case duplicated to submit to any other university for the award of any degree. To the best of my knowledge other than me, no one has submitted to any other university.

The project is done in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)** to be submitted as final semester project as part of our curriculum.

Name and Signature of the Student

TABLE OF CONTENTS (20bold, caps, centered)

Should be generated automatically using word processing software.

Chapter 1: Introduction 01(no bold)
1.1 Background 02(no bold)
1.2 Objectives ….
1.3 Purpose and Scope ….
1.2.1Purpose ….
1.2.2Scope
……
……

Chapter 2: System Analysis
2.1 Existing System
2.2 Proposed System
2.3 Requirement Analysis
2.4 Hardware Requirements
2.5 Software Requirements
2.6 Justification of selection of Technology

Chapter 3: System Design
3.1 Module Division
3.2 Data Dictionary
3.3 ER Diagrams
3.4 DFD/UML Diagrams

Chapter 4: Implementation and Testing

4.1 Code (Place Core segments)
4.2 Testing Approach
4.2.1 Unit Testing (Test cases and Test Results)
4.2.2 Integration System (Test cases and Test Results)

Chapter 5: Results and Discussions (Output Screens)
Chapter 6: Conclusion and Future Work
Chapter 7: References

List of Tables (20 bold, centered, Title Case)

Should be generated automatically using word processing software.

List of Figures (20 bold, centered, Title Case)

Should be generated automatically using word processing software.

(Project Introduction page format)

Chapter 1

Introduction (20 Bold, centered)

Content or text (12, justified)

Note: Introduction has to cover brief description of the project with minimum 4 pages.

Chapter 2

System Analysis (20 bold, Centered)

Subheadings are as shown below with following format (16 bold, CAPS)

2.1 Existing System (16 Bold)

2.1.1 ---------- (14 bold, title case)

2.1.1.1 ---------- (12 bold, title case)

2.2 Proposed System

2.3 Requirement Analysis

2.4 Hardware Requirements

2.5 Software Requirements

2.6 Justification of Platform – (how h/w & s/w satisfying the project)

Table 2.1: Caption

Chapter 3

System Design (20 bold, centered)

Subheadings are as shown below with following format (16 bold, CAPS)
Specify figures as Fig 11.1 – caption

3.1 Module Division
3.2 Data Dictionary
3.3 E-R Diagrams
3.4 Data Flow Diagrams / UML

Note: write brief description at the bottom of all diagrams

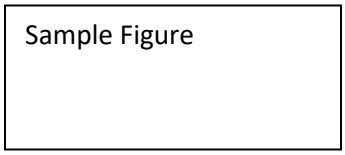

Fig. 3.1: Caption

Chapter 4

Implementation and Testing (20 bold, centered)

4.1 Code (Place Core segments)

Content includes description about coding phase in your project (Font-12)

(* don't include complete code-----just description)

4.2 Testing Approach

Subheadings are as shown below with following format (16 bold, CAPS)

4.2.1 Unit Testing

4.2.2 Integration Testing

Note:

- Explain about above testing methods
- Explain how the above techniques are applied in your project

Provide Test plans, test cases, etc relevant to your project

Chapter 5

Results and Discussions (20 bold, centered)

Note: Place Screen Shots and write the functionality of each screen at the bottom

Chapter 6

Conclusion and Future Work (20 bold, centered)

The conclusions can be summarized in a fairly short chapter around 300 words. Also include limitations of your system and future scope (12, justified)

Chapter 7

References (20 bold, centered)

Content (12, LEFT)

[1] Title of the book, Author

[2] Full URL of online references

[3] ----------

*** NOTE ABOUT PROJECT VIVA VOCE:**

Student may be asked to write code for problem during VIVA to demonstrate his coding capabilities and he/she may be asked to write any segment of coding used in the in the project. The project can be done in group of at most four students. However, the length and depth of the project should be justified for the projects done in group. A big project can be modularised and different modules can be assigned as separate project to different students.

Marks Distribution:

Semester V: 50 Marks

Documentation: 50 marks

Semester VI: 150 Marks

Documentation: 50 Marks:

Implementation and Viva Voce: 100 Marks

The plagiarism should be maintained as per the UGC guidelines.

Academic Council 11/06/2018
Item No:

UNIVERSITY OF MUMBAI

Syllabus for T.Y.B.Sc.

Programme: B.Sc.

Subject: Information Technology

with effect from the academic year

2018 – 2019

Semester – 5			
Course Code	**Course Type**	**Course Title**	**Credits**
USIT501	Skill Enhancement Course	Software Project Management	2
USIT502	Skill Enhancement Course	Internet of Things	2
USIT503	Skill Enhancement Course	Advanced Web Programming	2
USIT504	Discipline Specific Elective (Any One)	Artificial Intelligence	2
USIT505		Linux System Administration	
USIT506	Discipline Specific Elective (Any One)	Enterprise Java	2
USIT507		Next Generation Technologies	
USIT5P1	Skill Enhancement Course Practical	Project Dissertation	2
USIT5P2	Skill Enhancement Course Practical	Internet of Things Practical	2
USIT5P3	Skill Enhancement Course Practical	Advanced Web Programming Practical	2
USIT5P4	Discipline Specific Elective Practical (Any One)*	Artificial Intelligence Practical	2
USIT5P5		Linux Administration Practical	
USIT5P6	Discipline Specific Elective Practical (Any One)*	Enterprise Java Practical	2
USIT5P7		Next Generation Technologies Practical	
		Total Credits	**20**

(All the practical mentioned in the syllabi are compulsory as per the courses chosen)

Semester – 6			
Course Code	**Course Type**	**Course Title**	**Credits**
USIT601	Skill Enhancement Course	Software Quality Assurance	2
USIT602	Skill Enhancement Course	Security in Computing	2
USIT603	Skill Enhancement Course	Business Intelligence	2
USIT604	Discipline Specific Elective (Any One)	Principles of Geographic Information Systems	2
USIT605		Enterprise Networking	
USIT606	Discipline Specific Elective (Any One)	IT Service Management	2
USIT607		Cyber Laws	
USIT6P1	Skill Enhancement Course Practical	Project Implementation	2
USIT6P2	Skill Enhancement Course Practical	Security in Computing Practical	2
USIT6P3	Skill Enhancement Course Practical	Business Intelligence Practical	2
USIT6P4	Discipline Specific Elective Practical (Any One)*	Principles of Geographic Information Systems Practical	2
USIT6P5		Enterprise Networking Practical	
USIT6P6	Skill Enhancement Course Practical	Advanced Mobile Programming	2
		Total Credits	**20**

***The choice of Practical course is based on the theory Course. For Semester V, USIT504, USIT505, USIT506 and USIT507, the practical courses are USIT5P4, USIT5P5 USIT5P6, USIT5P7. For Semester VI, USIT604, USIT605 the practical courses are USIT6P4, USIT6P5 respectively. Practical Course USIT6P6 is compulsory.**

SEMESTER VI

B. Sc. (Information Technology)		Semester – VI	
Course Name: Software Quality Assurance		**Course Code: USIT601**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Introduction to Quality:** Historical Perspective of Quality, What is Quality? (Is it a fact or perception?), Definitions of Quality, Core Components of Quality, Quality View, Financial Aspect of Quality, Customers, Suppliers and Processes, Total Quality Management (TQM), Quality Principles of Total Quality Management, Quality Management Through Statistical Process Control, Quality Management Through Cultural Changes, Continual (Continuous) Improvement Cycle, Quality in Different Areas, Benchmarking and Metrics, Problem Solving Techniques, Problem Solving Software Tools. **Software Quality:** Introduction, Constraints of Software Product Quality Assessment, Customer is a King, Quality and Productivity Relationship, Requirements of a Product, Organisation Culture, Characteristics of Software, Software Development Process, Types of Products, Schemes of Criticality Definitions, Problematic Areas of Software Development Life Cycle, Software Quality Management, Why Software Has Defects? Processes Related to Software Quality, Quality Management System Structure, Pillars of Quality Management System, Important Aspects of Quality Management.	**12**
II	**Fundamentals of testing:** Introduction, Necessity of testing, What is testing? Fundamental test process, The psychology of testing, Historical Perspective of Testing, Definitions of Testing, Approaches to Testing, Testing During Development Life Cycle, Requirement Traceability Matrix, Essentials of Software Testing, Workbench, Important Features of Testing Process, Misconceptions About Testing, Principles of Software Testing, Salient Features of Good Testing, Test Policy, Test Strategy or Test Approach, Test Planning, Testing Process and Number of Defects Found in Testing, Test Team Efficiency, Mutation Testing, Challenges in Testing, Test Team Approach, Process Problems Faced by Testing, Cost Aspect of Testing, Establishing Testing Policy, Methods, Structured Approach to Testing, Categories of Defect, Defect, Error, or Mistake in Software, Developing Test Strategy, Developing Testing Methodologies (Test Plan), Testing Process, Attitude Towards Testing (Common People Issues), Test Methodologies/Approaches, People Challenges in Software Testing, Raising Management Awareness for Testing, Skills Required by Tester,	**12**

	Testing throughout the software life cycle, Software development models, Test levels, Test types, the targets of testing, Maintenance testing	
III	**Unit Testing: Boundary Value Testing:** Normal Boundary Value Testing, Robust Boundary Value Testing, Worst-Case Boundary Value Testing, Special Value Testing, Examples, Random Testing, Guidelines for Boundary Value Testing, **Equivalence Class Testing:** Equivalence Classes, Traditional Equivalence Class Testing, Improved Equivalence Class Testing, Edge Testing, Guidelines and Observations. **Decision Table–Based Testing:** Decision Tables, Decision Table Techniques, Cause-and-Effect Graphing, Guidelines and Observations, **Path Testing:** Program Graphs, DD-Paths, Test Coverage Metrics, Basis Path Testing, Guidelines and Observations, **Data Flow Testing:** Define/Use Testing, Slice-Based Testing, Program Slicing Tools.	**12**
IV	**Software Verification and Validation:** Introduction, Verification, Verification Workbench, Methods of Verification, Types of reviews on the basis od Stage Phase, Entities involved in verification, Reviews in testing lifecycle, Coverage in Verification, Concerns of Verification, Validation, Validation Workbench, Levels of Validation, Coverage in Validation, Acceptance Testing, Management of Verification and Validation, Software development verification and validation activities. **V-test Model:** Introduction, V-model for software, Testing during Proposal stage, Testing during requirement stage, Testing during test planning phase, Testing during design phase, Testing during coding, VV Model, Critical Roles and Responsibilities.	**12**
V	**Levels of Testing:** Introduction, Proposal Testing, Requirement Testing, Design Testing, Code Review, Unit Testing, Module Testing, Integration Testing, Big-Bang Testing, Sandwich Testing, Critical Path First, Sub System Testing, System Testing, Testing Stages. **Special Tests:** Introduction, GUI testing, Compatibility Testing, Security Testing, Performance Testing, Volume Testing, Stress Testing, Recovery Testing, Installation Testing, Requirement Testing, Regression Testing, Error Handling Testing, Manual Support Testing, Intersystem Testing, Control Testing, Smoke Testing, Adhoc Testing, Parallel Testing, Execution Testing, Operations Testing, Compliance Testing, Usability Testing, Decision Table Testing, Documentation Testing, Training testing, Rapid Testing, Control flow graph, Generating tests on the basis of Combinatorial Designs, State Graph, Risk Associated with New Technologies, Process maturity level of Technology, Testing Adequacy of Control in New technology usage, Object Oriented Application Testing, Testing of Internal Controls, COTS Testing, Client Server Testing, Web Application Testing, Mobile Application Testing, eBusiness eCommerce Testing, Agile Development Testing, Data Warehousing Testing.	**12**

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Software Testing and Continuous Quality Improvement	William E. Lewis	CRC Press	Third	2016
2	Software Testing: Principles, Techniques and Tools	M. G. Limaye	TMH		2017
3.	Foundations of Software Testing	Dorothy Graham, Erik van Veenendaal, Isabel Evans, Rex Black	Cengage Learning	3rd	
4.	Software Testing: A Craftsman's Approach	Paul C. Jorgenson	CRC Press	4th	2017

B. Sc. (Information Technology)		Semester – VI	
Course Name: Security in Computing		**Course Code: USIT602**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Information Security Overview** : The Importance of Information Protection, The Evolution of Information Security, Justifying Security Investment, Security Methodology, How to Build a Security Program, The Impossible Job, The Weakest Link, Strategy and Tactics, Business Processes vs. Technical Controls. **Risk Analysis**: Threat Definition, Types of Attacks, Risk Analysis. **Secure Design Principles**: The CIA Triad and Other Models, Defense Models, Zones of Trust, Best Practices for Network Defense.	**12**
II	**Authentication and Authorization**: Authentication, Authorization **Encryption**: A Brief History of Encryption, Symmetric-Key Cryptography, Public Key Cryptography, Public Key Infrastructure. **Storage Security**: Storage Security Evolution, Modern Storage Security, Risk Remediation, Best Practices. **Database Security**: General Database Security Concepts, Understanding Database Security Layers, Understanding Database-Level Security, Using Application Security, Database Backup and Recovery, Keeping Your Servers Up to Date, Database Auditing and Monitoring.	**12**
III	**Secure Network Design**: Introduction to Secure Network Design, Performance, Availability, Security. **Network Device Security**: Switch and Router Basics, Network Hardening. **Firewalls**: Overview, The Evolution of Firewalls, Core Firewall Functions, Additional Firewall Capabilities, Firewall Design. **Wireless Network Security**: Radio Frequency Security Basics, Data-Link Layer Wireless Security Features, Flaws, and Threats, Wireless Vulnerabilities and Mitigations, Wireless Network Hardening Practices and Recommendations, Wireless Intrusion Detection and Prevention, Wireless Network Positioning and Secure Gateways.	**12**
IV	**Intrusion Detection and Prevention Systems**: IDS Concepts, IDS Types and Detection Models, IDS Features, IDS Deployment Considerations, Security Information and Event Management (SIEM). **Voice over IP (VoIP) and PBX Security**: Background, VoIP Components, VoIP Vulnerabilities and Countermeasures, PBX, TEM: Telecom Expense Management. **Operating System Security Models**: Operating System Models, Classic Security Models, Reference Monitor, Trustworthy Computing, International Standards for Operating System Security.	**12**

V	**Virtual Machines and Cloud Computing**: Virtual Machines, Cloud Computing. **Secure Application Design**: Secure Development Lifecycle, Application Security Practices, Web Application Security, Client Application Security, Remote Administration Security. **Physical Security**: Classification of Assets, Physical Vulnerability Assessment, Choosing Site Location for Security, Securing Assets: Locks and Entry Controls, Physical Intrusion Detection.	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	The Complete Reference: Information Security	Mark Rhodes-Ousley	McGraw-Hill	2nd	2013
2.	Essential Cybersecurity Science	Josiah Dykstra	O'Reilly	Fifth	2017
3.	Principles of Computer Security: CompTIA Security+ and Beyond	Wm.Arthur Conklin, Greg White	McGraw Hill	Second	2010

B. Sc. (Information Technology)		Semester – VI	
Course Name: Business Intelligence		**Course Code: USIT603**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Business intelligence:** Effective and timely decisions, Data, information and knowledge, The role of mathematical models, Business intelligence architectures, Ethics and business intelligence **Decision support systems:** Definition of system, Representation of the decision-making process, Evolution of information systems, Definition of decision support system, Development of a decision support system	**12**
II	**Mathematical models for decision making:** Structure of mathematical models, Development of a model, Classes of models **Data mining:** Definition of data mining, Representation of input data , Data mining process, Analysis methodologies **Data preparation**: Data validation, Data transformation, Data reduction	**12**
III	**Classification**: Classification problems, Evaluation of classification models, Bayesian methods, Logistic regression, Neural networks, Support vector machines **Clustering:** Clustering methods, Partition methods, Hierarchical methods, Evaluation of clustering models	**12**
IV	**Business intelligence applications:** **Marketing models**: Relational marketing, Sales force management, **Logistic and production models**: Supply chain optimization, Optimization models for logistics planning, Revenue management systems. **Data envelopment analysis**: Efficiency measures, Efficient frontier, The CCR model, Identification of good operating practices	**12**
V	**Knowledge Management:** Introduction to Knowledge Management, Organizational Learning and Transformation, Knowledge Management Activities, Approaches to Knowledge Management, Information Technology (IT) In Knowledge Management, Knowledge Management Systems Implementation, Roles of People in Knowledge Management **Artificial Intelligence and Expert Systems:** Concepts and Definitions of Artificial Intelligence, Artificial Intelligence Versus Natural Intelligence, Basic Concepts of Expert Systems, Applications of Expert Systems, Structure of Expert Systems, Knowledge Engineering, Development of Expert Systems	**12**

Books and References:					
Sr. No.	**Title**	**Author/s**	**Publisher**	**Edition**	**Year**
1.	Business Intelligence: Data Mining and Optimization for Decision Making	Carlo Vercellis	Wiley	First	2009
2.	Decision support and Business Intelligence Systems	Efraim Turban, Ramesh Sharda, Dursun Delen	Pearson	Ninth	2011
3.	Fundamental of Business Intelligence	Grossmann W, Rinderle-Ma	Springer	First	2015

B. Sc. (Information Technology)		Semester – VI	
Course Name: Principles of Geographic Information Systems		**Course Code: USIT604 (Elective I)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**A Gentle Introduction to GIS** **The nature of GIS:** Some fundamental observations, Defining GIS, GISystems, GIScience and GIApplications, Spatial data and Geoinformation. **The real world and representations of it:** Models and modelling, Maps, Databases, Spatial databases and spatial analysis **Geographic Information and Spatial Database** **Models and Representations of the real world** **Geographic Phenomena:** Defining geographic phenomena, types of geographic phenomena, Geographic fields, Geographic objects, Boundaries **Computer Representations of Geographic Information:** Regular tessellations, irregular tessellations, Vector representations, Topology and Spatial relationships, Scale and Resolution, Representation of Geographic fields, Representation of Geographic objects **Organizing and Managing Spatial Data** **The Temporal Dimension**	**12**
II	**Data Management and Processing Systems** **Hardware and Software Trends** **Geographic Information Systems:** GIS Software, GIS Architecture and functionality, Spatial Data Infrastructure (SDI) **Stages of Spatial Data handling:** Spatial data handling and preparation, Spatial Data Storage and maintenance, Spatial Query and Analysis, Spatial Data Presentation. **Database management Systems:** Reasons for using a DBMS, Alternatives for data management, The relational data model, Querying the relational database. **GIS and Spatial Databases:** Linking GIS and DBMS, Spatial database functionality.	**12**
III	**Spatial Referencing and Positioning** **Spatial Referencing:** Reference surfaces for mapping, Coordinate Systems, Map Projections, Coordinate Transformations	**12**

	Satellite-based Positioning: Absolute positioning, Errors in absolute positioning, Relative positioning, Network positioning, code versus phase measurements, Positioning technology **Data Entry and Preparation** **Spatial Data Input:** Direct spatial data capture, Indirect spatial data captiure, Obtaining spatial data elsewhere **Data Quality:** Accuracy and Positioning, Positional accuracy, Attribute accuracy, Temporal accuracy, Lineage, Completeness, Logical consistency **Data Preparation:** Data checks and repairs, Combining data from multiple sources **Point Data Transformation:** Interpolating discrete data, Interpolating continuous data	
IV	**Spatial Data Analysis** **Classification of analytical GIS Capabilities** **Retrieval, classification and measurement:** Measurement, Spatial selection queries, Classification **Overlay functions:** Vector overlay operators,Raster overlay operators **Neighbourhood functions:** Proximity computations, Computation of diffusion, Flow computation, Raster based surface analysis **Analysis:** Network analysis, interpolation, terrain modeling **GIS and Application models:** GPS, Open GIS Standards, GIS Applications and Advances **Error Propagation in spatial data processing:** How Errors propagate, Quantifying error propagation	**12**
V	**Data Visualization** **GIS and Maps, The Visualization Process** **Visualization Strategies: Present or explore?** **The cartographic toolbox:** What kind of data do I have?, How can I map my data? **How to map?:** How to map qualitative data, How to map quantitative data, How to map the terrain elevation, How to map time series **Map Cosmetics, Map Dissemination**	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Principles of Geographic Information Systems-An Introductory Text Book	Editors: Otto Huisman and Rolf A.	The International Institute of Geoinformation Science and Earth Observation	Fourth	2009

2.	Principles of Geographic Information Systems	P.A Burrough and R.A.McDonnell	Oxford University Press	Third	1999
3.	Fundamentals of Spatial Information Systems,	R.Laurini and D. Thompson,	Academic Press		1994
4.	Fundamentals of Geographic Information Systems	Michael N.Demers	Wiley Publications	Fourth	2009
5.	Introduction to Geographic Information Systems	Chang Kang-tsung (Karl),	McGrawHill	Any above 3rd Edition	2013 7th Edition
6.	GIS Fundamentals: A First Text on Geographic Information Systems	Paul Bolsatd	XanEdu Publishing Inc	5th Edition	

B. Sc. (Information Technology)		Semester – VI	
Course Name: Enterprise Networking		**Course Code: USIT605 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**General Network Design:** Network Design Methodology, Architectures for the Enterprise, Borderless Networks Architecture, Collaboration and Video Architecture, Data Center and Virtualization Architecture, Design Lifecycle: Plan, Build, Manage Plan Phase Build Phase Manage Phase Prepare, Plan, Design, Implement, Operate, and Optimize Phases Prepare Phase Plan Phase Design Phase Implement Phase Operate Phase Optimize Phase Summary of PPDIOO Phases Project Deliverables Design Methodology Identifying Customer Design Requirements Characterizing the Existing Network Steps in Gathering Information Network Audit Tools Network Checklist Designing the Network Topology and Solutions Top-Down Approach Pilot and Prototype Tests Design Document **Network Design Models:** Hierarchical Network Models Benefits of the Hierarchical Model, Hierarchical Network Design, Core Layer, Distribution Layer, Access Layer, Hierarchical Model Examples, Hub-and-Spoke, Design Collapsed Core, Design Enterprise Architecture Model, Enterprise Campus Module, Enterprise Edge Area, E-Commerce Module, Internet Connectivity Module, VPN/Remote Access, Enterprise WAN, Service Provider Edge Module, Remote Modules, Enterprise Branch Module, Enterprise Data Center Module, Enterprise Teleworker Module, High Availability Network Services, Workstation-to-Router Redundancy and LAN, High Availability Protocols, ARP Explicit Configuration, RDP, RIP, HSRP, VRRP, GLBP, Server Redundancy, Route Redundancy, Load Balancing, Increasing Availability, Link Media Redundancy	**12**
II	**Enterprise LAN Design:** LAN Media, Ethernet Design Rules, 100Mbps Fast Ethernet Design Rules, Gigabit Ethernet Design Rules, 1000BASE-LX Long-Wavelength Gigabit Ethernet, 1000BASE-SX Short-Wavelength Gigabit Ethernet, 1000BASE-CX Gigabit Ethernet over Coaxial Cable, 1000BASE-T Gigabit Ethernet over UTP 86, 10 Gigabit Ethernet Design Rules, 10GE Media Types, EtherChannel, Comparison of Campus Media LAN Hardware, Repeaters, Hubs, Bridges, Switches, Routers, Layer 3 Switches, Campus LAN Design and Best Practices Best Practices for Hierarchical Layers, Access Layer Best Practices, Distribution Layer Best Practices, Core Layer Best Practices, STP Design Considerations, STP Toolkit, PortFast,	**12**

	UplinkFast, BackboneFast, Loop Guard, Root Guard, BPDU Guard, BPDU Filter, VLAN and Trunk Considerations, Unidirectional Link Detection (UDLD) Protocol, Large-Building LANs, Enterprise Campus LANs, Edge Distribution, Medium-Size LANs, Small and Remote Site LANs, Server Farm Module, Server Connectivity Options, Enterprise Data Center Infrastructure, Campus LAN QoS Considerations, Multicast Traffic Considerations, CGMP, IGMP Snooping. **Data Center Design:** Enterprise DC Architecture, Data Center Foundation Components, Data Center Topology Components, Data Center Network Programmability, SDN, Controllers, APIs, ACI, Challenges in the DC, Data Center Facility Aspects, Data Center Space, Data Center Power, Data Center Cooling, Data Center Heat, Data Center Cabling, Enterprise DC Infrastructure, Data Center Storage, Data Center Reference Architecture, Defining the DC Access Layer, Defining the DC Aggregation Layer, Defining the DC Core Layer, Security in the DC, Fabric Extenders, Virtualization Overview, Challenges, Defining Virtualization and Benefits, Virtualization Risks, Types of Virtualization, Virtualization Technologies, VSS, VRF, vPC, Device Contexts, Server Virtualization, Server Scaling, Virtual Switching, Network Virtualization Design Considerations, Access Control, Path Isolation, Services Edge, Data Center Interconnect, DCI Use Cases, DCI Transport Options, DCI L2 Considerations, Load Balancing in the DC, Application Load Balancing, Network Load Balancing.	
III	**Wireless LAN Design:** Wireless LAN Technologies, WLAN Standards, ISM and UNII Frequencies, Summary of WLAN Standards, Service Set Identifier, WLAN Layer 2 Access Method, WLAN Security, Unauthorized Access, WLAN Security Design Approach, IEEE 802.1X-2001 Port-Based Authentication, Dynamic WEP Keys and LEAP, Controlling WLAN Access to Servers, WLAN Authentication, Authentication Options, WLAN Controller Components, WLC Interface Types, AP Controller Equipment Scaling, Roaming and Mobility Groups, Intracontroller Roaming, Layer 2 Intercontroller Roaming, Layer 3 Intercontroller Roaming, Mobility Groups, WLAN Design, Controller Redundancy Design: Deterministic vs. Dynamic, N+1 WLC Redundancy, N+N WLC Redundancy, N+N+1 WLC Redundancy, Radio Management and Radio Groups, RF Groups, RF Site Survey, Using EoIP Tunnels for Guest Services, Wireless Mesh for Outdoor Wireless, Mesh Design Recommendations, Campus Design Considerations, Power over Ethernet (PoE), Wireless and Quality of Service (QoS), Branch Design Considerations, Local MAC, REAP, Hybrid REAP, Branch Office Controller Options. **WAN Technologies and the Enterprise Edge:** WAN and Enterprise Edge Overview, Definition of WAN, WAN Edge Module, Enterprise	**12**

	Edge Modules, WAN Transport Technologies, ISDN, ISDN BRI Service, ISDN PRI Service, Digital Subscriber Line, Cable, Wireless, Frame Relay, Time-Division Multiplexing, Metro Ethernet, SONET/SDH, Multiprotocol Label Switching (MPLS), Dark Fiber, Dense Wavelength-Division Multiplexing, Ordering WAN Technology and Contracts, WAN and Edge Design Methodologies, Response Time, Throughput, Reliability, Bandwidth Considerations, WAN Link Categories, Optimizing Bandwidth Using QoS, Queuing, Traffic Shaping and Policing, Classification, Congestion Management, Priority Queuing, Custom Queuing, Weighted Fair Queuing, Class-Based Weighted Fair Queuing, Low-Latency Queuing, Traffic Shaping and Policing, Link Efficiency, Window Size, DMZ Connectivity, Segmenting DMZs, DMZ Services, Internet Connectivity, Centralized Internet (Branch) vs. Direct Internet (Branch), High Availability for the Internet Edge, VPN Network Design. **WAN Design** Traditional WAN Technologies Hub-and-Spoke Topology Full-Mesh Topology Partial-Mesh Topology Point-to-Point Topology Remote Site Connectivity Enterprise VPN vs. Service Provider VPN Enterprise Managed VPN: IPsec IPsec Direct Encapsulation Generic Routing Encapsulation IPsec DMVPN IPsec Virtual Tunnel Interface Design GETVPN Service Provider–Managed Offerings ,Metro Ethernet Service Provider VPNs: L2 vs. L3 ,Virtual Private Wire Services VPWS L2 VPN Considerations ,Virtual Private LAN Services VPLS L2 VPN Considerations ,MPLS, MPLS Layer 3 Design Overview MPLS L3 VPN Considerations ,VPN Benefits WAN Backup Design WAN Backup over the Internet Enterprise WAN Architecture Cisco Enterprise MAN/WAN Enterprise WAN/MAN Architecture Comparison ,Enterprise WAN Components Comparing Hardware and Software Enterprise Branch Architecture Branch Design Branch Connectivity Redundancy for Branches Single WAN Carrier vs. Dual WAN Carriers Single MPLS Carrier Site ,Dual MPLS Carriers Hybrid WAN: L3 VPN with IPsec VPN ,Internet for Branches Flat Layer 2 vs. Collapsed Core ,Enterprise Branch Profiles Small Branch Design Medium Branch Design Large Branch Design Enterprise Teleworker Design ,ISRs for Teleworkers	
IV	Internet Protocol Version 4 Design,IPv4 Header ToS IPv4 Fragmentation IPv4 Addressing ,IPv4 Address Classes Class A Addresses Class B Addresses ,Class C Addresses Class D Addresses Class E Addresses ,IPv4 Address Types IPv4 Private Addresses NAT ,IPv4 Address Subnets Mask Nomenclature IP Address Subnet Design Example Determining the Network Portion of an IP Address Variable-Length Subnet Masks, Loopback Addresses IP Telephony Networks ,IPv4 Addressing Design Goal of IPv4 Address Design , Plan for Future Use of IPv4 Addresses , Performing Route Summarization , Plan for a	**12**

	Hierarchical IP Address Network , Private and Public IP Address and NAT Guidelines , Steps for Creating an IPv4 Address Plan Case Study: IP Address Subnet Allocation , Address Assignment and Name Resolution , Recommended Practices of IP Address Assignment , BOOTP DHCP DNS , Internet Protocol Version 6 Design, IPv6 Header IPv6 Address Representation IPv4-Compatible IPv6 Addresses IPv6 Prefix Representation IPv6 Address Scope Types and Address Allocations IPv6 Address Allocations IPv6 Unicast Address Global Unicast Addresses Link-Local Addresses , Unique Local IPv6 Address Global Aggregatable IPv6 Address , IPv4-Compatible IPv6 Address IPv6 Anycast Addresses , IPv6 Multicast Addresses IPv6 Mechanisms ICMPv6 , IPv6 Neighbor Discovery Protocol IPv6 Name Resolution , Path MTU Discovery IPv6 Address-Assignment Strategies , Manual Configuration SLAAC of Link-Local Address , SLAAC of Globally Unique IPv6 Address DHCPv6 , DHCPv6 Lite IPv6 Security IPv6 Routing Protocols RIPng OSPFv3 , BGP4 Multiprotocol Extensions (MP-BGP) for IPv6 , IPv6 Addressing Design , Planning for Addressing with IPv6 , Route Summarization with IPv6 IPv6 Private Addressing IPv6 for the Enterprise IPv6 Address Allocation , Partly Linked IPv4 Address into IPv6, Whole IPv4 Address Linked into IPv6 IPv6 Addresses Allocated Per Location and/or Type , IPv4-to-IPv6 Transition Mechanisms and Deployment Models , Dual-Stack Mechanism IPv6 over IPv4 Tunnels , Protocol Translation Mechanisms IPv6 Deployment Models , Dual-Stack Model Hybrid Model Service Block Model ,IPv6 Deployment Model Comparison IPv6 Comparison with IPv4 ,OSPF, BGP, Route Manipulation, and IP Multicast,OSPFv2 OSPFv2 Metric OSPFv2 Adjacencies and Hello Timers , OSPFv2 Areas OSPF Area Design Considerations OSPF Router Types OSPF DRs LSA Types Autonomous System External Path Types OSPF Stub Area Types Stub Areas Totally Stubby Areas , NSSAs Virtual Links OSPFv2 Router Authentication , OSPFv2 Summary OSPFv3 OSPFv3 Changes from OSPFv2, OSPFv3 Areas and Router Types OSPFv3 LSAs OSPFv3 Summary BGP BGP Neighbors eBGP iBGP Route Reflectors Confederations BGP Administrative Distance , BGP Attributes, Weight, and the BGP Decision Process BGP Path Attributes Next-Hop Attribute Local Preference Attribute Origin Attribute Autonomous System Path Attribute MED Attribute Community Attribute Atomic Aggregate and Aggregator Attributes Weight BGP Decision Process , BGP Summary , Route Manipulation PBR Route Summarization Route Redistribution Default Metric OSPF Redistribution Route Filtering Transit Traffic Routing Protocols on the Hierarchical Network Infrastructure IP Multicast Review , Multicast Addresses Layer 3 to Layer 2 Mapping IGMP , IGMPv1 IGMPv2 IGMPv3 CGMP IGMP Snooping , Sparse Versus Dense Multicast Multicast Source and Shared	

	Trees PIM PIM-SM PIM DR Auto-RP PIMv2 Bootstrap Router , DVMRP IPv6 Multicast Addresses	
V	Managing Security Network Security Overview Security Legislation Security Threats Reconnaissance and Port Scanning Vulnerability Scanners Unauthorized Access Security Risks Targets Loss of Availability Integrity Violations and Confidentiality Breaches , Security Policy and Process Security Policy Defined , Basic Approach of a Security Policy Purpose of Security Policies, Security Policy Components Risk Assessment , Risk Index Continuous Security Integrating Security Mechanisms into Network Design Trust and Identity Management , Trust Domains of Trust Identity Passwords Tokens Certificates , Network Access Control Secure Services Encryption Fundamentals Encryption Keys VPN Protocols , Transmission Confidentiality Data Integrity Threat Defense , Physical Security Infrastructure Protection Security Management Solutions Security Solution Network Security Platforms , Trust and Identity Technologies Firewall Fundamentals , Types of Firewalls Next-Gen Firewalls NAT Placement , Firewall Guidelines Firewall ACLs , Identity and Access Control Deployments Detecting and Mitigating Threats IPS/IDS Fundamentals IPS/IDS Guidelines , Threat Detection and Mitigation Technologies , Threat-Detection and Threat-Mitigation Solutions , FirePOWER IPS Security Management Applications , Security Platform Solutions Security Management Network Integrating Security into Network Devices IOS Security , ISR G2 Security Hardware Options Securing the Enterprise , Implementing Security in the Campus Implementing Security in the Data Center Implementing Security in the Enterprise Edge Network Management Protocols, Simple Network Management Protocol SNMP Components , MIB SNMP Message Versions SNMPv1 SNMPv2 SNMPv3 , Other Network Management Technologies RMON , RMON2 NetFlow Compared to RMON and SNMP , CDP LLDP Syslog	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	CCDA200-310Official Cert Guide	ANTHONY BRUNO, CCIE No. 2738 STEVE JORDAN, CCIE No. 11293	**Cisco Press**		
2.	Network Warrior	Gary A Donabue	**O Reilly**	2nd	2011

B. Sc. (Information Technology)		Semester – VI	
Course Name: IT Services Management		Course Code: USIT606 (Elective I)	
Periods per week (1 Period is 50 minutes),		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	**IT Service Management:** Introduction, What is service management? What are services? Business Process, Principles of Service management: Specialisation and Coordination, The agency principle, Encapsulation, Principles of systems, The service Life Cycle, Functions and processes across the life cycle. **Service Strategy Principles:** Value creation, Service Assets, Service Provider Service Structures, Service Strategy Principles. **Service Strategy:** Define the market, Develop the offerings, Develop Strategic Assets, Prepare for execution. **Challenges, Critical Success factors and risks:** Complexity, Coordination and Control, Preserving value, Effectiveness in measurement, Risks.	12
II	**Service Design:** Fundamentals, **Service Design Principles:** Goals, Balanced Design, Identifying Service requirements, identifying and documenting business requirements and drivers, Design activities, Design aspects, Subsequent design activities, Design constraints, Service oriented architecture, Business Service Management, Service Design Models **Service Design Processes:** Service Catalogue Management, Service Level Management, Capacity Management, Availability Management, IT Service Continuity Management, Information Security Management, Supplier Management **Challenges, Critical Success factors and risks:** Challenges, Risks	12
III	**Service Transition:** Fundamentals, **Service Transition Principles:** Principles Supporting Service Transition, Policies for Service Transition **Service Transition Processes:** Transition planning and support, Change Management, Service Asses Configuration Management, Service and Deployment Management, Service Validation and Testing, Evaluation, Knowledge Management. **Challenges, Critical Success factors and risks:** Challenges, Critical Success factors, Risks, Service Transition under difficult Conditions.	12
IV	**Service Operation:** Fundamentals, **Service Operation Principles:** Functions, groups, teams, departments and divisions, Achieving balance in service operations, Providing service, Operation staff involvement in service design and service transition, Operational Health, Communication, Documentation	12

	Service Operation Processes: Event Management, Incident Management, Request fulfilment, Problem Management, Access Management, Operational activities of processes covered in other lifecycle phases. **Challenges, Critical Success factors and risks:** Challenges, Critical Success factors, Risks	
V	**Continual Service Improvement(CSI) Principles:** CSI Approach, CSI and organizational change, Ownership, CSI register, External and Internal drivers, Service level management, Knowledge management, The Deming cycle, Service Measurement, IT governance, Frameworks, models, standards and quality Systems, CSI inputs and outputs. **CSI Process:** The seven step improvement process. **CSI Methods nad Techniques:** Methods and techniques, Assessments, benchmarking, Service Measurement, Metrics, Return on Investment, Service reporting, CSI and other service management processes, **Organising for CSI:** Organisational development, Functions, roles, Customer Engagement, Responsibility model - RACI, Competence and training. **Technology considerations:** Tools to support CSI activities. **Implementing CSI:** Critical Considerations for implementing CSI, The start, Governance, CSI and organisational change, Communication Strategy and Plan	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	ITIL v3 Foundation Complete Certification Kit				2009
2.	ITIL v3 Service Strategy		OGC/TSO		
3.	ITIL v3 Service Transition		OGC/TSO		
4.	ITIL v3 Service Operation		OGC/TSO		
5.	ITIL Continual Service Improvement		TSO	2011	2011

B. Sc. (Information Technology)		Semester – VI	
Course Name: Cyber Laws		**Course Code: USIT607 (Elective I)**	
Periods per week (1 Period is 50 minutes)		**5**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Theory Examination**	**2½**	**75**
	Internal	**--**	**25**

Unit	Details	Lectures
I	**Power of Arrest Without Warrant Under the IT Act, 2000:** A Critique, Crimes of this Millennium, Section 80 of the IT Act, 2000 – A Weapon or a Farce? Forgetting the Line Between Cognizable and Non-Cognizable Offences, Necessity of Arrest without Warrant from Any Place, Public or Otherwise, Check and Balances Against Arbitrary Arrests, Arrest for "About to Commit" an Offence Under the IT Act: A Tribute to Draco, Arrest, But NO Punishment! **Cyber Crime and Criminal Justice: Penalties, Adjudication and Appeals Under the IT Act, 2000:** Concept of "Cyber Crime " and the IT Act , 2000, Hacking, Teenage Web Vandals, Cyber Fraud and Cyber Cheating, Virus on the Internet, Defamation, Harassment and E-mail Abuse, Cyber Pornography, Other IT Act Offences, Monetary Penalties, Adjudication and Appeals Under IT Act , 2000, Network Service Providers, Jurisdiction and Cyber Crime, Nature of Cyber Criminality, Strategies to Tackle Cyber Crime and Trends, Criminal Justice in India and Implications on Cyber Crime.	**12**
II	**Contracts in the Infotech World:** Contracts in the Infotech World, Click-Wrap and Shrink-Wrap Contract: Status under the Indian Contract Act, 1872, Contract Formation Under the Indian Contract Act, 1872, Contract Formation on the Internet, Terms and Conditions of Contracts. **Jurisdiction in the Cyber World:** Questioning the Jurisdiction and Validity of the Present Law of Jurisdiction, Civil Law of Jurisdiction in India, Cause of Action, Jurisdiction and the Information Technology Act,2000, Foreign Judgements in India, Place of Cause of Action in Contractual and IPR Disputes, Exclusion Clauses in Contracts, Abuse of Exclusion Clauses, Objection of Lack of Jurisdiction, Misuse of the Law of Jurisdiction, Legal Principles on Jurisdiction in the United State of America, Jurisdiction Disputes w.r.t. the Internet in the United State of America.	**12**
III	**Battling Cyber Squatters and Copyright Protection in the Cyber World:** Concept of Domain Name and Reply to Cyber Squatters, Meta-Tagging, Legislative and Other Innovative Moves Against Cyber Squatting, The Battle Between Freedom and Control on the Internet, Works in Which Copyright Subsists and meaning of Copyright, Copyright Ownership and Assignment, License of Copyright, Copyright Terms and Respect for Foreign Works, Copyright	**12**

	Infringement, Remedies and Offences, Copyright Protection of Content on the Internet; Copyright Notice, Disclaimer and Acknowledgement, Downloading for Viewing Content on the Internet, Hyper-Linking and Framing, Liability of ISPs for Copyright Violation in the Cyber World: Legal Developments in the US, Napster and its Cousins: A Revolution on the Internet but a Crisis for Copyright Owners, Computer Software Piracy.	
IV	**E-Commerce Taxation: Real Problems in the Virtual World:** A Tug of War on the Concept of 'Permanent Establishment', Finding the PE in Cross Border E-Commerce, The United Nations Model Tax Treaty, The Law of Double Taxation Avoidance Agreements and Taxable Jurisdiction Over Non-Residents, Under the Income Tax Act, 1961, Tax Agents of Non-Residents under the Income Tax Act,1961 and the Relevance to E-Commerce, Source versus Residence and Classification between Business Income and Royalty, The Impact of the Internet on Customer Duties, Taxation Policies in India: At a Glance. **Digital Signature, Certifying Authorities and E-Governance:** Digital Signatures, Digital Signature Certificate, Certifying Authorities and Liability in the Event of Digital Signature Compromise, E-Governance in India: A Warning to Babudom!	**12**
V	**The Indian Evidence Act of 1872 v. Information Technology Act, 2000:** Status of Electronic Records as Evidence, Proof and Management of Electronic Records; Relevancy, Admissibility and Probative Value of E-Evidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages, Other Amendments in the Indian Evidence Act by the IT Act, Amendments to the Bankers Books Evidence Act, 1891 and Reserve Bank of India Act, 1934. **Protection of Cyber Consumers in India:** Are Cyber Consumers Covered Under the Consumer Protection Act? Goods and Services, Consumer Complaint, Defect in Goods and Deficiency in Services, Restrictive and Unfair Trade Practices, Instances of Unfair Trade Practices, Reliefs Under CPA, Beware Consumers, Consumer Foras, Jurisdiction and Implications on cyber Consumers in India, Applicability of CPA to Manufacturers, Distributors, Retailers and Service Providers Based in Foreign Lands Whose Goods are Sold or Services Provided to a Consumer in India. Amendments in Indian IT Act 2000	**12**

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Cyber Law Simplified	Vivek Sood	TMH Education		2001
2.	Cybersecurity Law	Jeff Kosseff	Wiley		2017

B. Sc. (Information Technology)		Semester – VI	
Course Name: Project Implementation		**Course Code: USIT6P1**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

The details are given in Appendix – I

B. Sc. (Information Technology)		Semester – VI	
Course Name: Security in Computing Practical		Course Code: USIT6P2	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	-

Practical No	Details
1	**Configure Routers**
a	OSPF MD5 authentication.
b	NTP.
c	to log messages to the syslog server.
d	to support SSH connections.
2	**Configure AAA Authentication**
a	Configure a local user account on Router and configure authenticate on the console and vty lines using local AAA
b	Verify local AAA authentication from the Router console and the PC-A client
3	**Configuring Extended ACLs**
a	**Configure, Apply and Verify an Extended Numbered ACL**
4	**Configure IP ACLs to Mitigate Attacks and IPV6 ACLs**
a	Verify connectivity among devices before firewall configuration.
b	Use ACLs to ensure remote access to the routers is available only from management station PC-C.
c	Configure ACLs on to mitigate attacks.
d	Configuring IPv6 ACLs
5	**Configuring a Zone-Based Policy Firewall**
6	Configure IOS Intrusion Prevention System (IPS) Using the CLI
a	Enable IOS IPS.
b	Modify an IPS signature.
7	**Layer 2 Security**
a	Assign the Central switch as the root bridge.
b	Secure spanning-tree parameters to prevent STP manipulation attacks.
c	Enable port security to prevent CAM table overflow attacks.
8	**Layer 2 VLAN Security**
9	**Configure and Verify a Site-to-Site IPsec VPN Using CLI**

10	**Configuring ASA Basic Settings and Firewall Using CLI**
a	Configure basic ASA settings and interface security levels using CLI
b	Configure routing, address translation, and inspection policy using CLI
c	Configure DHCP, AAA, and SSH
d	Configure a DMZ, Static NAT, and ACLs

B. Sc. (Information Technology)		Semester – VI	
Course Name: Business Intelligence Practical		Course Code: USIT6P3	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	-

Practical No	Details
1	Import the legacy data from different sources such as (Excel , SqlServer, Oracle etc.) and load in the target system. (You can download sample database such as Adventureworks, Northwind, foodmart etc.)
2	Perform the Extraction Transformation and Loading (ETL) process to construct the database in the Sqlserver.
3	a. Create the Data staging area for the selected database. b. Create the cube with suitable dimension and fact tables based on ROLAP, MOLAP and HOLAP model.
4	a.Create the ETL map and setup the schedule for execution. b. Execute the MDX queries to extract the data from the datawarehouse.
5	a. Import the datawarehouse data in Microsoft Excel and create the Pivot table and Pivot Chart. b. Import the cube in Microsoft Excel and create the Pivot table and Pivot Chart to perform data analysis.
6	Apply the what – if Analysis for data visualization. Design and generate necessary reports based on the data warehouse data.
7	Perform the data classification using classification algorithm.
8	Perform the data clustering using clustering algorithm.
9	Perform the Linear regression on the given data warehouse data.
10	Perform the logistic regression on the given data warehouse data.

The BI tools such as Tableau / Power BI / BIRT / R / Excel or any other can be used.

B. Sc. (Information Technology)		Semester – VI	
Course Name: Principles of Geographical Information System Practical		**Course Code: USIT6P4 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

Practical No	Details
0	Familiarizing Quantum GIS: Installation of QGIS, datasets for both Vector and Raster data, Maps.
1	Creating and Managing Vector Data: Adding vector layers, setting properties, formatting, calculating line lengths and statistics
2	Exploring and Managing Raster data: Adding raster layers, raster styling and analysis, raster mosaicking and clipping
3	Making a Map, Working with Attributes, Importing Spreadsheets or CSV files Using Plugins, Searching and Downloading OpenStreetMap Data
4	Working with attributes, terrain Data
5	Working with Projections and WMS Data
6	Georeferencing Topo Sheets and Scanned Maps Georeferencing Aerial Imagery Digitizing Map Data
7	Managing Data Tables and Saptial data Sets: Table joins, spatial joins, points in polygon analysis, performing spatial queries
8	Advanced GIS Operations 1: Nearest Neighbor Analysis, Sampling Raster Data using Points or Polygons, Interpolating Point Data
9	Advance GIS Operations 2: Batch Processing using Processing Framework Automating Complex Workflows using Processing Modeler Automating Map Creation with Print Composer Atlas
10	Validating Map data

B. Sc. (Information Technology)		Semester – VI	
Course Name: Advanced Networking Practical		**Course Code: USIT6P5 (Elective II)**	
Periods per week (1 Period is 50 minutes)		**3**	
Credits		**2**	
		Hours	**Marks**
Evaluation System	**Practical Examination**	**2½**	**50**
	Internal	**--**	**-**

Practical No	Details
1	**Configuring OSPF – I**
a	Single-Area OSPF Link Costs and Interface Priorities
b	Multi-Area OSPF with Stub Areas and Authentication
2	**Configuring OSPF – II**
a	OSPF Virtual Links and Area Summarization
b	OSPF over Frame Relay
3	**Redistribution and Administrative Distances**
a	Redistribution Between RIP and OSPF
b	Manipulating Administrative Distances
4	**BGP**
a	Configuring BGP with Default Routing
b	Using the AS_PATH Attribute
c	BGP Route Reflectors and Route Filters
5	**IPv6**
a	Configuring OSPF for IPv6
b	Configuring 6to4 Tunnels
6	**VLANs and EtherChannel**
a	Static VLANS, VLAN Trunking, and VTP Domains and Modes
b	Configuring EtherChannel
7	**Spanning Tree Protocol**
a	Spanning Tree Protocol (STP) Default Behavior
b	Modifying Default Spanning Tree Behavior
8	**VLAN and Spanning Tree**
a	Per-VLAN Spanning Tree Behavior
b	Multiple Spanning Tree

9	**Internal VLAN Routing**
a	Inter-VLAN Routing with an External Router
b	Inter-VLAN Routing with an Internal Route Processor
10	**Configure NAT Services**

B. Sc. (Information Technology)		Semester – VI	
Course Name: Advanced Mobile Programming Practical		Course Code: USIT6P6	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2½	50
	Internal	--	--

Practical No	Details
1	**Introduction to Android, Introduction to Android Studio IDE, Application Fundamentals:** Creating a Project, Android Components, Activities, Services, Content Providers, Broadcast Receivers, Interface overview, Creating Android Virtual device, USB debugging mode, Android Application Overview. Simple "Hello World" program.
2	**Programming Resources** Android Resources: (Color, Theme, String, Drawable, Dimension, Image),
3	**Programming Activities and fragments** Activity Life Cycle, Activity methods, Multiple Activities, Life Cycle of fragments and multiple fragments.
4	**Programs related to different Layouts** Coordinate, Linear, Relative, Table, Absolute, Frame, List View, Grid View.
5	**Programming UI elements** AppBar, Fragments, UI Components
6	**Programming menus, dialog, dialog fragments**
7	**Programs on Intents, Events, Listeners and Adapters** The Android Intent Class, Using Events and Event Listeners
8	**Programs on Services, notification and broadcast receivers**
9	**Database Programming with SQLite**
10	**Programming threads, handles and asynchronized programs**
11	**Programming Media API and Telephone API**
12	**Programming Security and permissions**
13	**Programming Network Communications and Services (JSON)**

APPENDIX – 1

Project Dissertation Semester V and Project Implementation Semester VI

Chapter 1 to 4 should be submitted in Semester V in spiral binding. These chapter have also to be included in Semester VI report. Semester VI report has to be hard bound with golden embossing. Students will be evaluated based on the dissertation in semester V and dissertation and viva voce in Semester VI.

I. OBJECTIVES

- Describe the Systems Development Life Cycle (SDLC).
- Evaluate systems requirements.
- Complete a problem definition.
- Evaluate a problem definition.
- Determine how to collect information to determine requirements.
- Perform and evaluate feasibility studies like cost-benefit analysis, technical feasibility, time feasibility and Operational feasibility for the project.
- Work on data collection methods for fact finding.
- Construct and evaluate data flow diagrams.
- Construct and evaluate data dictionaries.
- Evaluate methods of process description to include structured English, decision tables and decision trees.
- Evaluate alternative tools for the analysis process.
- Create and evaluate such alternative graphical tools as systems flow charts and state transition diagrams.
- Decide the S/W requirement specifications and H/W requirement specifications.
- Plan the systems design phase of the SDLC.
- Distinguish between logical and physical design requirements.
- Design and evaluate system outputs.
- Design and evaluate systems inputs.
- Design and evaluate validity checks for input data.

- Design and evaluate user interfaces for input.
- Design and evaluate file structures to include the use of indexes.
- Estimate storage requirements.
- Explain the various file update processes based on the standard file organizations.
- Decide various data structures.
- Construct and evaluate entity-relationship (ER) diagrams for RDBMS related projects.
- Perform normalization for the unnormalized tables for RDBMS related projects
- Decide the various processing systems to include distributed, client/server, online and others.
- Perform project cost estimates using various techniques.
- Schedule projects using both GANTT and PERT charts.
- Perform coding for the project.
- Documentation requirements and prepare and evaluate systems documentation.
- Perform various systems testing techniques/strategies to include the phases of testing.
- Systems implementation and its key problems.
- Generate various reports.
- Be able to prepare and evaluate a final report.
- Brief the maintenance procedures and the role of configuration management in operations.
- To decide the future scope and further enhancement of the system.
- Plan for several appendices to be placed in support with the project report documentation.
- Decide the various processing systems to include distributed, client/server, online and others.
- Perform project cost estimates using various techniques.
- Schedule projects using both GANTT and PERT charts.
- Perform coding for the project.
- Documentation requirements and prepare and evaluate systems documentation.
- Perform various systems testing techniques/strategies to include the phases of testing.
- Systems implementation and its key problems.
- Generate various reports.
- Be able to prepare and evaluate a final report.
- Brief the maintenance procedures and the role of configuration management in operations.
- To decide the future scope and further enhancement of the system.
- Plan for several appendices to be placed in support with the project report documentation.

- Work effectively as an individual or as a team member to produce correct, efficient, well-organized and documented programs in a reasonable time.
- Recognize problems that are amenable to computer solutions, and knowledge of the tool necessary for solving such problems.
- Develop of the ability to assess the implications of work performed.
- Get good exposure and command in one or more application areas and on the software
- Develop quality software using the software engineering principles
- Develop of the ability to communicate effectively.

II. Type of the Project

The majority of the students are expected to work on a real-life project preferably in some industry/ Research and Development Laboratories/Educational Institution/Software Company. Students are encouraged to work in the areas listed below. However, it is ***not mandatory*** for a student to work on a real-life project. The student can formulate a project problem with the help of her/his Guide and submit the project proposal of the same. **Approval of the project proposal is mandatory**. If approved, the student can commence working on it, and complete it. Use the latest versions of the software packages for the development of the project.

III. SOFTWARE AND BROAD AREAS OF APPLICATION

FRONT END / GUI Tools	.Net Technologies,Java
DBMS/BACK END	Oracle, SQL Plus, MY SQL, SQL Server,
LANGUAGES	C, C++, Java, VC++, C#, R,Python
SCRIPTING LANGUAGES	PHP,JSP, SHELL Scripts (Unix), TcL/TK,
.NET Platform	F#,C#. Net, Visual C#. Net, ASP.Net
MIDDLE WARE (COMPONENT) TECHNOLOGIES	COM/DCOM, Active-X, EJB
UNIX INTERNALS	Device Drivers, RPC, Threads, Socket programming
NETWORK/WIRELESS TECHNOLOGIES	-

REALTIME OPERATING SYSTEM/ EMBEDDED SKILLS	LINUX, Raspberry Pi, Arduino, 8051
APPLICATION AREAS	Financial / Insurance / Manufacturing / Multimedia / Computer Graphics / Instructional Design/ Database Management System/ Internet / Intranet / Computer Networking-Communication Software development/ E-Commerce/ ERP/ MRP/ TCP-IP programming / Routing protocols programming/ Socket programming.

IV. Introduction

The project report should be documented with scientific approach to the solution of the problem that the students have sought to address. The project report should be prepared in order to solve the problem in a methodical and professional manner, making due references to appropriate techniques, technologies and professional standards. The student should start the documentation process from the first phase of software development so that one can easily identify the issues to be focused upon in the ultimate project report. The student should also include the details from the project diary, in which they will record the progress of their project throughout the course. The project report should contain enough details to enable examiners to evaluate the work. The important points should be highlighted in the body of the report, with details often referred to appendices.

1.1 PROJECT REPORT:

Title Page

Original Copy of the Approved Proforma of the Project Proposal

Certificate of Authenticated work

Role and Responsibility Form

Abstract

Acknowledgement

Table of Contents

Table of Figures

CHAPTER 1: INTRODUCTION

1.1 Background

1.2 Objectives

1.3 Purpose, Scope, and Applicability

1.3.1 Purpose

1.3.2 Scope

1.3.3 Applicability

1.4 Achievements

1.5 Organisation of Report

CHAPTER 2: SURVEY OF TECHNOLOGIES

CHAPTER 3: REQUIREMENTS AND ANALYSIS

3.1 Problem Definition

3.2 Requirements Specification

3.3 Planning and Scheduling

3.4 Software and Hardware Requirements

3.5 Preliminary Product Description

3.6 Conceptual Models

CHAPTER 4: SYSTEM DESIGN

4.1 Basic Modules

4.2 Data Design

4.2.1 Schema Design

4.2.2 Data Integrity and Constraints

4.3 Procedural Design

4.3.1 Logic Diagrams

4.3.2 Data Structures

4.3.3 Algorithms Design

4.4 User interface design

4.5 Security Issues

4.6 Test Cases Design

The documentation should use tools like star UML, Visuo for windows, Rational Rose for design as part of Software Project Management Practical Course. The documentation should be spiral bound for semester V and the entire documentation should be hard bound during semester VI.

CHAPTER 5: IMPLEMENTATION AND TESTING

5.1 Implementation Approaches

5.2 Coding Details and Code Efficiency

5.2.1 Code Efficiency
5.3 Testing Approach
5.3.1 Unit Testing
5.3.2 Integrated Testing
5.3.3 Beta Testing
5.4 Modifications and Improvements
5.5 Test Cases

CHAPTER 6: RESULTS AND DISCUSSION
6.1 Test Reports
6.2 User Documentation
CHAPTER 7: CONCLUSIONS
7.1 Conclusion
7.1.1 Significance of the System
7.2 Limitations of the System
7.3 Future Scope of the Project
REFERENCES
GLOSSARY

APPENDIX A

APPENDIX B

V. EXPLANATION OF CONTENTS

Title Page
Sample format of Title page is given in Appendix 1 of this block. Students should follow the given format.
Original Copy of the Approved Proforma of the Project Proposal
Sample Proforma of Project Proposal is given in Appendix 2 of this block. Students should follow the given format.

Certificate of Authenticated work

Sample format of Certificate of Authenticated work is given in Appendix 3 of this block. Students should follow the given format.

Role and Responsibility Form

Sample format for Role and Responsibility Form is given in Appendix 4 of this block.
Students should follow the given format.

Abstract

This should be one/two short paragraphs (100-150 words total), summarising the project work. It is important that this is not just a re-statement of the original project outline. A suggested flow is background, project aims and main achievements. From the abstract, a reader should be able to ascertain if the project is of interest to them and, it should present results of which they may wish to know more details.

Acknowledgements

This should express student's gratitude to those who have helped in the preparation of project.

Table of Contents: The table of contents gives the readers a view of the detailed structure of the report. The students would need to provide section and subsection headings with associated pages. The formatting details of these sections and subsections are given below.

Table of Figures: List of all Figures, Tables, Graphs, Charts etc. along with their page numbers in a table of figures.

Chapter 1: Introduction

The introduction has several parts as given below:

Background: A description of the background and context of the project and its relation to work already done in the area. Summarise existing work in the area concerned with the project work.

Objectives: Concise statement of the aims and objectives of the project. Define exactly what is going to be done in the project; the objectives should be about 30 /40 words.
Purpose, Scope and Applicability: The description of Purpose, Scope, and Applicability are given below:

• Purpose: Description of the topic of the project that answers questions on why this project is being done. How the project could improve the system its significance and theoretical framework.
• Scope: A brief overview of the methodology, assumptions and limitations. The students should answer the question: What are the main issues being covered in the project? What are the main functions of the project?
• Applicability: The student should explain the direct and indirect applications of their work. Briefly discuss how this project will serve the computer world and people.
Achievements: Explain what knowledge the student achieved after the completion of the work. What contributions has the project made to the chosen area? Goals achieved - describes the degree to which the findings support the original objectives laid out by the project. The goals may be partially or fully achieved, or exceeded.

Organisation of Report: Summarising the remaining chapters of the project report, in effect, giving the reader an overview of what is to come in the project report.

Chapter 2: Survey of Technologies

In this chapter Survey of Technologies should demonstrate the students awareness and understanding of Available Technologies related to the topic of the project. The student should give the detail of all the related technologies that are necessary to complete the project. The should describe the technologies available in the chosen area and present a comparative study of all those Available Technologies. Explain why the student selected the one technology for the completion of the objectives of the project.

Chapter 3: Requirements and Analysis

Problem Definition: Define the problem on which the students are working in the project.

Provide details of the overall problem and then divide the problem in to sub-problems. Define each sub-problem clearly.

Requirements Specification: In this phase the student should define the requirements of the system, independent of how these requirements will be accomplished. The Requirements Specification describes the things in the system and the actions that can be done on these things. Identify the operation and problems of the existing system.

Planning and Scheduling: Planning and scheduling is a complicated part of software development. Planning, for our purposes, can be thought of as determining all the small tasks that must be carried out in order to accomplish the goal. Planning also takes into account, rules, known as constraints, which, control when certain tasks can or cannot happen. Scheduling can be thought of as determining whether adequate resources are available to carry out the plan. The student should show the Gantt chart and Program Evaluation Review Technique (PERT).

Software and Hardware Requirements: Define the details of all the software and hardware needed for the development and implementation of the project.

• Hardware Requirement: In this section, the equipment, graphics card, numeric co-processor, mouse, disk capacity, RAM capacity etc. necessary to run the software must be noted.

• Software Requirements: In this section, the operating system, the compiler, testing tools, linker, and the libraries etc. necessary to compile, link and install the software must be listed.

Preliminary Product Description: Identify the requirements and objectives of the new system. Define the functions and operation of the application/system the students are developing as project.

Conceptual Models: The student should understand the problem domain and produce a model of the system, which describes operations that can be performed on the system, and the allowable sequences of those operations. Conceptual Models could consist of complete Data Flow Diagrams, ER diagrams, Object-oriented diagrams, System Flowcharts etc.

Chapter 4: System Design

Describes desired features and operations in detail, including screen layouts, business rules, process diagrams, pseudocode and other documentation.

Basic Modules: The students should follow the divide and conquer theory, so divide the overall problem into more manageable parts and develop each part or module separately. When all modules are ready, the student should integrate all the modules into one system. In this phase, the student should briefly describe all the modules and the functionality of these modules.

Data Design: Data design will consist of how data is organised, managed and manipulated.

• Schema Design: Define the structure and explanation of schemas used in the project.

• Data Integrity and Constraints: Define and explain all the validity checks and constraints provided to maintain data integrity.

Procedural Design: Procedural design is a systematic way for developing algorithms or procedurals.

• Logic Diagrams: Define the systematical flow of procedure that improves its comprehension and helps the programmer during implementation. e.g., Control Flow Chart, Process Diagrams etc.

• Data Structures: Create and define the data structure used in procedures.

• Algorithms Design: With proper explanations of input data, output data, logic of processes, design and explain the working of algorithms.

User Interface Design: Define user, task, environment analysis and how to map those requirements in order to develop a “User Interface”. Describe the external and internal components and the architecture of user interface. Show some rough pictorial views of the user interface and its components.

Security Issues: Discuss Real-time considerations and Security issues related to the project and explain how the student intends avoiding those security problems. What are the security policy plans and architecture?

Test Cases Design: Define test cases, which will provide easy detection of errors and mistakes with in a minimum period of time and with the least effort. Explain the different conditions in which the students wish to ensure the correct working of the project.

Chapter 5: Implementation and Testing

Implementation Approaches: Define the plan of implementation, and the standards the students have used in the implementation.

Coding Details and Code Efficiency: Students not need include full source code, instead, include only the important codes (algorithms, applets code, forms code etc). The program code should contain comments needed for explaining the work a piece of code does. Comments may be needed to explain why it does it, or, why it does a particular way.

The student can explain the function of the code with a shot of the output screen of that program code.

• Code Efficiency: The student should explain how the code is efficient and how the students have handled code optimisation.

Testing Approach: Testing should be according to the scheme presented in the system design chapter and should follow some suitable model – e.g., category partition, state machine-based. Both functional testing and user-acceptance testing are appropriate. Explain the approach of testing.

• Unit Testing: Unit testing deals with testing a unit or module as a whole. This would test the interaction of many functions but, do confine the test within one module.

• Integrated Testing: Brings all the modules together into a special testing environment, then checks for errors, bugs and interoperability. It deals with tests for the entire application. Application limits and features are tested here.

Modifications and Improvements: Once the students finish the testing they are bound to be faced with bugs, errors and they will need to modify your source code to improve the system. Define what modification are implemented in the system and how it improved the system.

Chapter 6: Results and Discussion

Test Reports: Explain the test results and reports based on the test cases, which should show that the project is capable of facing any problematic situation and that it works fine in different conditions. Take the different sample inputs and show the outputs.

User Documentation: Define the working of the software; explain its different functions, components with screen shots. The user document should provide all the details of the product in such a way that any user reading the manual, is able to understand the working and functionality of the document.

Chapter 7: Conclusions

Conclusion: The conclusions can be summarised in a fairly short chapter (2 or 3 pages). This chapter brings together many of the points that would have made in the other chapters.

Limitations of the System: Explain the limitations encountered during the testing of the project that the students were not able to modify. List the criticisms accepted during the demonstrations of the project.

Future Scope of the Project describes two things: firstly, new areas of investigation prompted by developments in this project, and secondly, parts of the current work that was not completed due to time constraints and/or problems encountered.

REFERENCES

It is very important that the students acknowledge the work of others that they have used or adapted in their own work, or that provides the essential background or context to the project. The use of references is the standard way to do this. Please follow the given standard for the references for books, journals, and online material. The citation is mandatory in both the reports.

E.g:

Linhares, A., & Brum, P. (2007). Understanding our understanding of strategic scenarios: What role do chunks play? *Cognitive Science*, *31*(6), 989-1007. https://doi.org/doi:10.1080/03640210701703725

Lipson, Charles (2011). Cite right : A quick guide to citation styles; MLA, APA, Chicago, the sciences, professions, and more (2nd ed.). Chicago [u.a.]: University of Chicago Press. p. 187. ISBN 9780226484648.

Elaine Ritchie, J Knite. (2001). *Artificial Intelligence, Chapter 2 , p.p 23 - 44.* Tata McGrawHill.

GLOSSARY

If you the students any acronyms, abbreviations, symbols, or uncommon terms in the project report then their meaning should be explained where they first occur. If they go on to use any of them extensively then it is helpful to list them in this section and define the meaning.

APPENDICES

These may be provided to include further details of results, mathematical derivations, certain illustrative parts of the program code (e.g., class interfaces), user documentation etc.

In particular, if there are technical details of the work done that might be useful to others who wish to build on this work, but that are not sufficiently important to the project as a whole to justify being discussed in the main body of the project, then they should be included as appendices.

VI. SUMMARY

Project development usually involves an engineering approach to the design and development of a software system that fulfils a practical need. Projects also often form an important focus for discussion at interviews with future employers as they provide a detailed example of what the students are capable of achieving. In this course the students can choose your project topic from the lists given in Unit 4: Category-wise Problem Definition.

VII. FURTHER READINGS

1. Modern Systems Analysis and Design; Jeffrey A. Hoffer, Joey F. George, Joseph,S. Valacich; Pearson Education; Third Edition; 2002.
2. ISO/IEC 12207: Software Life Cycle Process
(http://www.software.org/quagmire/descriptions/iso-iec12207.asp).
3. IEEE 1063: Software User Documentation (http://ieeexplore.ieee.org).
4. ISO/IEC: 18019: Guidelines for the Design and Preparation of User Documentation for Application Software.
5. http://www.sce.carleton.ca/squall.
6. http://en.tldp.org/HOWTO/Software-Release-Practice-HOWTO/documentation.html.
7. http://www.sei.cmu.edu/cmm/

PROFORMA FOR THE APPROVAL PROJECT PROPOSAL

(Note: All entries of the proforma of approval should be filled up with appropriate and complete information. Incomplete proforma of approval in any respect will be summarily rejected.)

PNR **No.: ……** Roll no**: _____**

1. Name of the Student
   _____
2. Title of the Project
   _____
3. Name of the Guide
   _____
4. Teaching experience of the Guide _____
5. Is this your first submission? Yes ☐ No ☐

Signature of the Student Signature of the Guide

Date: …… Date: …….

Signature of the Coordinator

Date: ……

(All the text in the report should be in times new roman)

TITLE OF THE PROJECT

(NOT EXCEEDING 2 LINES, 24 BOLD, ALL CAPS)

A Project Report (12 Bold)
Submitted in partial fulfillment of the
Requirements for the award of the Degree of (size-12)

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)(14 BOLD, CAPS)

By(12 Bold)

Name of The Student (size-15, title case)
Seat Number (size-15)

Under the esteemed guidance of (13 bold)
Mr./Mrs. Name of The Guide (15 bold, title case)
Designation (14 Bold, title case)

COLLEGE LOGO

DEPARTMENT OF INFORMATION TECHNOLOGY(12 BOLD, CAPS)
COLLEGE NAME (14 BOLD, CAPS)
(Affiliated to University of Mumbai) (12, Title case, bold, italic)
CITY, PIN CODE(12 bold, CAPS)
MAHARASHTRA (12 bold, CAPS)
YEAR (12 bold)

COLLEGE NAME (14 BOLD, CAPS)
(Affiliated to University of Mumbai) (13, bold, italic)
CITY-MAHARASHTRA-PINCODE(13 bold, CAPS)

DEPARTMENT OF INFORMATION TECHNOLOGY (14 BOLD, CAPS)

College Logo

CERTIFICATE (14 BOLD, CAPS, underlined, centered)

This is to certify that the project entitled, **"Title of The Project "**, is bonafied work of **NAME OF THE STUDENT** bearing Seat.No: (**NUMBER**) submitted in partial fulfillment of the requirements for the award of degree of BACHELOR OF SCIENCE in INFORMATION TECHNOLOGY from University of Mumbai. (12, times new roman, justified)

Internal Guide (12 bold) **Coordinator**

(Don't write names of lecturers or HOD)

External Examiner

Date: **College Seal**

COMPANY CERTIFICATE (if applicable)

(Project Abstract page format)

Abstract (20bold, caps, centered)

Content (12, justified)

Note: Entire document should be with 1.5 line spacing and all paragraphs should start with 1 tab space.

ACKNOWLEDGEMENT

(20, BOLD, ALL CAPS, CENTERED)

The acknowledgement should be in times new roman, 12 font with 1.5 line spacing, justified.

(Declaration page format)

DECLARATION (20 bold, centered, allcaps)

Content (12, justified)

I here by declare that the project entitled, "**Title of the Project**" done at **place where the project is done**, has not been in any case duplicated to submit to any other university for the award of any degree. To the best of my knowledge other than me, no one has submitted to any other university.

The project is done in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)** to be submitted as final semester project as part of our curriculum.

Name and Signature of the Student

TABLE OF CONTENTS (20bold, caps, centered)

Should be generated automatically using word processing software.

Chapter 1: Introduction 01(no bold)
1.1 Background 02(no bold)
1.2 Objectives ….
1.3 Purpose and Scope ….
1.2.1Purpose ….
1.2.2Scope
……
……

Chapter 2: System Analysis
2.1 Existing System
2.2 Proposed System
2.3 Requirement Analysis
2.4 Hardware Requirements
2.5 Software Requirements
2.6 Justification of selection of Technology

Chapter 3: System Design
3.1 Module Division
3.2 Data Dictionary
3.3 ER Diagrams
3.4 DFD/UML Diagrams

Chapter 4: Implementation and Testing

4.1 Code (Place Core segments)
4.2 Testing Approach
4.2.1 Unit Testing (Test cases and Test Results)
4.2.2 Integration System (Test cases and Test Results)

Chapter 5: Results and Discussions (Output Screens)
Chapter 6: Conclusion and Future Work
Chapter 7: References

List of Tables (20 bold, centered, Title Case)

Should be generated automatically using word processing software.

List of Figures (20 bold, centered, Title Case)

Should be generated automatically using word processing software.

(Project Introduction page format)

Chapter 1

Introduction (20 Bold, centered)

Content or text (12, justified)

Note: Introduction has to cover brief description of the project with minimum 4 pages.

Chapter 2

System Analysis (20 bold, Centered)

Subheadings are as shown below with following format (16 bold, CAPS)

2.1 Existing System (16 Bold)

2.1.1 ---------- (14 bold, title case)

2.1.1.1 ---------- (12 bold, title case)

2.2 Proposed System

2.3 Requirement Analysis

2.4 Hardware Requirements

2.5 Software Requirements

2.6 Justification of Platform – (how h/w & s/w satisfying the project)

Table 2.1: Caption

Chapter 3

System Design (20 bold, centered)

Subheadings are as shown below with following format (16 bold, CAPS)
Specify figures as Fig 11.1 – caption

3.1 Module Division
3.2 Data Dictionary
3.3 E-R Diagrams
3.4 Data Flow Diagrams / UML

Note: write brief description at the bottom of all diagrams

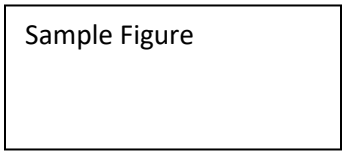

Fig. 3.1: Caption

Chapter 4

Implementation and Testing (20 bold, centered)

4.1 Code (Place Core segments)

Content includes description about coding phase in your project (Font-12)

(* don't include complete code-----just description)

4.2 Testing Approach

Subheadings are as shown below with following format (16 bold, CAPS)

4.2.1 Unit Testing

4.2.2 Integration Testing

Note:

- Explain about above testing methods
- Explain how the above techniques are applied in your project

Provide Test plans, test cases, etc relevant to your project

Chapter 5

Results and Discussions (20 bold, centered)

Note: Place Screen Shots and write the functionality of each screen at the bottom

Chapter 6

Conclusion and Future Work (20 bold, centered)

The conclusions can be summarized in a fairly short chapter around 300 words. Also include limitations of your system and future scope (12, justified)

Chapter 7

References (20 bold, centered)

Content (12, LEFT)

[1] Title of the book, Author

[2] Full URL of online references

[3] ----------

*** NOTE ABOUT PROJECT VIVA VOCE:**

Student may be asked to write code for problem during VIVA to demonstrate his coding capabilities and he/she may be asked to write any segment of coding used in the in the project. The project can be done in group of at most four students. However, the length and depth of the project should be justified for the projects done in group. A big project can be modularised and different modules can be assigned as separate project to different students.

Marks Distribution:

Semester V: 50 Marks

Documentation: 50 marks

Semester VI: 150 Marks

Documentation: 50 Marks:

Implementation and Viva Voce: 100 Marks

The plagiarism should be maintained as per the UGC guidelines.