

**DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY,  
Chhatrapati Sambhajinagar.**



**CIRCULAR /SU/CM/MMS/NEP-PG/83/2024**

It is hereby inform to all concerned that, on the recommendation of the Dean, Faculty of Commerce & Management; the Academic Council at its meeting held on 08.04.2024 has accepted the syllabus of **“Master of Management Science (MMS) (Sem-I&II)” as per Guidelines of National Education Policy-2020** under for the Faculty of Commerce & Management.


**This is effective from the Academic Year 2024-25 and Onwards as per appended herewith.**

All concerned are requested to note the contents of this circular and bring notice to the students, teachers and staff for their information and necessary action.

University Campus,  
Aurangabad-431 004.  
REF.NO. SU/MMS/2024-25/25778-89

Date:- 03-05-2024.

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**Deputy Registrar,  
Academic Section  
Syllabus unit.**

**Copy forwarded with compliments to :-**

- 1] **The Principals, all concerned affiliated Colleges, Dr. Babasaheb Ambedkar Marathwada University.**
- 2] **The Director, University Network & Information Centre, UNIC, with a request to upload this Circular on University Website.**

**Copy to :-**

- 1] The Director, Board of Examination & Evaluation,
- 2] **The Section Officer, [ Concerd Unit ] Examination Branch,**
- 3] The Section officer, [Eligibility Unit],
- 4] **The Programmer [Computer Unit-1] Examinations,**
- 5] **The Programmer [Computer Unit-2] Examinations,**
- 6] The In-charge, [E-Suvidha Kendra], Rajarshi Shahu Maharaj Pariksha Bhavan, Dr. Babasaheb Ambekar Marathwada University.
- 7] The Public Relation Officer,
- 8] The Record Keeper.

**D.R. BABASAHEB AMBEDKAR  
MARATHWADA UNIVERSITY,  
AURANGABAD.**



Curriculum of

CREDIT DISTRIBUTION SYLLABUS FOR  
TWO YEAR/ONE YEAR PG AS PER NEP

M.M.S.

MASTER OF MANAGEMENT SCIENCE

I & II SEMESTER

APPLICABLE FOR AFFILIATED COLLEGES

under NEP 2020

*[ Effective from the Academic Year 2024-25 & onwards ]*

**Dr. Babasaheb Ambedkar Marathwada University**  
**Chhatrapati Sambhajinagar - 431004 (MS) India**



## **Faculty of Commerce & Management**

**Curriculum of Master of Management Science (M.M.S.)**  
**As per NEP-2020 Structure**

**2 Year / 1 Year**  
**Semester – I & II**

**Run at College level from the**  
**Academic Year 2024-25 & onwards**

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6/04/2024

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Dr Ashok Gaitwad.

**SEMESTER WISE PROGRAM STRUCTURE**  
**MMS Programme**

MMS : First Year

Level : 6.0

<b>Semester I</b>							
Course Type	Course Code	Course Name	Scheme of Examination			No. of Credits	
			UA	IA	Total		
Major	MMS/MAN/501	Programming in C	60	40	100	4	
	MMS/MAN/502	Information Technology Concepts	60	40	100	4	
	MMS/MAN/503	Business Communication	60	40	100	4	
	Activity-1st (Choose any one from the basket) MMS/ACT/504	1. Google Workspace				50	2 (*Pr)
		2. HTML & CSS					
		3. Entrepreneurship Development					
4. Unix							
Elective-1 (Choose any one from the basket) 1.MMS/ELE/505 2.MMS/ELE/506 3.MMS/ELE/507	1. Network Security	60	40	100	4		
	2. E- Business						
	3. Data Structure & Algorithms						
Research Methodology	MMS/RMT/508	Research Methodology	60	40	100	4	
On Job Training / Field Project MMS/OJT/509		-	-	-	-	-	
<b>Total</b>			<b>330</b>	<b>220</b>	<b>550</b>	<b>22</b>	
<b>Total Credits for First Semester is 22</b>							

Note :- (\*Pr) Means Practical Only

<b>Semester II</b>							
Course Type	Course Code	Course Name	Scheme of Examination			No. of Credits	
			UA	IA	Total		
Major	MMS/MAN/510	Programming in Java	60	40	100	4	
	MMS/MAN/511	Operating System	60	40	100	4	
	MMS/MAN/512	Business Corporate Management	60	40	100	4	
	Activity-2nd (Choose any one from the basket) MMS/ACT/513	1. Advance Excel				50	2 (*Pr.)
		2. JavaScript					
		3. Marketing Skills					
4. Linux							
Elective-2 (Choose any one from the basket) 1.MMS/ELE/514 2.MMS/ELE/515 3.MMS/ELE/516	1. Cyber Security		60	40	100	4	
	2. Statistical Methods						
	3. DSS & MIS						
Research Methodology		-	-	-	-	-	
On Job Training / Field Project MMS/OJT-FP/517	1. OJT 2. Field Project like Preparing a Market Research plan for New Product 3. Preparation of any Inventory of Company / Business		60	40	100	4	
Research Project		-	-	-	-	-	
<b>Total</b>			<b>330</b>	<b>220</b>	<b>550</b>	<b>22</b>	
<b>Total Credits for Second Semester is 22</b>							
<b>Cum. Cr. For PG Diploma</b>							
<b>Credit Summary: First Year (Semester I and II)</b>							
1. Major Mandatory (1 to 6) : 24 credits						44	
2. Major Activity (1 & 2) : 04 credits							
3. Major Elective (1 & 2) : 08 credits							
4. RM I : 04 credits							
5. On Job Training/Field Project : 04 credits							

Note :- (\*Pr) Means Practical Only

MMS Programme

MMS : Second Year

Level : 6.5

<b>Semester III</b>							
Course Type	Course Code	Course Name	Scheme of Examination			No. of Credits	
			UA	IA	Total		
Major	MMS/MAN/518	Database Management System	60	40	100	4	
	MMS/MAN/519	Data Analytics	60	40	100	4	
	MMS/MAN/520	Functional Management –I	60	40	100	4	
	Activity-3rd (Choose any one from the basket) MMS/ACT/521	1. Android				50	2 (*Pr)
		2. PHP					
		3. Retail Management					
4. Oracle (SQL/PL-SQL)							
Elective-3 (Choose any one from the basket) 1.MMS/ELE/522 2.MMS/ELE/523 3.MMS/ELE/524	1. Software Engineering & Testing	60	40	100	4		
	2. Tableau						
	3. Personality Development						
Research Projects	RP : 1 <sup>st</sup> MMS/ RP /525	Mini Project			100	4	
<b>Total</b>			<b>330</b>	<b>220</b>	<b>550</b>	<b>22</b>	
<b>Total Credits for Third Semester is 22</b>							

Note :- (\*Pr) Means Practical Only

MMS : Second Year

Level : 6.5

<b>Semester IV</b>						
Course Type	Course Code	Course Name	Scheme of Examination			No. of Credits
			UA	IA	Total	
Major	MMS/MAN/526	Programming in Python	60	40	100	4
	MMS/MAN/527	Data Communication Network	60	40	100	4
	MMS/MAN/528	Functional Management –II	60	40	100	4
	<b>Elective-4</b> (Choose any one from the basket) 1.MMS/ELE/529 2.MMS/ELE/530 3.MMS/ELE/531	1. Computerised Accounting 2. ERP Management 3. R-Programming	60	40	100	4
Research Project	RP : 2 <sup>nd</sup> MMS/ RP /532	Major Project			150	6
<b>Total</b>			<b>330</b>	<b>220</b>	<b>550</b>	<b>22</b>
<b>Total Credits for Fourth Semester is 22</b>						
<b>Cum. Cr. For 2 year PG Degree</b> <b>First Year PG Diploma 44 Credits – Second year 44 Credits = 88 Credits</b> <b>Credit Summary : Two years (Semester I to IV)</b> 1. Major Mandatory (1 to 12) : 48 credits 2. Major Activity (1 to 3) : 06 credits 3. Major Elective (1 to 4) : 16 credits 4. RM 1 : 04 credits 5. On Job Training/Field Project : 04 credits 6. Research Projects (1 & 2) : 10 credits						<b>44</b>

**Master of Management Science (M.M.S.)**  
Semester End Examination  
Theory / Numerical Question Paper Pattern as per NEP-2020

<b>Time :- 2 Hrs.</b>		<b>Marks : 60</b>
Note :- 1. Question No. 1 is Compulsory 2. Solve Any Four questions from Q. No. 2 to Q. No. 7		
<b>Q. 1</b>	Questions on Explaining Terms / Concepts / Elements / Definition (*Paper Setter may include Fill in Blanks / True or False / MCQs / Match the following Answer in one Sentence etc)	<b>12 Marks</b>
	A :- 6 Marks 1 2 3 4 5 6 B :- 6 Marks 1 2 3 4 5 6	
<b>Q.2</b>	Long Question / 2 Short Questions (6 Marks each)	<b>12 Marks</b>
<b>Q.3</b>	Long Question / 2 Short Questions (6 Marks each)	<b>12 Marks</b>
<b>Q.4</b>	Long Question / 2 Short Questions (6 Marks each)	<b>12 Marks</b>
<b>Q.5</b>	Long Question / 2 Short Questions (6 Marks each)	<b>12 Marks</b>
<b>Q.6</b>	Long Question / 2 Short Questions (6 Marks each)	<b>12 Marks</b>
<b>Q.7</b>	Short Notes (Any two, 6 Marks each) 1. 2. 3. 4.	<b>12 Marks</b>

# Semester- I

<b>Semester</b>	: I
<b>Title of the Subject / course</b>	: Programming in C
<b>Course Code</b>	: MMS/MAN/501
<b>Credits</b>	: 4
<b>Marks</b>	: Marks: 100 (UA: 60 + IA: 40)

**Learning Objectives of the Course:**

- Understand the concept of a program (i.e., a computer following a series of instructions)
- Understand the concept of a variable holding a value, how a variable is declared and how it can change
- Understand the concept of a loop – that is, a series of statements which is written once but executed repeatedly- and how to use it in a programming language
- Be able to use a conditional statement to select a choice from two or more alternatives
- Be able to break a large problem into smaller parts, writing each part as a module or function

**Course Outcomes (CO) :-**

- Design the solution for the given problems and develop the same using C programming language.
- Apply the concepts of looping, branching, and decision-making statements for a given problem.
- Demonstrate the ability to write C programs using pointers, structures, unions and arrays.
- Develop modular applications using C programming language.

**Course Outline :-**

**Unit 1 :** Introduction to C Programming: Over View of C; History and Features of C; Structure of a C Program with Examples; Creating and Executing a C Program; Compilation process in C, C Character Set; C tokens - keywords, identifiers, constants, and variables; Data types, Formatted I/O functions - printf and scanf, control strings and escape sequences, output specifications with printf functions, C Operators & Expressions:

**Unit 2:**

Control Structures: Decision making Statements - Simple if, if\_else, nested if\_else, else\_if ladder, Switch-case, goto, break & continue statements; Looping Statements - Entry controlled and exit controlled statements, while, do-while, for loops, Nested loops. Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays - Declaration, Initialization and Memory representation.

**Unit 3 :**

Strings: Declaring & Initializing string variables; String handling functions - strlen, strcmp, strcpy and strcat; Character handling functions - toascii, toupper, tolower, isalpha, isnumeric etc Pointers in C: Understanding pointers - Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays; Pointer Arithmetic; Advantages and disadvantages of using pointers;

**Unit 4 :** User Defined Functions: Need for user defined functions; Format of C user defined functions; Components of user defined functions - return type, name, parameter list, function body, return statement and function call; Categories of user defined functions - With and without parameters and return type.

**Unit 5 :** User defined data types: Structures - Structure Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization,

comparing structure variables, Array of Structures; Unions - Union definition; difference between Structures and Unions.

**Reference books:**

- 1 E. Balgurusamy: Programming in ANSI C (TMH)
- 2 "The C Programming Language" by Brian W. Kernighan
- 3 Pradeep K. Sinha and Priti Sinha: Computer Fundamentals (Sixth Edition), BPB Publication
- 4 Kamthane: Programming with ANSI and TURBO C (Pearson Education))
- 5 V. Rajaraman: Programming in C (PHI – EEE)
- 6 S. ByronGottfried: Programming with C (TMH)
- 7 Kernighan & Ritchie: The C Programming Language (PHI)
- 8 Yashwant Kanitkar: Let us C 6. P.B. Kottur: Programming in C (Sapna Book House)

<b>Semester</b>	: I
<b>Title of the Subject / course</b>	: Information Technology Concepts
<b>Course Code</b>	: MMS/MAN/502
<b>Credits</b>	: 4
<b>Marks</b>	: Marks: 100 (UA: 60 + IA: 40)

### **Learning Objectives of the Course:**

1. Innovation perspective with technical approach for betterment of the society.
2. A commitment to lifelong learning and keeping up with evolving technologies.  
Develop system solutions involving both hardware and software.
3. Knowledge about computer languages.
4. Competency for higher studies and employability.
5. Knowledge about internet and its applications.

### **Course Outcomes (CO) :-**

1. Knowledge of computer fundamental, CPU functionalities and computer organization.
2. Understanding the concept of software and hardware.
3. Understanding the computer system and different types of system.
4. Understanding Internet and world wide web.
5. Understanding of Data communication and computer networking fundamentals, including protocols, topologies.

### **Course Outline :-**

**Unit 1 : Information concepts and processing :** Evolution of Information Processing, Data, Information, need for information, Components of Information Technology.

**Unit 2 : Element of computer processing system:** Block diagram of computer, Hardware – CPU, storage devices and media VDU, input-output devices, and data communication equipment  
Introduction to Software : Definition, Classification of software- system software, application software, Operating system as the main component of system software.

**Unit 3 : Programming Languages:** Classification, machine language, assembly language, higher level languages, fourth generation languages, compiler , interpreter

### **Unit 4 : Operating Systems and Data Communication :**

Operating System Fundamental : Introduction of O.S., Structure of O.S., Types of O.S.- Single user and multiuser O.S., various names of Operating Systems.

Data Communication : Forms of data transmission- analog and digital, Data transmission technique- modulation and Demodulation, Methods of data transmission- Synchronous and Asynchronous, Modes of data transmission – Simplex, Half duplex and Full Duplex. Communication media-wired and wireless.

### **Unit 5 : Networks and Internet :**

Computer Networks : LAN, MAN, WAN, Network topologies, Computing in network environment – Client Server, Parallel processing, Distributed., Network protocols.  
Internet facilities through WWW, Mosiac, Gopher, html  
Range of Internet Application : Scientific, business, education, industrial, national level weather forecasting, remote sensing, planning, multilingual applications.

**Reference books :**

1	Chetan Shivastava, Fundamentals of Information Technology, (1 <sup>st</sup> edition), Kalyani Publishers, New Delhi, 2006.
2	Rajaraman V., "Fundamental of Computer" (2 <sup>nd</sup> edition), Prentice Hall of India, New Delhi , 1996
3	Sanders, D.H. " Computers Today" McGraw Hill 1988.
4	Trainer T., et al, " Computer" (4 <sup>th</sup> edition) McGraw Hill, 1994.

Semester	:	I
Title of the Subject / course	:	<b>Business Communication</b>
Course Code	:	MMS/MAN/503
Credits	:	4
Marks	:	Marks: 100 (UA: 60 + IA: 40)

**Learning Objectives of the Course:**

- To understand the basic purpose of communication and comprehend the meaning of different forms of communication.
- The importance of Technical Communication.
- To understand how modern social media affects Business and how Social Media-based communication is working in present context.
- To gain Knowledge ethical and corporate communication

**Course Outcomes (CO) :-**

- To understand the role of communication in personal and business world.
- Create awareness about current trends in business communication.
- To sensitize students to their communicative behaviour
- To know corporate and ethical communication importance in industry

**Course Outline :-**

**Unit 1 : Introduction to Communication:** Communication-Defining communication, Process of communication, Communication Model, Objectives of communication, Principles of communication, Importance of Business communication, Importance Feedback.

**Unit 2: The Fundamentals of Communication:**

Types of communication, Dimensions of communication, Barriers to communication Verbal, Non-Verbal, Formal, Informal communication. Communication Cycle, Flow of communication Channels of communication,

**Unit 3: organisational Communication :**

Communication across Functional Areas : Management, Production, Marketing/Promotion, Public reaction/relation, Human Resource, etc.

**Unit 4:****Corporate and business communication:**

Corporate Communication, Persuasive Strategies in Business Communication, Ethics in Business Communication, Business Communication Aids

**Unit 5: Digital and social media communication**

Role of social media in business correspondence,

Social Media Platforms: Twitter, LinkedIn, WhatsApp, YouTube, Facebook, Podcast Blogs, Instagram.

**Reference books :**

1	Bové, C. L., & Thill, J. V. (2018). Business communication today (14th ed). Pearson.
2	Muralikrishna C., Sunita Mishra "Communication Skills for Engineers" 2nd edition, Pearson, New Delhi 2010
3	Introduction to Corporate Communication: Case Studies from India By Charu Lata Singh, Mona Gupta
4	Business Ethics and Communication (For CA-IPCC) By Rathore P.S.
5	S. Chand's Business Ethics and Communication (Question and Answers) (For CA ...By Seth, Tejpal C.S.

<b>Semester</b>	:	I
<b>Title of the Subject / course</b>	:	1. Google Workspace
<b>Course Code</b>	:	MMS/ACT/504
<b>Credits</b>	:	2
<b>Marks</b>	:	Marks: 50 (UA)

**Learning Objectives of the Course:**

- Understand what a word processor is and what Google Docs capabilities
- Demonstrate applying styles to documents and page formatting.
- Demonstrate creating tables in Google Docs and publishing and printing documents.
- Demonstrate sharing and collaborating on documents.

**Course Outcomes (CO) :-**

- Simplify basic office tasks and improve work productivity.
- Navigate both the desktop and mobile versions of Google Docs
- To be able to create documents for printing and sharing
- To be able to manage and store data in a spreadsheet.
- To be able to create and share presentations.

**Course Outline :-**

**Unit 1 :**

**Introduction to Google Workspace:** Overview of Google Workspace Applications and Tools, Navigate through Google Workspace interface, Benefits of using Google Workspace, Understanding cloud computing and how it applies to Google Workspace.

**Efficient Email Management with Gmail:** Setting up a Google account, Gmail account setup and customization, Creating, formatting, and attaching files to emails, Inbox organization, archiving, and marking emails, Labels, filters, and folder management, Managing contacts and tasks in Gmail, Scheduling Emails

**Unit 2:**

**Cloud-based file management:** Google Drive Overview, Uploading and downloading files and folders, Sharing files with individuals or groups, setting different permission levels, collaboration, Managing file versions and revisions

**Unit 3:**

**Cloud-based document processing:** Google Docs, Creating new Google Docs documents and formatting text with fonts, styles, and colors, Adding images, tables, and other elements to documents, page layout, margins, and orientation, Sharing, real time collaboration

**Unit 4:**

**Data collection, organize and analyzing:** Google Sheet and Google Form, Organizing and Formatting Data in Google Sheet, mathematical operations, analyzing data using sorting, filtering, and pivot tables, charts and graphs, Designing and creating surveys with Google Forms, question formats, Quizzes, sections, reviewing and analyzing form responses, Linking Google Forms to Google Sheets

**Unit 5:**

**Presentation using Google Slides:** Google slide layouts, insert images, videos, and audio into slides, Slide transitions, Embedding Google Docs, Sheets, and Forms into presentations

**Reference books :**

1	Google Workspace for Dummies by Ryan Teeter and Karl Barksdale
2	Google Drive & Docs In 30 Minutes by Ian Lamont

Semester	:	I
Title of the Subject / course	:	2. HTML and CSS
Course Code	:	MMS/ACT/504
Credits	:	2
Marks	:	Marks: 100 (UA: 60 + IA: 40)

**Learning Objectives of the Course: -**

1. Implementation of advance Professionalism for project management, interpersonal skills and teamwork.
2. Problem finding and solution with software.
3. A commitment to lifelong learning and keeping up with evolving technologies.

**Course Outcomes (CO) :**

- CO1 Ability to understand fundamental of web site design  
CO2 Able to construct static web page.  
CO3 Understanding of basic CSS  
CO4 Able to understand linking of web page.

**Course Outline :-**

**Unit 1: Introduction to HTML: Overview of HTML, definition, HTML document object model (HTML DOM), Learn HTML Using Notepad. Introduction HTML elements and attributes.**

**HTML headings and paragraphs:** Basics of HTML heading, understanding use of <h1> to <h6>tags , introduction to <p> tag. Attributes of each tag.

**Unit 2: HTML text formatting and quotation tags:** HTML <b>, <i>, <u>, <em>, <strong>, <sub>, <sup>, <mark>, <del>, tags. Understanding the use of blockquote>,<q>, <abbr>, <address>, <cite>, and <bdo> tags.

**Unit 3: HTML images and links:** use of images, image file formats: jpg, png, bmp, and use of image tags, and its attributes. Introduction to anchor tag and its attributes. Introduction to <link> tag and its attributes.

**Unit 4: Introduction to HTML list tags, tables and forms:** ordered list, unordered list, definition list, introduction to <table> tags, <th>,<tr>, and <td> tags and its attributes.

Introduction to form tag and its attributes, GET and POST methods, <input> tag and its attributes. Introduction to <button> tag.

**Unit 5: Introduction to Cascading Style Sheet:** Definition of CSS? CSS types: Inline CSS, style as attribute, style as tag Internal CSS, External CSS.

**Reference books:**

1	Learn HTML for Beginners: The illustrated guide to Coding by Jo Foster
2	Head First HTML and CSS by Elisabeth Robson and Eric Freeman
3	Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics by Jennifer Niederst Robbins
4	HTML and CSS: Design and Build Websites by Jon Duckett

**List of Practical: HTML CSS**

- Q1 Write a HTML program to demonstrate the use of Heading tags.  
Q2 Write a HTML program to demonstrate the use of paragraph tags.

- Q3 Write a HTML program to demonstrate the use of text formatting tags.
- Q4 Write a HTML program to demonstrate use of list tags and its attributes.
- Q5 Write a HTML program to demonstrate use of anchor tag.
- Q6 Write a HTML program to demonstrate the use of table tags and its attributes.
- Q7 Write a HTML program to demonstrate the use of form tags and its attributes.
- Q8. Write a HTML program to demonstrate the use of internal CSS.
- Q9 Write a HTML program to demonstrate the use external CSS.
- Q10 Write a HTML program to demonstrate the use of inline CSS.

<b>Semester</b>	:	<b>I</b>
<b>Title of the Subject / course</b>	:	<b>3. Entrepreneurship &amp; Development</b>
<b>Course Code</b>	:	<b>MMS/ACT/504</b>
<b>Credits</b>	:	<b>2 (*Pr)</b>
<b>Marks</b>	:	<b>Marks: 100 (UA: 60 + IA: 40)</b>

**Learning Objectives of the Course:-**

Ability to understand the concept of Entrepreneurship

Basic knowledge skills for start any new ventures.

Learn Steps from Idea generation to success.

To familiarize with Government initiatives

**Course Outcomes (CO) :-**

To impart theoretical knowledge of Entrepreneurship

To develop Entrepreneurship qualities and skills

To acquaint students with Steps involved in the formation of Small Enterprises

To enlighten students with Recent Trends and Concepts in Entrepreneurship

**Course Outline:-**

**Unit 1:** Introduction: Concept of entrepreneur, Entrepreneurship functions and skills, Nature and importance, Types of entrepreneurs, Entrepreneurship and economic growth.

**Unit 2:** Theories of Entrepreneurship, Creativity and innovation, Entrepreneur and Intrapreneur, Factors affecting entrepreneurial growth and development, Women entrepreneurs.

**Unit 3:** Micro, Small and Medium Enterprises (MSME): Definition, Importance, Problems of MSME and Remedies, Government Policy and Support, Steps involved in the formation of Small Enterprises- Location, Clearances, Permits required, Formalities, Licensing and Registration Procedure

**Unit 4:** Recent Trends and Concepts in Entrepreneurship: Recent Trends- Start up, Stand up, Skill India, Make in India, Incubation Centre- Concept and Importance.

**Unit 5:** Government initiatives for startup in India:

Government initiatives, Startup India initiative, Seed fund, ATAL innovation mission, Self-employment and talent utilization (SETU)

**Reference books :**

1	Hisrich, R.D., and Peters, M.P. "Entrepreneurship" Tata Mc Graw- Hill, New Delhi.
2	Roy, R. "Entrepreneurship" Oxford University Press, New Delhi.
3	Entrepreneurship and Small Business Management- by Shukla M.B
4	Current Trends in Entrepreneurship - by Mohan S. Elangovan R
5	Kathleen R. Allen , launching new ventures, An entrepreneurial approach, Cengage learning 2016.

<b>Semester</b>	:	1
<b>Title of the Subject / course</b>	:	4. Unix
<b>Course Code</b>	:	MMS/ACT/504
<b>Credits</b>	:	2 (*Pr)
<b>Marks</b>	:	Marks: 50

### Learning Objectives of the Course:-

1. To acquaint students with various UNIX commands and installation of UNIX operating system.
2. To cultivate implementation skill of UNIX operating system.
3. To develop skills in managing commands with I/O redirection and piping.
4. To prepare students for future courses having technical operating system knowledge.

### Course Outcome (CO) :-

1. To introduce students the basic knowledge of UNIX operating system.
2. To provide introduction to UNIX Operating System and its File System
3. To gain an understanding of important aspects related to the SHELL and the process
4. To acquaint students about implementation of execution of UNIX commands.

### Course Outline :-

#### Unit 1 : Introduction to Unix

Introduction to UNIX - History, UNIX versions, Install UNIX O.S. UNIX Features, The structure of UNIX System, The UNIX File System , File permissions, login procedure, error corrections, working with directories.

#### Unit 2: Commands in Unix

Examining ordinary file commands, file management commands, status information commands, working with Text commands.

#### Unit 3: I/O Redirection and Piping

controlling running program commands, input output redirection and pipes, Unix communication commands, && and || constructs.

#### Unit 4: Shell Programming - I

Shell Variables, The Profile File a Script Run During Starting-The First Shell Script-The read Command- echo, exit Command- if command, Branching Control Structures- Loop Control Structures-The Continue and Break Statement, case command.

#### Unit 5: Shell Programming - II

The Expr Command: Performing Integer Arithmetic-Real Arithmetic in Shell Programs, The here Document(<<) The Sleep Command-Debugging Scripts-The Script Command-The Eval Command-The Exec Command.

### Reference books :

1	The Unix programming Environment by Brain W. Kernighan & Rob Pike, Pearson.
2	Introduction to Unix Shell Programming by M.G. Venkateshmurthy, Pearson.
3	Unix and shell programming by B.M. Harwani, OXFORD university press.

<b>Semester</b>	: I
<b>Title of the Subject / course</b>	: 1. Network Security
<b>Course Code</b>	: MMS/ELE/505
<b>Credits</b>	: 4
<b>Marks</b>	: Marks: 100 (UA: 60 + IA: 40)

### Learning Outcomes (LO):-

- To learn the vulnerabilities of computer networks to attacks by adversaries and hackers.
- To evaluate the methods and techniques to defend against these attacks and to minimize their damage.
- To understand and explain the risks faced by computer systems and networks.
- To identify and analyze security problems in computer systems and networks.
- To develop security mechanisms to protect computer systems and networks.

### Course Outcome (CO):-

- To understand the concepts of Network security in a local area network and the Internet.
- Understanding the fundamental principal and concept of network security.
- Identify and assess networking security and vulnerabilities
- Analyze and apply security measures to network environment
- Analyze and learn from real world security case studies

### Course Outline:-

**Unit 1:** Introduction to Network security – network security, importance, need, Goal, types, working on network security, Wireless network security – introduction to wireless network, secure protocols, WEP, WPA.

**Unit 2:** network security concept - attack vectors, Secure Network architecture and design, Segmentation and zoning, VPN, DMZ, NAT, Secure Network protocols and services – SSL, SSH, TLS, DNS-SEC.

**Unit 3:** Network Device Security: Switch and Router Basics, MAC Addresses, IP Addresses, Router, ACL, Firewall – types, working, intrusion detection system – types of IDS, detections methods, Intrusion prevention system – type of IPS, detection methods.

**Unit 4:** Authentication –Introduction, Authentication factors, types, Biometrics, OTP, Password, CRAM.

**Unit 5:** Encryption and decryption – encryption, encryption techniques, AES, DES, RSA, E2E, types of encryptions – Symmetric and Asymmetric key encryption.

### Reference books:

1	Network Security: Private Communication in a Public World Book by Radia Perlman
2	Firewalls and Internet Security: Repelling the Wily Hacker by william R. cheswick and steven M bellovin
3	Hacking: The Art of Exploitation - Book by Jon Erickson
4	Applied Cryptography - Book by Bruce Schneier
5	Security Engineering: A Guide to Building Dependable Distributed Systems - Book by Ross J. Anderson

Semester	: I
Title of the Subject / course	: 2. E-Business
Course Code	: MMS/ELE/506
Credits	: 4
Marks	: Marks: 100 (UA: 60 + IA: 40)

### Learning Objectives of the Course:-

At the end of the course, students will be able

- Recognize e-Commerce and e-Business and their types.
- Specify the requirements for starting an online business.
- Identify the main e-Business Models
- Define the e-Marketplaces & Security

### Course Outcome (CO) :-

This course is to introduce students about the issues that a modern-day manager needs to address while doing business in a digital world.

The topics covered will include analysis of market place, environment and internal aspects such as infrastructure, strategy, planning, performance and use experience.

### Course Outline:-

**Unit 1 : Introduction:** E-Commerce – definition, History of E-commerce, types of E-Commerce B to B etc. Comparison of traditional commerce and e-commerce. E-Commerce business models – major B to B, B to C model, Consumer-to-Consumer (C2C), Consumer-to-Business (C2B) model, Peer to-Peer (P2P) model – emerging trends. Advantages/ Disadvantages of ecommerce, web auctions, virtual communities, portals, e-business revenue models.

**Unit 2: Security for E-Business:** Security threats – An area view – implementing E-commerce security – encryption – Decryption, Protecting client computers E-Commerce Communication channels and web servers Encryption, SSL protocol, Firewalls, Cryptography methods, VPNs, protecting, networks, policies and procedures.

**Unit 3: E-PAYMENTS:** E-payment systems – An overview. B to C payments, B to B payments. Types of E- payment system – Credit card payment, debit cards, accumulating balance, online stored value payment systems, digital cash, digital (electronic) wallets, agile wallet, smart cards and digital cheques. Secure Electronic Transaction (SET) protocol. RFID Concepts.

**Unit 4: E-BUSINESS MARKETING TECHNOLOGIES:** E-Commerce and marketing B to B and B to C marketing and branding strategies. Web transaction logs, cookies, shopping cart database, DBMS, SQL, data mining, CRM (customer relationship Management) system – permission marketing, affiliate marketing, viral marketing.

**Unit 5: CYBER LAWS:** Legal Aspects of E-Business, Internet frauds – Cyber Laws. IT Act 2000 salient features. Guidelines on cyber securities to be included

**Reference books :**

1	E-Business and E-Commerce Management: Strategy, Implementation and Practice By David Chaffey
2	The E-Business Book by Dayle M. Smith
3	E-BUSINESS by Parag Kulkarni, Sunita Jahirabadkar, Pradip Chande, Publisher Oxford University Press
4	R. G. Saha, E-Business, HPH
5	Introduction to E-business Management and strategy By Colin Combe
6	E-Commerce : an Indian Perspective By Joseph, P. T
7	Marriappa M – E- Commerce

Semester	:	I
Title of the Subject / course	:	3. Data Structure and Algorithm
Course Code	:	MMS/ELE/507
Credits	:	4
Marks	:	Marks: 100 (UA: 60 + IA: 40)

**Learning Objectives of the Course:-**

- Implementation of advance Professionalism for project management, interpersonal skills and teamwork.
- Problem finding and solution with software.
- A commitment to lifelong learning and keeping up with evolving technologies.

**Course Outcome (CO):-**

- Ability to understand fundamental data structures like arrays, linked lists, stack queues, trees, graphs
- Able to construct algorithm.
- Understanding of basic algorithmic complexity.
- Able to understand searching and sorting algorithms.

**Course Outline :-**

**Unit 1: Introduction to Algorithm:** Overview of Algorithm and their importance. Algorithm analysis-time complexity and space complexity.

**Introduction to Data Structure:** Basic Terminology: Data item, Fields, Records, Files, Entity, Attributes. Data Organization and Data Structure

**Arrays:** Representation of Linear Arrays, Traversing, Insertion and Deletions in Array.

**Unit 2: Linked List**

Concept of Linked List, Representation of linked List in memory, Traversing a linked list  
Searching a linked list: sorted and unsorted, Insertion & Deletion in Linked List

**Unit 3: Stacks, Queues, Recursion**

• **Stack:** Operations, Representation of Stack, Arithmetic Expression POLISH & POSTFIX, Application of stacks

• **Queue:** operations, types of queues, Representation of queues, Insertion & Deletion in queue, Applications of queue

**Unit 4: Searching and sorting Algorithm:**

Linear search, binary search, bubble sort, insertion sort, selection sort, merge sort

**Unit 5: Graph Algorithm**

Definition of Graph, types of Graphs, Graph representation: Adjacency List, Adjacency Matrix, traversing a graph (BFS and DFS) algorithm.

**Reference books:**

1	Data structure using C, by Seema Therja, 2 <sup>nd</sup> addition, oxford press
2	Lipschutz: Schaum's outline series Data structures Tata McGraw- Hill
3	Introduction Algorithms by Thomas Corman et.al
4	Fundamental of Data structure in C, by Ellis Horowitz, Sartaj Sahni, Susan Anderson-Freed
5	Algorithms by Robert Sedgewick and Kevin Wayne

<b>Semester</b>	:	I
<b>Title of the Subject / course</b>	:	Research Methodology
<b>Course Code</b>	:	MMS/RMT/508
<b>Credits</b>	:	4
<b>Marks</b>	:	Marks: 100 (UA: 60 + IA: 40)

**Learning Objectives of the Course:-**

- To equip the students with the basic understanding of the research methodology
- To provide an insight into the application of modern analytical tools and techniques for the purpose of management decision making.

**Course Outcome (CO):**

At the end of the course, students will be able

- Understand the role and importance of research
- Study the concepts & cycle of the research process
- Identify the sampling methods of Research process
- To apply various statistical methods to test the Hypothesis

**Course Outline: -**

**Unit 1 : Introduction to Research:** Scope, Objectives, Motivation, significance, Typen, Research Applications, Research Methodology.

**Unit 2: Research Problem:** Components of a Problem, Conditions for selecting Problem Research Problem Identification Problem Formulation and Statement of Research Objectives Techniques off defining research Problem

**Unit 3: Research designs & Sample Design:** Features, Significance, Introduction to Types-exploratory, descriptive & experimental research designs Sample Design Steps in sample design, types-Probability & Non-Probability sample design.

**Unit 4: Data collection:** Methods -Primary Data & Secondary Data, Survey methods, selection of an appropriate data collection method, conditions before using secondary data, Questinnaire Design

**Unit 5: Data Processing:** Editing, Coding classification, Tabulation, Analysis of Data; Introduction to SPSS, ANOVA, Research Proposal, Research process

**Reference books :**

1	Research methodology methods techniques by C.R. Kothari
2	Statistical methods: D. SP. Gupta-sultan Chand & New Delhi

3	Research methodology by Gupta
4	Research methodology in social science by Girdhari
5	Analysing data using SPSS Andrew Garth, Sheffield Hallam
6	Case Study Research: Design and Methods Robert K. Yin
7	The Essential Guide to Doing Your Research Project” by Zina O’Leary
8	Successful Qualitative Research: A Practical Guide for Beginners Virginia Braun.

# Semester- I

Semester	:	II
Title of the Subject / course	:	Programming in Java
Course Code	:	MMS/MAN/510
Credits	:	4
Marks	:	Marks: 100 (UA: 60 + IA: 40)

**Learning Objectives of the Course:-**

- Summarize the strengths and weaknesses of Java programming and the basic concepts of object-oriented programming.
- Identify Java code utilities in applets, Java packages, and classes.
- Write Java code using advanced Java features.

**Course Outcome (CO) :-**

- Understand to solve real world problems using OOP techniques.
- Understand the use of abstract classes.
- Understand to solve problems using java collection framework and I/o classes.
- Understand to develop multithreaded applications with synchronization.
- Understand to develop applets for web applications.
- Understand to design GUI based applications

**Course Outline :-**

**Unit 1:** Introduction to Java: Basics of Java programming, Java Features, History, JVM, Data types, Variables, Operators, Control structures, Looping, Java methods, Overloading, Arrays in java.

**Unit 2:** OOPS Features Objects and Classes: Basics of objects and classes in java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String Inheritance and Polymorphism: Inheritance in java, Super and sub class, Overriding, Object class, Polymorphism, Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class.

**Unit 3:** Interface in java, Package in java Exception handling with try-catch-finally

**Unit 4:** Event and GUI programming: Event handling in java, Event types, Mouse and key events, GUI Basics, Panels, Frames, Layout Managers: Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle

**Unit 5:** Multithreading in java: Thread life cycle and methods, Runnable interface, Thread synchronization,

**Reference books :**

1	E. Balagurusamy, Programming with JAVA, McGraw Hill, New Delhi, 2007
2	Raj Kumar Buyya, Object Oriented Programming with JAVA, McGraw Hill, 2009
3	Herbert Schildt, Java A Beginner's Guide – Create, Compile, and Run Java Programs Today, Sixth Edition, Oracle Press, 2014
4	Ken Arnold, James Gosling, "The Java Programming Language, Fourth Edition, Addison Wisely, 2005

Semester	:	II
Title of the Subject / course	:	Operating System
Course Code	:	MMS/MAN/511
Credits	:	4
Marks	:	Marks: 100 (UA: 60 + IA: 40)

**Learning Outcomes (LO): -**

- Grasp core knowledge and applications of computer.
- Problem finding and solution with hardware and software.
- A commitment to lifelong learning and keeping up with evolving technologies.
- Develop system solutions involving both hardware and software.
- Competency for higher studies and employability.

**Course Outcome (CO): -**

- Understand difference between system software and application software.
- Understand types of operating system, basic functions of O.S and Evolution of O.S
- Understand concept of process, process control block and threads.
- Understand the CPU scheduling Non primitive and primitive algorithms, deadlock.
- Understanding of device management.

**Course Outline: -**

**Unit 1: Introduction to Operating System.**

Introduction, Definition, classification and Functions of Operating System, Booting of OS & it's type. structure of OS, types of Operating System: Batch O.S., Multiprogramming O.S., Time Sharing O.S, Personal Computers O.S., Network O.S.

**Unit 2: Memory and Process Management**

Memory Management: Address Binding, Logical Vs. Physical Address space, Memory Allocation, Paging, Segmentation

Concept of process: Definition, states of process, Process control block, operation on process, threads

**Unit 3: CPU Scheduling**

Types of Schedulers, Criteria for scheduling, , Non-pre-emptive scheduling algorithms: FCFS and SJF, Pre-emptive scheduling algorithms: Round robin and Priority scheduling, concept of Deadlock

**Unit 4: Information Management and device management**

Device management: Dedicated Devices, Shared Device & Virtual Device. Device Characteristics: Input and Output devices, Storage devices, Device Allocations.

Information management: Concept of File system, Symbolic file system

**Unit 5: History and Development of Linux operating system**

Introduction to Linux, brief history of Linux, features of Linux OS, components of Linux System, benefits of Linux, Linux kernel, Linux file system, basic Linux commands.

**Reference books:**

1	G. Nutt, Operating System, Modern Operating System Concepts, 8 <sup>th</sup> edition, John Wiley Publications 2008
2	“Operating System”, By S.R.Sathe & Anil S.Mokhade , MacMillan Publication.
3	“Operating System”, By Stuart E.Madnick, John J.Donovan.
4	Linux for Beginners: The Ultimate Guide To the Linux Operating System & Linux Commands 1 <sup>st</sup> Edition by Adam Vardy
5	Linux: the Ultimate step by step Guide to Quickly and Easily Learning Linux by TED DAWSON
6	Operating System Concepts- A. Silberzchaz & P.B. Galvin, Addison – Wesley Publishing Company.
7	Peterson, Linux: Complete Reference (5 <sup>th</sup> Edition), Peterson, TMH, ISBN 10:0070222940

<b>Semester</b>	:	II
<b>Title of the Subject / course</b>	:	Business Corporate Management
<b>Course Code</b>	:	MMS/MAN/512
<b>Credits</b>	:	04
<b>Marks</b>	:	Marks: 100 (UA: 60 + IA: 40)

**Learning Objectives of the Course:-**

Understand Management for using as a tool for getting success in work.

Student will Acquired knowledge in the process and levels of management in the Organization

Student will understand the Finance function and basic accounting important for personal as well as business point of view.

Student will understand importance of human resources management in an organisation and the scope of human resource management.

Student will understand the contribution of marketing in the field of Job or business expansion, promotion.

**Course Outcome (CO):-**

The objective of this course is to provide an understanding of basic concepts, principles and practices of management as well as other areas of Management.

To make the students understand the concepts of Financial Accounting and Finance function.

To provide basic knowledge of the concept of Marketing & Production and their application in the field of business

**Course Outline:-**

**Unit 1: Fundamentals of Management:** Introduction to Management concept, Functions, Importance and Scope, Nature of Management, Planning, Organising Direction, staffing, Coordination.

Planning and Organizing, Nature, Scope, Objective and Significance of Planning, Elements and Steps of Planning, Effective Organizing, Organizational Structures, Formal and Informal Organizations Staffing. Directing Effective Directing, Supervision, Motivation.

Controlling and Coordinating- Elements of Managerial Control, Control Systems, Management Control Techniques, Effective Control Systems. Coordination Concept, Importance, Principles and Techniques of Coordination.

**Unit 2 : Finance and Basic Accounting:**

Conceptual Foundation, Finance Functions in Business, Corporate Finance, Nature and Scope of Financial Management, Objectives of Financial Management, Role of Financial Management a

Principles, concepts and conventions, double entry system of accounting - introduction to different books of account. Books of accounts Trading, Profit & Loss a/c, Balance sheet.

**Unit 3: HRM:** Meaning, Concept, function. Scope and Importance. Manpower planning, Selection, appraisal, training and Information systems.

**Unit 4: Marketing:** Understand the concept of marketing mix. These marketing mix elements consist of product policy and design, pricing, choice of marketing intermediaries, methods of physical distribution, use of personal, selling, advertising and sales promotion, marketing, research, and marketing organization.

**Unit 5: Production Planning and Control:**

Production Planning and Control, aggregate planning, multiple product batch production cycles, short term scheduling of job shop, activity scheduling in projects, Management of supply chain, Material management (introduction to materials management, system and procedures for inventory management planning and procurement of materials): quality management (quality concept and planning, standardization, quality circles).

**Reference books:**

1	Robbins, S.P. & Decenzo, D. A. (2014). Fundamentals of Management: Essential Concepts and Applications. New Delhi: Pearson Education
2	Drucker, F. Peter - The Practice of Management.
3	Bhattacharya and Dearden - Accounting For Management
4	Kotler, Philip - Marketing Management : Analysis Planning and Control
5	Aswathappa, A - Human Resources and Personnel Management
6	Goel and Gupta - Production Management
7	Fundamentals of Management: Essential Concepts and Applications. New Delhi: Pearson Education.
8	Essentials of Management. New Delhi: Tata McGraw-Hill Education.
9	Human Resource Management by C.V. Subramaniam
10	Drucker, F. Peter - Management-Tasks, Responsibilities & Practices.
11	R.L. Gupta and V.K. Gupta - Financial Accounting (Pt-I, Pt-II)
12	Stanton W J - Fundamentals of Marketing

<b>Semester</b>	:	II
<b>Title of the Subject / course</b>	:	1. Advance Excel
<b>Course Code</b>	:	MMS/ACT/513
<b>Credits</b>	:	2
<b>Marks</b>	:	Marks: 50 (UA)

**Learning Objectives of the Course: -**

- Excel enables users to format, organize and calculate data in a spreadsheet.
- Organizing data using software like Excel, data analysts and other users can make information easier to view as data is added or changed.

**Course Outcome (CO):-**

- Understanding the need and use of using Excel templates.
- Securing information in an Excel workbook.
- Manipulate data using data names and ranges, filters and sort, and validation lists
- Learning formulas, creating charts and graphs that can easily explain or simplify complex information or data.
- Analyzing data using Pivot Tables and Pivot Charts.

**Course Outline :-**

**Unit 1 :** Adding Elements to a Workbook: Adding, Modifying, cropping an image, and rotating an Images, compressing a Picture, Adding WordArt, Inserting AutoShapes, Adding Clip Art, Adding a Hyperlink.

Protection: Protect worksheet, protect workbook, share workbook, and track Changes.

**Unit 2:**Charts: Chart elements: Titles, legend, data labels, creating a New Chart, Formatting the Chart, Types of charts, Using Chart Templates.

Data Sorting: Sorting by One Column, Sorting by Colors or Icons, Sorting by Multiple Columns, Sorting by a Custom List.

**Unit 3:**Filtering Data: Creating a Custom AutoFilter, Using an Advanced Filter. Data Outline: Group, Ungroup and Subtotals.

Tables: Creating a Table, Entering Data into a Table, Sorting Data into a Table, Using Filters to Sort Tables, Data Tools: Data Validation, Consolidation

**Unit 4:**Formulas and functions: creating a formula, formula auditing, meaning and advantages of functions, insert function.

Mathematical functions: sum, autosum, sumif, subtotal product, power, sqrt, round.

Statistical functions: average, averageif and averageifs, count, counta, countif, countifs, max, min, median, mode.

Date & time functions: date, now, day, year, month, time, today, weekday, date-value.

**Unit 5: Look up & reference: vlookup & hlookup**

Financial functions: rate, type, pv, fv, nper, pmt, ipmt, cumipmt, npv, irr.

Names in excel: defining names, using and managing defined names.

Pivot Table: Pivot Table Tools, Source Data for a PivotTable, Change to a Different External Data Source, Delete a PivotTable, Using the Timeline.

**Reference books :**

1	Excel with Microsoft Excel: Comprehensive & Easy Guide to Learn Advanced MS Excel by Naveen Mishra
2	Excel 2010 Bible by John Walkenbach
3	Excel Formulas and Functions: Cool Tips and Tricks With Formulas in Excel by S Ima A Lex
4	Excel 2023: A Comprehensive Guide to become an Expert on Excel 2023 With All-in-One Approach Excel 2023: A Comprehensive Guide to become an Expert on Excel 2023 With All-in-One Approach

Semester	:	II
Title of the Subject / course	:	2. JavaScript
Course Code	:	MMS/ACT/513
Credits	:	2
Marks	:	Marks: 50

**Learning Objectives of the Course:-**

- Implementation of advance Professionalism for project management, interpersonal skills and teamwork.
- Problem finding and solution with software.
- Competency for higher studies and employability.
- A commitment to lifelong learning and keeping up with evolving technologies.

**Course Outcome (CO):-**

- Ability to understand fundamentals of JavaScript
- Proficiency in developing interactive and dynamic web applications.
- Understanding of basic functions in JavaScript
- Understand Internet and web technology.

**Course Outline:-**

**Unit 1: Introduction to JavaScript:** Overview of JavaScript, definition, features of JavaScript, Applications of JavaScript.

**Unit 2: JavaScript Variables and datatypes:** JavaScript `<script>` tag, what is variables, global variables, what is datatype: Primitive data type and non-primitive (reference) data types, **operators in JavaScript:** Arithmetic Operators, Comparison (Relational) Operators, Bitwise Operators, Logical Operators, Assignment Operators, Special Operators

**Unit 3: JavaScript if statement:** If Statement, If else statement, if else if statement, JavaScript switch statement,

**Unit 4: Introduction to Loops and functions:** for loop, while loop, do-while loop, for-in loop, **Functions:** What is Function, Advantage of JavaScript function, JavaScript Function Syntax, JavaScript Function Arguments.

**Unit 5: Built-in functions in JavaScript:** Date(), getDate(), getDay(), min(), max(), round(), alert()  
**Methods in JavaScript:** getElementbyID, getElementsByClassName()

**Reference books:**

1	A Smarter Way to Learn JavaScript by Mark Myers
2	JavaScript: The Definitive Guide by David Flanagan
3	JavaScript and jQuery: Interactive Front-End Web Development by Jon Ducket
4	Head First JavaScript Programming: A Brain-Friendly Guide by Elisabeth Robson

**List of JavaScript Practical questions:**

- Q1 Create a JavaScript program that generates a button. Upon clicking this button, the current date and time should be displayed.
- Q2 Write a JavaScript program to calculate multiplication and division of two numbers (input from user).
- Q3 Write a JavaScript program that accept two integers and display the larger.
- Q4 Write a JavaScript program to demonstrate alert box.
- Q5 Write a JavaScript program to demonstrate If Statement and if else statements.
- Q6 Write a JavaScript program to demonstrate switch statement.
- Q7 Write a JavaScript program to demonstrate for loop and for-in.
- Q8 Write a JavaScript program to demonstrate while loop and do while loop.
- Q9 Write a JavaScript program to demonstrate functions.
- Q10 Write a JavaScript program to demonstrate built-in functions.

Semester	:	II
Title of the Subject / course	:	3. Marketing Skills
Course Code	:	MMS/ACT/513
Credits	:	2 (*Pr)
Marks	:	Marks: 50

### Learning Objectives of the Course:-

- To Gain a comprehensive understanding of key marketing concepts, theories, and principles relevant to contemporary business environments.
- To Develop analytical skills to assess market trends, consumer behaviour, and competitive landscapes, enabling informed decision-making and strategic planning
- To acquire proficiency in conducting market research, including qualitative and quantitative methods, to gather insights for product development, positioning, and segmentation.
- To learn how to develop comprehensive marketing plans and execute marketing campaigns effectively, utilizing appropriate resources and channels to achieve desired objectives.
- Develop competence in digital marketing strategies and tools, including social media marketing, content marketing, search engine optimization

### Course Outcome (CO):-

- To provide an overview of marketing concepts, evolution, and its role in contemporary business environments.
- To analyse market trends, consumer behaviour, and market segmentation strategies to identify target markets and opportunities.
- To explore strategic marketing frameworks and tools to develop effective marketing strategies aligned with organizational goals.
- To Guide students through the process of developing comprehensive marketing plans and executing marketing campaigns effectively.

### Course Outline: -

#### Unit 1: Marketing Fundamentals and Strategic Planning

Overview of Marketing Concepts, Market Segmentation and Targeting, Strategic Planning Process in Marketing, Marketing Mix (Product, Price, Place, Promotion), Consumer Behaviour Analysis

#### Unit 2: Brand Management and Digital Marketing

Branding Strategies and Brand Equity, Integrated Marketing Communications (IMC), Social Media Marketing and Content Strategy, Search Engine Optimization (SEO) and Search Engine Marketing (SEM), Email Marketing and Online Advertising

#### Unit 3: Marketing Research and Analytics

Introduction to Marketing Research, Research Design and Data Collection Methods, Data Analysis Techniques (Quantitative and Qualitative), Marketing Metrics and Performance Measurement, Market Forecasting and Trend Analysis

**Unit 4: Product Development and Innovation**

New Product Development Process, Product Lifecycle Management, Innovation Strategies and Techniques, Managing Product Portfolios

**Unit 5: Global Marketing and International Business**

Global Market Entry Strategies, International Marketing Environment, Cultural, Political, and Legal Factors in International Marketing, Global Branding and Standardization vs. Adaptation, Managing International Distribution Channels

**Reference books:**

1	"Principles of Marketing" by Philip Kotler and Gary Armstrong
2	"Building Strong Brands" by David A. Aaker
3	"Digital Marketing: Strategy, Implementation, and Practice" by Dave Chaffey and Fiona Ellis-Chadwick
4	"Marketing Research: An Applied Orientation" by Naresh K. Malhotra
5	"Managing New Product and Process Development: Text and Cases" by Steven C. Wheelwright and Kim B. Clark
6	"Marketing Analytics: Data-Driven Techniques with Microsoft Excel" by Wayne L. Winston
7	"The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail" by Clayton M. Christensen
8	"Global Marketing" by Warren J. Keegan and Mark C. Green
9	"International Marketing" by Philip R. Cateora, John Graham, and Mary C. Gilly

<b>Semester</b>	:	<b>II</b>
<b>Title of the Subject / course</b>	:	<b>4. LINUX</b>
<b>Course Code</b>	:	<b>MMS/ACT/513</b>
<b>Credits</b>	:	<b>2 (*Pr)</b>
<b>Marks</b>	:	<b>Marks: 50</b>

### Learning Objectives of the Course:-

- What Ubuntu Linux-based Open Source O.S.?
- Learn how it is designed for computers, smartphones, and network servers. ?
- To learn all the principles used to develop the Ubuntu software are based on the principles of Open Source software development.
- To do the study a free operating system and is backed by a huge open source community.
- Recognize users, security, and privacy settings in Ubuntu Linux.

### Course Outcome (CO):-

- To introduce students the knowledge of OPEN Source operating system.
- To provide introduction to LINUX Operating System and its File System
- To provide Installation of Linux Operating System.
- To acquaint students about Installation of various open sources software on Linux platform.

### Course Outline :-

**Unit 1 : Ubuntu Overview:** Ubuntu Desktop Components-Desktop Icons, Desktop Panels, The Application Menu, The Places Menu, The System Menu, The Shortcut Icons. Desktop – various Desktops, Gnome, KDE Plasma, Cinnamon, How to make ubuntu look like Windows XP, Recall old memories of windows XP

**Unit 2: Working with files.:** Introduction, spatial mode, browse mode, opening files, searching for files, managing files and folders, using removable media, caja preferences, Extending Caja, dolphin file manager, Installation, Tools and utilities – running application

**Unit 3: Commands and I/O Redirection and Piping:**Linux advanced commands, input output redirection and pipes, && and || constructs.

**Unit 4: Installations - I:** Terminal window, command syntax, Commands - sudo, apt-get :- install, update, upgrade, remove, purge, auto remove, df, du, free, info , whatis, pwd, mkdir, ls, mv, cp, Ubuntu Terminal Shortcuts, What does sudo apt-get update and sudo apt-get upgrade command do? The differences between APT update and upgrade command.

**Unit 5: Installations – II:** Installation of compilers for languages/packages – c, c++, java, Ruby, D language, JSP, MYSQL,KDE-office, PHP, Hadoop, R-programming, Python, GAMBAS, SCILAB, Geany ID, EMU8086 - MICROPROCESSOR EMULATOR, android installation, MYSQL Workbench, Visual Studio Installation etc. Installation of various desktop - Gnome desktop, KDE Plasma Desktop, Cinnamon Desktop, LXQt Desktop

**Reference books :**

1	Official Ubuntu Book, 9 <sup>th</sup> edition by by Matthew Helmke, Elizabeth Joseph, Jose Rey
2	Beginning Ubuntu Linux: From Novice to Professional (Third Edition) by Keir Thomas - Apress; Bk&CD-Rom edition (June, 2008)
3	Linux Bible : Boot Up to Fedora, KNOPPIX, Debian, SUSE, Ubuntu , and 7 Other Distributions by Christopher Negus - Wiley; 2 edition (January 31, 2006)
4	Ubuntu Unleashed by Andrew Hudson, Paul Hudson - Sams; 1st edition (August 29, 2006)
5	Ubuntu for Non-Geeks, 3rd Edition: A Pain-Free, Project-Based, Get-Things-Done Guidebook by Rickford Grant

<b>Semester</b>	:	II
<b>Title of the Subject / course</b>	:	1. Cyber Security
<b>Course Code</b>	:	MMS/ELE/514
<b>Credits</b>	:	4
<b>Marks</b>	:	Marks: 100 (UA: 60 + IA: 40)

**Learning Objectives of the Course:-**

- To learn the vulnerabilities of computer networks to attacks by adversaries and hackers.
- To evaluate the methods and techniques to defend against these attacks and to minimize their damage.
- To understand and explain the risks faced by computer systems and networks.
- To develop security mechanisms to protect computer systems and networks.

**Course Outcome (CO):-**

- The main objectives of cyber security are to protect the confidentiality, integrity, and availability of information and systems.
- These are also known as the CIA triad and form the basis of all security programs.
- Understanding the fundamental principal and concept of cyber security.
- This objective aims to ensure that only authorized individuals or entities can access and view confidential data.

**Course Outline :-**

**Unit 1:** Introduction to cyber World: introduction to cyber space, Internet, Deep web and Dark web, Hackers, Types of hackers, Hacking, types of hacking, Ethical hacking.

**Unit 2:** Introduction to cyber security–cyber security, Cyber security domains, importance of cyber security, cyber security roles, cyber threats, CIA triad.

**Unit 3:** Cyber security fundamentals: Importance of cyber security in modern society, cyber threats and attacks – malwares, Phishing, Social engineering, Cyber-crime, types of cyber-crimes,

**Unit 4:** Cyber security devices–Router, Firewalls, VPN, Anti-malware software, data encryption, Intrusion detection systems, Intrusion Prevention system systems.

**Unit 5:** Authentication & Encryption–Introduction, Authentication factors, types, Biometrics, OTP, Password, encryption, encryption techniques, AES, DES, RSA, E2E, types of encryption – Symmetric and Asymmetric key encryption.

**Reference books:**

<b>1</b>	“The art of invisibility” by Kevin Mitnick
<b>2</b>	“Practical Malware analysis: the hands-on guide to dissecting malicious software” by Michael Sikorski and Andrew Honing
<b>3</b>	Hacking: The Art of Exploitation - Book by Jon Erickson
<b>4</b>	“Network Security Bible” by Eric Cole
<b>5</b>	Security Engineering: A Guide to Building Dependable Distributed Systems - Book by Ross J. Anderson

<b>Semester</b>	:	<b>II</b>
<b>Title of the Subject / course</b>	:	<b>2. Statistical Methods</b>
<b>Course Code</b>	:	<b>MMS/ELE/515</b>
<b>Credits</b>	:	<b>4</b>
<b>Marks</b>	:	<b>Marks: 100 (UA: 60 + IA: 40)</b>

**Learning Objectives of the Course:-**

- Perform statistical inference in several circumstances and interpret the results in an applied context

**Course Outcome (CO):-**

Successful completion of this course, students will be able to:

- Organize, manage and present data.
- Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.
- Analyze statistical data using measures of central tendency, dispersion and location.

**Course Outline :-**

**Unit 1 :**

Statistical Methods: Definition and scope of Statistics, concepts of statistical population and sample. Data: quantitative and qualitative, attributes, variables, scales of measurement nominal, ordinal, interval and ratio. Presentation: tabular and graphical, including histogram and ogives, consistency and independence of data with special reference to attributes.

**Unit 2:**

Measures of Central Tendency: mathematical and positional. Measures of Dispersion: range, quartile deviation, mean deviation, standard deviation, coefficient of variation, Moments, absolute moments, factorial moments, skewness and kurtosis

**Unit 3:**

Bivariate data: Definition, scatter diagram, simple, partial and multiple correlation (3 variables only), rank correlation. Simple linear regression, principle of least squares and fitting of polynomials and exponential curves.

**Unit 4:**

Index Numbers: Definition, construction of index numbers and problems thereof for weighted and unweighted index numbers including Laspeyre's, Paasche's, Edgeworth- Marshall and Fisher's Ideal Index numbers. Errors in Index numbers.

**Unit 5:**

Chain index numbers, conversion of fixed based to chain-based index numbers and vice-versa. Consumer price index numbers. Uses and limitations of index numbers.

**Reference books :**

1	Goon A.M., Gupta M.K. and Dasgupta B. (2002): Fundamentals of Statistics, Vol. I & II, 8th Edn. The World Press, Kolkata.
2	Gupta, S. C. and Kapoor, V.K. (2008): Fundamentals Of Mathematical Statistics, 4 th Edition (Reprint), Sultan Chand & Sons
3	Miller, Irwin and Miller, Marylees(2006): John E.Freund's Mathematical Statistics with Applications, (7th Edn.), Pearson Education, Asia.
4	Mood, A.M. Graybill, F.A. and Boes, D.C. (2007): Introduction to the Theory of Statistics, 3rd Edn., (Reprint), Tata McGraw-Hill Pub. Co.Ltd
5	Mukhopadhyay, P. (1999): Applied Statistics, New Central Book Agency

Semester	:	II
Title of the Subject / course	:	3. DSS & MIS
Course Code	:	MMS/ELE/516
Credits	:	4
Marks	:	Marks: 100 (UA: 60 + IA: 40)

**Learning Objectives of the Course:-**

- Understand the role and significance of DSS and MIS in organizations
- Analyse decision-making processes and identify suitable DSS solutions
- Demonstrate proficiency in data management techniques:
- Design and develop DSS and MIS solutions:

**Course Outcome (CO):-**

- To introduce the concepts and importance of Decision Support Systems and Management Information Systems.
- To understand the role of DSS and MIS in organizational decision-making and information management.
- To explore the components and architecture of DSS and MIS.
- To analyse the impact of DSS and MIS on organizational performance and competitiveness

**Course Outline: -**

**Unit 1: Introduction to Decision Support Systems and Management Information Systems**

Overview of Decision Support Systems and Management Information Systems, Role and importance of DSS and MIS in organizations, Components and architecture of DSS and MIS, Decision-making processes and models

**Unit 2: Data Management for Decision Support Systems and Management Information Systems**

Data collection, processing, and storage techniques, Data modelling and database design principles, Data warehousing and data mining concepts, Data quality and data governance

**Unit 3: Decision Support Systems Technologies**

Types of DSS: Model-driven, Data-driven, and Knowledge-driven DSS, Decision support tools and techniques: OLAP, EIS, GIS, etc, Business Intelligence and Analytics, Integration of DSS with other enterprise systems

**Unit 4: Design and Development of Decision Support Systems and Management Information Systems**

System development methodologies for DSS and MIS, User interface design principles, Case studies and examples of successful DSS and MIS implementations, Ethical and legal considerations in DSS and MIS development

**Unit 5: Implementation, Evaluation, and Maintenance of Decision Support Systems and Management Information Systems**

Implementation strategies and change management, Performance evaluation and measurement of DSS and MIS, Maintenance and upgrading of DSS and MIS, Future trends and emerging technologies in DSS and MIS

**Reference books:**

1	"Database Management Systems"- Raghu Ramakrishnan and Johannes Gehrke
2	"Business Intelligence Guidebook: From Data Integration to Analytics" by Rick Sherman
3	"Decision Support Systems for Business Intelligence" by Vicki L. Sauter
4	"Systems Analysis and Design" by Alan Dennis, Barbara Haley Wixom, and Roberta M. Roth
5	"Managing Information Technology" by Carol V. Brown, Daniel W. DeHayes, Jeffrey A. Hoffer, and Wainright E. Martin
6	"Information Systems Project Management" by David Avison and Guy Fitzgerald
7	"Information Technology Project Management" by Kathy Schwalbe