Dharmsinh Desai University
Faculty of MIS : Department of MCA
Proposed Teaching Scheme w.e.f. 2025 - 26

Semester-I											
Subject Code	Subject	Teaching Scheme			Exam Scheme						Credit
		Theory (Hrs.)	Practical (Hrs.)	TOTAL (Hrs.)	Sess.-Marks	IA	ESE-Marks	Prac.-Marks	TW-Marks	Total-Marks	
	Logic Building with Python	4	2	6	40	10	50	25	25	150	5
	DataBase Management System	4	2	6	40	10	50	25	25	150	5
	Computer Organization and Architecture	3	-	3	40	10	50	-	-	100	3
	Communication Skills	-	2	2	-	-	-	25	-	25	1
	Project - I	4	2	6	-	-	-	25	50	75	5
	Elective - I	3	-	3	40	10	50	-	-	100	3
	Computer Networks										
	Management Information Systems										
	Mathematics for Computer Science										
	Semester - I Total	**18**	**8**	**26**						**600**	**22**
Semester-II											
Subject Code	Subject	Teaching Scheme			Exam Scheme						Credit
		Theory (Hrs.)	Practical (Hrs.)	TOTAL (Hrs.)	Sess.-Marks	IA	ESE-Marks	Prac.-Marks	TW-Marks	Total-Marks	
	Software Engineering & Testing	4	-	4	40	10	50	-	25	125	4
	Core Java	4	2	6	40	10	50	25	25	150	5
	Data Structures	3	2	5	40	10	50	25	-	125	4
	Operating System	2	-	2	40	10	50	-	-	100	2
	Hands-on Cloud Computing platform	-	2	2	-	-	-	25	-	25	1
	Project - II	3	4	7	-	-	-	25	50	75	5
	Elective – II	-	2	2	-	-	-	25	-	25	1
	DevOps										
	Web Application Programming										
	Semester - II Total	**16**	**12**	**28**						**625**	**22**

Exam scheme indicates marks.
Teaching scheme indicates number of hours.

Dharmsinh Desai University
Faculty of MIS : Department of MCA
Proposed Teaching Scheme w.e.f. 2025 - 26

Semester-III												
Subject Code	Subject	Teaching Scheme			Exam Scheme						Credit
		Theory (Hrs.)	Practical (Hrs.)	TOTAL (Hrs.)	Sess.-Marks	IA	ESE-Marks	Prac.-Marks	TW-Marks	Total-Marks	
	Data Science - I	4	2	6	40	10	50	25	25	150	5
	Artificial Intelligence	4	2	6	40	10	50	25	25	150	5
	Elective – III	3	-	3	40	10	50	-	-	100	3
	Research Methodology										
	Cyber Security										
	Blockchain Technology										
	Elective – IV	3	2	5	40	10	50	25	-	125	4
	Mobile Application Development										
	Data Science - II										
	Internet of Things										
	Elective – V	3	2	5	40	10	50	25	25	150	4
	.Net Programming with C#										
	Advanced Java Programming										
	Analysis and Design of Algorithms										
	Semester - III Total	**17**	**8**	**25**						**675**	**21**
Semester-IV												
Subject Code	Subject	Teaching Scheme			Exam Scheme						Credit
		Theory (Hrs.)	Practical (Hrs.)	TOTAL (Hrs.)	Sess.-Marks	IA	ESE-Marks	Prac.-Marks	TW-Marks	Total-Marks	
	Research Dissertation / Software Project	-	40	40	-	-	-	300	300	600	20
	Semester - IV Total	**-**	**40**	**40**						**600**	**20**
TOTAL										**2500**	

Exam scheme indicates marks.
Teaching scheme indicates number of hours.

MCA SEMESTER – I
SUBJECT: LOGIC BUILDING WITH PYTHON

Teaching Scheme (Hours/Week)				Credits	Examination Scheme					
Lect	Tut	Prac	Total		Ext	Sess.	IA	TW	Prac	Total
4	-	2	6	5	50	40	10	25	2 5	150

A. COURSE OVERVIEW

The course is designed to provide knowledge about logic building and programming fundamentals. Students will be able to learn fundamental constructs of the python programming language. It will enable them to develop logic for creating basic python programs.

B. COURSE CONTENT

NO	TOPIC	L+T (hrs)	COs
[1]	Introduction to Program Development Life Cycle, Introduction to Flowchart, Symbols Used in Flowchart, Preparation of Flowchart, Advantages and Limitations of Flowchart, Development of Program Flowchart, Introduction to Pseudo Code. Introduction to Algorithm, Different Ways of Stating Algorithms, Key Features of an Algorithm and the Step-form, Variables, Subroutines, Input/output, Assignment, operators, conditional if and repetition. Strategy for Designing Algorithms, Tracing an Algorithm to Depict Logic, Specification for Converting Algorithms into Programs, Structured Programming Concepts.	10	CO1 CO2 CO3
[2]	Introduction to Python Programming Environment, Features of Python, Writing and Executing Basic Python Program. Data types: Built-in Types, str, bytes, Literals, type () function. Operators: Arithmetic, Assignment, Relational, Logical, Boolean, Bitwise, Membership, Identity, Operator Precedence and Associativity Input & Output statements, Command line arguments, Arrays	08	CO2
[3]	Decision Control Statements: if, else, elif, while, for, break, continue, pass, assert, return.	06	CO2 CO3
[4]	Introduction to Sequences List: create, update, delete elements, list methods, indexing and slicing.	02	CO2 CO3
[5]	Function: Advantages of Function, Create and Use Function, Return Multiple Results from Function, Recursive Functions, Arguments: Positional, Keyword, Default, Variable length. Local and Global Variables, Global Keyword, Passing variable number of arguments to Function	06	CO2 CO3 CO4
[6]	Strings: Introduction, Built-in String Functions, Slice Operation, Comparing Strings, Iterating String, Regular Expressions, String Module	03	CO2 CO3 CO4
[7]	File Handling: Types of Files, Open and Close File, read from Files, Write to Files, File Positions, Rename File, Delete File.	05	CO2 CO3 CO4 CO5

C. TEXT BOOKS

1. Reema Thareja, *Python Programming using Problem Solving Approach*; 2nd ed.; Oxford Publication.
2. R Nageswara Rao. Core Python Programming; 2nd Edition; Dreamtech press

D. REFERENCE BOOKS

1. John V Guttag. Introduction to Computation and Programming Using Python; 6th edition; Prentice Hall of India

E. COURSE OUTCOMES

CO Number	Skill	Statement
CO1	Apply	Design algorithms and flowcharts for a given problem.
CO2	Understand	Describe role and usage of Python language constructs.
CO3	Apply	Interpret algorithms and pseudocode to develop basic computer programs using python language.
CO4	Apply	Develop modular programs using python for given basic problems.
CO5	Apply	Develop basic python applications utilizing persistent data storage.

F. COURSE MATRIX

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
CO1	3	3	3	3	1	-	2	-	2	-	-	-	2
CO2	2	2	2	1	2	-	2	-	2	-	-	-	2
CO3	1	1	2	2	2	-	2	-	2	-	-	-	2
CO4	2	2	3	2	3	-	2	-	2	-	-	-	2
CO5	2	2	2	2	2	-	2	-	2	-	-	-	2
Avg	2	2	2.2	2	2	-	2	-	2	-	-	-	2

MCA SEMESTER – I
SUBJECT: DATABASE MANAGEMENT SYSTEM

Teaching Scheme (Hours/Week)				Credits	Examination Scheme					
Lect	Tut	Prac	Total		Ext	Sess.	IA	TW	Prac	Total
4	-	2	6	5	50	40	10	25	2 5	150

A. COURSE OVERVIEW

The purpose of this course is to provide fundamentals of database management system focusing on how to create, organize and maintain structured information in database. The course covers in-depth knowledge of Entity-Relational model, Normalization, Relational model as well as essential Transaction Processing concepts. It also includes PL/SQL programming concepts.

B. COURSE CONTENT

NO	TOPIC	L+T (hrs)	Cos
[1]	Database System Applications, Database Systems versus File Systems, View of Data, Database Languages, Database Design, Data Storage and Querying,, Transaction Management, Database System Structure, Database Users and Administrators .	3	CO1
[2]	Overview of Design Process, Entity Relationship Model, E-R Design Issues: Entity set vs Attributes, Binary vs N-ary Relationship set, Relationship Attributes, Entity Relationship Diagram, Weak Entity Sets, Reduction to Relational Schema, Extended E-R Features	6	CO2 CO1
[3]	Overview of SQL Query Language ,SQL Data Definition, Basic Datatypes, Schema design, Insert Values, SQL Select query, SQL Alternation of Schema, SQL Modification of Data, SQL built-in Functions, SQL Aggregation, SQL Subquery, SQL Join Expression	8	CO3
[4]	Feature of Good Relational Design, keys, Functional Dependency Theory, Normal Forms, Multivalued Dependency, Decomposition using Multivalued Dependency	6	CO2 CO1
[5]	Overview of Physical Storage Media, RAID, Storage Access, File Organization, Organization of Records in Files, Data Dictionary Storage	3	CO1
[6]	Basic Concepts, Ordered Indices, B+ Tree Index Files, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing, Multiple Key Access	5	CO5
[7]	Transaction Concept, Simple Transaction Model, Transaction Atomicity and Durability, Transaction Isolation, Serializability Concept, Transaction Isolation and Atomicity	4	CO5
[8]	Basic structure of PL/SQL block, Loops and Control Statements in PL/SQL blocks, Triggers in PL/SQL, Stored Procedure, Stored Functions , Cursor in PL/SQL block,Error handling in PL/SQL block	5	CO4

C. TEXT BOOKS

1. Abraham Silberschatz, Henry F.Korth and S.Sudarshan, *Database System Concepts* ; 4th ed ; McGraw Hill Publication
2. Joel Murach, Mike Murach & Associates , *Murach's MySQL* 3rd ed;
3. Ivan Byross ; SQL,PL/SQL The Programming Language of Oracle; 4th ed;

D. REFERENCE BOOKS

1. Carlos Coronel, Steven Morris, Peter Rob, *Database Systems : Design, Implementation and Management;* Cengage Learning
2. Ramez Elmsari, Shamkant B Navathe, *Fundamentals of Database Systems;* 7th ed ;Pearson Education
3. S K Singh, *Database Systems: Concepts, Design and Applications* ; Pearson Education

E. WEB REFERENCE

1. www.mysqltutorial.org
2. https://docs.oracle.com/

F. COURSE OUTCOMES

CO Number	Skill	Statement
CO1	Understand	Describe role and usage , building blocks, File Organization, Storage structure and design process of relational database system.
CO2	Analyse	Design robust relational database for a given societal problem
CO3	Apply	Demonstrate advanced CRUD operations on RDBMS.
CO4	Apply	Demonstrate usage of procedural language in relational database environment.
CO5	Understand	Justify working of existing techniques for indexing and transaction management.

G. COURSE MATRIX

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
CO1	3	-	-	-	-	-	2	-	-	-	-	-	3
CO2	2	3	3	3	3	-	3	-	-	-	-	-	1
CO3	2	3	3	3	3	-	3	-	-	-	-	-	2
CO4	2	3	3	3	3	-	3	-	-	-	-	-	2
CO5	3	2	2	1	1	-	2	-	-	-	-	-	2
Avg	2.5	2.1	2.0	2.0	2.0	-	2.6	-	-	-	-	-	2.0

MCASEMESTER–I

SUBJECT: COMPUTER ORGANIZATION AND ARCHITECTURE

Teaching Scheme (Hours/Week)				Credits	Examination Scheme					
Lect	Tut	Prac	Total		Ext	Sess.	IA	TW	Prac	Total
3	-	-	3	3	50	40	10	-	-	100

A. COURSEOVERVIEW

This course is intended to teach the basics involved in data representation and digital logic circuits used in the computer system. It covers the general concepts of digital logic design, including logic elements, and their use in combinational and sequential logic circuit design. Provide insights in basic architecture of processing, memory, and i/o organization in a computer system.

B. COURSECONTENT

NO	TOPIC	L+T (hrs)	COs
[1]	Generation of Computers, Analog and Digital Computer, Block Diagram of Computer, Positive and Negative Numbers, Integers and Reals, Number Systems: Binary, Octal, Decimal and Hexadecimal, Binary Addition, Subtraction, Multiplication and Division, r's and (r- 1)'s Complement, Conversion from One System to Another, Characters and Codes ASCII, UNICODE.	6	CO1 CO2
[2]	Basic Gates & its Truth Tables, Boolean Algebra: Fundamental Concepts, Basic Theorem and Properties, Boolean Functions Canonical and Standard Forms, Sum of Product, Product of Sum, K-map Method, Don't Care Condition, Combination Circuit Design with Gates, Universal Gates Functionality.	8	CO1 CO3
[3]	Block Diagram of ALU, Binary Half and Full Adder, Half and Full Subtractor, Multilevel NAND Circuits, Multilevel NOR Circuits.	3	CO1 CO3
[4]	Encoder, Decoder, Multiplexer, Demultiplexer.	3	CO4
[5]	Flip Flops: RS, JK, Asynchronous, Synchronous Shift Registers [Left & Right], Ripple Counter, Simple Arithmetic and logic Circuits.	3	CO4
[6]	Memory Hierarchy, Random Access Memory, Read Only Memory, Serial Access Memory, Direct Access Memory, Cache Memory.	2	CO1
[7]	Introduction to 8085 Microprocessor, 8085 Hardware Model, Programmable Registers, Instruction Format, Instruction Set, Instruction Execution, Fetch and Execution Cycles.	3	CO1
[8]	Peripheral Devices, Properties of Simple I/O Devices and Their Controllers, Asynchronous Data Transfer, Handshaking, Data Transfer Modes, Programmed I/O, Interrupted I/O, DMA, Transfer of Information between I/O Devices, CPU and Memory.	2	CO1

C. TEXT BOOKS

1. A. Anand Kumar, Fundamentals of Digital Circuits; 2nd ed.; PHI
2. Ramesh S. Gaonkar, *Microprocessor Architecture, Programming and Applications with 8085;* 4th ed.; Penram International Publishing PVT. LTD.

D. REFERENCEBOOKS

1. M. Morris Mano, *Computer System Architecture*; 3rd ed; PHI
2. M. Morris Mano, *Digital Logic and Computer Design;* 2nd ed; PHI
3. William Stallings, *Computer Organization and Architecture*; 6th ed.; PHI
4. Andrew S Tanenbaum, *Structure Computer Organization*; 4th ed; Pearson Education

E. COURSEOUTCOMES

CO Number	Skill	Statement
CO1	Understand	Describe role of various elements of computer organization and architecture such as microprocessor, I/O.
CO2	Apply	Working with various number systems
CO3	Apply	Simplify Boolean expression and logic circuits.
CO4	Understand	Interpret combinational and sequential logic circuit design.

F. COURSEMATRIX

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
CO1	2	-	-	1	1	-	2	-	1	-	-	-	3
CO2	2	3	-	2	3	-	2	-	3	-	-	-	2
CO3	2	3	-	3	3	-	2	-	3	-	-	-	2
CO4	2	2	-	3	3	-	2	-	2	-	-	-	2
Avg	2	2	-	2.25	2.5	-	2	-	2.25	-	-	-	2.25

MCA SEMESTER – I

SUBJECT: Communication Skills

Teaching Scheme (Hours/Week)				Credits	Examination Scheme					
Lect	Tut	Prac	Total		Ext	Sess.	IA	TW	Prac	Total
-	-	2	2	2	-	-	-	-	25	25

A. COURSE OVERVIEW

The course is intended to familiarize students with the basics of English language and help them to learn to identify language structures for correct English usage. To enable the students to adopt strategies for effective reading and writing skills. It helps students to carry out day to day communication at the work place by adequate understanding of various types of communication to facilitate efficient interpersonal communication.

B. COURSE CONTENT

NO	TOPIC	Practical	COs
[1]	Concord, Tenses, Impersonal Passive Voice, Conditional Sentences, Conjunctions and Prepositions, Idioms.	4	CO1
[2]	Nature and Scope, Communication Networks, Supervisor and Employee Communication, Organizational Structure, Lack of Trust, Unethical Communication. Non-verbal Communication: Significance and Forms, Elements of Non-verbal Communication. Cross-cultural Communication: Concept, Different Communication Styles and Strategies. Technology-enabled Business Communication: Tools, Impact, Effectiveness. Case Study.	6	CO2 CO3
[3]	Business Messages: Importance, Types, Approaches, Stages. Business Letter Writing: Principles and Components, Kinds of Business Letters Instructions: Written Instructions, Format, Audience Analysis, Characteristics Business Reports: Kinds, Characteristics, Parts, Elements, Steps Proposals: Types, Components, Format, Proposal Layout and Design Resume: Format, Types, Video Resumes, Send Resumes, Online Recruitment: Process and Techniques.	8	CO3 CO5
[4]	Interviews: Principles, General Preparations, Follow up, Questions Group Discussion: Planning and Preparation, Steps.	6	CO4 CO5

C. TEXT BOOKS

1. Meenakshi Raman and Prakash Singh, *Business Communication;* Oxford University Press
2. Meenakshi Raman and Sangeeta Sharma, *Technical Communication;* Oxford University Press

D. REFERENCE BOOKS

1. Sangeeta Sharma & Vinod Mishra, *Communication Skills for Engineers and Scientists*; PHI
2. William Sanborn Pfeiffer and T. V. S. Padmaja, *Technical Communication*; Pearson

E. COURSE OUTCOMES

CO Number	Skill	Statement
CO1	Apply	Effective use of tenses and Conditional Sentences for academic writing
CO2	Analyze	Identify Various Means of Professional Communication
CO3	Apply	Practice Effective Business Writing and Correspondence
CO4	Apply	Exercise Interviews and Group Discussion Practices
CO5	Apply	Understanding Professional Environment and Being Competent

F. COURSE MATRIX

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
CO1	2	2	2	2	3	2	-	-	1	3	-	-	2
CO2	2	2	2	2	3	2	-	-	3	3	2	-	2
CO3	2	2	2	3	2	2	-	-	2	3	2	-	2
CO4	2	2	2	2	2	2	-	-	3	3	2	-	2
CO5	2	2	2	1	1	2	-	-	3	3	2	-	2
Avg	2	2	2	2	2.2	2	-	-	2.4	3	2	-	2

MCA SEMESTER – I
SUBJECT: Project – 1

Teaching Scheme (Hours/Week)				Credits	Examination Scheme					
Lect	Tut	Prac	Total		Ext	Sess.	IA	TW	Prac	Total
4	-	2	6	5	-	-	-	50	25	75

A. COURSE OVERVIEW

This course provides the knowledge to design and develop web applications using HTML, CSS, JavaScript and PHP. It enables learners to structure web pages with HTML, style them using CSS and add interactivity through JavaScript. Additionally, students will be able to develop server-side scripting using PHP and MySQL. By the end of the course, learners will be able to create responsive and dynamic web applications.

B. COURSE CONTENT

NO	TOPIC	L+T (hrs)	Cos
[1]	Introduction to HTML5, Structure of HTML5 Document, Strict and Loose Type HTML5 Document, HTML Document validation, DOCTYPE Element, Metadata Elements. Character Entities in HTML5, Text Formatting with Physical and Logical Style Elements.	03	CO1
[2]	Table Element, Lists, Hyperlinks, Insert Image in a Web Page, Image Map, FORM Element, Various FORM Elements, Media Elements. Introduction to Editable Content and Checking Spelling Mistakes, custom data attributes, client-side storage, drag and drop, geolocation API.	08	CO1 CO2
[3]	Introduction to Cascaded Style Sheets (CSS), Syntax, Selectors, Apply CSS in an HTML Document, webpage background, Color Properties, Font Properties, Border Properties, CSS Box Model, Template-layout model, Transition and Animation.	05	CO1 CO2
[4]	Introduction to Java Script and <script>, Client-Side JavaScript, Placement of Script, Data Types, Variables, Variable Scope, Variable Names, Reserved Words, Operators, Control Statements. Introduction to Java Script Functions, Hoisting, Events, Arrays, Objects, Classes and Modules.	08	CO1 CO2
[5]	Introduction to Document Object Model in JS, Cookies, Document Object Model - Nodes and Levels, verify type of nodes and its child nodes, Change Element value, count nodes, add and insert nodes. Form Validation, errors and exception.	05	CO1 CO2
[6]	PHP: Introduction, Structure and Syntax, Files, Variables, Data Types, Strings.	02	CO1
[7]	PHP: Arrays, Operators, Conditional Statements, Loops, built-in Functions for arrays, strings and date, User defined Functions, Types of Errors, Error Handling. HTML Form Handling, Performing CRUD operations using MySQLi procedural approach.	09	CO1 CO3

C. TEXT BOOKS

1. DT Editorial Service, HTML 5 Black Book 2nd Edition, Dreamtech Press Publication
2. David Flanagan, JavaScript: The Definitive Guide 6E, O'ReillyPublications
3. Antonio Lopez. *Learning PHP 7;* 2016 Packt Publishing

D. REFERENCE BOOKS

1. Rob Crowther, Joe Lennon, Ash Blue and Greg Wanish, HTML5 in Action, Manning Publication
2. Mark Pilgrim, HTML5 Up and Running - Dive into the Future of Web Development; 5th ed.;
   O'Reilly Media Publication
3. A Smarter Way to Learn JavaScript the new approach that uses technology to cut your effort in half
4. Marijn Haverbeke, Eloquent JavaScript 3rd edition
5. Atkinson Leon. Suraski Zeev. *Core PHP Programming*; Pearson Publication

E. COURSE OUTCOMES

CO Number	Skill	Statement
CO1	Understand	Explain the building blocks and importance of HTML, CSS, JS and PHP for consistent and robust web design.
CO2	Apply	Design, develop and validate client-side interactive web pages.
CO3	Create	Create data centric web application individually or in a team.

F. COURSE MATRIX

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12	PSO 1
CO1	3	2	2	2	3	2	2	1	2	-	2	-	2
CO2	2	1	2	1	3	2	2	1	2	-	2	-	2
CO3	3	2	3	2	3	1	2	1	2	-	2	-	2
Avg	2.6	1.6	.3	1.6	3	1.6	2	1	2	-	2	-	2

MCA SEMESTER –I
SUBJECT: COMPUTER NETWORKS

Teaching Scheme (Hours/Week)				Credits	Examination Scheme					
Lect	Tut	Prac	Total		Ext	Sess.	IA	TW	Prac	Total
3	-	-	3	3	50	40	10	-	-	100

A. COURSE OVERVIEW

The course aims to provide understanding of computer networks and data communication. It covers various networking devices, layered task and Open Systems Interconnection (OSI) model. The course also introduces the learners to functionalities of various layers of OSI model.

B. COURSE CONTENT

NO	TOPIC	L+T (hrs)	COs
[1]	Introduction, Data Communications, Networks: Network Criteria, Physical Structures like Types of connections, Topologies, Types of Networks and Network Models, The Internet, Protocols and Standards, Layered Tasks, The OSI Model, Layers in The OSI Model, TCP/IP Protocol Suit, Addressing.	4	CO1 CO3
[2]	Physical Layer, Transmission Impairment: Attenuation, Distortion, Noise, Data Rate Limits, Network Performance: Bandwidth, Throughput, Latency, Jitter. Guided Media: Twisted-Pair Cable, Coaxial Cable, Fibre-Optic Cable, Unguided Media: Radio Waves, Microwaves, Infrared.	4	CO1 CO3
[3]	Data Link Layer, Error Detection and Correction: Types of Errors, Redundancy, Detection versus Correction, Forward Error Correction versus Retransmission, Coding, Block Coding: Error Detection, Error Correction, Hamming Distance, And Minimum Hamming Distance, Cyclic Redundancy Check, Checksum: One's Complement, Internet Checksum, Framing: Fixed and Variable Size Framing, Flow and Error Control, Connecting Devices: Passive Hubs, Repeaters, Active Hubs, Bridges, Two-Layer Switches, Routers, Three-Layer Switches, Gateway.	6	CO2 CO3
[4]	Network Layer, IPv4 Addresses: Address Space, Notations, Classful Addressing, Classless Addressing, Network Address Translation (NAT), Forwarding Techniques, Forwarding Process, Routing Table, Introduction to Unicast and Multicast routing.	5	CO2 CO3

[5]	Transport Layer, Process-To-Process Delivery: Client/Server Paradigm, Connectionless Versus Connection-Oriented Service, Reliable Versus Unreliable User Datagram Protocol (UDP): Well-Known Ports for UDP, User Datagram Checksum, UDP Operation, Use of UDP, TCP Services, TCP Features, Segment, Segment Header Format, A TCP Connection, Flow Control, Error Control, Congestion, Congestion Control, Quality of Service, Techniques to improve QoS.	5	CO4 CO3 CO1
[6]	Application Layer, Name Space: Flat Name Space, Hierarchical Name Space Domain Name Space, Distribution of Name Space: Hierarchy of Name Servers, Zone, Root Server, Primary and Secondary Servers DNS in the Internet: Generic Domains, Country Domains, Inverse Domain, Resolution: Resolver, Mapping Names to Addresses, Mapping Address to Names, Recursive Resolution, Iterative Resolution, Caching, DNS Messages and Types of Records Overview of Telnet, SSH, E-Mail, SMTP, FTP, WWW, HTTP, and FIREWALL	6	CO4 CO3 CO1

C. TEXT BOOKS

1. Behrouz Fourozan. *Data Communication and Networking; 4th ed.;* Tata McGraw-Hill Publications

D. REFERENCE BOOKS

1. Andrew S. Tanenbaum. *Computer Networks*; Prentice Hall Publications

E. COURSE OUTCOMES

CO Number	Skill	Statement
CO1	Understand	Understand Computer Networking fundamentals, types of networks, Protocols and connections
CO2	Apply	Practice Error detection, Error correction and IP addressing
CO3	Understand	Explain functionalities of OSI model layers
CO4	Apply	Illustrate the use of TCP, UDP, Namespaces and Domain Name System

F. COURSE MATRIX

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
CO1	3	-	1	-	-	-	3	-	2	-	-	-	2
CO2	3	3	3	-	-	-	2	-	2	-	-	-	2
CO3	3	2	1	-	-	-	3	-	2	-	-	-	2
CO4	2	3	3	-	-	-	3	-	2	-	-	-	2
Avg	2.8	2	2	-	-	-	2.8	-	2	-	-	-	2

MCA SEMESTER – I

SUBJECT: MANAGEMENT INFORMATION SYSTEMS

Teaching Scheme (Hours/Week)				Credits	Examination Scheme					
Lect	Tut	Prac	Total		Ext	Sess.	IA	TW	Prac	Total
3	-	-	3	3	50	40	10	-	-	100

A. COURSE OVERVIEW

The course is intended to describe the role of information systems in business management. It covers the fundamentals of decision support systems and Enterprise Systems including E-commerce for business and explain the ethical and societal issues related to information systems.

B. COURSE CONTENT

NO	TOPIC	L+T (hrs)	COs
[1]	Organizations and Information Systems, Impact of Information Systems, Role of MIS, Impact of MIS, MIS and User, MIS as a Control System, MIS A Support to the Management, Management Effectiveness and MIS.	5	CO1
[2]	Introduction, Infrastructure Components, Contemporary Hardware Platform Trends, Determining the Information Requirement, Development and Implementation of MIS, Management of the Information Quality in the MIS, Organisation for Development of MIS, MIS: Development Process Model	5	CO1 CO2
[3]	Applications in Manufacturing Sector: Personnel Management, Financial Management, Production Management, Raw Materials Management, Marketing Management, Applications in Service Sector: Creating Distinctive Service, Service Concept, Service Process Cycle and Analysis, Customer Service Design, Service Management System.	5	CO1 CO3
[4]	Decision Support Systems (DSS), DSS Models, Group Decision Support Systems, AI System, Knowledge based Expert System, DSS Application in E-enterprise.	5	CO1
[5]	Enterprise Systems, Enterprise Software and Business Value, Supply Chain Management Systems and its Applications, Global Supply Chains and Internet, Business Value of Supply Chain Management Systems E-Commerce: E-Commerce and the Internet, E-Commerce: Business and Technology, Mobile Digital Platform and Mobile E-Commerce, Case study on Building E-Commerce Web Site.	8	CO1 CO5
[6]	Understanding Ethical and Social Issues Related to Systems, Ethics in Information Society, Moral Dimensions of Information Systems.	2	CO4

C. TEXT BOOKS

1. Waman S. Jawadekar, *Management Information Systems Texts and Cases;* 5th ed.; Tata McGrawHill Education Pvt. Ltd.
2. Kenneth C Laudon and Jane P Laudon, *Management Information System*; 12th ed.; PHI, New Delhi.

D. REFERENCE BOOKS

1. S. Sadagopan, *Management Information Systems*; PHI, New Delhi
2. Sanjay Mahapatra, *Cases in Management Information Systems*; PHI, New Delhi
3. Uma G. Gupta, *Management Information Systems*; Galgotia Publications

E. COURSE OUTCOMES

CO Number	Skill	Statement
CO1	Understand	Interpret the role and applications of information Systems in Business Management.
CO2	Understand	Express relationships between information systems, organization, management.
CO3	Understand	Explain the importance of ethical aspects, information quality and the MIS development process.
CO4	Evaluate	Evaluate the applicability of relevant IT infrastructure in management of various business processes.

F. COURSE MATRIX

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
CO1	2	3	2	-	-	2	2	2	-	2	-	-	2
CO2	2	2	2	-	-	2	2	1	-	2	-	-	2
CO3	2	1	2	-	-	2	2	3	-	2	-	-	2
CO4	3	2	2	-	-	1	2	3	-	2	-	-	2
Avg	2.25	2.5	2	-	-	1.75	2	2.25	-	2	-	-	2

MCASEMESTER –I

SUBJECT: BASIC MATHEMATICS FOR COMPUTER SCIENCE

Teaching Scheme (Hours/Week)				Credits	Examination Scheme					
Lect	Tut	Prac	Total		Ext	Sess.	IA	TW	Prac	Total
3	-	-	3	3	50	40	10	-	-	100

A. COURSEOVERVIEW

The course is intended to make the learner understand and use various concepts of statistical methods for solving relevant real-life problems. It enables the learner to gain fundamentals of probability. It enables the learner to solve matrix based problems

B. COURSECONTENT

NO	TOPIC	L+T (hrs)	COs
[1]	Introduction to Statistics, Scales of Measurements, Collection of data, Frequency Distribution, Arithmetic Mean, Geometric Mean, Harmonic Mean, Median and Mode.	10	CO1 CO2
[2]	Mean Deviation, Standard Deviation, Coefficient of Variation, Coefficient of Skewness : Karl pearson's & Bowley's.	06	CO2
[3]	Introduction Probability, Addition Theorem – Examples, Multiplication Theorem – Examples, Conditional Probability Examples, Bayes theorem Examples Probability Distribution Function. Discrete Probability Distribution, Bernoulli/ Binomial Distribution and Fitting of Binomial Distribution, Poisson Distribution & Fitting of Poisson Distribution, Continuous Probability Distribution, Normal Distribution & Fitting of Normal Distribution.	09	CO3
[4]	Determinant, Properties of Determinants, Minors and Cofactors	02	CO4
[5]	Matrices, Types of Matrices, Operations on Matrices (addition, subtraction, multiplication), Transpose of a Matrix, Symmetric and Skew Symmetric Matrices, Invertible Matrices, Cramer's Rule, Eigen Values and Eigen vectors	03	CO4

C. TEXT BOOKS

1. S.P.Gupta, *Statistical Methods;* Sultan Chand & Sons
2. I. H. Sheth, *Discrete Mathematics;* Nirav Prakashan

D. REFERENCEBOOKS

1. Lloyd Jaisingh, *Asbtract Algebra;* Schaum's Series

E. COURSEOUTCOMES

CO Number	Skill	Statement
CO1	Apply	Compute various measures of central tendency.
CO2	Understand	Use different statistical measure on data.

CO3	Apply	To calculate probability & perform probability distribution for given set of data
CO4	Understand	Apply matrix operations and determinants to solve given problems.

F. COURSEMATRIX

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
CO1	3	2	3	-	3	-	1	-	-	-	-	-	2
CO2	2	2	1	-	3	-	1	-	-	-	-	-	2
CO3	2	2	2	-	2	-	3	-	-	-	-	-	2
CO4	1	2	3	-	1	-	3	-	-	-	-	-	2
Avg	2	2	2.25		2.16		2						2