

**BA/ B.Sc. Physical Science
(Four Year Degree Program)
Subject: Computer Science
(For affiliated colleges of CDLU, Sirsa)**

**Learning Outcomes-based Curriculum Framework
(as per NEP)**

For

**1st to 6th Semester- For Batch 2025-26 and onwards
OR
3rd to 6th Semester- For Batch 2024-25**



**Department of Computer Science & Engineering
Faculty of Engineering and Technology
Chaudhary Devi Lal University, Sirsa-125055
2025**

**Learning Outcomes-based Curriculum Framework
(as per NEP)**

For

**BA/ B.Sc. Physical Science (Four Year Degree Program)
Computer Science**

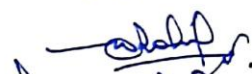
(1st to 6th Semester)

**For Batch 2025-26 and onwards
(3rd to 6th Semester)
(For Batch 2024-25)**

Faculty of EAT (4/7/25)

Staff Council (16/6/25)




BoS (03/07/2025)










Department of Computer Science & Engineering

Faculty of Engineering and Technology

Chaudhary Devi Lal University, Sirsa-125055

2025

SEMESTER I

Course Type	Course Code B.Sc./ Multidisciplinary/ Comp Sc/Sem/Course Type/Paper Code	Course Title	Level	Credits			Marks (L)			Marks (P)	Maximum Marks
				L	P	Total	Int	Ext	Total		
DSC	BSC/BA/CSE/MD/1/DSC/101	Computer Fundamentals and Programming in C	100	2	2	4	15	35	50	50	100
						4					100
						4					100
MIC	BSC/BA/CSE/MD/1/MIC/101	Information Technology Tools	100	1	1	2	10	15	25	25	50
MDC	BSC/BCOM/BA/CSE/MD/1/MDC/101 OR	Fundamental of Computer OR	100	2	1	3	15	35	50	25	75
	BSC/BCOM/BA/CSE/MD/1/MDC/102 OR	Basics of MS Word OR									
	BSC/BCOM/BA/CSE/MD/1/MDC/103	Introduction to Computer Hardware and Maintenance									
AEC		To be opted from central Pool				2					50
SEC	BSC/BCOM/BA/CSE/MD/1/SEC/101 OR	Digital Fluency in Public Life OR	100	1	2	3	10	15	25	50	75
	BSC/BCOM/BA/CSE/MD/1/SEC/102 OR	Web Designing with HTML OR									
	BSC/BCOM/BA/CSE/MD/1/SEC/103	Generative AI									
VAC		To be opted from central Pool				2					50
Total						24					600

SEMESTER II

Course Type	Course Code B.Sc./ Multidisciplinary/ Comp Sc/Sem/Course Type/Paper Code	Course Title	Level	Credits			Marks (L)			Marks (P)	Maximum Marks
				L	P	Total	Int	Ext	Total		
DSC	BSC/BA/CSE/MD/2/DSC/151	Data Structure	100	2	2	4	15	35	50	50	100
						4					100
						4					100
MIC	BSC/BA/CSE/MD/2/MIC/151	Problem Solving Techniques	100	1	1	2	10	15	25	25	50
MDC	BSC/BCOM/BA/CSE/MD/2/MDC/151	Basics of Internet	100	2	1	3	15	35	50	25	75
	OR BSC/BCOM/BA/CSE/MD/2/MDC/152	OR Introduction to MS Excel									
	OR BSC/BCOM/BA/CSE/MD/2/MDC/153	OR Introduction to Digital Media and Design									
AEC		To be opted from central Pool				2					50
SEC	BSC/BCOM/BA/CSE/MD/2/SEC/151	Office Tools	100	1	2	3	10	15	25	50	75
	OR BSC/BCOM/BA/CSE/MD/2/SEC/152	OR Introduction to C									
	OR BSC/BCOM/BA/CSE/MD/2/SEC/153	OR App Development using Flutter									
VAC		To be opted from central Pool				2					50
Total						24					600

Course Type	Course Code B.Sc./ Multidisciplinary/ Comp Sc/Sem/Course Type/Paper Code	Course Title	Level	Credits			Marks (L)			Marks (P)	Maximum Marks
				L	P	Total	Int	Ext	Total		
DSC	BSC/BA/CSE/MD/3/DSC/201	Object Oriented programming with C++	200	2	2	4	15	35	50	50	100
						4					100
						4					100
MIC	BSC/BA/CSE/MD/3/MIC/201	Introduction to Python	200	2	2	4	15	35	50	50	100
MDC	BSC/BCOM/BA/CSE/MD/3/MDC/201 OR BSC/BCOM/BA/CSE/MD/3/MDC/202 OR BSC/BCOM/BA/CSE/MD/3/MDC/203	Data Handling with SQL OR Microsoft PowerPoint with Animation OR Introduction to Cyber Security	200	2	1	3	15	35	50	25	75
AEC		To be opted from central pool				2					50
SEC	BSC/BCOM/BA/CSE/MD/3/SEC/201 OR BSC/BCOM/BA/CSE/MD/3/SEC/202	Advanced Excel Tools OR Desktop Publishing	200	1	2	3	10	15	25	50	75
Total						24				600	

Course Type	Course Code B.Sc./ Multidisciplinary/ Comp Sc/Sem/Course Type/Paper Code	Course Title	Level	Credits			Marks (L)			Marks (P)	Maximum Marks
				L	P	Total	Int	Ext	Total		
DSC	BSC/BA/CSE/MD/4/DSC/251	Database Management System	200	2	2	4	15	35	50	50	100
						4					100
						4					100
MIC	BSC/BA/CSE/MD/4/MIC/251	Introduction to SQL	200	2	2	4	15	35	50	50	100
AEC		To be opted from central pool				2					50
VAC		To be opted from central pool				2					50
Total						20					500

Note*: The Internship of 4 to 6 weeks duration, carrying 4 credits for the 5th Semester, has to be successfully completed during the summer vacation of the second year (i.e., after the 4th Semester).

Internship: A course requiring students to participate in a professional activity or work experience, or cooperative education activity with an entity external to the education institution, normally under the supervision of an expert of the given external entity. A key aspect of the internship is induction into actual work situations. Internships involve working with local industry, government or private organizations, business organizations, artists, crafts persons, and similar entities to provide opportunities for students to actively engage in on site experiential learning.

Course Type	Course Code B.Sc./ Multidisciplinary/ Comp Sc/Sem/Course Type/Paper Code	Course Title	Level	Credits			Marks (L)			Marks (P)	Maximum Marks
				L	P	Total	Int	Ext	Total		
DSC	BSC/BA/CSE/MD/5/DSC/301	Python Programming	300	2	2	4	15	35	50	50	100
						4					100
						4					100
MIC	BSC/BA/CSE/MD/5/MIC/301	Web Development	300	2	2	4	15	35	50	50	100
SEC	BSC/BCOM/BA/CSE/MD/3/INT/301	Internship*				4					100
Total						20					500

SEMESTER VI

Course Type	Course Code B.Sc./ Multidisciplinary/ Comp Sc/Sem/Course Type/Paper Code	Course Title	Level	Credits			Marks (L)			Marks (P)	Maximum Marks
				L	P	Total	Int	Ext	Total		
DSC	BSC/BA/CSE/MD/6/DSC/351	Operating System	300	2	2	4	15	35	50	50	100
						4					100
						4					100
MIC	BSC/BA/CSE/MD/6/MIC/351	Data Structure using C	300	2	2	4	15	35	50	50	100
	BSC/BA/CSE/MD/6/MIC/352	Programming with Objects and Classes	300	2	2	4	15	35	50	50	100
Total						20					500

Note:

1. The medium of instructions and examinations shall be English and Hindi for BA/B.Com. Students only.
2. The students must obtain at least 40 percent marks in external examination. But there is no condition of minimum pass percentage in internal examination. However, a student will be declared 'pass' only if he/she obtain at least 40 percent marks in aggregate i.e., internal plus external evaluation.

SEMESTER- I						
BSC/BA/CSE/MD/1/DSC/101 Computer Fundamentals and Programming in C						
Course Type	Course Credits	Contact Hours/	Delivery Mode	Maximum Marks	Exam Duration	Assessment Methods

		Work		External	Internal				
DSC	02	02 Hours	Lecture	35	15			03 Hours	TTE/MTE/Assignment/ Attendance
					10	2	3		

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions.

The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each.).

Course Objective: The course is designed to provide a comprehensive understanding of the fundamental concepts of computer science and programming. Students will be able to develop logics which will help them to create programs, applications in C.

Course Outcomes:

CO1: Knowledge: The concept of machine language, assembly language, and high-level language, and their roles in software development. Knowledge of C language programming constructs

CO2: Understand: different types of operators, their hierarchies and also control statements of C.

CO3: Apply: Various types of programming constructs such as operators and to understand their hierarchy and associativity. To implement control statements to control the flow of execution in programs. To apply arrays of strings in various applications, such as handling multiple strings simultaneously

CO4: Analyze: the efficiency and effectiveness of different programming constructs and control statements.

CO5: Evaluate: the correctness and performance of implemented algorithms and programs through testing and debugging.

CO6: Create: develop programs that incorporate multiple programming constructs, such as loops, arrays, functions, and strings.

UNIT I

Computer System: Definition, Characteristics of Computer, Block Diagram of Computer and its components and their functions.

Memory: Need of Memory, Characteristics of Memory, Introduction to Primary and Secondary Memory. Compiler & Interpreter

Number System: Number Systems and their Conversions.

Elements of C: C character set, Identifiers and Keywords, Data types, Constants and Variables, Structure of a C Program, Arithmetic, Relational and Logical Operators, Arithmetic expressions, Evaluation of arithmetic expressions, Operators' Precedence and Associativity in expression evaluation, Type Casting.

UNIT II

Control Structures: Conditional statements, iterative/looping statements, break and continue goto statement. **Functions:** Prototype, Declaration and Definition of a function, Actual and Formal Arguments in Functions, Recursion.

Arrays: Definition, Creating and Using One Dimensional Arrays, Initializing an Array, Accessing individual elements in an Array, Two dimensional Arrays.

Introduction to Pointers: Understanding a Pointer Variable, call by value, call by reference, Pointers and Arrays.**R**

REFERENCE BOOKS:

1. Sukhendra Singh and Hemant Jain, C Programming for Problem Solving
2. Yashavant Kanetkar, Let Us C: Authentic guide to C Programming Language - 19th Edition
3. Brian W. Kernighan / Dennis Ritchie, The C Programming Language

SEMESTER- I							
BSC/BA/CSE/MD/1/DSC/101 Computer Fundamentals and Programming in C							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
DSC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper BSC/BA/CSE/MD/1/DSC/101 **Computer Fundamentals and Programming in C.**

SEMESTER- I						
BSC/BA/CSE/MD/1/MIC/101 Information Technology Tools						
Course	Course	Contact	Delivery	Maximum Marks	Exam	Assessment

Type	Credits	Hours/Work	Mode	External	Internal			Duration	Methods
MIC	01	01 Hours	Lecture	15	10			01 Hours	TTE/MTE/ Assignment/ Attendance
					5	2	3		

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 03. Question No. 1 is compulsory and will consist of FIVE Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be only One Unit in the Question Paper consisting of Two Questions.

The student will attempt one question from the unit in addition to the Compulsory Question No. 1. First Question will carry five marks and rest Questions will carry equal marks (10 marks each).

Course Objective: The course is designed to provide a comprehensive understanding of the fundamental concepts of computer science and programming.

CO1: Knowledge: the historical development and evolution of computers, the key characteristics and limitations of computers, Number system and Codes, Memory and their types.

CO2: Understand: Understand different types of software (system, application, utility, open-source) and their evolution, the need and functions of an operating system.

CO3: Apply: Perform conversions between decimal, binary, octal, and hexadecimal number systems. Utilize office applications like word processing, spreadsheet, and database management.

CO4: Analyze: analyze the memory hierarchy and the characteristics of different types of memory, the basic models of networks and identify different network devices and their functions.

CO5: Evaluate: the philosophy of open-source software, including licensing and copyright issues, the benefits and drawbacks of using open-source software for different applications.

CO6: Create: a small database application with data records, forms, queries, and report

Unit-I

Introduction to Computers: Generations of Computers, Characteristics of computers, Limitations of Computers. Applications of computers, Block diagram of computer, functions of different units of computers.

Operating System Concepts Need and Functions of Operating Systems,, Type of OS: Batch, Multi-programming and real time Network and distributed OS,

Computer languages: Introduction to High Level Language, Low Level Language and Assembly Language, Compilers, Interpreters, Assemblers.

Word Processing: Introduction to Word Processing, Menus, Creating, Editing & Formatting Document, Spell Checking, Printing, Views, Tables, Word Art.

Email – Sending mail to a number of people in a group, downloading an attachment.

Networking and Internet Basic Concepts of Networking, Advantages of Networking, Types of Networks, Network Devices, www, IP addresses.

Reference Books:

1. Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB
2. Dromey, R.G., How to Solve it By Computer, PHI
3. Norton, Peter, Introduction to Computer, McGraw-Hill
4. Leon, Alexis & Leon, Mathews, Introduction to Computers, Leon Tech World
5. Rajaraman, V., Fundamentals of Computers, PHI
6. Ram, B., Computer Fundamentals, Architecture & Organization, New Age International (P) Ltd.

SEMESTER- I

BSC/BA/CSE/MD/1/MIC/101 Information Technology Tools							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MIC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva-Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BA/CSE/MD/1/MIC/101 Information Technology Tools**

SEMESTER- I
BSC/BCOM/BA/CSE/MD/1/MDC/101 Fundamental of Computer

Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External		Internal			
MDC	02	02 Hours	Lecture	35	15			02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions.

The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).

The paper Setter will set the paper in both English and Hindi/ mixed mode languages.

Course Objectives: To introduce the fundamental concepts of computers, their history, generations, types, and applications. To familiarize students with computer hardware components, input/output devices, and storage technologies.

Course Outcomes:

CO1: Knowledge Understand the definition, characteristics, history, and generations of computers. Identify the types of computers (Analog, Digital, Hybrid) and their applications. Recognize basic computer hardware components (CPU, Memory, I/O Devices) and storage devices.

CO2: Understand Explain the types of software (System vs. Application), utility software, and operating systems (GUI vs. CLI). Comprehend system settings configuration (date, time, display, desktop) and basic software tools (MS Paint, Notepad, WordPad).

CO3: Apply Demonstrate the ability to install basic drivers, manage files (create, rename, copy, move, delete), and organize folders. Use essential software tools for basic tasks.

CO4: Analyze Evaluate the functions of an operating system in managing hardware and software resources. Assess the role of different input/output and storage devices in computing.

CO5: Evaluate Compare different types of computers and software for their suitability in various applications. Judge the effectiveness of file management and system configuration in improving productivity.

Unit-I

Introduction to Computers: Definition and Characteristics of Computers, History and Generations of Computers, Types of Computers, and applications.

Computer Hardware: Basic Components of a Computer (CPU, Memory, I/O Devices), Input Devices (Keyboard, Mouse, Scanner, Barcode Reader), Output Devices (Monitor, Printer, Projector), Storage Devices (Hard Disk, Pen Drive, CDs/DVDs)

Unit-II

Computer Software: Types of Software (System vs. Application Software), Utility Software, Operating Systems, its Functions and Types (GUI vs. CLI).

System Settings: Setting Date, Time & Time Zone, Configuring Display Settings, Change Desktop Background & Icons

Basic Software Tools: Using MS Paint, Notepad, WordPad, Installing Basic Drivers.

File Management: Creating, Renaming, and Organizing Folders, Copying, Moving, and Deleting Files

ReferencesBooks:

1. **Rajaraman, V.** (2014). *Fundamentals of Computers* (6th ed.). PHI Learning Pvt. Ltd.
2. **Sinha, P. K., & Sinha, P.** (2007). *Computer Fundamentals* (6th ed.). BPB Publications.

3. **Norton, P.** (2006). *Introduction to Computers* (6th ed.). Tata McGraw-Hill Education.
4. **Bangia, R.** (2010). *Learning Microsoft Office and Windows*. Khanna Book Publishing Co.
5. **Arora, A.** (2015). *Computer Fundamentals and Applications*. Vikas Publishing House.

SEMESTER- I							
BSC/BCOM/BA/CSE/MD/1/MDC/101 Fundamental of Computer (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MDC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva-Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/BCOM/BA/CSE/MD/1/MDC/101 Fundamental of Computer

SEMESTER- I
BSC/BCOM/BA/CSE/MD/1/MDC/102 BASICS OF MS WORD

Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
MDC	02	02 Hours	Lecture	35	15			02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions.

The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).

The paper Setter will set the paper in both English and Hindi/ mixed mode languages.

Course objective: To introduce MS Word as a word processor, covering document creation, saving, and printing & to teach formatting and editing techniques (font, paragraph, page layout) for professional document design.

Course Outcomes:

CO1: Knowledge Understand the basics of MS Word as a word processor, including creating, saving, and printing documents. Learn about clipboard functions (cut, copy, paste) and different file formats (DOCX, PDF).

CO2: Understand Explain formatting techniques (font, paragraph, page layout) and editing tools (find/replace). Comprehend document structuring using tables, bulleted lists, illustrations (pictures, shapes), headers, footers, and page borders.

CO3: Apply Demonstrate the ability to format documents professionally by adjusting margins, orientation, indentation, and breaks. Use spell check, hyperlinks, bookmarks, and table of contents for enhanced document navigation.

CO4: Analyze Evaluate the effectiveness of different formatting styles, page layouts, and document structuring techniques in improving readability and presentation.

CO5: Evaluate & Create Assess the use of advanced features like mail merge, macros, citations, and bibliographies for automating tasks and creating professional documents.

Unit I

Introduction to MS Word: Word processor, Creating new documents, Saving files (docx, PDF), Opening existing documents, Printing setup and options, Clipboard functions (cut/copy/paste)
 Formatting & Editing: Font formatting (styles, size, color), Paragraph formatting (alignment, spacing), Editing tools (find/replace), Adding pages (cover, blank), Inserting tables & bulleted lists, Adding illustrations (pictures, shapes), Header & footer insertion, page colors, Adding paragraph spacing, Setting page borders.

Unit II

Setting page margins, Page orientation (portrait/landscape), Paragraph indentation, Line and page breaks, Spell and grammar check
 Inserting Hyperlinks and Bookmarks Adding table of contents, Inserting footnotes, Adding citations, Creating simple bibliography
 Mailings: Creating labels, starting mail merge, Inserting merge fields, record and run a Macro

Reference Books:

- Joyce, J. (2015). Microsoft Word 2016: Step by step. Microsoft Press.
- Lowe, D. (2010). Microsoft Word 2010 all-in-one for dummies. Wiley India Pvt. Ltd.
- Rutkosky, N. F. (2014). Microsoft Word 2013: Text with software. BPB Publications.

SEMESTER- I							
BSC/BCOM/BA/CSE/MD/1/MDC/102 BASICS OF MS WORD (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MDC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva-Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/BCOM/BA/CSE/MD/1/MDC/102 Basics of MS Word

SEMESTER- I									
BSC/BCOM/BA/CSE/MD/1/MDC/ 103 Introduction to Computer Hardware and Maintenance									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
MDC	02	02 Hours	Lecture	35	15			02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions.

The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).

The paper Setter will set the paper in both English and Hindi/ mixed mode languages.

Course objective:The course provides the knowledge and practical skills to understand, assemble, disassemble, and maintain personal computers, including hardware components, power supplies, storage devices, and system installations.

Course Outcomes:

CO1: Knowledge Understand the functions and interrelationships of core computer hardware components, including the motherboard, CPU, RAM, ROM, chipsets, BIOS, CMOS battery, and various I/O connectors.

CO2: Understand Explain the roles and configurations of different power supply units (SMPS, AT, ATX), storage devices (diskette drives, hard drives, CD-ROMs, tape drives), and expansion slots (PCI, PCI Express, PCMCIA, AGP).

CO3: Apply Demonstrate the ability to assemble a personal computer by mounting the motherboard and processor, connecting various ports and connectors, inserting I/O cards, and installing RAM and other devices.

CO4: AnalyzeEvaluate system performance and troubleshoot issues related to hardware components, power supplies, and peripheral devices, ensuring optimal functionality and reliability.

CO5: Evaluate & Optimize Assess and perform system installations, including CMOS setup, operating system installation (e.g., Windows), application software (e.g., MS Office), antivirus programs, and system upgrades to enhance performance and security.

Unit - I

Inside the PC Motherboard: CPU, memory, chipset, ROM, CMOS Battery, BIOS, I/O Connectors, SMPS, AT and ATX power supply connectors, Storage devices- Hard disk drives(HDDs), Solid State Drives(SSDs), USB Flash Drives, SD Cards, Optical Disks(CDs, DVDs), PCI & PCI Express slots, PCMCIA, AGP, Audio and Video ports.

Unit - II

Assembly of PC: Assembly of PC: Mounting of Motherboard & Processor, Connecting the different Ports & Connectors of FDD & IDE-Inserting different I/O cards on the Motherboard, Connecting SMPS to the Motherboard, Connecting RAMs & other devices. Disassembly of PC, System Installation: CMOS Setup, Installation of Windows, Installation of MS-Office, Installation of Antivirus, System upgrade

Reference Books:

- Sinna, P.K. & Sinha, Prlt Computer Fundamentals, BPB
- Rajaraman V. Fundamentals of Computers, PHI
- Scott Mucher, Upgrading and Repairing PCs
- James Berustein, Building Your Own Computer Made Easy, The Step By Step Guide
- Ram B. Computer Fundamentals, Architecture & Organization, New Age International (P) Ltd

SEMESTER- I							
BSC/BCOM/BA/CSE/MD/1/MDC/ 103 Introduction to Computer Hardware and Maintenance (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MDC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva-Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/BCOM/BA/CSE/MD/1/MDC/ 103 Introduction to Computer Hardware and Maintenance

SEMESTER- I								
BSC/BCOM/BA/CSE/MD/1/SEC/101 Digital Fluency in Public Life								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
SEC	01	01 Hours	Lecture	15	10		01 Hours	TTE/MTE/ Assignment/ Attendance
					5	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 03. Question No. 1 is compulsory and will consist of FIVE Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be only One Unit in the Question Paper consisting of Two Questions. The student will attempt one question from the unit in addition to the Compulsory Question No. 1. First Question will carry five marks and rest Questions will carry equal marks (10 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.								
Course objective: The course introduces fundamental concepts of computer systems, number systems, operating systems, and word processing. It enhances skills in managing files, system settings, and document creation using word processing tools.								
Course Outcomes: CO1: Knowledge: Understand the basic components of a computer system, input/output devices, memory concepts, number systems, operating systems, and word processing tools. CO2: Understand: Comprehend number system conversions, operating system functions, Windows interface management, and word processing features for efficient digital operations. CO3: Apply: Demonstrate the ability to manage files, configure system settings, and create, edit, and format documents using word processing software. CO4: Analyze: Analyze different operating system types, file management techniques, and document formatting strategies to optimize workflow and productivity. CO5: Evaluate: Assess the effectiveness of word processing, file organization, and system settings in enhancing efficiency and usability in digital environments.								

Unit-I

Introduction: Definition, Characteristics, Applications, Components of Computer System, Input/Output Devices, **Memory:** Concept of Memory, Memory Hierarchy, Units of Memory, and Types of Memory.

Operating System: Definition & Functions of Operating System, Types of Operating System Basic Components of Windows, Exploring Computer, Icons, taskbar, desktop, managing files and folders, Control panel – display properties, add/remove software and hardware, setting date and time, screensaver.

Windows Accessories:Notepad: Basic text editing, file extensions (.txt, .html), simple HTML coding, WordPad: Enhanced text formatting, MS Paint: Drawing, editing images, saving in different formats (BMP, PNG, JPG), Snipping Tool / Snip & Sketch: Taking screenshots

Word Processing: Introduction to Word Processing, Menus, Creating, Editing & Formatting Documents, Spell Checking, Printing, Views, Tables, Word Art. Header and Footer, Mail Merge.

Reference Books:

1. Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB
2. Dromey, R.G., How to Solve it By Computer, PHI
3. Microsoft Office – Complete Reference – BPB Publication

SEMESTER- I							
BSC/BCOM/BA/CSE/MD/1/SEC/101 Digital Fluency in Public Life(Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
SEC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper

BSC/BCOM/BA/CSE/MD/1/SEC/101 Digital Fluency

SEMESTER- I								
BSC/BCOM/BA/CSE/MD/1/SEC/102 Web Designing with HTML								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
SEC	01	01 Hours	Lecture	15	10		01 Hours	TTE/MTE/ Assignment/ Attendance
					5	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 03. Question No. 1 is compulsory and will consist of FIVE Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be only One Unit in the Question Paper consisting of Two Questions. The student will attempt one question from the unit in addition to the Compulsory Question No. 1. First Question will carry five marks and rest Questions will carry equal marks (10 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.								
Course objective: The course introduces fundamental web designing concepts using HTML, covering webpage structure, hyperlinks, multimedia integration, tables, frames, and forms. It develops skills for creating structured and interactive web pages.								
Course Outcomes: CO1: Knowledge: Understand the basics of the World Wide Web, web servers, domain names, URLs and search engines. Learn the fundamental structure and elements of HTML. CO2: Understand: Comprehend the difference between HTML tags and elements, formatting techniques, list structures, tables, frames, hyperlinks, and form attributes for effective webpage development. CO3: Apply: Demonstrate the ability to create and format web pages using HTML, incorporating multimedia, tables, frames, hyperlinks, and interactive forms with various input elements. CO4: Analyze: Analyze different webpage structures, table layouts, and form elements to improve usability, functionality, and design consistency in web development. CO5: Evaluate: Assess the effectiveness of HTML elements, multimedia integration, and form controls in creating responsive, user-friendly, and well-structured websites.								

Unit-I

Introduction: World Wide Web, URL, Domain, Web Page and a Website, Internet Browser, Web Server, Search Engines,

Introduction toHTML: History of HTML, Basic structure of an HTML document, HTML Tag vs Element, HTML Attributes; HTML-Basic Formatting Tags, HTML-Lists: Unordered Lists, Ordered Lists, Marquee Elements, Working with Hyperlinks: Images and Multimedia,

Tables and Frames, HTML-Table: < table >, <th>, <tr>, < td >, < caption >, <thead>, <tbody>, <tfoot>, <colgroup>, <col>; Colspan&Rowspan HTML-Iframe

Working with Forms: HTML-Form: Form attributes, Form elements: < input >, <textarea>. <button>, < select >, < label >, <fieldset>, <legend>.

Reference Books:

1. Matthew David, HTML5: Designing Rich Internet Applications (Visualizing the Web)
2. Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics
3. Satish Jain, Web Designing and Development Training Guide
4. Prem Kumar, Web Design With HTML &CSS : HTML & CSS Complete Beginner's Guide

SEMESTER- I							
BSC/BCOM/BA/CSE/MD/1/SEC/102 Web Designing with HTML (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
SEC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BCOM/BA/CSE/MD/1/SEC/102 Web Designing with HTML**

SEMESTER- I									
BSC/BCOM/BA/CSE/MD/1/SEC/ 103 Generative AI									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks				Exam Duration	Assessment Methods
				External	Internal				
SEC	01	01 Hours	Lecture	15	10			01 Hours	TTE/MTE/ Assignment/ Attendance
					5	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 03. Question No. 1 is compulsory and will consist of FIVE Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be only One Unit in the Question Paper consisting of Two Questions. The student will attempt one question from the unit in addition to the Compulsory Question No. 1. First Question will carry five marks and rest Questions will carry equal marks (10 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.									
Course objective: This course introduces the basics of Artificial Intelligence and Generative AI, focusing on AI tools for content creation, their benefits, ethical use, and copyright issues, with hands-on experience using popular AI applications.									
Course Outcomes: CO1: Knowledge: Understand the fundamentals of Artificial Intelligence, including definitions of AI and Generative AI, differences between traditional AI and generative AI models, and various types of AI tools used in content creation. CO2: Understand: Explain the benefits and limitations of using AI for creative work, along with the ethical considerations and copyright basics related to AI-generated content.. CO3: Apply: Demonstrate the ability to use AI tools for generating text (essays, blogs, emails, social media content), creating images and designs (logos, web layouts), and performing language translation and voice generation. CO4: Analyze: Analyze the role of AI tools in data analytics such as auto charting and summarizing data trends, and evaluate the effectiveness of educational AI tools like flashcards, quizzes, and mind maps for enhancing learning. CO5: Evaluate: Evaluate the ethical use of AI in content creation, assess copyright implications, and ensure responsible and legal deployment of AI-generated content across various media platforms.									

Unit-I

Introduction : Definition of Artificial Intelligence and Generative AI, Traditional AI vs. Generative AI models, Types of AI tools used in content creation (Text Generation Tools, Image & Design Generation Tools, Language Translation & Voice Generation Tools, Data & Analytics Tools, Educational Tools) , Benefits & limitations of using AI for creative work, Ethical use of AI and copyright basics

Text Generation: Create essays, blogs, emails, social media content.

Tools: ChatGPT, Google Gemini

Image & Design: Generate images, logos, web designs.

Tools: Canva, Leonardo

Language & Voice: Translation, speech-to-text, text-to-speech.

Tools: Google Translate, DeepL

Data & Analytics: Auto charting, summarizing data trends.

Tools: Google Sheets, ChatGPT

Education: Flashcards, quizzes, summaries, mind maps.

Tools: Quizlet, Google Keep, ChatGPT, MindMup

Reference Books::

1. Tom Taulli, Artificial Intelligence Basics: A Non-Technical Introduction
2. Micheal Lanham, Practical AI Projects with Google Cloud Platform
3. David Foster, Generative Deep Learning: Teaching Machines to Paint, Write, Compose, and Play
4. Daniel Jurafsky and James H. Martin, Speech and Language Processing
5. Marcus du Sautoy, The Creativity Code: Art and Innovation in the Age of AI

SEMESTER- III							
BSC/BCOM/BA/CSE/MD/1/SEC/103 Generative AI (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
SEC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/BCOM/BA/CSE/MD/1/SEC/103 Generative Artificial Intelligence

SEMESTER- II									
BSC/BA/CSE/MD/2/DSC/151				Data Structure					
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
DSC	02	02 Hours	Lecture	35	15			03 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory. First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).									
Course Objective: The objective of this course is to get the students familiar with various types of data structure and different techniques to implement the data structures and their real life applications.									
Course Outcomes: CO1: Knowledge: Define key concepts related to data structures and algorithms such as arrays, stacks, queues, linked lists, searching, and sorting. Also understand the characteristics and implementations of various data structures and algorithms. CO2: Understand: the time-space tradeoffs in algorithm design, the concepts of recursion, and divide and conquer strategy in algorithmic design. Describe the utility and conversion methods of expressions between prefix, infix, and postfix notations using stacks. CO3: Apply: Implement searching and sorting algorithms (e.g., linear search, binary search, bubble sort, selection sort, insertion sort, merge sort, quick sort) to solve problems efficiently. And to apply single and multi-dimensional arrays, sparse matrices, stacks, queues, and linked lists in code CO4: Analyze: the efficiency and performance of algorithms using time and space complexity analysis. Compare and contrast the characteristics, advantages, and disadvantages of different data structures and algorithms CO5: Evaluate: the effectiveness and correctness of algorithm implementations through testing and debugging. And select appropriate data structures and algorithms for solving real-world problems based on their efficiency and complexity CO6: Create: Construct efficient and scalable solutions to problems by applying appropriate data structures and algorithms.									

UNIT I

Data Structure and Algorithm Preliminaries: Definitions, Operations on Data structures,

Algorithms: Introduction to Algorithms, Algorithmic Notations, Complexity of Algorithms-Big“O Notation,

Arrays: Introduction, Linear Arrays, Representation of Linear Arrays in Memory, Traversing Linear Arrays, Concatenating Two Arrays, Insertion into a Linear Array, Deletion from a Linear Array, Largest/Smallest Element from an Array, Linear Search, Binary Search. Introduction to Multidimensional Arrays, Address Calculation of Elements of Arrays.

Linked list: Introduction to Linked List, Representation of Linked List in Memory, Traversing a Linked List, Searching a Linked List, Insertion into a Linked List, Deletion from a Linked List.

UNIT- II

Stack: Introduction to Stacks, Array Representation of Stacks, Operations on stack,: PUSH and POP, Polish Notations and Reverse Polish Notation, Evaluation of Postfix Expressions,

Queues: Introduction to Queues, Operations on the Queues: Enqueue and Dequeue, Circular Queue.

Trees : Introduction, Basic Terminology, Binary Tree, Tree Representations using Array, Binary Trees Traversing by Recursive procedures: Preorder In-order, & Post-order Traversal.

Reference Books:

1. Hemant Jain, Problem Solving in Data Structures & Algorithms Using C
2. Yashavant P. Kanetkar, Data Structure Through C
3. Rajesh K. Shukla, Data Structures using C & C++
4. E Balagurusamy, Data Structures Using C
5. Seymour Lipschutz, Data Structure With C

SEMESTER II							
BSC/BA/CSE/MD/2/DSC/151 Data Structure							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
DSC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/BA/CSE/MD/2/DSC/151: Data Structure

SEMESTER- II									
BSC/BA/CSE/MD/2/MIC/151 Problem Solving Techniques									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
MIC	01	01 Hours	Lecture	15	10			01 Hours	TTE/MTE/ Assignment/ Attendance
					5	2	3		

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 03. Question No. 1 is compulsory and will consist of FIVE Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be only One Unit in the Question Paper consisting of Two Questions.

The student will attempt one question from the unit in addition to the Compulsory Question No. 1. First Question will carry five marks and rest Questions will carry equal marks (10 marks each).

Course Objectives: The course aims to provide a comprehensive understanding of problem-solving techniques and the fundamentals of C programming.

CO1: Knowledge: to gain knowledge of problem-solving techniques, including flowcharts and algorithms, as well as the basics of the C programming language.

CO2: Understand: Understand algorithm complexity, data types, operators, arithmetic expressions, and how to use C programming constructs to solve real-world problems.

CO3: Apply: will apply C language programming constructs to solve real problems.

CO4: Analyze:Students will be able to determine the most efficient approach for given problems.

CO5: Evaluate: Students will be able to evaluate the performance of C programs and optimise them by choosing appropriate data structures and control flow mechanism.

Unit-I

Problems Solving Techniques: Data, Information , Algorithms, Flowcharts, Pseudo Code, Decision Tables.

Introduction to C Language: Introduction to High Level language and Low level language, Salient Features of C language, Structure of a C Program, Variables and Constants, Character Set, Identifiers and Keywords, Rules for Forming Identifiers, Data Types, Data Type Qualifiers, Assignment Statements, Arithmetic Operators, Relational Operators, Logical Operators, , Type casting, Precedence and Associativity of Operators, Evaluation of arithmetic expressions.

Control Statements: Conditional Statements: if, if-else, nested if-else and Conditional Operators.

Loop Statements: while Loop, do-while Loop, for Loop, break and continue statements.

Reference Books:

1. Hemant Jain, Problem Solving in Data Structures & Algorithms Using C
2. Yashavant P. Kanetkar, Data Structure Through C
3. Rajesh K. Shukla, Data Structures using C & C++
4. E Balagurusamy, Data Structures Using C
5. Seymour Lipschutz, Data Structure With C

SEMESTER- II							
BSC/BA/CSE/MD/2/MIC/151 Problem Solving Techniques							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MIC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BA/CSE/MD/2/MIC/102 Problem Solving Techniques**

SEMESTER- II									
BSC/BCOM/BA/CSE/MD/2/MDC/ 151 BASICS OF INTERNET									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
MDC	02	02 Hours	Lecture	35	15			02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.									
Course objective: The course introduces the Internet, its history, evolution, and applications, including comparisons with Intranet, WWW, websites, and webpages.									
Course Outcomes: CO1: Knowledge Understand the definition, history, and evolution of the Internet, along with its key applications. Differentiate between Internet, Intranet, WWW, websites, and webpages. Identify types of websites (static, dynamic) and popular web browsers. CO2: Understand Explain how the Internet works at a basic level, the role of search engines (crawling, indexing, ranking), and effective search techniques (keywords, filters, operators). Describe Google services (Drive, Maps, Meet) and email communication fundamentals. CO3: Apply Demonstrate the ability to use web browsers efficiently, perform advanced searches, and utilize Google services (Drive, Maps, Meet). Create and manage an email account (Gmail) while following proper email etiquette and security practices. CO4: Analyze Evaluate different types of websites and their purposes. Assess search engine optimization (SEO) principles and the impact of effective search techniques on information retrieval. CO5: Evaluate & Secure Judge the reliability of websites and online information. Implement email security best practices to prevent phishing, spam, and data breaches.									

Unit I

Introduction to the Internet: Definition, history, evolution and applications, How the Internet works (basic overview), difference between Internet , Intranet and Extranet, WWW, Websites and Webpages, Difference between a website and a webpage, Types of websites (static, dynamic), Web Browsers, Popular browsers (Google Chrome, Firefox, Edge, Safari)

Unit II

Internet Tools and Services, Google Search Engine, How search engines work (crawling, indexing, ranking), Effective search techniques (keywords, filters, operators), Google services (Google Drive, Maps, Meet), Email Communication, How it works, characteristics of an email, Creating and managing an email account (Gmail), Email etiquette, attachments, and security (phishing/spam)

Reference Books::

- Ravichandran, A. (2013). Internet and Web Technology (1st ed.). Khanna Book Publishing Company.
- Pandey, A. K., & Dutta, N. (2014). Internet & Web Designing (2nd ed.). S.K. Kataria& Sons.
- Kamal, R. (2011). Internet and Web Technologies (1st ed.). McGraw Hill India.

SEMESTER- II							
BSC/BCOM/BA/CSE/MD/2/MDC/ 151 BASICS OF INTERNET (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MDC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva-Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/BCOM/BA/CSE/MD/2/MDC/ 151 BASICS OF INTERNET

SEMESTER- II									
BSC/BCOM/BA/CSE/MD/2/MDC/152 INTRODUCTION TO MS EXCEL									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
MDC	02	02 Hours	Lecture	35	15			02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.									
Course objective: The course introduces SQL syntax for defining (DDL), manipulating (DML), and querying (DQL) data, including constraints and data types.									
Course Outcomes: CO1: Knowledge Understand the uses of MS Excel in business, education, and data management. Identify key components of the Excel interface (Ribbon, Quick Access Toolbar, Worksheets, Cells) and basic data entry techniques. CO2: Understand Explain cell formatting, basic formulas (SUM, AVERAGE, MAX, MIN), and different types of cell references (relative vs. absolute). Comprehend data organization techniques like sorting, filtering, and conditional formatting. CO3: Apply Demonstrate the ability to create, save, and format workbooks. Perform calculations using basic functions and analyze data through tables and charts (Column, Bar, Pie, Line). CO4: Analyze Evaluate datasets using logical functions (IF, AND, OR) and lookup functions (VLOOKUP, HLOOKUP). Assess the effectiveness of data validation and drop-down lists in maintaining data integrity. CO5: Evaluate & Optimize Judge the suitability of different chart types for data representation. Optimize data management by applying advanced Excel features for efficient business and educational use.									

Unit I

Introduction to MS Excel: Uses in business, education, and data management, Excel interface: Ribbon, Quick Access Toolbar, Worksheets, Cells Working with Worksheets & Data Entry, Creating, saving, and opening workbooks

Entering data (text, numbers, dates), Cell formatting (font, alignment, borders, colors), Basic Formulas & Functions, Simple calculations (SUM, AVERAGE, MAX, MIN), Using cell references (relative vs. absolute)

Unit II

Advanced Excel Features & Data Management, Data Organization & Analysis, Sorting and filtering data, Conditional formatting (highlighting cells based on rules), Creating and modifying tables, Charts & Graphical Representation, Types of charts (Column, Bar, Pie, Line), Inserting and customizing charts, Adding titles, labels, and legends, Essential Functions & Data Tools, Logical functions (IF, AND, OR), Lookup functions (VLOOKUP, HLOOKUP – basic introduction), Data validation and drop-down lists

Reference Books::

- Frye, C. (2018). Microsoft Excel 2019 step by step. Microsoft Press.
- Winston, W. L. (2019). Microsoft Excel 2019: Data analysis and business modelling (6th ed.). PHI Learning.
- Price, M. (2019). Excel 2019 in easy steps. BPB Publications.
- Wilson, K. (2019). Using Microsoft Office: Using Excel 2019: The step-by-step guide to using Microsoft Excel 2019 Elluminet Press.

SEMESTER- II							
BSC/BCOM/BA/CSE/MD/2/MDC/152 INTRODUCTION TO MS EXCEL (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MDC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva-Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BCOM/BA/CSE/MD/2/MDC/152 INTRODUCTION TO MS EXCEL**

SEMESTER- II								
BSC/BCOM/BA/CSE/MD/2/MDC/ 153 INTRODUCTION TO DIGITAL MEDIA AND DESIGN								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
MDC	02	02 Hours	Lecture	35	15		02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.								
Course objective: The course provides essential knowledge and practical skills to understand the core components of digital media, utilize multimedia tools, apply fundamental design principles, and create visually engaging and interactive content for modern digital platforms.								
Course Outcomes: CO1: Knowledge Define digital media and its components (text, image, audio, video, animation), and describe their roles in modern digital communication and content creation. CO2: Understand Recognize the formats, features, and basic techniques involved in editing text, audio, image, and video files, and understand their integration in multimedia content. CO3: Apply Use common tools (e.g., PowerPoint, Google Slides, Canva, Animaker) to create simple multimedia projects incorporating text, images, audio, video, and animations. CO4: Analyze Examine multimedia presentations and interactive content to identify how design principles such as layout, color, typography, and user interactivity affect user engagement and effectiveness. CO5: Evaluate & Optimize Assess multimedia tools and content for design effectiveness and user experience, and create well-structured, visually appealing, and interactive digital media projects based on design best practices.								

Unit - I

Understanding Digital media: Definition, scope and significance in modern communication, components (text, images, audio, video, animation), Text in Digital media: Fonts, styles and effective use of text, Digital Images and Graphics: Basics of digital images, formats (JPEG, PNG) and simple editing techniques, Audio Basics: Understanding audio formats (MP3, WAV), recording basics, and simple editing, Video Basics: Introduction to video formats (MP4, AVI), basic shooting techniques, and simple editing.

Unit - II

Digital Design and Interactivity: **Principles of Design** (Layout, color theory, visual hierarchy, and typography in digital interfaces), **Animation and Motion Graphics**: Basics of animation, frame rates, and creating simple animations using tools like Powtoon or Animaker, **Interactive Media**: Hyperlinks, buttons, user interaction in digital content (presentations, web interfaces, apps), **Authoring and Presentation Tools**: Introduction to tools like Microsoft PowerPoint, Google Slides and Canva for creating interactive, visually compelling presentations

Reference Books::

- **Savage, T.M., & Vogel, K.E. An Introduction to Digital Multimedia, Jones & Bartlett Learning.**
- **Bhatnagar, Gaurav, Mehta, Shikha, & Mitra, Sugata. Introduction to Multimedia Systems, Academic Press.**

SEMESTER- II							
BSC/BCOM/BA/CSE/MD/2/MDC/ 153 INTRODUCTION TO DIGITAL MEDIA AND DESIGN (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MDC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva-Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BCOM/BA/CSE/MD/2/MDC/ 153 INTRODUCTION TO DIGITAL MEDIA AND DESIGN**

SEMESTER- II								
BSC/BCOM/BA/CSE/MD/2/SEC/151 Office Tools								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
SEC	01	01 Hours	Lecture	15	10		01 Hours	TTE/MTE/Assignment/Attendance
					5	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 03. Question No. 1 is compulsory and will consist of FIVE Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be only One Unit in the Question Paper consisting of Two Questions. The student will attempt one question from the unit in addition to the Compulsory Question No. 1. First Question will carry five marks and rest Questions will carry equal marks (10 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.								
Course objective: The course provides fundamental knowledge of office tools, including spreadsheets, presentations, computer networks, and the internet. It enhances data organization, presentation skills, and online communication proficiency.								
Course Outcomes: CO1: Knowledge: Understand the basic functionalities of spreadsheets, PowerPoint, computer networks, internet applications, and email communication. CO2: Understand: Comprehend spreadsheet operations, presentation tools, network types, topologies, web browsing, and email functionalities for efficient digital communication and data management. CO3: Apply: Demonstrate the ability to create and manipulate spreadsheets, design presentations with animations and templates, configure network settings, and manage email communications effectively. CO4: Analyze: Analyze different network types and topologies, spreadsheet functions, and presentation techniques to optimize efficiency and effectiveness in professional tasks. CO5: Evaluate: Assess the impact of spreadsheets, presentations, and internet tools in enhancing workplace productivity, data handling, and professional communication.								

Unit-I

Spreadsheet: Elements of Electronics SpreadSheet, Applications, Creating and Opening of SpreadSheet, Menus, Manipulation of cells: Enter texts numbers and dates, Cell Height and Widths, Built-in function, creating charts.

PowerPoint Presentation: Creating, modifying and enhancing a presentation, Delivering a presentation, Using sound, animation and design templates in presentation.

Computer Networks: Computer Networks and their advantages, Types of Computer Network, Network Topologies,

Internet: Internet and its applications, Creating Email Id, Viewing an EMail, Sending an EMail to a single and multiple users, Sending a file as an attachment, WWW, Web Browsers and Search Engines.

Reference Books:

1. Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB
2. Dromey, R.G., How to Solve it By Computer, PHI
3. Microsoft Office – Complete Reference – BPB Publication

SEMESTER- II							
BSC/BCOM/BA/CSE/MD/2/SEC/151 Office Tools (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
SEC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BCOM/BA/CSE/MD/2/SEC/151 Office Tools**

SEMESTER- II								
BSC/BCOM/BA/CSE/MD/2/SEC/152 Introduction to C								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
SEC	01	01 Hours	Lecture	15	10		01 Hours	TTE/MTE/ Assignment/ Attendance
					5	2		

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 03. Question No. 1 is compulsory and will consist of FIVE Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be only One Unit in the Question Paper consisting of Two Questions.

The student will attempt one question from the unit in addition to the Compulsory Question No. 1. First Question will carry five marks and rest Questions will carry equal marks (10 marks each).

The paper Setter will set the paper in both English and Hindi/ mixed mode languages.

Course objective: The course introduces fundamental programming concepts in C, covering data types, operators, decision and loop control statements, and arrays. It enhances logical thinking and problem-solving skills for structured programming.

Course Outcomes:

CO1: Knowledge: Understand the basics of programming languages, structure of a C program, variables, constants, data types, operators, and control statements.

CO2: Understand: Comprehend the use of decision control and loop control structures to implement logic-based solutions in programming.

CO3: Apply: Demonstrate the ability to write C programs using variables, operators, conditional statements, loops, and one-dimensional arrays for data handling.

CO4: Analyze: Analyze the role of operators, control structures, and arrays in optimizing program logic and improving efficiency.

CO5: Evaluate: Assess different programming approaches and debugging techniques to develop efficient, error-free, and structured C programs.

Unit-I

Introduction: High Level language, Low level language, Structure of a C Program, Variables and Constants, Character Set, Identifiers and Keywords, Data Types, Variables, Declaring Variables, Initializing Variables, Constants, Types of Constants.

Operators: Assignment Statements, Arithmetic Operators, Relational Operators, Logical Operators, Comma and Conditional Operators, Type casting, Precedence and Associativity.

Decision Control Statements: if, if-else, ladder else-if and nested if-else Statements,

Loop Control Statements: while Loop, do-while Loop, for Loop,

Arrays: Definition, Creating and Using One Dimensional Arrays, Initializing an Array, Accessing individual elements in an Array,

Reference Books:

1. Hemant Jain, Problem Solving in Data Structures & Algorithms Using C
2. Yashavant P. Kanetkar, Data Structure Through C
3. Rajesh K. Shukla, Data Structures using C & C++
4. E Balagurusamy, Data Structures Using C
5. Seymour Lipschutz, Data Structure With C

SEMESTER- II							
BSC/BCOM/BA/CSE/MD/2/SEC/152 Introduction to C (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
SEC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BCOM/BA/CSE/MD/2/SEC/152 Introduction to C**

SEMESTER- II									
BSC/BCOM/BA/CSE/MD/2/SEC/153 App Development using Flutter									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
SEC	01	01 Hours	Lecture	15	10			01 Hours	TTE/MTE/ Assignment/ Attendance
					5	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 03. Question No. 1 is compulsory and will consist of FIVE Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be only One Unit in the Question Paper consisting of Two Questions. The student will attempt one question from the unit in addition to the Compulsory Question No. 1. First Question will carry five marks and rest Questions will carry equal marks (10 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.									
Course objective: This course covers the basics of Flutter development, including app setup, widgets, state management, package use, API integration, testing, and app deployment on Android and iOS.									
Course Outcomes: CO1: Knowledge: Understand the fundamentals of Flutter, including installation, basic widgets, gestures, layouts, and how to run a Flutter application. CO2: Understand: Explain state management concepts, Flutter packages, widget building methods, and the structure of Flutter apps using tools like GitHub repositories. CO3: Apply: Demonstrate the ability to create Flutter user interfaces using key widgets such as AppBar, Scaffold, Containers, and Text widgets; manage app state effectively and integrate third-party packages. CO4: Analyze: Analyze and implement REST API calls and database concepts within Flutter applications; perform widget testing to ensure app functionality and UI reliability. CO5: Evaluate: Evaluate deployment processes for releasing Flutter applications on Android Play Store and iOS App Store, ensuring app readiness and compliance with platform guidelines.									

Unit-I

Introduction to Flutter: Flutter – Installation, Widgets and Gestures: Title, Body, Layouts, Columns, Root, Run App

State Management, Flutter Packages: Introduction to Package, Build Method, Dart Packages, App Bar, Text Widgets, Scaffold, Containers, Structuring Flutter Apps, Using GitHub Repositories for Flutter

Flutter: Accessing REST API, Database Concepts, Testing: Widget Testing

Deployment: Android Application on Play Store, iOS Application on App Store

Reference Books::

1. Alessandro Biessek, Flutter for Beginners
2. Marco L. Napoli, Beginning Flutter: A Hands-On Guide to App Development
3. Eric Windmill, Flutter in Action
4. Carmine Zaccagnino, Programming Flutter: Native, Cross-Platform Apps the Easy Way
5. Simone Alessandria & Brian K Fitz (O'Reilly), Flutter Cookbook

SEMESTER- II							
BSC/BCOM/BA/CSE/MD/2/SEC/?? App Development using Flutter (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
SEC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BCOM/BA/CSE/MD/2/SEC/153 App Development using Flutter**

SEMESTER- III									
BSC/BA/CSE/MD/3/DSC/201				Object Oriented programming with C++					
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
DSC	02	02 Hours	Lecture	35	15			03 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions.									
The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).									
Objective: To teach students the concepts of inheritance and polymorphism in C++, enabling them to create reusable and flexible code.									
Course Outcomes:									
CO1: Knowledge: Learn the input/output statements and functions in C++.									
CO2: Understand: The input/output statements and functions in C++..									
CO3: Apply: The various concepts of operator overloading and inheritance.									
CO4: Analyze: the efficiency and effectiveness of programming constructs and control statements.									
CO5: Evaluate: the correctness and performance of implemented algorithms and programs through testing and debugging.									
CO6: Create: develop programs that incorporate multiple programming constructsbased on various concepts of C++.									

UNIT – I

Introduction to Programming in C++: Concept of OOP, Programming Features of C++, concept of class and object, Data types and operators, Control Statements: Conditional Statements & Loops, Data members and Member functions, Access specifiers, Static Data Members and static Member Functions, Inline Functions, Friend Function.

UNIT– II

Constructors & Destructors: Introduction, default, parameterized and copy constructors, function overloading, **Operator Overloading:** Overloading unary and binary operators.

Inheritance: Introduction, Types of Inheritance: Single, Multiple, Multilevel, Hierarchical and Hybrid.

Polymorphism: compile-time and run time Polymorphism.

Reference Books:

1. Robert Lafore, Object-Oriented Programming in C++ (4th Edition)
2. Raimund K. Ege, Object-oriented programming with C++
3. E.Balagurusamy, Object Oriented Programming with C++
4. Bjarne Stroustrup, C++ Programming Language, 4e
5. Rajesh K. Shukla, Object-Oriented Programming in C++

SEMESTER III							
BSC/BA/CSE/MD/3/DSC/201 Object Oriented programming with C++							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
DSC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/CSE/MD/3/DSC/201 Object Oriented programming with C++.

SEMESTER- III									
BSC/BA/CSE/MD/3/MIC/201 Introduction to Python									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
MIC	02	02 Hours	Lecture	35	15			02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).									
Course Objective: The objective of this course is to get the students familiar with fundamental concepts of python programming, looping concepts, and libraries.									
Course Outcomes: CO1: Knowledge: installations, working, structures, control statements, operators, lists, object oriented programming concepts CO2: Understand: conditional & control statements ,strings ,oopsconcepts ,libraries CO3: Apply: python programming constructs to solve real world problems. CO4: Analyze: to determine the most efficient approach for given problems. CO5: Evaluate: the performance of Python programs and optimize them by choosing appropriate data structures and control flow mechanisms									

Unit-I

Introduction to Python: Introduction, Compiler and Interpreter, Features and history of Python, Python Keywords and Identifiers; Comments: Purpose/use of comments, Single line comment/Multiline comment; Python Variables: Declaration of Variables, Assign Values to Variables, Initialization, Reading, Variable naming restrictions.

Python Data Types: Data types, Type conversion.

Operators: Arithmetic, Comparison/Relational Operators, Increment Operators, Logical operators, Identity Operators, and Operators Precedence.

Python Control Flow Statement: if Structure, if-else structure, if elif structure, and nested if Structure;

Unit-II

Looping: Python Loop Statements: Python while loop, Python for loop, Python range (), Python Nested Loop Structures; Python Branching Statements – break, continue, pass.

Python Lists: Create Python Lists, Update Python Lists, Delete Elements from Python Lists, and Built-in Functions Methods for Python Lists and implement arrays.

Strings: Working with Strings, Useful String Methods.

Reference Books:

1. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd Edition, Green Tea Press, 2015, ISBN: 978-9352134755.
2. Charles Dierbach, "Introduction to Computer Science Using Python", 1st Edition, WileyIndia Pvt Ltd. ISBN-13: 978-8126556014.
3. Wesley J Chun, "Core Python Applications Programming", 3rd Edition, Pearson EducationIndia, 2015. ISBN-13: 978-9332555365.

4. ReemaThareja, “Python Programming using problem solving approach”, Oxford University press, 2017. ISBN-13: 978-0199480173

SEMESTER- III							
BSC/BA/CSE/MD/3/MIC/201 Introduction to Python(Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MIC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BA/CSE/MD/3/MIC/201 Introduction to Python**

SEMESTER- III								
BSC/BCOM/BA/CSE/MD/3/MDC/201 Data Handling with SQL								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
MDC	02	02 Hours	Lecture	35	15		02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.								
Course objective: The course provides fundamental knowledge of computers, operating systems, and MS Windows. It also covers word processing and internet essentials, including email usage, enhancing digital literacy and office productivity skills.								
Course Outcomes: CO1: Knowledge Understand fundamental database concepts (tables, records, fields, keys) and the role of RDBMS. Recognize SQL as a standard query language and differentiate between DDL, DML, and DQL commands. CO2: Understand Explain data types (numeric, character, date) and constraints (PRIMARY KEY, FOREIGN KEY, NOT NULL, UNIQUE). Comprehend basic SELECT queries with filtering (WHERE clause), sorting (ORDER BY), and arithmetic expressions. CO3: Apply Demonstrate the ability to create and modify database structures using DDL commands (CREATE, ALTER, DROP). Perform data manipulation (INSERT, UPDATE, DELETE) and write queries with aliases and logical operators. CO4: Analyze Evaluate datasets using aggregate functions (SUM, AVG, COUNT, MAX, MIN) and grouping (GROUP BY, HAVING). Assess table relationships through joins (INNER, LEFT/RIGHT) and subqueries (IN, EXISTS). CO5: Evaluate & Optimize Judge the efficiency of SQL queries and enforce referential integrity using foreign keys. Optimize database design and query performance for real-world applications.								

Unit I

Introduction to Databases and SQL, Database concepts (Tables, Records, Fields, Keys), Role of RDBMS (MySQL, Oracle, etc.), SQL as a standard language for querying databases.

SQL Commands: DDL (CREATE, ALTER, DROP), DML (INSERT, UPDATE, DELETE), DQL (SELECT with WHERE, ORDER BY), Data Types and Constraints, Numeric, Character, Date types, Constraints: PRIMARY KEY, FOREIGN KEY, NOT NULL, UNIQUE, SELECT with arithmetic expressions, aliases, Filtering using WHERE (comparison/logical operators)

Unit II

Advanced SQL Operations: Aggregate Functions & Grouping, SUM(), AVG(), COUNT(), MAX(), MIN(), GROUP BY, HAVING clauses, Joins and Subqueries, INNER JOIN, LEFT/RIGHT JOIN, Nested queries (subqueries with IN, EXISTS), Table Relationships, Foreign key implementation, Referential integrity

Reference Books:

1. Desai, B. (2010). An introduction to database systems (8th ed.). Galgotia Publications.
2. Kakkar, D. P. (2012). SQL complete reference. BPB Publications.
3. Bayross, I. (2010). SQL, PL/SQL: The programming language of Oracle. BPB Publications.

SEMESTER- III							
BSC/BCOM/BA/CSE/MD/3/MDC/201 Data Handling with SQL (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MDC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva-Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/BCOM/BA/CSE/MD/3/MDC/201 Data Handling with SQL

SEMESTER- III								
BSC/BCOM/BA/CSE/MD/3/MDC/ 202 Microsoft PowerPoint with Animation								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
MDC	02	02 Hours	Lecture	35	15		02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.								
Course objective: The course provides PowerPoint’s interface and basic functionalities for creating and managing presentations.								
Course Outcomes: CO1: Knowledge Understand PowerPoint’s interface (Ribbon, Slides Pane, Notes) and its core features. Learn to create, save, and open presentations while managing slides (add, delete, duplicate) and applying layouts/design themes. CO2: Understand Explain text formatting (font, size, styles) and object insertion (shapes, icons, SmartArt). Comprehend visual enhancements like images, charts, tables, and background customization (colors, gradients, pictures). CO3: Demonstrate the ability to use Slide Master for consistent designs, create custom templates, and apply animations (entrance, exit, emphasis) with motion paths and timing adjustments. CO4: Analyze Evaluate advanced animation techniques (trigger animations, Animation Pane) and slide transitions (sound effects, duration). Assess interactive elements like hyperlinks and action buttons for seamless navigation. CO5: Evaluate & Design Judge the effectiveness of slide designs, animations, and transitions in engaging audiences. Optimize presentations for professionalism and interactivity using advanced PowerPoint tools.								

Unit I

Overview of PowerPoint, Features and interface (Ribbon, Slides Pane, Notes), Creating, saving, and opening presentations, Slide Management, Adding, deleting, duplicating slides, Slide layouts and design themes, Working with Text & Objects, Formatting text (Font, Size, Styles), Inserting shapes, icons, and SmartArt

Unit II

Advanced Slide Design, Visual Enhancements, Inserting and formatting images, charts, and tables, Background customization (Colors, Gradients, Pictures), Master Slides & Templates, Using Slide Master for consistent design, Custom templates and theme
Animations in PowerPoint: Entrance, Exit, Emphasis effects, Motion Paths and timing adjustments, Advanced Animation Techniques, Trigger animations (On Click, With Previous), Animation Pane for fine-tuning
Slide Transitions, Applying and customizing transitions, Sound effects and duration settings, Hyperlinks & Action Buttons, Creating interactive navigation, Linking to slides, websites, or files

Reference Books::

1. Bosse, C. (2020). Microsoft PowerPoint: Best practices, tips, and techniques. Packt Publishing.
2. Faithe, W. (2004). PowerPoint® advanced presentation techniques. Wiley Publishing.

SEMESTER- III							
BSC/BCOM/BA/CSE/MD/3/MDC/ 202 Microsoft PowerPoint with Animation (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MDC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva-Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/BCOM/BA/CSE/MD/3/MDC/ 202 Microsoft PowerPoint with Animation

SEMESTER- III								
BSC/BCOM/BA/CSE/MD/3/MDC/ 203 INTRODUCTION TO CYBERSECURITY								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
MDC	02	02 Hours	Lecture	35	15		02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.								
Course objective: The course provides essential knowledge and practical skills to identify common cyber threats, implement safe internet practices, protect personal and organizational data, and understand basic cyber laws and ethical considerations in the cyberspace.								
Course Outcomes: CO1: Knowledge Define cyber security, its significance in daily life, and comprehend basic cyber laws and ethical practices in the cyberspace. CO2: Understand Recognize and describe various cyber threats, including viruses, worms, malware, phishing attacks, social engineering tactics, and ransomware, understanding their potential impacts. CO3: Apply Implement safe internet practices by identifying secure websites (e.g., HTTPS, padlock symbols), avoiding suspicious downloads and links, and configuring privacy settings on social media platforms. CO4: Analyze Understand basic data encryption concepts, differentiate between cloud and local data backup methods, and apply best practices for data storage and sharing to safeguard information. CO5: Evaluate & Optimize Assess the risks associated with using public Wi-Fi networks and employ strategies such as using Virtual Private Networks (VPNs) to protect sensitive transactions on unsecured networks.								

Unit - I

Introduction to Cybersecurity: Definition and importance of cybersecurity in daily life, Common Cyber Threats: Viruses, worms, and malware, Phishing attacks and social engineering, Ransomware and its implications, **Safe Internet Practices:** Recognizing secure websites (HTTPS, padlock symbol), Avoiding suspicious downloads and links, Understanding privacy settings on social media platforms, **Password Security:** Characteristics of strong passwords, Implementing two-factor authentication (2FA).

Unit - II

Protecting Devices and Data: Understanding data encryption basics, Methods for backing up data (cloud vs. local storage), Best practices for data storage and sharing, Safe Use of Public Networks: Risks associated with public Wi-Fi, Using Virtual Private Networks (VPNs), Avoiding sensitive transactions on unsecured networks, Introduction to Cyber Laws and Ethics: Overview of basic cyber laws relevant to users, Understanding ethical behavior in the cyberspace.

Reference Books::

1. **Steinberg Joseph.** *Cybersecurity For Dummies*, 3rd Edition, Wiley, 2025
2. Brooks, Charles J. *Cybersecurity Essentials*, Wiley, 2018
3. **Meeuwisse, Raef.** *Cybersecurity for Beginners*, Cyber Simplicity, 2017

SEMESTER- III							
BSC/BCOM/BA/CSE/MD/3/MDC/ 203 INTRODUCTION TO CYBERSECURITY (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MDC Practical	01	02 Hours	Practical	25	–	02 Hours	Practical/ Viva-Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BCOM/BA/CSE/MD/3/MDC/ 203 INTRODUCTION TO CYBERSECURITY**

SEMESTER- III								
BSC/BCOM/BA/CSE/MD/3/SEC/201 Advanced Excel Tools								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
SEC	01	01 Hours	Lecture	15	10		01 Hours	TTE/MTE/ Assignment/ Attendance
					5	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 03. Question No. 1 is compulsory and will consist of FIVE Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be only One Unit in the Question Paper consisting of Two Questions. The student will attempt one question from the unit in addition to the Compulsory Question No. 1. First Question will carry five marks and rest Questions will carry equal marks (10 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.								
Course objective: The course provides advanced knowledge of MS Excel, covering data types, formulas, functions, logical operations, lookup functions, financial calculations, and error handling for efficient data analysis and report generation.								
Course Outcomes: CO1: Knowledge: Understand the structure of MS Excel, types of data, cell references, formulas, functions, and error types in spreadsheets. CO2: Understand: Comprehend the use of mathematical, logical, text, lookup, financial, and date/time functions to manage and analyze data effectively. CO3: Apply: Demonstrate proficiency in using Excel formulas, conditional logic functions, pivot tables, and printing options for structured data representation and report generation. CO4: Analyze: Analyze various Excel functions and techniques to optimize data organization, financial calculations, and troubleshooting spreadsheet errors. CO5: Evaluate: Assess spreadsheet accuracy, apply error correction techniques, and generate professional reports to enhance data-driven decision-making.								

Unit 1

Introduction to MS-Excel. Types of data: numeric, alpha-numeric, date, Cell references and ranges (relative, absolute, mixed), Formulas and their components, Basic understanding of functions. Common functions like SUM, AVERAGE, and COUNT, AutoSum.

IF functions and nested IF functions for conditional logic, Date and time functions (TODAY, NOW, DAY, MONTH, YEAR, DATEVALUE), Mathematical functions (SUMIF, ROUND, ROUNDDOWN, COUNT), Text manipulation functions (TEXT, CONCATENATE), Logical functions (AND, OR), Lookup and reference functions (LOOKUP, VLOOKUP, HLOOKUP)

Creating output reports: Defining print area and printing options, Printing ranges of cells, Preparation of reports using Pivot Tables, Error correction in spreadsheets, Correcting errors such as #DIV/0!, #NAME?, #NULL!, #NUM!, #REF!, #VALUE!.

AI-Powered Tools in Excel via Power BI: Introduction to Power BI, Differences between Excel and Power BI, Creating data models in Excel for Power BI, AI Visuals in Power BI, Building Interactive Reports

Reference Books:

1. Microsoft Office 2016 Step by Step: MS Office 2016 Step by Step, By Joan Lambert, Curtis Frye
2. Microsoft Office – Complete Reference – BPB Publication
3. Learn Microsoft Office – Russell A. Stultz – BPB Publication

SEMESTER- III							
BSC/BCOM/BA/CSE/MD/3/SEC/201 Advanced Excel Tool (Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
SEC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BCOM/BA/CSE/MD/3/SEC/201 Advanced Excel Tools**

SEMESTER- III								
BSC/BCOM/BA/CSE/MD/3/SEC/202 Desktop Publishing								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
SEC	01	01 Hours	Lecture	15	10		01 Hours	TTE/MTE/ Assignment/ Attendance
					5	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 03. Question No. 1 is compulsory and will consist of FIVE Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be only One Unit in the Question Paper consisting of Two Questions. The student will attempt one question from the unit in addition to the Compulsory Question No. 1. First Question will carry five marks and rest Questions will carry equal marks (10 marks each). The paper Setter will set the paper in both English and Hindi/ mixed mode languages.								
Course objective: To equip students with foundational skills in graphic design using industry-standard tools like Photoshop and CorelDraw, enabling them to create, edit, and publish visually compelling digital content for both web and print media.								
Course Outcomes CO1: Knowledge Understand the role of computers in modern design processes and Gain hands-on experience with Photoshop and CorelDraw interfaces and tools. CO2: Understand Learn the differences between vector and bitmap images and their applications.. CO3: Apply editing techniques such as cropping, layering, and coloradjustments.. CO4: Analyze Design simple graphics, logos, and business cards using CorelDraw.. CO5: Evaluate Prepare artwork suitable for digital publishing and printing.								

UNIT-I

Computer as a Design Tool: Types of Graphic Applications: Web & Windows Based. Tools Available for Designing and Desktop Publishing: Photoshop, CorelDraw, Brief Explanation of all these.

Working with Photoshop: Photoshop Program Window, Working with Images: Vector and Bitmap Images, Size, Resolution, Editing, Cropping, Colour Modes, Making Selections, Editing Selections, Painting, Drawing and Retouching Tools, Layers, Hiding, Showing, Deleting, Repositioning, Flattening, Filters.

Working with CorelDraw: CorelDraw Basics, Menus & Toolbar. Drawing and Selecting, Working with Text, Working with Images, Page Layout and Background, Layers, Gradients, Creating Logos and Business Cards with CorelDraw

Reference Books:

1. DTP Course A complete Book for page maker coreldraw photoshop with image guideline by Pooja Sangwan
2. Adobe Creative Team. Adobe Photoshop Classroom in a Book. Adobe Press.
3. Gary David Bouton. CorelDRAW X8: The Official Guide. McGraw-Hill Education.

SEMESTER- III							
BSC/BCOM/BA/CSE/MD/3/SEC/202 Desktop Publishing(Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
SEC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BCOM/BA/CSE/MD/3/SEC/202 Desktop Publishing**

SEMESTER- IV									
BSC/BA/CSE/MD/4/DSC/251 Database Management System									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
DSC	02	02 Hours	Lecture	35	15			03 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).									
Course Objective: To provide students with a comprehensive understanding of database systems, their architecture, and the fundamental principles of database design using the relational model.									
Course Outcomes: CO1: Knowledge: Identify the different components of a database environment and understand the functions of a DBMS.. CO2: Understand: To understand the terminology of the relational model, properties of relations, keys, and integrity constraints. CO3: Apply: the concept of functional dependency and explain the need for normalization. CO4: Analyze: the efficiency and effectiveness of programming constructs and control statements. CO5: Create: To identify and eliminate data redundancy and update anomalies using normalization.									

UNIT – I

Basic Terminology: Traditional File Based Systems, Limitations of File Based Approach, Database Approach: Characteristics of Database Approach, Database Management System (DBMS), Components of Database Environment, DBMS Functions, Advantages and Disadvantages of DBMS.

Roles in the Database Environment: Database Administrator, Database Designers, Applications Developers and End Users.

Database System Architecture: Three Levels of Architecture, Schemas and Instances, Data Independence: Logical and Physical Data Independence.

UNIT – II

Introduction to Data Models: Entity-Relationship Model and ER Diagrams.

Relational Model: Relational Model Terminology, Properties of Relations, Keys, Integrity Constraints over Relations.

Functional Dependency & Normalization: Data Redundancy and Update Anomalies. Functional Dependencies: Full Functional Dependencies and Transitive Functional Dependencies, Normal Forms (1NF, 2NF, 3NF).

Reference Books:

1. Data base System Concepts, Silberschatz, Korth, McGraw hill
2. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill
3. Fundamentals of Database Systems, ElmasriNavathe Pearson Education.
4. An Introduction to Database Systems, C.J. Date, A.Kannan, S.SwamiNadhan, Pearson,

SEMESTER- IV							
BSC/BA/CSE/MD/4/DSC/251 Database Management System							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
DSC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/CSE/MD/4/DSC/251 Database Management System.**

SEMESTER- IV								
BSC/BA/CSE/MD/4/MIC/251 Introduction to SQL								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
MIC	02	02 Hours	Lecture	35	15		02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).								
Course objective: To provide students with a comprehensive understanding of database systems, their architecture, and the fundamental principles of database design using the relational model.								
Course Outcomes: CO1: Knowledge: knowledge of Database Management Systems (DBMS), including their purpose, architectures (Centralized, Client-Server), and the fundamental concepts of the Relational Model. CO2: Understand: Develop a conceptual understanding of relational databases, functional dependencies, normalization processes, and how they help in reducing redundancy and anomalies in databases. CO3: Apply: ability to apply SQL for database creation, modification, and retrieval. CO4: Analyze: analyze relational schemas by identifying functional dependencies and applying normalization techniques (1NF, 2NF, 3NF) to optimize database design. CO5: Evaluate: Evaluate different database architectures, constraints, and normalization techniques to determine their effectiveness in improving database performance and data integrity.								

UNIT-I

Database Management System – Introduction and Purpose, Database Architectures: Centralized, Client-Server,

Relational Model: Relational Model Terminology, Properties of Relations, Keys, Constraints over Relations.

Functional Dependency & Normalization: Data Redundancy and Update Anomalies. Functional Dependencies: Full Functional Dependencies and Transitive Functional Dependencies, Normal Forms (1NF, 2NF, 3NF).

UNIT-II

SQL: Introduction to SQL Types of SQL, data types, Creation of Database, DDL, DML, and DCL commands

(creation of tables with and without constraints, Alter commands, insertion into tables, updating a record, deleting records from table, dropping a table, order by clause, group by clause, Retrieving records from tables)

Reference Books:

1. Data base System Concepts, Silberschatz, Korth, McGraw hill
2. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill
3. Fundamentals of Database Systems, ElmasriNavathe Pearson Education.
4. An Introduction to Database Systems, C.J. Date, A.Kannan, S.SwamiNadhan, Pearson,
5. Korth, H. F.,&Sudarshan, S. (2010). Database System Concepts. 6th edition. McGrawHill.

SEMESTER- IV							
BSC/BA/CSE/MD/4/MIC/251 Introduction to SQL							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MIC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BA/CSE/MD/4/MIC/202 Introduction to SQL**

SEMESTER- V									
BSC/BA/CSE/MD/5/DSC/301 Python Programming									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
DSC	02	02 Hours	Lecture	35	15			03 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).									
Course Objective: The objective of this course is to get the students familiar with fundamental concepts of python programming, looping concepts, and libraries.									
Course Outcomes: CO1: Knowledge: installations, working, structures, control statements, operators, lists, object oriented programming concepts CO2: Understand: conditional & control statements ,strings ,oopsconcepts ,libraries CO3: Apply: python programming constructs to solve real world problems. CO4: Analyze: to determine the most efficient approach for given problems. CO5: Evaluate: the performance of Python programs and optimize them by choosing appropriate data structures and control flow mechanisms									

Unit-I

Introduction to Python: Keywords and Identifiers; Comments: Purpose/use of comments, Single line comment/Multiline comment; Python Variables: Declaration of Variables, Assign Values to Variables, Initialization, Reading, Variable naming restrictions.

Python Data Types: Implicit Declaration of Data Types, Python Numbers (Integers, floating-point numbers, and complex numbers), Python Strings, Python Boolean data type;

Operators: Arithmetic, Comparison/Relational Operators, Increment Operators, Logical operators, Identity Operators, and Operators Precedence.

Unit-II

Conditional Statements: Python Control Flow Statement, Decision Making: Simple If Structure, if-else structure, if elif structure, and nested If Structure.

Python Loop Statements: Python while loop, Python for loop, Python range(), Python Nested Loop Structures; Python Branching Statements – break, continue, pass.

Python Lists: Create Python Lists, Update Python Lists, Delete Elements from Python Lists, and Built-in Functions Methods for Python Lists and implement arrays.

Reference Books:

1. E. Balagurusamy, Introduction to Computing and Problem Solving Using Python, McGraw Hill, 2016.
2. Charles Dierbach, Introduction to Computer Science Using Python, Wiley, 2013
3. Barry Paul, Paul Deitel, Harvey Deitel, Python How to program, Pearson, 2007
4. Mark Lutz, David Ascher, Programming Python, 4e, O'Reilly, 2009

SEMESTER- V							
BSC/BA/CSE/MD/5/DSC/301 Python Programming							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
DSC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/CSE/MD/5/DSC/301 Python Programming.

SEMESTER- V								
BSC/BA/CSE/MD/5/MIC/301 Web Development								
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods
				External	Internal			
MIC	02	02 Hours	Lecture	35	15		02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).								
Course objective: The course aims to provide fundamental knowledge of the Internet, World Wide Web, website development, and HTML. It equips students with skills to design, develop, and publish interactive web pages effectively.								
Course Outcomes: CO1: Knowledge: Gain foundational knowledge of the Internet, World Wide Web, web browsers, web servers, HTTP, URLs, and search engines. CO2: Understand: Understand website development steps, including choosing content, domain names, ISPs, web design, and web publishing. CO3: Apply: Apply knowledge of HTML tags, text formatting, page layouts, images, lists, tables, frames, forms, and interactive elements CO4: Analyze: Analyze different website structures, design elements, and navigation techniques to improve usability and efficiency. CO5: Evaluate: Evaluate various website development strategies, search engine techniques, and HTML structuring methods to enhance website accessibility, functionality, and user experience.								

UNIT-I

Introduction to Internet and World Wide Web; Evolution and History of World Wide Web; Basic Features; Web Browsers; Web Servers; Hypertext Transfer Protocol; URLs; Searching Techniques; Search Engines.

Steps for Developing Website; Choosing the Contents; Home Page; Domain Names; Internet Service Provider; Planning and Designing Web Site; Creating a Website; Web Publishing; Hosting Site;

UNIT-II

Introduction to HTML; Hypertext and HTML; HTML Document Features; HTML Tags; Header, Title, Body, Paragraph, Ordered/Unordered Line, Creating Links; Headers; Text Styles; Text Structuring; Text Colors and Background; Formatting Text; Page layouts; Insertion of Text, Movement of Text

Images: Types of Images, Insertion of Image, Movement of Image,

List: Ordered and Unordered lists;

Table Handling like Columns, Rows, Width, Colors;

Frame Creation and Layouts;

Reference Books:

1. Deitel H.M., Deitel P.J., Internet & World wide Web: How to program, Pearson Education.
2. Jackson, Web Technologies, Pearson Education
3. Prem Kumar, Web Design With HTML & CSS: HTML & CSS, 2021
4. Jennifer Niederst Robbins, Learning Web Design: A Beginner's Guide

SEMESTER- V							
BSC/BA/CSE/MD/5/MIC/301 Web Development							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MIC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BA/CSE/MD/5/MIC/301 Web Development**

SEMESTER- V							
BSC/BCOM/BA/CSE/MD/3/INT/301 Internship							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
INTERNSHIP	4		Internship/Training	100	–	03 Hours	Viva-Voce/ Training Report

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by External and one Internal examiners. The Examinees shall be evaluated on the Basis of the Internship/Training Report and a presentation based viva-voce exam during 5th semester Examination.

SEMESTER- VI									
BSC/BA/CSE/MD/6/DSC/351 Operating System									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
DSC	02	02 Hours	Lecture	35	15			03 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).									
Course Objective: To provide students with a foundational understanding of operating system principles, including process management, CPU scheduling, memory management, and command-line interfaces.									
Course Outcomes: CO1: Knowledge: Identify the different memory management and various memory concepts CO2: Understand: To understand the basic concepts of operating systems and its services along with process management CO3: Apply: to work with directory structure and security aspects. CO4: Analyze: the efficiency and effectiveness of memory organization and process in the execution. CO5: Create: To work with directory structure and security aspects.									

UNIT-I

Introductory Concepts: Operating System, Functions and Characteristics. Types of Operating System: Real time, Multiprogramming, Multiprocessing, Batch processing.

Process Management: Process Concepts, Process States and Process Control Block, Inter-Process Communication.

CPU Scheduling: Scheduling Criteria, Levels of Scheduling, Scheduling Algorithms, Introduction to critical section problem.

UNIT-II

Deadlocks: Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery.

Memory Management: Contiguous and Non Contiguous Memory Allocation, Paging and Segmentation; Page Replacement Algorithms.

DOS:Internal& External Commands: Date, DIR,CLS, CHKDSK, append, time, attrib, cd,md, copy, del, rmdir, exit, help, diskcopy, scandisk, backup, assign, path, sort commands.

Linux Commands: ls, pwd, cd, mkdir, rmdir, rm, cp, mv, touch, tar, cat, tail, head, date, who, passwd, sort commands,

Reference Books::

1. Silberschatz A., Galvin P.B., and Gagne G., Operating System Concepts, John Wiley & Sons.
2. Godbole, A.S., Operating Systems, Tata McGraw-Hill Publishing Company, New Delhi.
3. Deitel, H.M., Operating Systems, Addison- Wesley Publishing Company, New York.
4. Tanenbaum, A.S., Operating System- Design and Implementation, Prentice Hall of India, New Delhi.

SEMESTER- VI							
BSC/BA/CSE/MD/6/DSC/351 Operating System							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
DSC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/CSE/MD/6/DSC/351 Operating System**

SEMESTER- VI									
BSC/BA/CSE/MD/6/MIC/351 Data Structure using C									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
MIC	02	02 Hours	Lecture	35	15			02 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).									
Course objective: The course introduces fundamental data structures and algorithms, including arrays, linked lists, stacks, queues, and trees. It develops problem-solving skills for efficient data organization, searching, traversal, and manipulation techniques.									
Course Outcomes: CO1: Knowledge: Gain foundational knowledge of data structures, algorithms, arrays, linked lists, stacks, queues, and trees, along with their operations, representations, and traversal techniques. CO2: Understand: Comprehend the principles of data organization, memory representation, and algorithmic notations. Understand the working mechanisms of searching, insertion, deletion, and traversal in various data structures. CO3: Apply: Apply searching algorithms (linear and binary search) and evaluate expressions using stack operations. CO4: Analyze: Analyze different data structures based on their efficiency, memory utilization, and suitability for specific problem-solving scenarios. CO5: Evaluate: Evaluate the effectiveness of data structures in optimizing algorithm performance.									

UNIT I

Data Structure and Algorithm Preliminaries: Definitions, Operations on Data structures,

Algorithms: Introduction to Algorithms, Algorithmic Notations.

Arrays: Introduction, Linear Arrays, Representation of Linear Arrays in Memory, Traversing Linear Arrays, Insertion into a Linear Array, Deletion from a Linear Array, Largest/Smallest Element from an Array, Linear Search, Binary Search. Introduction to Multidimensional Arrays, Address Calculation of Elements of Arrays.

UNIT- II

Stack: Introduction to Stacks, Array Representation of Stacks, Operations on stack,: PUSH and POP, Polish Notations and Reverse Polish Notation, Evaluation of Postfix Expressions.

Linked list: Introduction to Linked List, Representation of Linked List in Memory, Traversing a Linked List, Searching a Linked List, Insertion into a Linked List, Deletion from a Linked List.

Queues: Introduction to Queues, Operations on the Queues: Enqueue and Dequeue

Tree:

Reference Books:

1. Hemant Jain, Problem Solving in Data Structures & Algorithms Using C
2. Yashavant P. Kanetkar, Data Structure Through C
3. Rajesh K. Shukla, Data Structures using C & C++
4. E Balagurusamy, Data Structures Using C
5. Seymour Lipschutz, Data Structure With C

SEMESTER- VI							
BSC/BA/CSE/MD/6/MIC/351 Data Structure using C							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MIC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one Internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper
BSC/BA/CSE/MD/6/MIC/351 Data Structure using C

SEMESTER- VI									
BSC/BA/CSE/MD/6/MIC/352 Programming with Objects and Classes									
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks			Exam Duration	Assessment Methods	
				External	Internal				
MIC	02	02 Hours	Lecture	35	15			03 Hours	TTE/MTE/ Assignment/ Attendance
					10	2	3		
Instructions to Paper Setter for Term-End Examination: The Term End Examination shall cover the whole content of the course. The Total number of Questions shall be 05. Question No. 1 is compulsory and will consist of SEVEN Short/Objective Type questions of 01 mark each covering the complete syllabus. In addition to the Compulsory First Question, there shall be Two Units in the Question Paper each consisting of Two Questions. The student will attempt one question from each unit in addition to the Compulsory Question No. 1. First Question will carry seven marks and rest Questions will carry equal marks (14 marks each).									
Objective: To teach students the concepts of inheritance and polymorphism in C++, enabling them to create reusable and flexible code.									
Course Outcomes: CO1: Knowledge: Learn the input/output statements and functions in C++. CO2: Understand: The input/output statements and functions in C++.. CO3: Apply: The various concepts of operator overloading and inheritance. CO4: Analyze: the efficiency and effectiveness of programming constructs and control statements. CO5: Evaluate: the correctness and performance of implemented algorithms and programs through testing and debugging. CO6: Create: develop programs that incorporate multiple programming constructsbased on various concepts of C++.									

UNIT – I

Introduction: Concept of OOP, Programming Features of C++, Data types and operators,
Control Statements: Conditional Statements & Loops, Data members and Member functions, Access specifiers, Static Data Members and static Member Functions, Inline Functions, Friend Function.

UNIT– II

Constructors & Destructors: Introduction, default, parameterized and copy constructors, Inheritance: Introduction, Types of Inheritance: Single, Multiple, Multilevel, Hierarchical and Hybrid.

Polymorphism: Compile-time and run time Polymorphism.

Operator Overloading: Overloading unary and binary operators.

Reference Books:

1. Robert Lafore, Object-Oriented Programming in C++ (4th Edition)
2. Raimund K. Ege, Object-oriented programming with C++
3. E.Balagurusamy, Object Oriented Programming with C++
4. Bjarne Stroustrup, C++ Programming Language, 4e
5. Rajesh K. Shukla, Object-Oriented Programming in C++

SEMESTER- VI							
BSC/BA/CSE/MD/6/MIC/352 Programming with Objects and Classes(Lab)							
Course Type	Course Credits	Contact Hours/Work	Delivery Mode	Maximum Marks		Exam Duration	Assessment Methods
				External	Internal		
MIC Practical	02	04 Hours	Practical	50	–	02 Hours	Practical/ Viva- Voce

Instructions to Paper Setter for Term-End Examination: The Term End Examination shall be conducted by a panel of one external examiner and one internal examiner. The Question Paper for Practical examination shall be set on the spot.

Note: Students are advised to do laboratory/ practical practice based on the paper **BSC/BA/CSE/MD/6/MIC/352 Programming** with Objects and Classes