

Course Outcomes (COs) For BSc

Semester: I

Course Code: HMA210	Course Title: Computer Concepts and Problem solving using C++
Course Credits: 03 (3-0-0)	Hours/Week: 03
Total Contact Hours: 44	Formative Assessment Marks: 20
Exam Marks: 80	Exam Duration: 03

Course Outcomes (COs):

On successful completion of this course, students will be able to:

- Understand the basics of computer.
- Understand problem-solving strategies and techniques.
- Describe the Object-Oriented Programming principles and concepts.
- Understand of the syntax and semantics of the C++.

Course Code: HMA210P	Course Title: Computer Basics and Programming in C++
Course Credits: 02 (0-0-2)	Hours/Week: 04
Total Contact Hours: 60	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 03

Course Outcomes (COs):

On successful completion of this course, students will be able to:

1. Illustrate the hardware components of Computer.
2. Use Open-Source Office tools.
3. Demonstrate simple programming skills through C++ programming language

Semester: II

Course Code: HMB210	Course Title: Data Structures
Course Credits: 03 (3-0-0)	Hours/Week: 03
Total Contact Hours: 44	Formative Assessment Marks: 20
Exam Marks: 80	Exam Duration: 03

Course Outcomes (COs):

On successful completion of this course, students will be able to:

1. Understand the basics of Data Structures.
2. Identify the appropriate data structures and algorithms for solving real world problems.
3. Understand the practical applications of Tree and Graph.

Course Code: HMB210P	Course Title: Data Structures using C++
Course Credits: 02 (0-0-2)	Hours/Week: 04
Total Contact Hours: 60	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 03

Course Outcomes (COs):

On successful completion of this course, students will be able to:

1. Implement data structures using C++.
2. Demonstrate searching and sorting techniques using ++.
3. Demonstrate simple programming skills through C++ programming language.

Semester: III

Course Code: HMC210	Course Title: Data Base Management System
Course Credits: 03 (3-0-0)	Hours/Week: 03
Total Contact Hours: 44	Formative Assessment Marks: 20
Exam Marks: 80	Exam Duration: 03

Course Outcomes (COs):

CO1: Understand basic concepts of databases, data models, and ER diagrams.

CO2: Apply relational algebra and SQL to query and manipulate data.

CO3: Analyze database normalization to improve design and remove anomalies.

CO4: Evaluate transaction management and database security features.

Course Code: HMC210P	Course Title: DBMS Lab
Course Credits: 02 (0-0-2)	Hours/Week: 04
Total Contact Hours: 60	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 03

Course Outcomes (COs):

CO1: Execute single-line SQL queries and apply group functions effectively.

CO2: Perform database operations using DDL, DML, DCL, and TCL commands.

CO3: Implement advanced SQL concepts like nested queries and join operations.

CO4: Create views and apply table-level locking mechanisms for data control.

Course Code: HMC220 (Elective 1)	Course Title: Software Engineering
Course Credits: 03(3-0-0)	Hours/Week: 03
Total Contact Hours: 44 Hours	Formative Assessment Marks: 20
Exam Marks: 80	Exam Duration: 03

Course Outcomes (COs):

- CO1 Explain software engineering concepts, process models, and agile practices.
- CO2 Apply techniques to gather and manage software requirements.
- CO3 Model systems using UML diagrams and system modeling techniques.
- CO4 Design software architecture using patterns and UML notations.

Course Code: HMC230 (Elective 2)	Course Title: E-commerce and E-Governance
Course Credits: 03(3-0-0)	Hours/Week: 03
Total Contact Hours: 44	Formative Assessment Marks: 20
Exam Marks: 80	Exam Duration: 03

Course Outcomes (COs):

- CO1 Understand the fundamentals, models and infrastructure of E-Commerce.
- CO2 Analyze E-Commerce strategies, marketing and real-world applications.
- CO3 Explain E-Governance models, technologies and service.
- CO4 Evaluate challenges, innovations, and future trends in E-Governance.

Semester: IV

Course Code: HMD210	Course Title: Object Oriented Programming with Java
Course Credits: 03 (3-0-0)	Hours/Week: 03
Total Contact Hours: 44	Formative Assessment Marks: 20
Exam Marks: 80	Exam Duration: 03

Course Outcomes (COs):

On successful completion of this course, students will be able to:

1. Understand the Java programming fundamentals.
2. Describe with examples of basic Java OOP concepts.
3. Understand the Java Interfaces and Packages.
4. Deliberate the Details of Multithreading, Exception Handling & File Handling Design GUI applications using tools like AWT.

Course Code: HMD210P	Course Title: Programming with Java Lab
Course Credits: 02 (0-0-2)	Hours/Week: 04
Total Contact Hours: 60	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 03

Course Outcomes (COs):

On successful completion of this course, students will be able to:

1. Implement simple programs using Java Fundamental concepts.
2. Identify classes, objects, members of class and the relationships among them needed for finding the solution to specific problems using Objected Oriented Programming concepts of Java.
3. Design & Develop simple GUI programs using AWT GUI tool.

Course Code: HMD220 (Elective)	Course Title: Software Testing
CourseCredits: 03(3-0-0)	Hours/Week: 03
TotalContactHours: 44	Formative Assessment Marks: 20
ExamMarks: 80	ExamDuration: 03

Course Outcomes (COs):

CO1 Understand basics of software testing and test case design.

CO2 Apply decision table and data flow testing methods.

CO3 Analyze integration and system testing techniques.

CO4 Evaluate object-oriented and GUI testing approaches.

Course Code: HMD230	Course Title: Digital Marketing
Course Credits: 02(2-0-0)	Hours/Week: 02
Total Contact Hours: 30	Formative Assessment Marks: 10
Exam Marks: 40	Exam Duration: 02

Course Outcomes (COs):

CO1 Describe the basics, evolution, and channels of digital marketing.

CO2 Apply social media and email marketing strategies effectively.

CO3 Create content and mobile marketing plans with analytics.

Semester V [NEP]

DSC-5 Course code: GME 280	Course Title: Programming in Python
Total Contact Hours: 52	Course Credits: 04
Formative Assessment Marks: 40	Duration of SEE/Exam: 2½ Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

After the successful completion of the course, the student will be able to:

CO1: Setup python to develop simple applications

CO2: Understand the basic concepts in Python Programming

CO3: Learn how to write, debug and execute Python programs

CO4: Understand and demonstrate the use of advanced data types such as tuples, dictionaries and lists, Tuples and Sets

CO5: Design solutions for problems using object-oriented concepts in Python

CO6: Use and apply the different Python Libraries for GUI Interface, Data Analysis and Data Visualization

CO7: Extend the knowledge of python programming to build successful career in software development

DSC-5 Lab Course code: GME 280P	Course Title: Python Programming Lab
Total Contact Hours: 52	Hours/week : 04
Formative Assessment Marks: 25	Course Credits: 02
Exam Marks: 25	Duration of Exam: 03 Hours

Course Outcomes (COs):

CO1 Apply basic Python syntax and logic.

CO2 Use data structures and functions effectively.

CO3 Build apps with Tkinter, SQLite, NumPy, Matplotlib, and Pandas.

CO4 Solve real-world problems using modular Python code.

DSC-6 Course code: GME 282	Course Title: Computer Networks
Total Contact Hours: 52	Course Credits: 04
Formative Assessment Marks: 40	Duration of SEE/Exam: 2 ¹ / ₂ Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

After the successful completion of the course, the student will be able to:

- Define various data communication components in networking
- Describe networking with reference to different types of models and topologies
- Understand the need for Network and various layers of OSI and TCP/IP reference model
- Explain various Data Communications media
- Describe the physical layer functions and components
- Identify the different types of network topologies and Switching methods
- Describe various Data link Layer Protocols
- Identify the different types of network devices and their functions within a network
- Analyse and interpret various Data Link Layer and Transport Layer protocols
- Explain different application layer protocols

DSC-6 Lab Course code: GME 290P	Course Title: Computer Networks Lab
Total Contact Hours: 52	Hours/week : 04
Formative Assessment Marks: 25	Course Credits: 02
Exam Marks: 25	Duration of Exam: 03 Hours

Course Outcomes (COs):

CO1 Identify and set up basic computer hardware, software, and network configurations.

CO2 Create and test wired network cables and connect networking devices.

CO3 Simulate and configure various network topologies using network simulators.

CO4 Analyze network protocols and services like FTP and wireless LAN through simulation.

Semester VI

DSC-7 Course code: GMF 280	Course Title: Web Technologies
Total Contact Hours: 52	Course Credits: 04
Formative Assessment Marks: 40	Duration of SEE/Exam: 2 ¹ / ₂ Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

After the successful completion of the course, the student will be able to:

- Understand basics of web technology
- Recognize the different Client-side Technologies and tools like, HTML, CSS, JavaScript
- Learn Java Servlets and JDBC
- Web Technology for Mobiles and Understand web security

DSC-7 Lab Course code: GMF 280P	Course Title: Web Technologies Lab
Total Contact Hours: 52	Hours/week : 04
Formative Assessment Marks: 25	Course Credits: 02
Exam Marks: 25	Duration of Exam: 03 Hours

Course Outcomes (COs):

CO1 Create web pages using HTML tags, tables, lists, and forms.

CO2 Style web pages using inline, internal, and external CSS.

CO3 Use JavaScript for interactivity, validation, and event handling.

CO4 Build JavaScript programs for clocks, calculators, and animations.

DSC-8 Course code: GMF 290	Course Title: Statistical Computing & R Programming
Total Contact Hours: 52	Course Credits: 04
Formative Assessment Marks: 40	Duration of SEE/Exam: 2 ¹ / ₂ Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

After the successful completion of the course, the student will be able to:

- Explore fundamentals of statistical analysis in R environment
- Describe key terminologies, concepts and techniques employed in Statistical Analysis
- Define Calculate, Implement Probability and Probability Distributions to solve a wide Variety of problems
- Conduct and interpret a variety of Hypothesis Tests to aid Decision Making
- Understand, Analyse, and Interpret Correlation Probability and Regression to analyse the underlying relationships between different variables

DSC-8 Lab Course code: GMF 290P	Course Title: R Programming Lab
Total Contact Hours: 52	Hours/week : 04
Formative Assessment Marks: 25	Course Credits: 02
Exam Marks: 25	Duration of Exam: 03 Hours

Course Outcomes:

- Install, Code and Use R Programming Language in R Studio IDE to perform basic tasks on Vectors, Matrices and Data frames. Explore fundamentals of statistical analysis in R environment.
- Describe key terminologies, concepts and techniques employed in Statistical Analysis.
- Define Calculate, Implement Probability and Probability Distributions to solve a wide variety of problems.
- Conduct and interpret a variety of Hypothesis Tests to aid Decision Making.
- Understand, Analyze, and Interpret Correlation Probability and Regression to analyse the underlying relationships between different variables.