

DSCs - FOUR YEAR DEGREE PROGRAMME

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

DSCs - FOUR YEAR DEGREE PROGRAMME

Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/

Bachelor of Science (Economics) (Honours)

Session 2026-27

Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/ Bachelor of Science (Economics) (Honours) Semester-III											
Program Name	Course Title	Course Code	Course Type	Hours per week	Credit		Marks			Examination Time (in Hours)	
				L-T-P	L-T-P	Total	Total	Ext.			CA
								L	P		
Bachelor of Arts Hons. Semester III / Bachelor of Science (Computer Science) Hons. Semester III/ Bachelor of Science (Economics) Hons. Semester III	Computer Science (Computer Oriented Numerical and Statistical Methods)	BARM-3134 BCSM-3134 BECM-3134	DSC DSC DSC	3-0-2	3-0-1	4	100	40	30	30	3+3

Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/ Bachelor of Science (Economics) (Honours) Semester-IV											
Program Name	Course Title	Course Code	Course Type	Hours per week	Credit		Marks			Examination Time (in Hours)	
				L-T-P	L-T-P	Total	Total	Ext.			CA
								L	P		
Bachelor of Arts Hons. Semester IV / Bachelor of Science (Computer Science) Hons. Semester IV/ Bachelor of Science (Economics) Hons. Semester IV	Computer Science (Data Structures using C++)	BARM-4134	DSC	3-0-2	3-0-1	4	100	40	30	30	3+3
		BCSM-4134	DSC								
		BECM-4134	DSC								

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Arts / Bachelor of Science (Computer Science) / Bachelor of Science (Economics)

Session 2026-27

Bachelor of Arts / Bachelor of Science (Computer Science) / Bachelor of Science (Economics) Semester - V											
Program Name	Course Code	Course Title	Course Type	Hours per week	Credit		Marks			Examination Time (in Hours)	
				L-T-P	L-T-P	Total	Total	Ext.			C A
								L	P		
Bachelor of Arts Semester V/	BARM-5134	Computer Science (Database Management Systems)	E	3-0-2	3-0-1	4	100	40	30	30	3+3
Bachelor of Science (Computer Science) Semester V /	BCSM-5134		C								
Bachelor of Science (Economics) Semester V	BECM-5134		E								

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUM OF EXAMINATIONS OF THREE YEAR DEGREE PROGRAMME

Bachelor of Arts / Bachelor of Science (Computer Science) / Bachelor of Science (Economics)

Session 2026-27

Bachelor of Arts / Bachelor of Science (Computer Science) / Bachelor of Science (Economics)Semester - VI											
Program Name	Course Code	Course Title	Course Type	Hours per week	Credit		Marks				Examination Time (in Hours)
				L-T-P	L-T-P	Total	Total	Ext.		C A	
								L	P		
Bachelor of Arts-Semester VI/ Bachelor of Science-Semester VI/ Bachelor of Science (Economics)-Semester VI	BARM-6134 BCSM-6134 BECM-6134	Computer Science (Web Designing and Development)	E C E	3-0-2	3-0-1	4	100	40	30	30	3+3

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- I**

Session 2026-27

Course Code: BARM-1134

BCSM-1134

BECM-1134

**COMPUTER SCIENCE
(COMPUTER FUNDAMENTALS AND PC SOFTWARE)**

Course Outcomes:

After passing this course the student will be able to:

CO1: comprehend about computer hardware, operating system concepts and various system software.

CO2: Identify various input, output and memory devices.

CO3: Apply office automation software to create professional and academic documents.

CO4: Apply skills to make effective presentations and spreadsheets using associated application software.

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- I
Session 2026-27**

Course Code: BARM-1134

BCSM-1134

BECM-1134

**COMPUTER SCIENCE
(COMPUTER FUNDAMENTALS AND PC SOFTWARE)**

Examination Time: 3 Hrs.

Max. Marks: 100

Theory: 40

L-T-P: 3-0-1

Practical: 30

Credits: 4

CA: 30

Instructions for Paper Setter -

Eight questions of equal marks (08 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT I

Fundamentals of Computer: Introduction to computer, Generations of Computers, Classification of Computers, Applications of computer, Components of computers (Input unit, Output Unit, Memory Unit & CPU), type of Software, Translators (compiler, interpreter, assembler), Booting a System.

UNIT II

Input and Output Devices: Keyboards, Mouse, Joystick, Track Ball, Light Pen and Data Scanning devices (scanner, OCR, OMR, MICR, Bar Code Reader, Card Reader), Monitor, Printers (laser printer, dot matrix printer, ink jet printer).

Memories: Concept of storage units (bit, byte, KB, MB etc.), Primary Memory-RAM and ROM. Secondary Memory- Magnetic storage devices, and Optical Storage Devices.

Operating System: meaning, purpose, Windows GUI, Command-line, Powershell overview. File Explorer

UNIT III

Word Processing: Introduction to word, Parts of window of word (Title bar, menu bar, status bar, and ruler), understanding the Ribbon, Use of Office Button and Quick Access Toolbar, Creation of new documents, opening document.

Formatting pages, paragraphs and sections, indents and outdents, creating lists and numbering. headings, styles, fonts and font size; editing, positioning, and viewing texts; finding and replacing text; inserting page breaks, page numbers, bookmarks, symbols, and dates; using tables, header, footer, macros, mail-merge; printing setup

UNIT IV

PowerPoint Presentation: Introduction to PowerPoint, starting a new slide, creating, opening and saving presentation, moving/rearranging slides, printing slides.

Applying theme to presentation, Views (slide View, slide sorter, notes view, outline view), Formatting & enhancing text formatting.

Creating a graph, displaying slide show, adding multimedia. Slide transitions, applying Animation, Timing slide display, adding movies & sounds.

Spreadsheets using MS Excel: Spreadsheet overview, Editing, Formatting, freeze panes, using formulas and functions, sorting and filtering, pivot tables, charts and Graphs.

References:

1. Anshuman Sharma, A book of Fundamentals of Information Technology, Lakhanpal Publishers, 5th Edition.
2. Prof. Satish Jain, M. Geetha, Kratika, BPB's Office 2010 Course Complete Book, BPB Publications, 2017.
3. Joyce Cox, Joan Lambert and Curtis Frye, Microsoft office Professional 2010 Step by Step, Microsoft Press, 2010.
4. V. Rajaraman, Neeharika Adabala, Fundamentals of Computers, PHI Learning, 2015.
5. P.K. Sinha, Computer Fundamentals, BPB Publications, 2004.

Note: The latest editions of the books should be followed.

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- I
Session 2026-27**

**Course Code: BARM-1134
BCSM-1134
BECM-1134**

**COMPUTER SCIENCE
(COMPUTER FUNDAMENTALS AND PC SOFTWARE)
(PRACTICAL)**

Examination Time: 3 Hrs.

Max. Marks: 100

L-T-P: 3-0-1

Theory: 40

Credits: 4

Practical: 30

CA: 30

Practical based on PC Software - Office.

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- II
(Session 2026-27)**

**Course Code: BARM-2134
BCSM-2134
BECM-2134**

**COMPUTER SCIENCE
(PROGRAMMING IN C)**

Course Outcomes:

After passing this course the student will be able to:

CO1: Comprehend the working of various programming constructs involved in C Programming.

CO2: Apply various operators and control sequence of program using various control statements.

CO3: Apply programming concepts such as arrays, functions and strings to provide solution in different problem domains.

CO4: Work with pointers, structure, union and perform file handling.

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- II
(Session 2026-27)**

**Course Code: BARM-2134
BCSM-2134
BECM-2134**

**COMPUTER SCIENCE
(PROGRAMMING IN C)
(Theory)**

Examination Time: 3 Hrs.

Max. Marks: 100

L-T-P: 3-0-1

Theory: 40

Credits: 4

Practical: 30

CA: 30

Instructions for Paper Setter -

Eight questions of equal marks (08 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Introduction: Introduction to Computer Programming, concept of algorithm, flow chart, program structure.

Program Development life cycle: Compiling and executing programs using IDE, command line.

Fundamentals of C Programming: Token, Character set, Identifiers and Key Words, Constants, Variables, Expressions, Statements, Symbolic Constants; Data types, declaring variables, initializing variables, types of integers, types of floats, strings, characters C Preprocessor directives: #define Statement, Conditional Compilation, include Files typedef, enum, Type Casting.

UNIT-II

Operations and Expressions: Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators.

Data I/O Functions: Types of I/O function, Formatted & Unformatted console I/O Functions.

Control Statements: Preliminaries, While, Do-while and For statements, Nested loops, If, if-else, ladder-if and nested if statements, Switch, Break – Continue statements.

UNIT-III

Storage Classes: Introduction to various storage classes, scope and lifetime of a variable, advantages and disadvantages.

Arrays: Types of Arrays, One Dimensional and Two-Dimensional Arrays.

Strings: Introduction to Strings and String functions and manipulation, array of strings.

Functions: User Defined & Library Function, Function (Prototype, Declaration, Definition), Methods of passing arguments, local and global functions, Recursion.

UNIT-IV

Pointers: Introduction, Uses of pointers, Limitations of pointers, Difference between void pointer and Null pointer, Pointer arithmetic, operators not allowed on pointers, Types of Pointer, Passing Pointers to function, concept of pointer to pointer, dynamic memory management.

Structures & Unions: Defining and processing a structure, user defined data types, structures and pointers, passing structures to functions, self-referenced structure, unions, Arrays and Structures.

File handling in C: Introduction, file input/output function, binary file and text file.

References:

1. E. Balagurusamy, Programming in ANSI C, Tata McGraw-Hill (2002), 5th edition.
2. Stephen G. Kochan, Programming in C, Pearson Education (2015), 4th edition.
3. Rachhpal Singh K.S. Kahlon, Gurvinder Singh, Programming in C, Kalyani Publishers (2011).
4. Yashwant Kanetkar, Let us C, BPB Publications (2020), 17th edition.
5. R.S. Salari, Application Programming in C, Khanna Book Publishing (2012), 4th edition.
6. Anshuman Sharma, Learn programming in C, Lakhanpal Publishers (2016), 7th edition.

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- II
(Session 2026-27)**

Course Code: BARM-2134

BCSM-2134

BECM-2134

**COMPUTER SCIENCE
(PROGRAMMING IN C)
(PRACTICAL)**

Examination Time: 3 Hrs.

Max. Marks: 100

L-T-P: 3-0-1

Theory: 40

Credits: 4

Practical: 30

CA: 30

Lab based on Programming in C.

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- III**

Session 2026-27

Course Code: BARM-3134

BCSM-3134

BECM-3134

COMPUTER SCIENCE

(COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS)

Course Outcomes:

After passing this course the student will be able to:

CO1: Solve non-linear and linear equations using different methods.

CO2: comprehend interpolation and numerical integration.

CO3: Calculate different means and deviations using statistical techniques.

CO4: Comprehend correlation, curve fitting and regression for finding solutions to various statistical problems.

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- III**

Session 2026-27

Course Code: BARM-3134

BCSM-3134

BECM-3134

COMPUTER SCIENCE

(COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS)

(THEORY)

Examination Time: 3 Hrs.

Max. Marks: 100

Theory: 40

L-T-P: 3-0-1

Practical: 30

Credits: 4

CA: 30

Instructions for Paper Setter -

Eight questions of equal marks (8 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. The students can use Non-programmable/ scientific & Non-storage type calculator.

Unit –I

Introduction: Numerical methods, Numerical methods versus numerical analysis, Errors and Measures of Errors. Bisection method, false position method and Newton Raphson method.

Simultaneous Solution of Equations: Gauss Elimination Method, Gauss Jordan method

Unit -II

Interpolation: Interpolation and Curve Fitting, Newtons Methods: Forward Difference Method, Backward Difference Method and Divided Difference Method.

Numerical Integration: Trapezoidal Rule, Simpson's 1/3 Rule Simpson's 3/8 Rule.

Unit -III

Measure of Central Tendency: Mean Arithmetic, Mean Geometric, Mean Harmonic, Mean, Median and Mode.

Measure of dispersion: Range, Mean deviation, Standard deviation, co-efficient of variation.

Unit –IV

Correlation: Meaning, Karl Pearson method, Rank correlation.

Regression: Meaning, Linear Regression and its coefficients.

References/ Textbooks:

1. B.S. Grewal, Numerical Methods in Engineering & Science: With Programs in C, C++ & MATLAB, Khanna Publisher, 2014.
2. V. Rajaraman, Computer Oriented Numerical Methods, Prentice Hall of India Private Ltd., 2009.

Note: The latest editions of the books should be followed.

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- III**

Session 2026-27

Course Code: BARM-3134

BCSM-3134

BECM-3134

COMPUTER SCIENCE

(COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS)

PRACTICAL

Examination Time: 3 Hrs.

Max. Marks: 100

L-T-P: 3-0-1

Theory: 40

Credits: 4

Practical: 30

CA: 30

Lab exercises using a spread sheet tool for:

1. Iterative Solutions
2. Simultaneous Solution of Equations
3. Interpolation
4. Measure of Central Tendency
5. Measure of dispersion
6. Correlation
7. Regression

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- IV**

(Session 2026-27)

Course Code: BARM-4134

BCSM-4134

BECM-4134

**COMPUTER SCIENCE
(DATA STRUCTURES USING C++)**

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend various concepts of Object Oriented Programming.

CO2: Analyze complexity of algorithms to determine their efficiency and comprehend array and Linked List as base data structures..

CO3: Comprehend various hashing method, sorting and searching algorithms as well as operations of queue and stack data structures.

CO4: Comprehend advanced data structures such as tree and graph.

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- IV**

(Session 2026-27)

Course Code: BARM-4134

BCSM-4134

BECM-4134

**COMPUTER SCIENCE
(DATA STRUCTURES USING C++)
(THEORY)**

Examination Time: 3 +3 Hrs.

Max. Marks: 100

L-T-P: 3-0-1

Theory: 40

Credits: 4

Practical:30

CA: 30

Instructions for Paper Setter -

Eight questions of equal marks (8 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. The students can use Non-programmable/ scientific & Non-storage type calculator.

UNIT-I

Introduction to OOPs: Object Oriented Programming (OOP) v/s Procedural Programming, Encapsulation, Inheritance, Polymorphism, Abstraction.

Classes and Objects: Constructors and Destructors; Access Specifiers (public, private, protected).

Inheritance: class hierarchies, Public & Private inheritance, Levels of inheritance, Overloading v/s overriding; virtual functions, Friend Functions and Friend Classes.

UNIT-II

Data Structures: Introduction to elementary data organization, Common Operation on Data Structures, Algorithm Complexity, Big O Notation, Time-Space Tradeoff between Algorithms.

Arrays: Array defining, representing arrays in memory, various operations on linear arrays, Multi-Dimensional arrays.

Linked Lists: Types of Linked Lists, representing linked list in memory, advantages of using linked lists over arrays, various operations of linked lists, doubly linked List.

UNIT-III

Stacks: Description of stack structure, Implementation of stack, using arrays and linked lists, application of stack-converting, arithmetic expression from infix notation to polish notation and their subsequent evaluation, quicksort technique.

Queues: Description of queue structure, Implementation of queue using arrays and linked lists, description or priorities of queues, dequeues.

Sorting and Searching: Sorting Algorithms, bubble sort, selection sort, insertion sort, quick sort, merge sort, heap sort, searching Algorithms, linear search and binary search, hashing.

UNIT-IV

Trees: Description of Tree Structure and its Terminology, Binary Trees and Binary Search Trees and their representation in Memory, Heapsort.

Graphs: Description of Graph Structure, Implement Graphs in Memory using Adjacency Matrix, Path Matrix, graph traversal techniques - DFS, BFS.

Files: File Organization Techniques (Sequential, Indexed).

References / Textbooks:

1. Seymour Lipschutz, Data Structures with C (Schaum's Outline Series), McGraw Hill Education (2017), 1st Edition
2. Reema Thareja, Data Structures Using C, Oxford Publication (2014), 2nd Edition
3. Sahni Horowitz, Fundamentals of Data Structures in C (2008), 2nd Edition
4. Narasimha Karumanchi, Data Structures and Algorithms made easy, Careermonk Publications (2016), 5th Edition
5. S.K. Srivastava and Deepali Srivastava, Data Structures through C, BPB Publications (2004)
6. Yedidyah Langsam, Augestein and Tanenbaum, Data Structures using C and C++, Pearson Education India (2015), 2nd Edition

**Bachelor of Arts (Honours) / Bachelor of Science (Computer Science) (Honours)/
Bachelor of Science (Economics) (Honours) Semester- IV**

(Session 2026-27)

Course Code: BARM-4134

BCSM-4134

BECM-4134

**COMPUTER SCIENCE
(DATA STRUCTURES USING C++)
(PRACTICAL)**

Examination Time: 3 +3 Hrs.

Max. Marks: 100

L-T-P: 3-0-1

Theory: 40

Credits: 4

Practical:30

CA: 30

Lab Exercises based on Implementation of Data Structures using C++:

- Classes and Objects, constructors and destructors
- Data types
- Control statements
- Arrays & Strings in C++
- Searching (binary search, linear search)
- Sorting: Bubble Sort, selection sort, insertion sort, quick sort, merge sort, heap sort.
- Linked list
- Stacks (Using Arrays)
- Queues (Using Arrays)
- Trees – Traverse the BST
- Graphs-transversal, finding the shortest path
- File handling

Bachelor of Arts / Bachelor of Science (Computer Science) /

Bachelor of Science (Economics) - Semester-V

Session 2026-27

COURSE CODE: BARM-5134

BCSM-5134

BECM-5134

COMPUTER SCIENCE

(DATA BASE MANAGEMENT SYSTEMS)

Course Outcomes:

After passing course the student will be able to:

CO1: Understand data, database and database models.

CO2: Gain knowledge of keys, normalization and relational algebra.

CO3: Create, manage, access and recover databases.

CO4: Comprehend strategies for backup and recovery of databases.

Bachelor of Arts / Bachelor of Science (Computer Science) /

Bachelor of Science (Economics) - Semester-V

Session 2026-27

COURSE CODE: BARM-5134

BCSM-5134

BECM-5134

COMPUTER SCIENCE

(DATA BASE MANAGEMENT SYSTEMS)

(THEORY)

Examination Time: 3 Hrs.

Max. Marks: 100

L-T-P: 3-0-1

Theory: 40

Credits: 4

Practical: 30

CA: 30

Instructions for Paper Setter -

Eight questions of equal marks (8 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Introduction to Databases: Overview of databases and DBMS, History and evolution of database systems.

Types of Databases: Relational, NoSQL, Object-oriented. Relational model concepts: tables, rows, columns. Comparison of database models (Hierarchical, Network, Relational). Entity-Relationship (ER) Modeling: Introduction to ER diagrams, Entities, attributes, relationships, designing a database using ER model.

UNIT-II

Relational Database Design: Converting ER diagrams to relational schemas. Relational integrity constraints.

Understanding keys: Primary, Foreign, Composite.

Normalization: 1NF, 2NF, 3NF, BCNF.

Relational Algebra: operators like selection, projection, cartesian product, join and write queries using them.

UNIT-III

SQL Statements: DDL, DML, DCL, TCL, constraints, Join methods & Sub query, Union, Intersection, Built in Functions, View, and Security amongst users, indexing object and Common Table Expressions (CTEs).

Concurrency Control: Introduction, Concurrency control with locking methods, Two Phase locking, Precedence graph, Concurrency control based on timestamp ordering, Concurrency control based on optimistic scheduling.

Recovery: Introduction, Recovery Techniques: Log Based Recovery and Shadow Paging.

UNIT-IV

Database Security: Understanding database security concepts, User roles and permissions, Data encryption and access control measures.

Backup, Recovery, and Maintenance: Strategies for database backup and recovery, Disaster recovery planning, Regular maintenance practices for databases.

References/Textbooks:

1. C. J. Date, An Introduction to Database Systems, Pearson Education 2000.
2. F. Korth & Silverschatz, A., Database System Concepts, Tata McGraw Hill, 2010.
3. Elmasri & Navathe, Fundamentals of Database Systems, Addison-Wesley, 2011.
4. B.C.Desai, An Introduction to Database Management System, Galgotia Publication, 1991.
5. Ivan Bayross, SQL, PL/SQL - The Programming Language of Oracle, BPB Publications, 2010.
6. Gurvinder Singh, Parteek Bhatia, Simplified Approach to DBMS, Kalyani Publishers, 2016.
7. Anshuman Sharma, Fundamentals of DBMS, Lakhanpal Publications, 4th Edition.

Note: The latest editions of the books should be followed.

Bachelor of Arts / Bachelor of Science (Computer Science) /

Bachelor of Science (Economics) - Semester–V

Session 2026-27

COURSE CODE: BARM-5134

BCSM-5134

BECM-5134

COMPUTER SCIENCE

(DATA BASE MANAGEMENT SYSTEMS)

(PRACTICAL)

Examination Time: 3 Hrs.

Max. Marks: 100

L-T-P: 3-0-1

Theory: 40

Credits: 4

Practical: 30

CA: 30

Lab on database management system.

Bachelor of Arts / Bachelor of Science (Computer Science) /

Bachelor of Science (Economics) - Semester–VI

(Session 2026-27)

COURSE CODE: BARM-6134

BCSM-6134

BECM-6134

COMPUTER SCIENCE

(Web Designing and Development)

Course Outcomes:

After passing course the student will be able to:

CO1: Comprehend the basics of web designing and development through application of HTML.

CO2: Apply CSS and Bootstrap for generating web pages with responsive design.

CO3: Apply JavaScript to add dynamicity to the webpages.

CO4: comprehend advanced JavaScript concepts and process of web optimization.

Bachelor of Arts / Bachelor of Science (Computer Science) /

Bachelor of Science (Economics) Semester–VI

(Session 2026-27)

COURSE CODE: BARM-6134

BCSM-6134

BECM-6134

COMPUTER SCIENCE

(Web Designing and Development)

(Theory)

Examination Time: 3 Hrs.

Max. Marks: 100

L-T-P: 3-0-1

Theory: 40

Credits: 4

Practical: 30

CA: 30

Instructions for Paper Setter -

Eight questions of equal marks (8 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. The students can use only Non-programmable & Non-storage type calculator

UNIT-I

Introduction to Web Design and Development: Overview of web technologies and the web development process, Understanding the difference between web design and development.

Introduction to HTML: Basics: Structure of an HTML document, Common HTML elements (headings, paragraphs, lists, links, images, Tables, Linking, Frames, Forms), Semantic HTML and its importance, Introduction to DOM.

UNIT-II

CSS Fundamentals: Introduction to CSS and its role in web design, CSS selectors, properties, and values, Box model, layout techniques (flexbox, grid).

Responsive Design: Principles of responsive web design, Media queries and breakpoints, using frameworks like Bootstrap for responsive layouts.

UNIT-III

JavaScript Basics: Introduction to JavaScript and its role in web development.

Basic Programming Techniques & Constructs: Variables, data types, functions, and control structures, Operators, Functions, GET/POST Methods, DOM Manipulation & Event handling.

UNIT-IV

Forms Validation, Cookies, Inter-page communication and form data handling using JavaScript.

Web Performance Optimization: Techniques for optimizing website performance, using tools to analyze website performance, Importance and usage of SEO (Search Engine Optimization).

References/Textbooks:

1. Jon Duckett, HTML and CSS: Design and Build Websites
2. Jon Duckett, JavaScript and J Query: Interactive Front-End Web Development"
3. Jennifer Niederst Robbins, Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics
4. Ben Frain, Responsive Web Design with HTML5 and CSS
5. Ethan Brown, Web Development with Node and Express
6. Terry Felke-Morris, Web Development and Design Foundations with HTML5, McGraw Hill
7. Jon Duckett, Beginning HTML, XHTML, CSS, and JavaScript, Cengage 8. Luke Welling and Laura Thomson, PHP and MySQL Web Development, Pearson Education

Bachelor of Arts / Bachelor of Science (Computer Science) /

Bachelor of Science (Economics) - Semester–VI

Session 2026-27

COURSE CODE: BARM-6134

BCSM-6134

BECM-6134

COMPUTER SCIENCE

(Web Designing and Development)

(PRACTICAL)

Examination Time: 3 Hrs.

Max. Marks: 100

L-T-P: 3-0-1

Theory: 40

Credits: 4

Practical: 30

CA: 30

Programming exercises based on:

- Exploring Web Technologies and Setting up the Development Environment (e.g. Visual Studio Code)
- Creating HTML Documents using headings, paragraphs, lists, links, and images
- Advanced HTML Elements (create forms), applying CSS styles, understanding Box model, Layout techniques
- Integrate Bootstrap into the project and use its grid system to create a responsive layout
- Basic JavaScript programming: GET/POST methods, DOM Manipulation, Event handling, Form validation, working with cookies
- Analyze the performance of the developed webpage using tools like Google Page Speed Insights and Understanding basic SEO