Name of the programme: BCA

S. N.	Subject Code	Subject Name	Course Outcomes	
1	BCA 101	MATHEMATICS - I	CO1	To familiar with determinant and matrices.
			CO2	To formulate Limits, Continuity & Differentiability.
			CO3	To demonstrate a working knowledge Definite & Indefinite Integrals.
			CO4	To define vectors in 2 and 3 dimensions & physical interpretation of scalar and vector product.
			CO5	To develop analytical ability to solve real world problems using these methodologies.
2	BCA 102	PROGRAMMING PRINCIPLE AND ALGORITHM	CO1	To understand the basic programming fundamentals of C programming
			CO2	To Execute the structure of C program and use of built-in operators and datatypes.
			CO3	To Understand the use of header files, decision structure, loop control structure and functions
			CO4	To Develop an algorithm and flow chart to solve the problem
			CO5	To Develop programs using decision structures, loops and functions
3	BCA 103	COMPUTER FUNDAMENTAL AND OFFICE AUTOMATION	CO1	Outline computer hardware, software
			CO2	Explain systems development, word-processing, spreadsheet, and presentation
			CO3	Implement binary, hexadecimal and octal number systems and their arithmetic
			CO4	Characterize the knowledge of various types of operating systems
			CO5	Summarize the basic Idea About Command Line Interface
4	BCA 104	PRINCIPLES OF MANAGEMENT	CO1	Students would be able to define management; its importance and state the functions of management . They will be able to recognize the sequential functions of management and tell the difference between management and administration. They will be able to recognize various
			CO2	Students will be able to illustrate the importance of leadership, motivation, and strategy formulation in the organization and interpret change management models and stress
			CO3	Students would be able to execute various models used in management and strategies to carry on managerial functions.
			CO4	Students will learn to analyze and implement various managerial functions by distinguishing their priority and effectiveness.
			CO5	Students will be able to justify various management theories and relate to their effectiveness in current market scenario.
			CO6	Students would be able to design new ways of drafting strategies to manage change essential for managing an organization.

5	BCA 106	BUSINESS COMMUNICATION	CO1	To understand basic concept of business communication and principles to prepare effective communication for domestic and international business situations
			CO2	To demonstrate their verbal and non-verbal communication skills through oral and written presentations.
			CO3	To stimulate their critical thinking by designing and developing clean and lucid writing skills.
			CO4	To develop an understanding of appropriate organizational formats and channels used in business communication.
			CO5	To gain an understanding of IT Technology for Business communication.
6	BCA 108 (008)	ENVIRONMENTAL STUDIES	CO1	To gain knowledge about basics aspects associated with structure and function of ecological systems.
			CO2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource and the need of their conservation for a sustainable environment.
			CO3	To gain knowledge about the conservation of biodiversity and its importance.
			CO4	To identify their roles, responsibilities as a citizen, consumers and environmental actors in a complex interconnected world.
			CO5	To analyze the impact of human and pollution on environment.
			CO6	Students will able to write and communicate effectively about environmental issues and problems.
			CO7	To enhance awareness of Disaster Risk Management
7	BCA 105	COMPUTER LABORATORY & PRACTICAL WORK OF COMPUTER FUNDAMENTAL & OFFICE AUTOMATION	CO1	Define command of Dos operating system.
			CO2	Explain the concept of windows operating system and various application.
			CO3	Use of MS word and their various application.
			CO4	Illustrate the concept of MS-Excel and their application.
			CO5	Basic idea of Power Point Presentation and how to use it like creation of ppt on any topic.
8	BCA 107	COMPUTER LABORATORY & PRACTICAL WORK OF C PROGRAMMING	CO1	Apply the specification of syntax rules for numerical constants and variables, data types
			CO2	Usage of Arithmetic operator, Conditional operator, logical operator and relational operators
			CO3	Read, understand and trace the execution of programs written in C language
			CO4	Write C programs using decision making, and looping constructs
			CO5	Able to write c program using functions

9	BCA 201	MATHEMATICS - II	CO1	To apply the basic concepts of Sets , Relation and Functions.
			CO2	Formulate Partial Differentiation and its applications.
			CO3	To apply the basics concepts of 3 Dimensional Coordinates Geometry.
			CO4	To develop the ability to understand the double and triple integral.
10	BCA 202	C PROGRAMMING	CO1	Introduces with different data types, preprocessor directives, Bitwise operators and command line arguments in the C language
			CO2	To understand the concept of array, string and file handling in C programming
			CO3	Understand the dynamics of memory by the use of pointers, structure and union
			CO4	Develop logics which will help them to create programs
11	BCA 203	ORGANIZATION BEHAVIOR	CO1	To comprehend the nature, functioning and design of organizations as social collectives.
			CO2	To analyze the behavior of individuals and groups in organizations.
			CO3	To explain cause and effect of different behaviors in the organizations.
			CO4	To contrast the reciprocal relationship between the organizational leaders, managerial behavior, and their subordinates.
			CO5	To develop conceptual understanding of change and its implementation.
12	BCA 204	DIGITAL ELECTRONICS & COMPUTER ORGANIZATION	CO1	To acquire the basic knowledge of logic gates.
			CO2	To construct basic combinational circuits and verify their functionalities
			CO3	To apply the design procedures to design basic sequential circuits
			CO4	To illustrate about counters & Registers
			CO5	To evaluate the structure of various number systems and its application in digital design.
13	BCA 205	FINANCIAL ACCOUNTING & MANAGEMENT	CO1	Acquire the basic concepts of accounting terms along with Generally Accepted Accounting Principles (GAAP).
			CO2	Attain in depth skills of organisation accounts and apply specific Accounting standards and accounting rules to record different transaction and events of business entities.
			CO3	Build the ability to prepare and interprets the financial statements of business entities.
			CO4	Demonstrate the roles and importance of finance function, management of funds and allocation of funds.
			CO5	Articulate the basic concepts and theories related to capital structure and cost of capital.
			CO6	Explain the importance of working capital in a business entity and list the factors influencing the working capital management.

14	BCA 206	Computer Laboratory & Practical work C Programming	CO1	Acquire logical thinking, Implement the algorithms and analyze their complexity, Identify the correct and efficient ways of solving problems.
			CO2	Implement real time functions using the power of C language features.
			CO3	C programs using decision making, branching, looping constructs.
			CO4	Applying and Writing C programs to implement one dimensional and two dimensional arrays. (Dynamic Memory Allocation)
			CO5	Applying the specification of syntax rules for numerical constants and variables, data types.

15	BCA 301	OBJECT ORIENTED PROGRAMMING (OOPs)	CO1	To identify the difference between the C and C++
			CO2	To describe the object-oriented programming approach in connection with C++
			CO3	To apply the concepts of object-oriented programming
			CO4	Classify inheritance with understanding of early and late binding, usage of exception handling.
			CO5	To summarize the concepts of function overloading , operator overloading ,virtual functions and polymorphism.
16	BCA 302	DATA STRUCTURE USING C & C++	CO1	Apply appropriate constructs of programming language coding standards for application development.
			CO2	Use appropriate data structures for problem solving and programming.
			CO3	Use algorithmic foundations for solving problems and programming.
			CO4	To apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.
			CO5	Develop programming logic and skills.
17	BCA 303	COMPUTER ARCHITECTURE & ASSEMBLY LANGUAGE	CO1	To understand the theory and architecture of central processing unit.
			CO2	To analyze some of the design issues in terms of speed, technology & performance.
			CO3	To design a simple CPU with applying the theory concepts.
			CO4	To learn the concepts of parallel processing, pipelining.
			CO5	To define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.
18	BCA 304	BUSINESS ECONOMICS	CO1	To gain knowledge of basic concepts and fundamentals of economics
			CO2	To develop practical understanding of various economics concepts in business.
			CO3	To apply the basic concepts of different market structure in long run and short run of business.
			CO4	To compute various measures regarding macroeconomic concerns
			CO5	To take appropriate decision and applying the concept of issues of dumping ,Exim policy of 2004-09,WTO concept , Globalization, group of twenty(g-20)
19	BCA 305	ELEMENTS OF STATISTICS	CO1	To gain Knowledge of basic concepts / fundamentals of statistics.
			CO2	To develop practical understanding of various statistics concepts.
			CO3	To compute various measures of central tendency, Measures of Dispersion, Permutations & Combinations, SQC and their implementation in solving the numerical problems.
			CO4	To apply the basic concepts of probability and solve the numerical problems.

			CO5	To Take appropriate decisions and applying the Concept of Analytics and logical thinking.
20	BCA 306	COMPUTER LABORATORY & PRACTICAL WORK OF OOPs	CO1	To create and explain the basic C++ program .
			CO2	To demonstrate various programs using class and objects.
			CO3	To teach the student to implement object oriented concepts
			CO4	Illustrate the use of constructors and destructors.
21	BCA 307	COMPUTER LABORATORY & PRACTICAL WORK OF DS	CO1	Develop simple C Programs using pointers and Functions.
			CO2	Develop C program for Linear data structure operations and its applications
			CO3	Experiment with File Manipulation concepts
			CO4	Develop programs using various sorting algorithms
			CO5	Develop programs using different searching methods

22	BCA 401	COMPUTER GRAPHICS & MULTIMEDIA APPLICATION	CO1	To describe the basics of computer graphics, different graphics systems and applications of computer graphics.
			CO2	To develop an understanding of various algorithms for scan conversion
			CO3	To apply the concept of the techniques of clipping, two dimensional transformations and three dimensional transformations.
			CO4	To perform the use of multimedia and animation.
23	BCA 402	OPERATING SYSTEM	CO1	To describe and explain the fundamental components of a computer operating system..
			CO2	To define, restate, discuss, and explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.
			CO3	To design and construct the following OS components: System calls, Schedulers, Memory management systems, Virtual Memory and Paging systems.
			CO4	To describe and extrapolate the interactions among the various components of computing systems.
			CO5	Analyze the performance of different algorithm used in design of operating system componets.
24	BCA 403	SOFTWARE ENGINEERING	CO1	To decompose the given project in various phases of a lifecycle.
			CO2	To choose appropriate process model depending on the user requirements.
			CO3	To Perform various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance.
			CO4	To know various processes used in all the phases of the product.
			CO5	To apply the knowledge, techniques, and skills in the development of a software product.
25	BCA 404	OPTIMIZATION TECHNIQUES	CO1	To gain Knowledge of the concepts / fundamentals of algorithms.
			CO2	To develop practical understanding of various optimization techniques.
			CO3	To compute various optimization techniques like LPP, Queuing Theory, Replacement Theory, Inventory Theory and Job Sequencing and their implementation.
			CO4	To formulate & implement the numerical methods in solving business related problems.
			CO5	To take appropriate decisions using logical thinking.
26	BCA 406	MATHEMATICS - III	CO1	To develop the ability to understand the complex number system.
			CO2	To develop an understanding of convergence and divergence of infinite series.
			CO3	To basic concepts of vector calculus.
			CO4	To get the basic concepts of Fourier Series.
			CO5	To introduce the first and second order Linear Differential Equation and determine its solution.

27	BCA 405	COMPUTER LABORATORY & PRACTICAL WORK OF CGMA	CO1	Describe the basics concepts of computer graphics.
			CO2	Discuss various algorithms for scan conversion and filling of basic objects .
			CO3	Apply clipping and filling techniques for modifying an object..
			CO4	To analyse the concepts of different types of geometric transformations.
			CO5	To apply the cocepts of animation..

28	BCA 501	INTRODUCTION TO DBMS	CO1	Define the basic concepts of database management systems
			CO2	Ability to design entity relationship model and convert entity relationship diagrams into RDBMS
			CO3	Ability to compare different storage structures and formulate SQL queries on the data.
			CO4	Able to demonstrate transaction processing and concurrency control
			CO5	Able to apply normalization technique for schema refinement
29	BCA 502	JAVA PROGRAMMING AND DYNAMIC WEBPAGE DESIGN	CO1	To implement, compile, test and run Java programs comprising more than one class
			CO2	To understand the concept of package, interface, multithreading and jdbc in java
			CO3	To design and develop simple GUI application in java
			CO4	To design the simple web page
			CO5	To make use of members of classes found in the Java API
30	BCA 503	COMPUTER NETWORK	CO1	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies.
			CO2	Have a basic knowledge of the use of cryptography and network security.
			CO3	Specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols.
			CO4	Analyze, specify and design the topological and routing strategies for an IP based networking infrastructure .
			CO5	Have a working knowledge of datagram and internet socket programming.
31	BCA 504	NUMERICAL METHODS	CO1	To apply numerical methods to find our solution of algebraic equations using different methods under different conditions, and numerical solution of system of algebraic equations.
			CO2	To apply various interpolation methods and finite difference concepts.
			CO3	To work out numerical differentiation and integration whenever and wherever routine methods are not applicable.
			CO4	To able solve simultaneous linear equations with different methods.
			CO5	To work numerically on the ordinary differential equations using different methods through the theory of finite differences.
32	BCA 505	COMPUTER LABORATORY & PRACTICAL WORK OF DBMS	CO1	Able to choose appropriate database schema for a given problem
			CO2	Able to design an E-R model for real world problem
			CO3	Able to develop relational model for schema refinement

		DBMS	CO4	Able to build a database for roadway travels and formulate quires using DDL, DML, DCL commands
			CO5	Able to create triggers, cursors for given problem
33	BCA 506	COMPUTER LABORATORY & PRACTICAL WORK OF JAVA PROGRAMMING & DYNAMIC WEBPAGE DESIGN	CO1	Write, compile, and execute Java programs that may include basic data types and control flow constructs
			CO2	Implement, compile, test and run Java programs comprising more than one class
			CO3	Write, compile and execute Java programs using object oriented class structures with parameters, constructors, including inheritance and exception handling etc.
			CO4	Write, compile, and execute Java programs using arrays, string, recursion and file handling.
			CO5	Write, compile, execute Java programs that include GUIs and event driven programming
34	BCA 507	MINOR PROJECT	CO1	To study independently in chosen domain of Information Technology and programming
			CO2	To learn about project planning, execution, tracking, audit and closure of project.
			CO3	To understand current technologies and future trends in IT Project Management.
			CO4	Gather, organize, summarize and interpret technical literature with the purpose of formulating a project proposal.
			CO5	Write a technical report summarizing state-of-the art on an identified topic.

35	BCA 601	COMPUTER NETWORK SECURITY	CO1	To identify some of the factors driving the need for network security
			CO2	To identify and classify particular examples of attacks.
			CO3	To define the terms vulnerability, threat and attack
			CO4	To identify physical points of vulnerability in simple networks.
			CO5	To compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of hybrid systems.
36	BCA 602	INFORMATION SYSTEM	CO1	To understand System Development Life Cycle.
			CO2	Analyse and specify the requirements of a system by gathering data.
			CO3	To develop system proposal.
			CO4	Design system components and environments.
			CO5	Evaluate software quality and productivity.
37	BCA 603	E-COMMERCE	CO1	To analyze the impact of E-commerce on business models and strategy.
			CO2	To describe the major types of E-commerce.
			CO3	To explain the process that should be followed in building an E-commerce presence.
			CO4	To identify the key security threats in the E-commerce environment.
			CO5	To describe how procurement and supply chains relate to B2B E-commerce.
38	BCA 604	KNOWLEDGE MANAGEMENT	CO1	Define Business Intelligence and Business Decision conecpts.
			CO2	Explain the concept of Business Expert System and various support system
			CO3	To compute different approaches of Data Mart , Data Warehouse and its Tools.
			CO4	Examine Multidimensional analysis and Data mining techniques
			CO5	Describe Knowledge Management System and its techniques.

39	BCA 605P	MAJOR PROJECT	CO1	To design an Online Project with advanced technologies of their choice.
			CO2	To meet the requirements of the industry.
			CO3	To develop a project professionally
			CO4	To prepare a SRS report.
			CO5	To develop good presentation skills.