Course Specific Outcomes (CSOs) for B.Sc. in BCA

Paper-CC1: Introduction to Programming using C

After course completion the students will have the following learning outcomes:

CO1: Understanding a functional hierarchical code organization.
CO2: Ability to define and manage data structures based on problem subject domain.
CO3: Ability to work with textual information, characters and strings.
CO4: Ability to work with arrays of complex objects.
CO5: Understanding a concept of object thinking within the framework of functional model.
CO6: Understanding a concept of functional hierarchical code organization.
CO7: Understanding a defensive programming concept. Ability to handle possible errors during program execution.

Paper-CC2: Computer Fundamental with Digital Electronics

After course completion the students will have the following learning outcomes:

CO1: Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.
CO2: To understand and examine the structure of various number system and its application in digital design.
CO3: The ability to understand , analyze and design various combinational and sequential circuits.
CO4: Ability to identify basic requirements for a design application and propose a cost effective solution.
CO5: Ability to identify and prevent various hazards and timing problems in a digital design.
CO6: To develop skill to build and troubleshoot digital circuits.

Paper-CC3: Data Structure

After course completion the students will have the following learning outcomes:

CO1: Ability to analyze algorithms and a algorithm correctness.
CO2: Ability to summarize searching and sorting techniques .
CO3: Ability to describe stack, queue and linked list operation.
CO4: Ability to have knowledge of tree and graphs concepts.

Paper-CC4: Discrete Mathematics

After course completion the students will have the following learning outcomes:

CO1: Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives.
CO2: Students completing this course will be able to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.
CO3: Students completing this course will be able to use tree and graph algorithms to solve problems.
CO4: Students completing this course will be able to evaluate Boolean functions and simplify expressions using the properties of Boolean algebra.

Paper-CC5: Data Base Management System (DBMS)

After course completion the students will have the following learning outcomes:

CO5: Describe the fundamental elements of relational database management systems .
CO6: Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.
CO7: Design ER-models to represent simple database application scenarios.
CO8: Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
CO9: Improve the database design by normalization.
CO10: Familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing.

Paper-CC6: Object Oriented using C++

After course completion the students will have the following learning outcomes:

CO1: Ability to describe the concepts of object-oriented programming.
CO2: Ability to handle interfaces, class hierarchies and exceptions in programs.
CO3: Ability to construct appropriate diagrams and textual descriptions to communicate the static structure and dynamic behavior of an object oriented solution .
CO4: Ability to design and develop Object Oriented systems

Paper-CC7: Operating System

After course completion the students will have the following learning outcomes:

CO1: an ability to understand basic concepts about operating system.
CO2: an ability to describe process management ,scheduling and concurrency control mechanisms.
CO3: an ability to analyze memory management and deadlocks.
CO4: an ability to compare various file systems and its operating systems examples.

Paper-CC8: System Programming

After course completion the students will have the following learning outcomes:

CO1: Learn basic concepts of operating systems and system software's.
CO2: Design of operating systems and system software's.
CO3: Learn the functioning of the principal parts of an operating system.

Paper-CC9: OOPS Using JAVA

After course completion the students will have the following learning outcomes:

CO1: Ability to describe the concepts of object-oriented programming with Java.
CO2: Ability to handle interfaces, class hierarchies and exceptions in programs.
CO3: Ability to construct appropriate diagrams and textual descriptions to communicate the static structure and dynamic behavior of an object oriented solution .
CO4: Ability to design and develop Object Oriented systems with Java.

Paper-CC10: Data Communication & Computer Network

After course completion the students will have the following learning outcomes:

CO1: Independently understand basic computer network technology.
CO2: Understand and explain Data Communications System and its components.
CO3: Identify the different types of network topologies and protocols.
CO4: Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
CO5: Identify the different types of network devices and their functions within a network
CO6: Understand and building the skills of subnetting and routing mechanisms.
CO7: Familiarity with the basic protocols of computer networks, and how they can be usedto assist in network design and implementation.

Paper-CC11: Analysis of Algorithm & Graph Algorithm

After course completion the students will have the following learning outcomes:

CO1: Argue the correctness of algorithms using inductive proofs and invariants.
CO2: Analyze worst-case running times of algorithms using asymptotic analysis.
CO3: Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize divide-and-conquer algorithms. Derive and solve recurrences describing the performance of divide-and-conquer algorithms.
CO4: Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize dynamic-programming algorithms, and analyze them.
CO5: Describe the greedy paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize greedy algorithms, and analyze them.

CO6: Explain the major graph algorithms and their analyses. Employ graphs to model engineering problems, when appropriate. Synthesize new graph algorithms and algorithms that employ graph computations as key components, and analyze them.

Paper-CC12: Micro Processor & Computer Organization

After course completion the students will have the following learning outcomes:

CO1: Describe the architecture and organization of microprocessor along with instruction set format.
CO2: Describe modes and functional block diagram of 8086 along with pins and their functions.
CO3: List and describe memory and addressing modes.
CO4: List, describe and use different types of instructions, directives and interrupts
CO5: Develop assembly language programs using various programming tools.

Paper-CC13: DOT(.) NET

After course completion the students will have the following learning outcomes:

CO1: Understanding a functional hierarchical code organization.
CO2: Ability to define and manage data structures based on problem subject domain.
CO3: Ability to work with textual information, characters and strings.
CO4: Ability to work with arrays of complex objects.
CO5: Understanding a concept of object thinking within the framework of functional model.
CO6: Understanding a concept of functional hierarchical code organization.
CO7: Understanding a defensive programming concept. Ability to handle possible errors during program execution.

Paper-CC14: Theory of Automata and Compiler Design

After course completion the students will have the following learning outcomes:

CO1: Graduate should be able to understand the concept of abstract machines and their power to recognize the languages.
CO2: Attainsthe knowledge of language classes & grammars relationship among them with the help of chomsky hierarchy.
CO3: Ability to understand the design of a compiler given features of the languages.
CO4: Ability to implement practical aspects of automata theory.
CO5: Gain knowledge of powerful compiler generation tools.

Paper- DSE –1:

After course completion the students will have the following learning outcomes:

CO1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
CO2: an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
CO3: an ability to communicate effectively with a range of audiences
CO4: An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
CO5: The ability to analyze, design, verify, validate, implement, apply, and maintain software systems
CO6: The ability to appropriately apply discrete mathematics, probability and statistics, and relevant topics in computer science and supporting disciplines to complex software systems
CO7: Understanding a concept of functional hierarchical code organization.
CO8: Understanding a defensive programming concept. Ability to handle possible errors during program execution.

Paper- DSE –2:

After course completion the students will have the following learning outcomes:

CO1: To develop inter personal skills and be an effective goal oriented team player.
CO2: To develop professionals with idealistic, practical and moral values.
CO3: To develop communication and problem solving skills.
CO4: To re-engineer attitude and understand it s influence on behavior

Paper- DSE –3:

After course completion the students will have the following learning outcomes:

CO1: Understand Operating System concepts
CO2: Use System calls and memory management
CO3: Use Unix commands and editors
CO4: Carry out Unix/Linux File management and shell programming in Unix/Linux
CO5: Do Network configuration and security management in Unix/Linux
CO6: Understand and explain common wireless sensor node architectures.
CO7: Be able to carry out simple analysis and planning of wireless sensor networks (WSNs).
CO8: Demonstrate knowledge of MAC protocols developed for WSN.
CO9: Demonstrate knowledge of routing protocols developed for WSN.
CO10: Understand and explain mobile data-centric networking principles.
CO11: Be familiar with WSN standards.

Paper- DSE –4:

After course completion the students will have the following learning outcomes:

CO1: Introducing the fundamental theory and concepts of computational intelligence methods, in particular neural networks, fuzzy systems, genetic algorithms and their applications in the area of machine intelligence.
CO2: This can be summarized as to understand the fundamental theory and concepts of neural networks, neuro-modeling, several neural network paradigms and its applications.
CO3: To understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic control and other machine intelligence applications of fuzzy logic.
CO4: To understand the basics of an evolutionary computing paradigm known as genetic algorithms and its application to engineering optimization problems.
CO5: To develop communication and problem solving skills.
CO6: To re-engineer attitude and understand it s influence on behavior

SEC–1.i. Web Technology & amp; Internetworking [Web Page Design Using HTML]

After course completion the students will have the following learning outcomes:

CO1: Students are able to develop a dynamic webpage by the use of java script and HTML/ DHTML/ASP.
CO2: Students will be able to write a well formed / valid XML document
CO3: Students will be able to connect a java program to a DBMS and perform insert, update and delete operations on DBMS table.
CO4: Students will be able to write a server side java application called Servlet to catch form data sent from client and store it on database.
CO5: Students will be able to write a server side java application called JSP to catch form data sent from client, process it and store it on database.

SEC–1.ii. Web Technology & Internetworking [Web Page Design Using XML]

After course completion the students will have the following learning outcomes:

CO1: Students will be able to write a well formed / valid XML document
CO2: Students will be able to connect a java program to a DBMS and perform insert, update and delete operations on DBMS table.
CO3: Students will be able to write a server side java application called Servlet to catch form data sent from client and store it on database.
CO4: Students will be able to write a server side java application called JSP to catch form data sent from client, process it and store it on database.

SEC–1.iii. Web Technology & Internetworking [Web Page Design Using Java Scripts]

After course completion the students will have the following learning outcomes:

CO1: Students will be able to connect a java program to a DBMS and perform insert, update and delete operations on DBMS table.
CO2: Students will be able to write a server side java application called Servlet to catch form data sent from client and store it on database.
CO3: Students will be able to write a server side java application called JSP to catch form data sent from client, process it and store it on database.

SEC–1.iv. Web Technology & Internetworking [Web Page Design Using PHP/My SQL]

After course completion the students will have the following learning outcomes

CO1: Students will be able to connect a java program to a DBMS and perform insert, update and delete operations on DBMS table.
CO2: Students will be able to write a server side java application called Servlet to catch form data sent from client and store it on database.
CO3: Students will be able to write a server side java application called JSP to catch form data sent from client, process it and store it on database.

SEC–2.i. Computer Graphics & Multimedia [Photoshop Design]

After course completion the students will have the following learning outcomes

CO1: Define multimedia to potential clients.
CO2: Identify and describe the function of the general skill sets in the multimedia industry.
CO3: Identify the basic components of a multimedia project.
CO4: Identify the basic hardware and software requirements for multimedia development and playback.

SEC–2.ii. Computer Graphics & Multimedia [Audio & Video editing]

After course completion the students will have the following learning outcomes

CO1: Define multimedia to potential clients.
CO2: Identify and describe the function of the general skill sets in the multimedia industry.
CO3: Identify the basic components of a multimedia project.
CO4: Identify the basic hardware and software requirements for multimedia development and playback.

SEC–2.iii. Computer Graphics & Multimedia [Animation designing]

After course completion the students will have the following learning outcomes

CO1: Define multimedia to potential clients.
CO2: Identify and describe the function of the general skill sets in the multimedia industry.
CO3: Identify the basic components of a multimedia project.
CO4: Identify the basic hardware and software requirements for multimedia development and playback.

SEC–2.iv. Computer Graphics & Multimedia [Page Maker]

After course completion the students will have the following learning outcomes

CO1: Define multimedia to potential clients.
CO2: Identify and describe the function of the general skill sets in the multimedia industry.
CO3: Identify the basic components of a multimedia project.
CO4: Identify the basic hardware and software requirements for multimedia development and playback.

Paper- GE1: Linear Algebra

After course completion the students will have the following learning outcomes

CO1: Understand the concepts of vector spaces, subspaces, bases, dimension and their properties.
CO2: Relate matrices and linear transformations, compute eigen values and eigen vectors of linear transformations.
CO3: Learn properties of inner product spaces and determine orthogonality in inner product spaces.
CO4: Realize importance of adjoint of a linear transformation and its canonical form.

Paper- GE2: Numerical Computing

After course completion the students will have the following learning outcomes

CO1: Obtain numerical solutions of algebraic and transcendental equations.
CO2: Find numerical solutions of system of linear equations and check the accuracy of the solutions.
CO3: Learn about various interpolating and extrapolating methods.
CO4: Solve initial and boundary value problems in differential equations using numerical methods.
CO5: Apply various numerical methods in real life problems.

Paper- GE3: Operation Research

After course completion the students will have the following learning outcomes

CO1: Obtain numerical solutions of algebraic and transcendental equations.
CO2: Find numerical solutions of system of linear equations and check the accuracy of the solutions.
CO3: Learn about various interpolating and extrapolating methods.
CO4: Solve initial and boundary value problems in differential equations using numerical methods.
CO5: Apply various numerical methods in real life problems.

Paper- GE4: Graph Theory

After course completion the students will have the following learning outcomes

CO1: Appreciate the definition and basics of graphs along with types and their examples.
CO2: Understand the definition of a tree and learn its applications to fundamental circuits.
CO3: Know the applications of graph theory to network flows.
CO4: Understand the notion of planarity and coloring of a graph.
CO5: Relate the graph theory to the real-world problems.