DEPARTMENT OF COMPUTER SCIENCE

Bachelor of Computer Application (BCA)

Program Outcomes

PO1: Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking

and actions, checking out the degree to which these assumptions are accurate and valid, and looking at

our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO2: Effective Communication: Speak, read, write and listen clearly in person and through electronic

media in English and in one Indian language, and make meaning of the world by connecting people,

ideas, books, media and technology.

PO3: Citizenship ethics, and sustainability: Demonstrate empathetic social concern and equity centered

national development. Guided by ethics. Promoting social, economic and environment sustainability.

PO4: Use of computer skills: Use the knowledge of computers and information technology for data

acquisition and data analysis in experimental investigations and in communication.

PO5: Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long

learning in the broadest context socio-technological changes.

Program Specific Outcomes

PSO1: Get familiar with the potentially rich and employable field of computer applications.

PSO2: Become eligible for higher studies in the area of Computer Science/ Applications.

PSO3: Develop skills in software development to take up self-employment in the Indian and global software market.

PSO4: Get trained and equipped with meeting the requirements of the software industry in the country and outside.

SEMESTER 1
BCA1B01 – Computer Fundamentals & Html
Course outcomes

CO1: Demonstrate an understanding of the fundamentals of computers, including their components, functions, and historical development.
CO2 Illustrate the basics of computer organization, showcasing comprehension of the relationships among computer components and their functions.
CO3: Apply knowledge to write algorithms and draw flowcharts for solving simple problems, demonstrating the practical application of computational thinking.
CO4: Understand the basics of Internet and web page design, interpreting the foundational concepts and principles behind creating web pages and navigating the internet.

BCA1C02 – Discrete Mathematics

Course outcomes

CO1: Explain basic notions of symbolic logic and prove boolean expressions
CO2: To Perform the operations of union, intersection, complement, and difference on sets using proper notation
CO3: To define the basic concepts of graphs, directed graphs, and weighted graphs and understand Eulerian and Hamitonian graphs
CO4: Able to understand the concept of plane graph and theory & Is able to understand Eulerian and Hamitonian graphs
CO5: Understand various types of trees and methods for traversing trees.

BCA1C01 – Mathematical Foundation for Computer Applications

Course outcomes

CO1: Acquire knowledge of the principles of linear algebra and vectors, as well as their application in definite integrals.
CO2: Demonstrate an understanding of matrices and their operations, grasping the fundamental concepts associated with these mathematical structures.
CO3: Apply the concept of Cayley Hamilton and solve systems of equations, showcasing the practical application of linear algebra in solving mathematical problems.
CO4: Analyze the concept of vectors in two and three dimensions, breaking down their components

and understanding their geometric and algebraic properties.

CO5: Integrate knowledge to comprehend the basic principles of differential and integral calculus, including definite and indefinite integrals, synthesizing various mathematical concepts for problem-solving.

SEMESTER 2

BCA2B02 – Problem Solving using C
Course outcomes

CO1: Identify and recall the basics of C program structure, including familiarity with IDE, tokens, variable declaration, and the definition of symbolic constants.

CO2: Explain and interpret the basic concepts of operators and expressions, including type conversions, operator precedence, and associativity in the C programming language.

CO3: Apply the knowledge gained to demonstrate familiarity with control structures, such as branching, loops, and expressions, by creating and executing simple programs.

CO4: Analyze and assess the ability to create and use functions, design arrays of elementary objects, and understand the basic concepts of Structures and Union. Develop analytical skills for subsequent coursework and professional development.

CO5: Integrate knowledge to understand the creation and processing of files, command line operations, and defensive programming concepts. Develop the ability to handle possible errors during program execution, synthesizing skills for effective programming practices.

BCA2C04 - Operations Research

Course outcomes

CO1: - Comprehend the meaning of Operations Research (OR) and its various applications in decision-making and problem-solving.

CO2: Apply graphical and simplex methods to solve Linear Programming Problems (LPP), demonstrating practical problem-solving skills in Operations Research.

CO3: Apply Operations Research techniques to solve transportation problems, showcasing the ability to use quantitative methods in logistics and distribution.

CO4: - Apply Operations Research methodologies to solve assignment problems and sequencing problems, demonstrating proficiency in optimization and decision-making.

CO5: Analyze and construct network diagrams, as well as determine critical paths for finding project

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durations, showcasing higher-order thinking skills in Operations Research.

SEMESTER 3

A11 – Python Programming

Course outcomes

CO1: Identify and recall Python programming basics and paradigm, demonstrating an understanding of fundamental concepts in Python programming.
CO2: Demonstrate an understanding of Python looping and control statements, interpreting how they function within the context of programming tasks.
CO3: Apply knowledge to develop the ability to create and use functions, global variables, recursion, and analytical skills. Demonstrate the practical application of Python programming in coursework and professional development.
CO4: Analyze and comprehend the use of Python string, list, tuple, dictionary, and manipulations on them, showcasing the ability to break down and understand complex data structures in Python programming.

A12-Sensors and Transducers

Course outcomes

CO1: Explain resistance, inductance and capacitance transducers.
CO2: Able to understand concepts of temperature and pressure transducers.
CO3: Perceive the concepts level transducers such as and flow transducers
CO4: Explain Electromagnetic transducers and radiation sensors.
CO5: Define force and torque transducers and sound transducers.

BCA3C05- Computer Oriented Numerical & Statistical Methods

Course outcome

CO1: Learning of application and statistical methods such as correlation and regression.
CO2: To Learn techniques to calculate the measures of central tendency and different measures of dispersion
CO3: To gain insight into consequences of plan by probability techniques and processing samples using sampling techniques

CO4: Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems

CO5: Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.

BCA3C06 –Theory of Computation

Course Outcomes

CO1: Demonstrate an understanding and recall of the basic concepts of formal languages and finite automata techniques

CO2: Apply knowledge to design Finite Automata for various Regular Expressions and Languages, demonstrating the practical application of formal language concepts.

CO3: Explain the models of computation, encompassing formal languages, grammars, and automata, and articulate the connections between these components.

CO4: Analyze and design finite automata, pushdown automata, Turing machines, formal languages, and grammars. Demonstrate the ability to break down and understand complex models and their interrelationships in the field of computation.

BCA3B04 – Data Structures Using C

Course Outcomes

CO1 - Develop ability to analyze algorithms and algorithm correctness and impart the basic concepts of data structures and algorithms.

CO2 -Enable students to describe how arrays, linked structures are represented in memory and used by algorithms as well as describe common applications for arrays, linked structures.

CO3 -Demonstrate stacks, queues are represented in memory and used by algorithms and describe common applications for stacks, queues and summarize searching and sorting techniques.

CO4 - Explain different methods for traversing trees and how represented in memory.

CO5-To Design and implement an appropriate hashing function.

SEMESTER 4

A13 – Data Communication and Optical Fibers

Course Outcomes

CO1: Identify and understand comprehend processes to communicate with each other across a computer network
CO2: Understand the concept of multiplexing, GSM and its applications.
CO3: Analyze the services, roles and features of the data link control of data networks
CO4: Identify and understand the fundamental knowledge about optical fiber communication systems.

A14 Microprocessors-Architecture and Programming

Course Outcomes

CO1: Demonstrate an understanding of the internals of a Microprocessor, encompassing its components, functions, and basic architecture.
CO2: Design the architecture of an 8085 Microprocessor, displaying comprehension of the components and their interrelationships within the microprocessor.
CO3: Explain the instruction set of an 8085 Microprocessor, demonstrating comprehension of the various instructions and their functionalities.
CO4: Program a Microprocessor, showcasing the ability to apply the knowledge gained in designing and implementing programs using the 8085 Microprocessor.
CO5: Identify the basics of an 8086 Microprocessor, demonstrating knowledge of its key components and distinguishing features.

BCA4B05 – Database Management System and RDBMS

Course Outcomes

CO1: To learn the basic concepts of databases and data models and explains the features of database management systems, architecture of database systems, and the role of database users.

CO2: Develops an Entity-Relationship model based on user requirements and Convert an Entity-Relationship diagram to Relational Schema.

CO3: Learn Functional Dependency and Functional Decomposition and Applies various Normalization techniques for database design improvement.

CO4:Use the basics of SQL and construct queries using SQL in database creation and interaction.

CO5: To understand the principle of transaction management design and Design a commercial relational database system (Postgres) by writing SQL using the system.

BCA4C08 – Computer Graphics

Course Outcomes

CO1: To understand the basics of computer graphics, different graphics systems and applications of computer graphics.
CO2: Define various algorithms for scan conversion and filling of basic objects.
CO3: To know the use of geometric transformations on graphics objects and their application in composite form.
CO4: To learn different clipping methods and its transformation to graphics display device.
CO5: To make students familiar with different color models and image manipulation using GIMP

BCA4C07- E-Commerce

CO1: Analyze the impact of E-commerce on business models and strategy, evaluating its influence on various aspects of business operations.
CO2: Identify major types of E-commerce, demonstrating recall and recognition of different forms and classifications within the E-commerce domain.
CO3: Enable students to implement the process for building an E-commerce presence, applying the knowledge gained to practical situations and scenarios.
CO4: Identify key security threats and ethical issues in E-commerce, breaking down and examining the various challenges and concerns within the realm of E-commerce security and ethics.
CO5: Execute online transactions through different payment methods, applying the learned knowledge in real-world scenarios to conduct secure and efficient online transactions.

SEMESTER 5

BCA5B07 – Computer Organization and Architecture

CO1: Acquire knowledge of the basics of digital circuits, logic gates, and combinational circuits, demonstrating an understanding of foundational concepts in digital electronics.
CO2: Understand the basics of flip-flops and their applications, interpreting how these components operate within the context of digital circuits.
CO3: Comprehend the basics of computer organization, demonstrating an understanding of the relationships among various components in a computer system.
CO4: Explain the basics of microprogramming and addressing modes, demonstrating an understanding of how microprogramming contributes to computer architecture and the various addressing modes used in programming.
CO5: Enable understanding of the basics of memory organization, showcasing a grasp of how computer memory is structured and organized to facilitate efficient data storage and retrieval.

BCA5B08 -Java Programming

Course Outcomes

CO1: Apply object-oriented programming features and concepts to solve given problems, demonstrating the practical application of OOP principles.
CO2: Utilize the Java standard API library to write complex programs, applying the acquired knowledge in practical programming scenarios.
CO3: Implement object-oriented programming concepts, demonstrating the ability to apply OOP principles in program design and development.
CO4: Implement Exception Handling and database connections in Java, showcasing the practical application of advanced programming concepts.
CO5: Utilize graphical user interface and Event Handling in Java, demonstrating the application of Java programming for creating interactive and user-friendly software interfaces.

BCA5B09 -Web Programming using PHP

Course Outcomes

CO1:To learn the basic concepts of creating web pages using HTML
CO2: write server side scripting programs using java script

CO3: Learn basics of PHP programming language

CO4: Create PHP programs that use various PHP library functions, and that manipulate files and directories.

CO5: Analyze and solve various database tasks using the PHP language.

BCA5B10 Principles of Software Engineering

Course Outcomes

CO 1: Comprehend engineering practices in software development, understanding the principles and approaches involved in the engineering aspect of software development..

CO 2: Acquire knowledge about various software development methodologies and practices, demonstrating awareness and recall of different approaches in software development..

CO 3: Understand and study various evaluation methods in software development, demonstrating the ability to interpret and comprehend the assessment techniques used in the field..

CO4: Analyze and extract software requirements specifications for different projects, demonstrating the ability to break down and understand the specific requirements of diverse software projects..

CO5: Develop a basic level of software architecture/design, applying the knowledge gained to create fundamental software structures and designs.

SEMESTER 6

BCA6B11 – Android Programming

Course Outcomes

CO1: Comprehend the basic concepts of Android programming, understanding the fundamental principles and ideas involved in developing applications for the Android platform.

CO2.: Identify the different types of resources in Android, demonstrating knowledge and recognition of the various resources used in Android application development.

CO3: Design a user interface for Android applications, applying the acquired knowledge to create effective and user-friendly interfaces for Android apps..

CO4: Understand the concepts of Menu, Fragment, and ActionBar in Android, demonstrating the ability to interpret and comprehend these essential components within the Android development framework.

CO5: Develop an application with database connectivity using Android, applying the knowledge gained to create an Android application that interacts with a database.

BCA6B12 -Operating Systems

Course Outcomes

CO1: Learn the basic concepts of operating systems. and about process management
CO2: Understand and experience the UNIX commands and language constructs in building shell scripts
CO3:Able to compare different process scheduling algorithms and process synchronization
CO4: Learn and apply different memory management techniques
CO5: Discuss various protection and security aspects and awareness on mobile operating systems

BCA6B13 Computer Networks

Course Outcomes

CO1 : Acquire knowledge about different network terminologies, demonstrating an understanding of the various terms used in networking.
CO2: Become familiar with different layers of the network, showcasing recognition and recall of the layered architecture in network systems.
CO3: Explain the functions of the data link layer and network layer, demonstrating an understanding of how these layers operate and contribute to network functionality.
CO4: Define the functions of the Transport layer, interpreting and comprehending the role this layer plays in network communication.
CO5: Understand the concept of network security and cryptography, demonstrating the ability to interpret and comprehend the principles and techniques involved in securing networks through cryptography.

BCA6B16C- Software testing & Quality Assurance

Course Outcomes

CO1 - Analyze the different lifecycle models of software development
CO2 - Identify major types testing
CO3 - Enable students to implement the process that should be followed in building an   E-commerce presence

CO4 -Helps the students to implement Integration testing and System testing to verify requirements specifications
CO5 - Demonstrate the quality management, assurance, and quality standard to software system and best practices in testing.

BSc Computer Science

Program Outcomes

PO1: Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking

and actions, checking out the degree to which these assumptions are accurate and valid, and looking at

our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO2: Effective Communication: Speak, read, write and listen clearly in person and through electronic

media in English and in one Indian language, and make meaning of the world by connecting people,

ideas, books, media and technology.

PO3: Citizenship ethics, and sustainability: Demonstrate empathetic social concern and equity centered

national development. Guided by ethics. Promoting social, economic and environment sustainability.

PO4: Use of computer skills: Use the knowledge of computers and information technology for data

acquisition and data analysis in experimental investigations and in communication.

PO5: Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long

learning in the broadest context socio-technological changes.

Program Specific Outcomes

 PSO1: Get familiar with the potentially rich and employable field of computer applications

PSO2: Be eligible for higher studies in the area of Computer Science/ Applications.

PSO3: Develop skills in software development to take up self-employment in the Indian and global software market.

PSO4: Get trained and equipped with meeting the requirements of the software industry in the country and outside.

SEMESTER 1

BCS1B01 – Computer Fundamentals & Html
Course outcomes

CO1: Demonstrate an understanding of the fundamentals of computers, including their components, functions, and historical development.
CO2 Illustrate the basics of computer organization, showcasing comprehension of the relationships among computer components and their functions.
CO3: Apply knowledge to write algorithms and draw flowcharts for solving simple problems, demonstrating the practical application of computational thinking.
CO4: Understand the basics of Internet and web page design, interpreting the foundational concepts and principles behind creating web pages and navigating the internet.

MTS1 C01: MATHEMATICS-1
Course outcomes

CO1: To learn the application of the derivative and integration..
CO2: To explain the notion of continuity as related to functions. You should be able to relate an intuitive notion of continuity to the mathematical definition of continuity.
CO3: To demonstrate integral representing the volume of a solid of revolution about a coordinate axis, given the formulas for solids of revolution.
CO4: Explain asymptotes in terms of graphical behavior.
CO5: To demonstrate the meaning of the definite integral both as a limit of Riemann sums and as the net accumulation of a rate of change and should be able to use integrals to solve a variety of problems.

ELE1C01 - Electronic Devices
Course outcomes

CO1: Acquire basic knowledge of electronics components and their operations, demonstrating understanding and recognition of fundamental concepts in electronics.
CO2: Enable students to apply their knowledge by understanding how to create PCBs for different applications, showcasing practical skills in designing printed circuit boards.
CO3: Comprehend the fundamentals of electronics and basic diode operations, showcasing the ability to interpret and understand the functioning of electronic components.
CO4: Analyze and identify different types of diodes, understanding their workings and applications, demonstrating the ability to break down and recognize the characteristics of various diodes.
CO5: Understand different types of transistors and their operations, interpreting and comprehending the principles behind the functioning of various transistor types in electronic circuits.

SEMESTER II

BCS2B02 – Problem Solving using C

CO1: Identify and recall the basics of C program structure, including familiarity with IDE, tokens, variable declaration, and the definition of symbolic constants.
CO2: Explain and interpret the basic concepts of operators and expressions, including type conversions, operator precedence, and associativity in the C programming language.
CO3: Apply the knowledge gained to demonstrate familiarity with control structures, such as branching, loops, and expressions, by creating and executing simple programs.
CO4: Analyze and assess the ability to create and use functions, design arrays of elementary objects, and understand the basic concepts of Structures and Union. Develop analytical skills for subsequent coursework and professional development.
CO5: Integrate knowledge to understand the creation and processing of files, command line operations, and defensive programming concepts. Develop the ability to handle possible errors during program execution, synthesizing skills for effective programming practices.

MTS2 C02: MATHEMATICS-11

CO1: Understand the meaning of polar curves and their graphing, demonstrating comprehension of the principles behind polar coordinate systems and their graphical representation.
CO2: Explain the derivatives and integration of hyperbolic functions, interpreting the concepts and operations involved in calculus with hyperbolic functions.
CO3: Apply the understanding of improper integrals and their applications, as well as comprehend diagonalization and L-U factorization of matrices, demonstrating the practical application of integration techniques and matrix operations.
CO4: Apply the understanding of power series and their applications, showcasing the practical application of mathematical concepts in solving problems involving power series.
CO5: Understand the meaning of vector spaces and subspaces with examples, interpreting the foundational concepts of linear algebra and their application in real-world examples.

ELE2C02 - Electronic Circuits

CO1: Students able to understand the rectifiers,filters and voltage regulators circuit
CO2: Ability to understand a SMPS circuits and different IC voltage regulators
CO3: Identify and understand how transistor working as an amplifier
CO4: Demonstrate familiarity with biasing methods
CO5: Enable students to understand different amplifiers and oscillators

SEMESTER III

A11 – Python Programming
Course outcomes

CO1: Identify and recall Python programming basics and paradigm, demonstrating an understanding of fundamental concepts in Python programming.
CO2: Demonstrate an understanding of Python looping and control statements, interpreting how they function within the context of programming tasks.
CO3: Apply knowledge to develop the ability to create and use functions, global variables, recursion, and analytical skills. Demonstrate the practical application of Python programming in coursework and

professional development.

CO4: Analyze and comprehend the use of Python string, list, tuple, dictionary, and manipulations on them, showcasing the ability to break down and understand complex data structures in Python programming.

A12-Sensors and Transducers
Course outcomes

CO1: Explain resistance, inductance and capacitance transducers.
CO2: Able to understand concepts of temperature and pressure transducers.
CO3: Perceive the concepts level transducers such as and flow transducers
CO4: Explain Electromagnetic transducers and radiation sensors.
CO5: Define force and torque transducers and sound transducers.

BCS3B04 – Data Structures Using C

Course Outcomes

CO1 - Develop ability to analyze algorithms and algorithm correctness and impart the basic concepts of data structures and algorithms.
CO2 -Enable students to describe how arrays, linked structures are represented in memory and used by algorithms as well as describe common applications for arrays, linked structures.
CO3 -Demonstrate stacks, queues are represented in memory and used by algorithms and describe common applications for stacks, queues and summarize searching and sorting techniques.
CO4 - Explain different methods for traversing trees and how represented in memory.
CO5-To Design and implement an appropriate hashing function.

MTS3 C03: MATHEMATICS-111

Course outcome

CO1: Explain Vector valued functions
CO2: To understand more about partial differentiation and its applications
CO3: Learn more about double integral and triple integral
CO4: To Understand more about the theorems related with the complex numbers and identify complex numbers
CO5: Explain relation between double integral and triple integral

ELE3C03 - Digital Electronics

Course outcome

CO1: Apply the basic concepts of number systems and demonstrate competence in converting numbers between Binary, Decimal, and Hexadecimal representations, showcasing practical skills in manipulating numeric systems.
CO2 Demonstrate familiarity with Boolean Operations, the Laws of Boolean Algebra, DeMorgan Theorems, and apply Boolean Algebra and Karnaugh Maps to simplify logic circuits, showcasing the practical application of logical concepts in circuit design.
CO3: Implement combinational logic circuits and execute logic functions, applying theoretical knowledge to practical scenarios in the design and functioning of digital circuits.
CO4: Understand sequential logic design, interpreting the principles behind designing circuits that incorporate sequential elements, showcasing comprehension of the logical flow in digital systems.
CO5: Understand different types of memories used in digital and microprocessor systems, interpreting the foundational concepts and principles behind various memory types in digital systems.

SEMESTER IV

A13 – Data Communication and Optical Fibers

Course Outcomes

CO1: Identify and understand comprehend processes to communicate with each other across a computer network
CO2: Understand the concept of multiplexing, GSM and its applications.
CO3: Analyze the services, roles and features of the data link control of data networks
CO4: Identify and understand the fundamental knowledge about optical fiber communication systems.

A14 Microprocessors-Architecture and Programming

Course Outcomes

CO1: Demonstrate an understanding of the internals of a Microprocessor, encompassing its components, functions, and basic architecture.

CO2: Design the architecture of an 8085 Microprocessor, displaying comprehension of the components and their interrelationships within the microprocessor.

CO3: Explain the instruction set of an 8085 Microprocessor, demonstrating comprehension of the various instructions and their functionalities.

CO4: Program a Microprocessor, showcasing the ability to apply the knowledge gained in designing and implementing programs using the 8085 Microprocessor.

CO5: Identify the basics of an 8086 Microprocessor, demonstrating knowledge of its key components and distinguishing features.

BCS4B05 – Database Management System and RDBMS

Course Outcomes

CO1: To learn the basic concepts of databases and data models and explains the features of database management systems, architecture of database systems, and the role of database users.
CO2: Develops an Entity-Relationship model based on user requirements and Convert an Entity-Relationship diagram to Relational Schema.
CO3: Learn Functional Dependency and Functional Decomposition and Applies various Normalization techniques for database design improvement.
CO4: Use the basics of SQL and construct queries using SQL in database creation and interaction.
CO5: To understand the principle of transaction management design and Design a commercial relational database system (Postgres) by writing SQL using the system.

MTS4 C04: MATHEMATICS-IV

Course outcome

CO1: Explain the concept of differential equation
CO2: Able to find solutions of higher order linear differential equations
CO3: To understand Laplace transforms and orthogonal functions
CO4: To solve ordinary differential equations using Laplace transforms

CO5: Explain application of Fourier series

ELE4C04 - Communication Electronics

Course outcome

CO1: Enable students to understand basics knowledge about communication system
CO2: Ability to understand electromagnetic spectrum
CO3: Students able to compare the AM, FM and PM
CO4: Identify and understand the basics of PAM and PCM
CO5: Enable students to understand basics of Digital Modulation Techniques

SEMESTER V

BCS5B07 – Computer Organization and Architecture

Course outcome

CO1: Acquire knowledge of the basics of digital circuits, logic gates, and combinational circuits, demonstrating an understanding of foundational concepts in digital electronics.
CO2: Understand the basics of flip-flops and their applications, interpreting how these components operate within the context of digital circuits.
CO3: Comprehend the basics of computer organization, demonstrating an understanding of the relationships among various components in a computer system.
CO4: Explain the basics of microprogramming and addressing modes, demonstrating an understanding of how microprogramming contributes to computer architecture and the various addressing modes used in programming.
CO5: Enable understanding of the basics of memory organization, showcasing a grasp of how computer memory is structured and organized to facilitate efficient data storage and retrieval.

BCS5B08 -Java Programming

Course Outcomes

CO1: Apply object-oriented programming features and concepts to solve given problems, demonstrating the practical application of OOP principles.

CO2: Utilize the Java standard API library to write complex programs, applying the acquired knowledge in practical programming scenarios.
CO3: Implement object-oriented programming concepts, demonstrating the ability to apply OOP principles in program design and development.
CO4: Implement Exception Handling and database connections in Java, showcasing the practical application of advanced programming concepts.
CO5: Utilize graphical user interface and Event Handling in Java, demonstrating the application of Java programming for creating interactive and user-friendly software interfaces.

BCS5B09 -Web Programming using PHP
Course Outcomes

CO1: To learn the basic concepts of creating web pages using HTML
CO2: write server-side scripting programs using java script
CO3: Learn basics of PHP programming language
CO4: Create PHP programs that use various PHP library functions, and that manipulate files and directories.
CO5: Analyze and solve various database tasks using the PHP language.

BCS5B10 Principles of Software Engineering

Course Outcomes

CO 1: Comprehend engineering practices in software development, understanding the principles and approaches involved in the engineering aspect of software development.
CO 2: Acquire knowledge about various software development methodologies and practices, demonstrating awareness and recall of different approaches in software development.
CO 3: Understand and study various evaluation methods in software development, demonstrating the ability to interpret and comprehend the assessment techniques used in the field.
CO4: Analyze and extract software requirements specifications for different projects, demonstrating the ability to break down and understand the specific requirements of diverse software projects.
CO5: Develop a basic level of software architecture/design, applying the knowledge gained to create fundamental software structures and designs.

SEMESTER VI

BCS6B11 – Android Programming

Course Outcomes

CO1: Comprehend the basic concepts of Android programming, understanding the fundamental principles and ideas involved in developing applications for the Android platform.
CO2.: Identify the different types of resources in Android, demonstrating knowledge and recognition of the various resources used in Android application development.
CO3: Design a user interface for Android applications, applying the acquired knowledge to create effective and user-friendly interfaces for Android apps.
CO4: Understand the concepts of Menu, Fragment, and ActionBar in Android, demonstrating the ability to interpret and comprehend these essential components within the Android development framework.
CO5: Develop an application with database connectivity using Android, applying the knowledge gained to create an Android application that interacts with a database.

BCS6B12 -Operating Systems

Course Outcomes

CO1: Learn the basic concepts of operating systems. and about process management
CO2: Understand and experience the UNIX commands and language constructs in building shell scripts
CO3: Able to compare different process scheduling algorithms and process synchronization
CO4: Learn and apply different memory management techniques
CO5: Discuss various protection and security aspects and awareness on mobile operating systems

BCS6B13 Computer Networks

Course Outcomes

CO1: Acquire knowledge about different network terminologies, demonstrating an understanding of the various terms used in networking.
CO2: Become familiar with different layers of the network, showcasing recognition and recall of the layered architecture in network systems.
CO3: Explain the functions of the data link layer and network layer, demonstrating an understanding of how these layers operate and contribute to network functionality.
CO4: Define the functions of the Transport layer, interpreting and comprehending the role this layer plays in network communication.
CO5: Understand the concept of network security and cryptography, demonstrating the ability to interpret and comprehend the principles and techniques involved in securing networks through cryptography.

BCS6B16D Computer Graphics

Course outcome

CO1 To understand the basics of computer graphics, different graphics systems and applications of computer graphics.
CO2 To learn various algorithms for scan conversion and filling of basic objects.
CO3 To know the use of geometric transformations on graphics objects and their application in composite form.
CO4 To learn different clipping methods and its transformation to graphics display device.
CO5 To make students familiar with different color models and image manipulation using GIMP

Master of Computer Science

Program Outcomes

PROGRAM OUTCOMES

PO1. Advanced Problem-Solving Skills: Graduates will demonstrate the ability to identify, analyze, and solve complex, real-world problems within their field of study, applying innovative and evidence-based solutions.

PO2. Mastery of Advanced Research Methods: Graduates will master advanced research methodologies, including the design, execution, and dissemination of original research, contributing to the body of knowledge in their discipline.

PO3. Professional Development and Career Readiness: Graduates will be well-prepared for their chosen careers, possessing the necessary skills, knowledge, and experience to excel in their professional roles or pursue further advanced studies.

PO4. Leadership and Collaborative Abilities: Graduates will exhibit leadership qualities and the ability to work collaboratively in diverse teams, recognizing the value of teamwork, and contributing effectively to the achievement of common goals.

PO5. Community Engagement and Service: Graduates will engage in community service and outreach, applying their expertise to address societal issues and contribute to the betterment of the community and beyond.

Program Specific Outcomes

By the end of MSc CS program, a student will:

PSO1: Evaluate complex real-world problems by applying principles of theoretical computing, engineering and Mathematical models.

PSO2: Modern Tool usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

PSO3: Understand all dimensions of the concepts of software application development, projects and Aware the students to publish their work in reputed journals.

PSO4: Conceive Project Management capabilities to solve real world problems in accordance to the needs of the industry, in a specific time frame and to address the challenging requirements coming from the enterprise applications

PSO5: Design and develop computer programs/computer-based systems in the field of Computer Sciences viz. Computational Intelligence, Machine learning, Web technology, Information Retrieval Systems, Data Analytics, Communication and networking.

Semester I
CSS1C01 – DISCRETE MATHEMATICAL STRUCTURES

Course Outcome
CO1: Verify the validity of an argument using propositional and predicate logic. CO2: Understand allocations of set theory and operations on set and apply operations of relations and functions in discrete structures CO3: Understand applications of Lattices and Boolean algebra in the computer science domain. CO4: Identify Group, Ring and Field in Group Theory CO5: Apply the concepts of graph theory and trees to formulate problem solving and understand applications of Graph Theory and Tree

CSS1C02 – ADVANCED DATA STRUCTURES

Course Outcome
CO1: Summarize different categories of data structures and design algorithms to perform operations with linear and non – linear data structures.
CO2: Describe how arrays, linked lists, stacks, queues, trees and graphs are represented in memory and used by algorithms. CO3: Describe common applications for arrays, linked lists, stack, queue, tree and graphs. CO4: Demonstrate different methods for traversing trees and describe various types of trees and heap structures. CO5: Design and implement an appropriate hashing function for an application and Discuss the computational efficiency of the principal algorithms for sorting, searching and hashing.

CSS1C03 – THEORY OF COMPUTATION

Course Outcome
CO1: Describe broad overview of the theoretical foundations of computer science. CO2: Understand regular languages and finite automata. CO3: Apply the concept of context free languages in problem solving. CO4: Solve various problems of applying normal form techniques, push down automata and Turing Machines.

CO5: Propose solutions for the problems based on computability and decidability.

CSS1C04 – THE ART OF PROGRAMMING METHODOLOGY

Course Outcome
CO1: Improve ability to develop effective algorithms.   CO2: Understand the fundamental principles of problem-solving using computers.   CO3. Demonstrate the applications of the programming constructs including decision making, looping, arrays and strings and Conceptualize modular programming basics using functions, structures and Unions.   CO4. Understand features like pointers and macros and to become familiar with programming with files   CO5: Design, develop, implement, test and document well-structured and reliable computer programs using the C programming language.

CSS1C05 – COMPUTER ORGANIZATION & ARCHITECTURE

Course Outcome
CO1: Identify, understand and apply different number systems and codes and identify the digital representation of data in a computer system.   CO2: Understand the general concepts in digital logic design and their use in sequential and combinational circuit design.   CO3: Describe fundamental organization of a computer system and computer arithmetic formulae and solve problems.   CO4: Explain addressing modes, instruction formats and program control statements.   CO5: Distinguish the organization of various parts of a system memory hierarchy Identify and compare different methods for computer I/O.

SEMESTER II

CSS2C06 – DESIGN AND ANALYSIS OF ALGORITHMS

Course Outcome

CO1:   Design algorithms in context of space and time complexity and apply asymptotic   notation.

CO2: Analyze the problem and develop the algorithms related to these problems.

CO3: Classify the problems and apply the appropriate design strategy to develop algorithms.   CO4: Analyze the problem and develop the algorithms related to these problems.

CO5: Demonstrate the use of parallel algorithms.

CSS2C07 – OPERATING SYSTEM CONCEPTS COURSE

Course Outcome
CO1: Understand the basic components of a computer operating system and interpret the applications of Process and threads.
CO2: Describe the policies for scheduling, deadlocks, synchronization, system calls, and file systems.
CO3: Illustrate the functioning of process management, memory management and file management Modules present in an OS.
CO4: Differentiate various types of scheduling algorithms.
CO5: Understand the concepts of Three-Tier Client/Server Architecture, Middleware and the characteristics of mobile operating systems.

CSS2C08 – COMPUTER NETWORKS

Course Outcome
CO1: Understand the basic concepts of computer network organization and implementation.
CO2: Describe theoretical understanding of layered network models - OSI and TCP/IP Models.
CO3: Illustrate the functionalities of different network layers.
CO4: Analyze the network application such as data transmission between client and server, file transfer, real-time and multimedia transmission.
CO5: Explain the security aspects in networks and principles of cryptography.

CSS2C09 – COMPUTATIONAL INTELLIGENCE

Course Outcome:
CO1: Apply the basic principles, models, and algorithms of AI to recognize, model, and solve problems in the analysis and design of information systems. CO2: Conceptualize various knowledge representation techniques. CO3: Analyze the problem-solving methods and algorithms related to searching, reasoning, game playing and machine learning. CO4: Understand the functioning of expert systems and its importance. CO5: Demonstrate the implementation of various AI algorithms to solve real life problems.

CSS2C10 – PRINCIPLES OF SOFTWARE ENGINEERING

Course Outcome
CO1: Understand the software process and development models. CO2: Understand the software design process and structured analysis of systems. CO3: Distinguish different types of modelling like DFD and UML. CO4: Illustrate the knowledge about the design of user interface. CO5: Apply the skill of project management and report preparation.

SEMESTER III

CSS3C11 – ADVANCED DATABASE MANAGEMENT SYSTEM

Course Outcome
CO1: Explain the basics of database management systems, concepts of relational   data model, entity-relationship model, relational database design, relational   algebra and calculus. CO2: Apply the normalization techniques to improve the database design. CO3: Describe various database manipulation commands in SQL. CO4: Understand Transaction Processing & Locking using the concept of Concurrency control. CO5: Conceptualize advanced features of Object-Oriented Database Management Systems   and Distributed databases.

CSS3C12 – OBJECT ORIENTED PROGRAMMING CONCEPTS

Course Outcome:

CO1: Recall the object-oriented programing concepts and basics of Java.

CO2: Design and implement object-oriented programs including packages and interfaces.

CO3: Explain and handle exceptions and threads.

CO4: Develop interactive programs using applets, AWT and swings.

CO5: Explain the concepts of JDBC, sockets and gives an introduction to Unified Modelling Language (UML).

CSS3C13 – PRINCIPLES OF COMPILERS

Course Outcome
CO1: Understand the major phases of compilation, identify tokens of a typical high -level programming language, define regular expressions for tokens, design and   implement a lexical analyzer. CO2: Develop the parsers and experiment with the knowledge of different parsers design   without automated tools. CO3: Construct the intermediate code representations and generation. CO4: Explain the role of different types of runtime environments and memory   organization for implementation of typical programming languages. CO5: Apply the optimization techniques to have a better code for code generation.

COMPUTER GRAPHICS

Course Outcome
CO1: Understand the basics of computer graphics, different graphics systems and applications of computer graphics. CO2: Extract scene with different clipping methods and its transformation to graphics   display device. CO3: Explore projections and visible surface detection techniques for display. CO4: Explore object representations and surface detection methods. CO5: Understand techniques and OpenGL programming concepts.

CSS3E02c – CRYPTOGRAPHY AND NETWORK SECURITY

Course Outcome
CO1: Understand the fundamentals of cryptography.
CO2: Describe data integrity, authentication, digital signatures.
CO3: Analyze different network security applications
CO4: Familiarize standard algorithms that provide confidentiality, integrity and authenticity.
CO5: Understand network security technologies.

SEMESTER IV

CSS4E03f – WEB ENGINEERING

Course Outcome
CO1: Understand basic concepts Web engineering.
CO2: Describe Requirements Engineering (RE) for web applications and familiarize Web   application architecture and architecture for multimedia data.
CO3: Understand NOSQL databases and introduce MongoDB
CO4: Understand the basics of Modelling web applications and web application design
CO5: Understand the elementary concepts of testing web applications.

CSS4E04a – DIGITAL IMAGE PROCESSING

Course Outcome
CO1: Understand the fundamental concepts of a digital image processing
CO2: Apply various image enhancement techniques
CO3: Describe various image enhancement techniques
CO4: Implement algorithms for handling intensive image restoration problems.
CO5: Identify and compare various image segmentation and representation techniques and understand various image compression procedures.