**BACHELOR OF SCIENCE (COMPUTER SCIENCE)**

**SEMESTER-I**

**CORE – I: PROBLEM SOLVING THROUGH C (21UCS01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Students will be able to develop logic, which will help them create programmes and applications in C.

**CO2**: Also, by learning the basic programming constructs, they can easily switch over to any other language in the future.

**CO3**: Enhance skills in problem solving by constructing algorithms.

**CO4**: Demonstrate the use of strings and string handling functions.

**CO5**: Repeat the sequence of instructions and points for a memory location.

**PROFESSIONAL ENGLISH – PHYSICAL SCIENCE- I (21UPES01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Recognise their own ability to improve their own competence in using the language.

**CO2**: Use language for speaking with confidence in an intelligible and acceptable manner.

**CO3**: Understand the importance of reading for life.

**CO4**: Read independently unfamiliar texts with comprehension.

**CO5**: Understand the importance of writing in academic life.

**ALLIED- I: ALGEBRA AND CALCULUS (21UMAA01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Know the application of relations between the roots and coefficients of an equation and diminishing the roots of an equation.

**CO2**: Ability to solve the consistency of linear equations and application of the Cayley-Hamilton theorem

**CO3**: Understanding the concepts of Cartesian coordinates, parametric coordinates, and polar coordinates.

**CO4**: Understand the basic properties of PDE.

**CO5**: Gain the skill to solve problems.

**PRACTICAL – I C PROGRAMMING (21UCSP01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Develop a C programme.

**CO2**: Control the sequence of the programme and give logical outputs.

**CO3**: Implement strings in your C programme.

**CO4**: Store different data types in the same memory.

**CO5**: Manage I/O operations in your C programme.

**SEMESTER-II**

**CORE – II: DATA STRUCTURES AND ALGORITHMS (21UCS02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Implement basic data structures such as arrays and linked lists.

**CO2**: Design and implement data structures such as linked list stacks, queues, and trees by using C as the programming language and using static or dynamic implementations.

**CO3**: Represent and manipulate data using non-linear data structures like trees and graphs to design algorithms for various applications.

**CO4**: Skill to describe stack, queue, and linked list operations

**CO5**: Solve problems involving graphs, trees, and heaps.

**PRACTICAL - II: DATA STRUCTURE USING C (21UCSP02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Understand the concept of dynamic memory management, data types, algorithms, and Big O notation.

**CO2**: Understand basic data structures such as arrays, linked lists, stacks, and queues.

**CO3**: Describe the hash function and concepts of collisions and their resolution methods.

**CO4**: Solve problems involving graphs, trees, and heaps

**CO5**: Apply algorithms for solving problems like sorting, searching, insertion, and deletion of data.

**CORE-III: COMPUTER ARCHITECTURE & ORGANIZATION (21UCS03)**

 **COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Identify the basic structure and functional units of a computer to analyse the merits and pitfalls in architecture and performance.

**CO2**: Demonstrate the impact of instruction set architecture and the central processing unit on the cost performance of computer design and apply it to assembly language programming.

**CO3**: Select and classify various interrupts used to implement I/O control and data transfers.

**CO4**: Describe the design process of a computer with arithmetic and logical operations and critical elements in each step.

**CO5**: Identify the pros and cons of different types of memory hierarchy, cache design, and data transfer techniques in computers.

**PROFESSIONAL ENGLISH: PHYSICAL SCIENCE-II (21UPES02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Attend interviews with boldness and confidence.

**CO2**: Adapt easily into the workplace context, having become communicatively competent.

**CO3**: Apply to the research and development organisations and sections of companies and offices with winning proposals.

**CO4**: Write simple sentences without committing errors of spelling or grammar.

**CO5**: Use language for speaking with confidence in an intelligible and acceptable manner.

**ALLIED II: DIFFERENTIAL EQUATION AND LAPLACE**

**TRANSFORM (21UMAA02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Understand the concept of maxima and minima.

**CO2**: Developing knowledge in numerical methods for problem solving.

**CO3**: Understand the second-order differential equations with constant coefficients.

**CO4**: Understand the basic properties of Laplace transforms.

**CO5**: Solving the simple problems of inverse Laplace and its applications

**ALLIED-PRACTICAL (21UMAAP01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: The problem-solving skills of students are enhanced.

**CO2**: Theoretical concepts are strengthened by solving a maximum number of problems.

**CO3**: Due to one-on-one interaction with the teacher, the doubts of the students get cleared, if any.

**CO4**: Students learn how to apply mathematical concepts to practical and real-life problems.

**CO5**: An interdisciplinary approach is developed.

**SEMESTER-III**

**CORE-IV: RELATIONAL DATABASE MANAGEMENT SYSTEM (21UCS04)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Illustrate DBMS architecture, physical and logical database designs, database modelling, relational, ierarchical,  and network models.

**CO2**: Exhibit an understanding of normalisation theory and apply such knowledge to the normalisation of a database.

**CO3**: Populate and query a database using SQL DML/DDL commands.

**CO4**: Declare and enforce integrity constraints on a database using a state-of-the-art RDBMS.

**CO5**: Programming PL/SQL, including stored procedures, stored functions, cursors, and packages.

**CORE: V: COMPUTER NETWORKS (21UCS05)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Describe how signals are used to transfer data between nodes.

**CO2**: Implement a simple LAN with hubs, bridges, and switches. Describe how packets on the Internet are delivered.

**CO3**: Analyse the requirements for a given organisational structure to select the most appropriate networking architecture.

**CO4**: Demonstrate design issues, flow control, and error control.

**CO5**: Evaluate the challenges in building networks and solutions to those.

**PRACTICAL-III: SQL and PL/SQL (21UCSP03)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Identify the basic concepts and various data models used in database design, ER modelling concepts, architecture use, and design queries using SQL.

**CO2**: Apply relational database theory and be able to describe relational algebra expressions, tuples, and domain relational expressions for queries.

**CO3**: Recognise and identify the use of normalisation, functional dependency, indexing, and hashing techniques in database design.

**CO4**: Recognise or identifythe purpose of query processing and optimisation and also demonstrate the basics of query evaluation.

**CO5**: Apply and relate the concepts of transaction, concurrency control, and recovery in databases.

**ALLIED-III: STATISTICAL METHODS AND THEIR APPLICATIONS**

**(21USTA01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Analyse the sample data and its usage in different ways, such as locations and dispersion.

**CO2**: Understand the relationship between variables and forecast future values.

**CO3**: Understand the concept of sampling, sampling errors, and types of sampling.

**CO4**: Solve a range of problems using the techniques covered.

**CO5**: Conduct basic statistical analysis of the data.

**SBEC-I: OFFICE AUTOMATION LAB (21UCSSP01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Office Tools course would enable the students to craft professional word documents, Excel spreadsheets, and PowerPoint presentations using the Microsoft suite of office tools.

**CO2**: To familiarise the students with the preparation of documents and presentations with office automation tools.

**CO3**: To perform documentation

**CO4**: To perform accounting operations

**CO5**: To perform presentation skills

**SEMESTER–IV**

**CORE – VI: PROGRAMMING IN JAVA (21UCS06)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Every student should be able to list and use object-oriented programming concepts for problem solving. Write programmes using the Java collection API as well as the Java standard class library.

**CO2**. Explain the Java programmes using object-oriented classes with parameters, constructors, methods including inheritance, test classes, and exception handling.

**CO3**: Draw and Animate using Event-Based Advanced Java Programme Concepts (Applet) Represent the interface and package.

**CO4**: Read and make elementary modifications to Java programmes that solve real-world problems.

**CO5**: Validate input in a Java program. Identify and fix defects and common security issues in code.

**PRACTICAL -IV: JAVA PROGRAMMING (21UCSP04)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Knowledge of the structure and model of the Java programming language (knowledge)

**CO2:** Use the Java programming language for various programming technologies (understanding)

**CO3**: Develop software in the Java programming language (application).

**CO4**: Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)

**CO5**: Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem (synthesis).

**SBEC II: PRACTICAL – IMAGE EDITING TOOL (21UCSSP02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Students will learn how to optimise images and save images in proper file formats.

**CO2**: Students will learn colour selection and conversion as it relates to both Web and business publications.

**CO3**: To develop an understanding of the scale, function, process, and options existing for image editing.

**CO4**: To develop creative conceptual visualisation and the process of design.

**CO5**: Use of different tools to enhance the quality of the image and make it more attractive.

**ALLIED IV: STATISTICAL METHODS AND THEIR APPLICATIONS**

**(21USTA04)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Understand the concept of random variables and the expected average.

**CO2**: Compute Bernoulli trials and understand the rare case population.

**CO3**: Learn the usage of normal curves and curve fitting by using the method of least squares.

**CO4**: Learn about the large samples and the theory of attributes.

**CO5**: Exhibit the ability to use skills in statistics and different practicing areas for formulating and tackling statistics-related problems.

**ALLIED – II PRACTICAL – STATISTICAL METHOD (21USTAP02)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Organize, manage, and present data.

**CO2**: Analyse statistical data graphically using frequency distributions and cumulative frequency distributions.

**CO3**: Analyse statistical data using measures of central tendency, dispersion, and location.

**CO4**: Use the basic probability rules, including additive and multiplicative laws, using the terms independent and mutually exclusive events.

**CO5**: Translate real-world problems into probability models.

**SEMESTER - V**

**CORE-VII: OPERATING SYSTEM (21UCS07)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Describe process management scheduling and synchronisations.

**CO2**: Understand and analyse the theory and implementation of processes, memory management, physical and virtual memory, scheduling, file management, and security.

**CO3**: Expose the details of major operating system concepts, an overview of system memory management, and the implementation of file systems.

**CO4**: Understands the use of different process scheduling algorithms and synchronisation techniques to avoid deadlock.

**CO5**: They will learn different memory management techniques like paging, segmentation, demand paging, etc.

**CORE - VIII: WEB TECHNOLOGY (21UCS08)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Gain knowledge of client-side scripting, validation of forms, and AJAX programming.

**CO2**: Have an understanding of server-side scripting in the PHP language.

**CO3**: Choose, understand, and analyse any suitable real-time web application.

**CO4**: Integrate Java and server-side scripting languages to develop web applications.

**CO5**: Develop and deploy real-time web applications on web servers and in the cloud.

**CORE IX - LINUX AND SHELL PROGRAMMING (21UCS09)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Study all the Basic Commands.

**CO2**: Practice the usage of shell scripts for system configuration.

**CO3**: Apply various effects. Piping and redirection processes

**CO4**: Analysis of the use of shell scripts for simple processes

**CO5**: Associate the concepts of arrays with Linux and apply them to create, compile, and execute C programmes in the Linux terminal.

**ELECTIVE-I: SOFTWARE PROJECT MANAGEMENT (21UCSE01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Identify the different project contexts and suggest an appropriate management strategy.

**CO2**: Acquire the knowledge of managing and economics for conventional, modern, and future software projects.

**CO3**: Apply, analyse, design, and develop the software project.

**CO4**: Identify and describe the key phases of project management.

**CO5**: Determine an appropriate project management approach through an evaluation of the business context and scope of the project.

**PRACTICAL – V: WEB TECHNOLOGY LAB (21UCSP05)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Analyse a web page and identify its elements and attributes.

**CO2**: Create web pages using XHTML and Cascading Style Sheets.

**CO3**: Build dynamic web pages using JavaScript (client-side programming).

**CO4**: Create XML documents and schemas.

**CO5:**Listvarious tags in HTML and use them;apply **a cascaded** style sheet to create aweb page.

**SBEC III: MOBILE APPLICATION DEVELOPMENT LAB (21UCSSP03)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Write simple programmes and develop small applications using the concepts of UI design, layouts, and preferences.

**CO2**: Study all the basic tools

**CO3**: Practice the use of control panel objects.

**CO4**: Apply various commands for layouts and animations.

**CO5**: Analysis of the Use of SQLite

**SEMESTER - VI**

**CORE: X – PROGRAMMING IN PYTHON (21UCS10)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Study all the commands.

**CO2**: Practice the use of control flow statements.

**CO3**: Apply Various Commands in Files and Directories

**CO4**: Analysis of the Use of MYSQL to Connect Databases

**CO5**: To learn and know the concepts of file handling, exception handling, and database connectivity.

**PRACTICAL VII: PYTHON PROGRAMMING (21UCSP07)**

 **COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Describe the Python language syntax, including control statements, loops, and functions to

Write programmes for a wide variety of problems in mathematics, science, and games.

**CO2**: Examine the core data structures like lists, dictionaries, tuples, and sets in Python to store,

process and sort the data.

**CO3**: Interpret the concepts of object-oriented programming as used in Python using encapsulation,

polymorphism and inheritance.

**CO4**: Discover the capabilities of Python regular expressions for data verification and utilise matrices

for building performance-efficient Python programmes.

**CO5**: Identify the external modules for creating and writing data to Excel files and inspect the file.

operations to navigate the file systems.

**ELECTIVE-II: MOBILE COMPUTING (21UCSE04)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Understand the fundamentals of wireless communications.

**CO2**: Analyse security, energy efficiency, mobility, scalability, and dreier unique characteristicsofn wireless networks.

**CO3**: A working understanding of the characteristics and limitations of mobile hardware devices, including dreier user-interface modalities

**CO4**: The aptitude to develop applications that are mobile-device-specific and demonstrate current practice in mobile computing contexts.

**CO5**: A comprehension and appreciation of the design and development of context-aware solutions for mobile devices

**ELECTIVE-III: INTERNET OF THINGS (21UCSE09)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Able to understand the application areas of IOT

**CO2**: Able to realise the revolution of the Internet in mobile devices, cloud & andtworks.

**CO3**: Able to understand the building blocks of the Internet of Things and its characteristics

**CO4**: Able to build the physical and logical design of IOT systems.

**CO5**: Understand cloud platforms for IOT.

**SBEC IV – QUANTITATIVE APTITUDE (21UCSS01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Understand the basic concepts of quantitative ability.

**CO2**: Use their logical thinking and analytical abilities to solve quantitative aptitude questions from company-specific and other competitive tests.

**CO3**: Solve questions related to time and distance, time and work, etc. from company-specific and other competitive tests.

**CO4**: Solve the problems easily by using the short-cut method with time management, which will be helpful to them to clear the competitive exams for better job opportunities.

**CO5**: Analyse the problems logically and approach the problems in a different manner.

**MINI PROJECT (21UCSPR01)**

**COURSE OUTCOMES (COs):**

After the successful completion of this course, the students will be able to

**CO1**: Students will be able to practice acquired knowledge within the chosen area of technology for project development.

**CO2**: Identify, discuss, and justify the technical aspects of the chosen project with a comprehensive and systematic approach.

**CO3**: Understand how to identify the issues and challenges of industry.

**CO4**: Prepare a report on the application of emerging technologies in the selected industry.

**CO5**: Understand how to develop the project.