**BACHELOR OF COMPUTER APPLICATIONS**

**SEMESTER-I**

**CORE – I: PROBLEM SOLVING THROUGH C (21UCA01)**

**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 (20UPES01)**

**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 Clayey-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 (21UCAP01**)

**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: C++ PROGRAMMING (21UCA02)**

**COURSE OUTCOMES (COs):**

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

**CO1:** To provide evidence of the student’s competence to programme in the C++ programming language; this proof will be demonstrated as the student works towards his or her associate degree.

**CO2:** To provide an opportunity for students not enrolled in a degree programme to acquire evidence of confirmation of C++ programming language skills

**CO3:** Introduces Object-Oriented Programming Concepts Using the C++ Language

**CO4:** Understanding the principles of data abstraction, inheritance, and polymorphism combinations

**CO5:** Understand and Apply the Principles of Virtual Functions and Polymorphism

**CORE- III: COMPUTER ARCHITECTURE & ORGANIZATION**

 **(21UCA03)**

**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 (20UPES02)**

**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 of 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.

**PRACTICAL - II: C++ PROGRAMMING   (21UCAP02)**

**COURSE OUTCOMES (COs):**

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

CO1: Understand the features in OOPS.

CO2: Select and apply proper statements relative to problems.

CO3: Combine multiple features in C++ to implement complex problems.

**CO4:** To provide evidence of the student’s competence to programme in the C++ programming language; this proof will be demonstrated as the student works towards his or her associate degree.

**CO5:** To provide an opportunity for students not enrolled in a degree programme to acquire evidence of confirmation of C++ programming language skills

**SEMESTER-III**

**CORE – IV: DATA STRUCTURES AND ALGORITHMS (21UCA04)**

**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.

**CORE-V: OPERATING SYSTEM (21UCA05)**

**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-VI: RELATIONAL DATABASE MANAGEMENT SYSTEM (21UCA06)**

**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, hierarchical, 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.

**PRACTICAL-III: SQL and PL/SQL (21UCAP03)**

**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 (21UCASP02)**

**COURSE OUTCOMES (COs):**

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

The **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 - VII: COMPUTER NETWORKS (21UCA07)**

**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.

**CORE VIII: PROGRAMMING IN JAVA (21UCA08)**

**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:** Clarify the programming language design, syntax, and semantics.

**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.

**CORE-IX: SOFTWARE ENGINEERING (21UCA09)**

**COURSE OUTCOMES (COs):**

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

**CO1:** 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 recognise ethical and professional responsibilities in engineering situations and make informed judgements

 **CO5:** Which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

**PRACTICAL -IV: JAVA PROGRAMMING (21UCAP04)**

**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 (21UCASP02)**

**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 the Web and business.

publications.

**CO3:** To develop 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:** Organise, 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 - X: DATA MINING AND WAREHOUSING (21UCA10)**

**COURSE OUTCOMES (COs):**

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

**CO1:** Ability to perform the pre-processing of data and apply mining techniques to it

**CO2:** Ability to classify web pages, extracting knowledge from the web.

**CO3:** Apply data mining techniques and methods to large data sets.

**CO4:** Use data mining tools.

**CO5:** Compare and contrast the various classifiers.

**CORE - XI: WEB TECHNOLOGY (21UCA11)**

**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 – XII: VISUAL PROGRAMMING (21UCA12)**

**COURSE OUTCOMES (COs):**

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

**CO1:** Students list the visual programming concepts.

**CO2:** Explain basic concepts and definitions.

**CO3:** Express constants and arithmetic operations.

**CO4:** Distinguish variables and data types.

**CO5:** Students code visual programmes by using the Visual Basic work environment. Distinguish and compose events and methods.

**PRACTICAL VI: PROGRAMMING IN VB (21UCAP06)**

**COURSE OUTCOMES (COs):**

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

**CO1:** Understand the features in VB. Select and apply statements for design forms.

**CO2:** Combine multiple features in the interface and database.

**CO3:** Prepare a project in visual programming.

**CO4:** Manage and analyse prepared projects with programmes.

**CO5:** Interpret and report on obtaining results.

**SBEC III: MOBILE APPLICATION DEVELOPMENT LAB (21UCASP03)**

**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

**PRACTICAL – V: WEB TECHNOLOGY LAB (21UCAP05)**

**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 a web page.

**SEMESTER – VI**

**CORE-XIII – PROGRAMMING IN PYTHON (21UCA13)**

**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 (21UCAP07)**

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

**CO2:** Examine the core data structures like lists, dictionaries, 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 (21UCAP06)**

**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's unique characteristics in wireless networks.

**CO3:** A working understanding of the characteristics and limitations of mobile hardware devices, including 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 (21UCAP07)**

**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 computing, and sensor networks

**CO3:** Able to understand the building blocks of the Internet of Things and their 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 (21UCAPR01)**

**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.