

## **Course Outcomes:**

### **BCA-0101 Mathematics1**

- **CO1:** Understand foundational concepts in algebra, calculus, and statistics to apply mathematical principles in problem-solving scenarios.
- **CO2:** Enhance analytical and critical thinking abilities through logical reasoning and mathematical techniques in solving mathematical problems.
- **CO3:** Develop quantitative and computational skills for mathematical modeling, data analysis, and numerical calculations in practical and academic contexts.

### **BCA-0102 Applied English**

- **CO1:** Enhance spoken and written English proficiency for effective communication in professional and social contexts through improved grammar, vocabulary, and pronunciation.
- **CO2:** Strengthen reading comprehension skills to analyze and understand diverse texts, including literary works, articles, and business documents.
- **CO3:** Foster intercultural competence by developing an understanding of cultural diversity and improving communication skills in multicultural environments

### **BCA-0103 Computer Fundamental**

- **CO1:** Understand the fundamental components of a computer system, including hardware, software, and the relationship between them, enabling students to make informed decisions regarding computer usage and troubleshooting.
- **CO2:** Develop basic computer skills, including file management, operating system navigation, and common software applications, empowering students to efficiently and effectively utilize computers for various tasks and purposes.
- **CO3:** Introduce students to the concepts of computational thinking and algorithmic problem-solving, fostering their ability to break down complex problems into manageable steps and develop logical solutions, which are applicable across various domains and disciplines.

### **BCA-0104 C Programming**

- **CO1:** Gain a strong understanding of the C programming language, including its syntax, data types, and control structures, enabling students to write structured and efficient code.

- **CO2:**Develop problem-solving skills and the ability to break down complex tasks into smaller, manageable steps, allowing students to design and implement functional C programs for real-world applications.
- **CO3:**Acquire knowledge of essential programming concepts such as memory management, pointers, and file handling, empowering students to create robust and versatile programs that interact with system resources effectively.

### **BCA-0105 Office Automation Tools**

- **CO1:**Develop proficiency in using office automation tools such as word processors, spreadsheets, and presentation software, enabling students to create professional documents, analyze data, and deliver impactful presentations.
- **CO2:**Acquire skills in managing and organizing electronic information, including email communication, scheduling, and task management, enhancing students' productivity and efficiency in a professional setting.
- **CO3:**Gain knowledge of advanced features and techniques in office automation tools, such as macros, templates, and collaboration functionalities, enabling students to streamline workflows, automate repetitive tasks, and collaborate effectively with colleagues in a team environment.

### **BCA-0201 Mathematics-II**

- **CO1:**Understand foundational concepts in algebra, calculus, and statistics to apply mathematical principles in problem-solving scenarios.
- **CO2:**Enhance analytical and critical thinking abilities through logical reasoning and mathematical techniques in solving mathematical problems.
- **CO3:**Develop quantitative and computational skills for mathematical modeling, data analysis, and numerical calculations in practical and academic contexts.

### **BCA-0202 Communicative English**

- **CO1:** Enhance spoken and written English proficiency for effective communication in professional and social contexts through improved grammar, vocabulary, and pronunciation.
- **CO2:** Strengthen reading comprehension skills to analyze and understand diverse texts, including literary works, articles, and business documents.

- **CO3:** Foster intercultural competence by developing an understanding of cultural diversity and improving communication skills in multicultural environments.

### **BCA-0203 Digital electronics**

- **CO1:** Develop a thorough understanding of digital logic circuits, including Boolean algebra, combinational logic, and sequential logic, enabling students to design, analyze, and troubleshoot digital circuits and systems.
- **CO2:** Acquire knowledge of digital components and their behavior, such as logic gates, multiplexers, decoders, and flip-flops, allowing students to effectively utilize these components in the design and implementation of digital systems.
- **CO3:** Gain skills in using computer-aided design (CAD) tools and simulation software for digital circuit design and analysis, providing students with hands-on experience in the practical application of digital electronics concepts.

### **BCA-0204 Data structure**

- **CO1:** Gain a comprehensive understanding of various data structures, including arrays, linked lists, stacks, queues, trees, and graphs, enabling students to choose and implement the most suitable data structure for different problem-solving scenarios.
- **CO2:** Develop proficiency in analyzing the time and space complexity of algorithms related to data structures, allowing students to assess the efficiency and performance of their code and make informed decisions for optimization.
- **CO3:** Acquire skills in designing and implementing efficient algorithms for common operations on data structures, such as searching, sorting, inserting, and deleting elements, equipping students with the ability to solve complex computational problems using appropriate data structures and algorithms.

### **BCA-0205 Data Base Management System**

- **CO1:** Develop a strong understanding of fundamental concepts in database management systems (DBMS), including data modeling, relational database design, and normalization, enabling students to design efficient and well-structured databases.
- **CO2:** Acquire skills in using Structured Query Language (SQL) for database manipulation, including querying, updating, and retrieving data, allowing students to effectively interact with and manage databases.

- **CO3:** Gain knowledge of advanced topics in DBMS, such as indexing, transaction management, and database security, empowering students to optimize database performance, ensure data integrity, and implement robust security measures in real-world scenarios.

### **BCA-0302 Business Practices and Management**

- **CO1:** Develop a comprehensive understanding of business principles and practices, including topics such as strategic planning, organizational behavior, and marketing strategies, enabling students to make informed decisions and contribute effectively to business management.
- **CO2:** Acquire skills in critical thinking, problem-solving, and decision-making, allowing students to analyze business challenges, propose effective solutions, and evaluate their impact on organizational success.
- **CO3:** Gain knowledge of ethical and sustainable business practices, corporate social responsibility, and effective leadership strategies, preparing students to navigate the complex and dynamic business environment with integrity and a focus on social and environmental impact.

### **BCA-0303 Computer Architecture**

- **CO1:** Develop a comprehensive understanding of computer architecture principles, including processor organization, memory systems, and input/output systems, enabling students to comprehend the inner workings of computer systems.
- **CO2:** Acquire skills in designing and evaluating computer architectures, including instruction set architecture (ISA), pipelining, and memory hierarchies, allowing students to optimize performance, power efficiency, and reliability in computer system design.
- **CO3:** Gain knowledge of emerging trends and technologies in computer architecture, such as parallel processing, cloud computing, and specialized accelerators, equipping students to stay abreast of advancements and make informed design choices to meet evolving computational needs.

### **BCA-0304 Object oriented programming with C++**

- **CO1:** Understand and apply key principles of object-oriented programming in C++.
- **CO2:** Demonstrate proficiency in writing C++ code using object-oriented concepts and language features.

- **CO3:** Design and implement object-oriented systems using UML and C++ to solve programming problems.

### **BCA-0305 Desktop Publishing and Publication**

- **CO1:** Gain proficiency in using desktop publishing software to create professional-quality publications.
- **CO2:** Develop skills in layout design, typography, and graphics to create visually appealing and effective print and digital materials.
- **CO3:** Understand the publishing process and demonstrate the ability to produce and publish various types of documents, such as brochures, newsletters, and magazines.

### **BCA-0401 Personnel Management**

- **CO1:** Develop an understanding of key principles and concepts in personnel management, including recruitment, selection, performance management, and employee relations.
- **CO2:** Acquire skills in effectively managing human resources, such as conducting job analyses, designing compensation systems, and implementing employee development programs.
- **CO3:** Apply knowledge of legal and ethical considerations in personnel management, including compliance with labor laws, equal employment opportunities, and workplace diversity.

### **BCA-0402 Accounting**

- **CO1:** Understand and apply foundational accounting principles, including financial statement preparation, recording transactions, and analyzing financial data.
- **CO2:** Develop skills in interpreting and evaluating financial information, such as income statements, balance sheets, and cash flow statements.
- **CO3:** Demonstrate proficiency in using accounting software and tools to perform tasks like budgeting, forecasting, and financial reporting.

### **BCA-0403 System Analysis and Design**

- **CO1:** Acquire knowledge and skills in analyzing business processes and system requirements to identify and propose effective system solutions.
- **CO2:** Develop proficiency in designing system architectures, data models, and user interfaces to meet the identified requirements.
- **CO3:** Apply industry-standard methodologies and tools to effectively manage the system development lifecycle, including requirements gathering, system modeling, and testing.

### **BCA-0404 Programming in VB**

- **CO1:** Gain proficiency in writing VB code to develop desktop applications with graphical user interfaces (GUIs).
- **CO2:** Understand and apply programming concepts such as variables, control structures, loops, and functions in VB.
- **CO3:** Demonstrate the ability to design and implement VB programs that interact with databases, handle events, and perform data manipulation tasks.

### **BCA-0405 Internet Technology and Web Page design**

- **CO1:** Develop a comprehensive understanding of internet technologies, protocols, and standards, including HTML, CSS, JavaScript, and server-side scripting languages.
- **CO2:** Acquire proficiency in designing and creating visually appealing and responsive web pages using modern web development tools and frameworks.
- **CO3:** Demonstrate the ability to integrate multimedia elements, interactive features, and optimize web pages for search engines and various devices for effective user experience.

### **BCA-0501 Operating System**

- **CO1:** Understand the fundamental concepts and principles of operating systems, including process management, memory management, file systems, and I/O management.
- **CO2:** Gain knowledge and skills in designing and implementing operating system functionalities, such as process scheduling, memory allocation, and device management.

- **CO3:**Demonstrate the ability to analyze and troubleshoot operating system issues, optimize system performance, and apply security measures to protect the system and its resources.

#### **BCA-0502 ecommerce**

- **CO1:** Develop an understanding of the fundamental concepts and principles of e-commerce, including online business models, electronic payment systems, and security considerations.
- **CO2:** Acquire skills in designing and implementing e-commerce websites, including product catalogs, shopping carts, and secure online transactions.
- **CO3:**Demonstrate the ability to analyze e-commerce trends, identify target markets, and develop effective e-commerce strategies to drive online sales and enhance customer experience.

#### **BCA-0503 Management Information System**

- **CO1:** Understand the role and importance of management information systems in organizations, including their impact on decision-making, strategic planning, and operational efficiency.
- **CO2:**Acquire knowledge and skills in designing, implementing, and managing information systems that support various business functions, such as finance, marketing, and operations.
- **CO3:**Demonstrate the ability to analyze organizational needs, identify information requirements, and recommend appropriate technologies and systems for effective data collection, storage, retrieval, and reporting.

#### **BCA-0504 ASP.NET technology**

- **CO1:** Develop proficiency in building web applications using ASP.NET framework, including understanding the architecture and components of ASP.NET.
- **CO2:**Acquire skills in designing and implementing dynamic web pages, server-side scripting, and database connectivity using ASP.NET.
- **CO3:**Demonstrate the ability to develop secure and scalable web applications, leverage ASP.NET features such as authentication, session management, and caching, and deploy applications to a web server.

### **BCA-0505 Computer Oriented Statistical Methods**

- **CO1:** Understand the principles and concepts of statistical analysis and their application in computer-based data analysis.
- **CO2:** Develop proficiency in using statistical software packages and programming languages to perform statistical analysis, data visualization, and hypothesis testing.
- **CO3:** Demonstrate the ability to interpret and communicate statistical results, apply appropriate statistical techniques to real-world datasets, and make informed decisions based on statistical findings.

### **BCA-0601 Computer Networks**

- **CO1:** Understand the fundamental principles and concepts of computer networks, including network architecture, protocols, and data transmission.
- **CO2:** Acquire knowledge and skills in designing, configuring, and managing computer networks, including LANs, WANs, and wireless networks.
- **CO3:** Demonstrate the ability to troubleshoot network issues, implement network security measures, and analyze network performance for effective and efficient data communication.

### **BCA-0602 Numerical Methods**

- **CO1:** Develop an understanding of various numerical techniques and algorithms used for solving mathematical problems, such as root finding, interpolation, and numerical integration.
- **CO2:** Acquire proficiency in implementing numerical methods using programming languages or software tools to solve complex mathematical and engineering problems.
- **CO3:** Demonstrate the ability to analyze the accuracy and efficiency of numerical methods, select appropriate techniques for specific problems, and interpret and communicate the results effectively.

### **BCA-0603 Multimedia Technology**

- **CO1:** Understand the principles and concepts of multimedia technology, including multimedia elements, file formats, and multimedia integration.



- **CO2:** Acquire skills in designing and creating multimedia content, including graphics, audio, video, and interactive elements, using multimedia authoring tools.
- **CO3:** Demonstrate the ability to integrate multimedia elements effectively, apply multimedia design principles, and optimize multimedia content for various platforms and delivery methods.

### **BCA-0604 Computer Graphics**

- **CO1:** Gain a comprehensive understanding of computer graphics principles, including rendering algorithms, transformations, and shading models.
- **CO2:** Develop practical skills in graphics programming and using industry-standard tools for creating 2D and 3D graphics.
- **CO3:** Cultivate problem-solving abilities and critical thinking skills to analyze graphics-related problems and implement effective solutions.

### **BCA-0605 Software Engineering**

- **CO1:** Master software development methodologies and lifecycle, including requirements gathering, design, implementation, testing, and maintenance.
- **CO2:** Acquire strong programming skills in multiple languages and frameworks, enabling the creation of robust and scalable software solutions.
- **CO3:** Develop effective collaboration and teamwork abilities for successful project management, communication, and version control in real-world software development.