M.Sc. in Computer Science (M.Sc. CS)

Program Outcomes (POs)

PO1: Grasp fundamental computing knowledge, expertise in a particular computing domain, mathematical principles, and domain-specific insights to craft abstract and conceptual computing models that cater to clearly defined problems and requirements.

PO2: Recognize, define, investigate through literature review, and resolve complicated computing challenges, arriving at well-supported conclusions by applying fundamental principles of mathematics, computer science, and relevant domain knowledge.

PO3: Invent and assess solutions for complex computing issues, as well as design and evaluate systems, components, or processes that fulfil specified requirements while prioritizing public health and safety, cultural, societal, and environmental factors.

PO4: Generate, choose, modify, and employ suitable methods, resources, and new computing tools in challenging computing tasks, all while recognizing their limits.

PO5: Realize and uphold professional ethics, cyber security regulations, responsibilities, and the standards inherent to the professional practice of computing.

PO6: Acknowledge the necessity for and possess the capability to pursue self-directed learning for continuous growth as a professional in the field of computing.

PO7: Gain practical experience in a particular area of computer science by engaging in project work.

PO8: Acquire the skill to apply computer science knowledge to real-world challenges.

PO9: Develop programming skills and enhance analytical and logical thinking capabilities.

PO10: Create and construct computer programs and computer-based systems within the domains of algorithms, networking, web design, cloud computing, artificial intelligence, and mobile applications.

Course Outcomes (Cos)

Semester – I

Subject Code: 1101   Operating Systems

Course Outcomes:

CO1: Gain ability in designing and comprehending essential OS components, which include system calls, schedulers, memory management systems, virtual memory, and paging systems.

CO2: Examine various techniques for managing devices and resources in timesharing and distributed systems.

CO3: Increase attentiveness about the various types of operating systems and the services they provide.

CO4: Acquire knowledge of diverse process scheduling algorithms and synchronization techniques to enhance the overall performance of a computer system.

CO5: Grasp the distinct services offered by the Operating System at various levels.

Subject Code: 1102   Software Engineering and Project Management

Course Outcomes:

CO1: Grasp the fundamentals of software engineering and the essential concepts of software testing.

CO2: Implement the prescribed procedures within various software development life-cycle models.

CO3: Incorporate communication, modeling, construction, and deployment practices into the software development process.

CO4: Uncover the principles behind various software testing methods and have the capability to apply suitable testing approaches during the software development process.

CO5: Describe the principles of quality management and the various metrics employed in software development and apply the principles of project management and planning.

CO6: Create test cases for a software system.

Subject Code: 1103   Data Structures and Analysis of Algorithm

Course Outcomes:

CO1: Show a grasp of fundamental data structures like linked lists, stacks, queues, and binary search trees, along with associated algorithms.

CO2: Grasping the Fundamentals of Data Structures

CO3: Using Data Structures to Develop Efficient Computer Programs for Real-World Applications

CO4: Creating and Executing Data Structures and Algorithms

CO5: Analysis of data structures and algorithms

CO6: Acquire knowledge of fundamental data structures, their implementation, and typical applications.

CO7: Develop the skill to design and evaluate basic algorithms while validating their correctness with the suitable data structure.

Subject Code: 1104   Cyber Security

Course Outcomes:

CO1: Grasp fundamental security principles.

CO2: Comprehend the concepts of data confidentiality, security concerns, and cryptographic solutions.

CO3: Demonstrate proficiency in verifying identity through diverse authentication methods.

CO4: Acquire knowledge about network safeguarding at the network layer.

CO5: Gain insights into network attacks and security-related services.

Subject Code: 1105   Data Communications and Networking

Course Outcomes:

CO1: Realize network communication through the layered approach, including the Open Systems Interconnection (OSI) model and the Internet Model.

CO2: Gain insight into diverse transmission media types, network devices, and performance evaluation criteria applicable to each medium and device.

CO3: Grasp the principles of flow control, error control, and LAN protocols, and explain the design and algorithms applied in the physical and data link layers.

CO4: Explain the operational principles of LAN, along with the concepts of physical and logical addressing, subnetting, and supernetting.

CO5: Recognize the functions executed by a Network Management System, and analyse the processes involved in connection establishment and congestion control, particularly in relation to the TCP Protocol.

CO6: Understand the principles and functioning of various application layer protocols, including HTTP, SMTP, and FTP.

CO7: Recognize the fundamental security risks that can affect a network.

Semester – II

Subject Code: 2101   Web Technology

Course Outcomes:

CO1: Choose a web development and design methodology that prioritizes sustainability.

CO2: Create a web-based application by employing appropriate client-side and server-side web technologies.

CO3: Expertise solutions for complicated challenges by employing the right approach, technologies, frameworks, web services, and content management systems.

CO4: Study a web page and recognize its elements and attributes

CO5: Build web pages with XHTML and Cascading Style Sheets (CSS).

CO6: Develop interactive web pages with JavaScript.

Subject Code: 2102   Computer Organization and Architecture

Course Outcomes:

CO1: Comprehend the structure and operation of the central processing unit (CPU).

CO2: Examine design problems related to speed, technology, cost, and performance.

CO3: Acquire an understanding of parallel processing, pipelining, and inter-processor communication concepts.

CO4: Illustrate I/O and memory organization principles.

Subject Code: 2103   Database Management Systems

Course Outcomes:

CO1: Discover and grasp the fundamentals of the database approach.

CO2: Explore and comprehend database architecture, data modelling, and data normalization.

CO3: Create and illustrate Entity-Relationship (ER) and Extended Entity-Relationship (EER) diagrams for practical scenarios.

CO4: Familiarize oneself with SQL commands and their applications.

CO5: Comprehend the concepts of transactions, concurrency, and recovery in the context of databases.

CO6: Create entity-relationship diagrams and transform them into a relational database management system (RDBMS), then craft SQL queries for data manipulation within the RDBMS.

CO7: Show their comprehension of essential concepts in query evaluation and optimization techniques.

Subject Code: 2104   Design & Analysis of Algorithms

Course Outcomes:

CO1: Gain knowledge of fundamental concepts such as asymptotic notations for algorithm analysis, space and time complexity, searching and sorting algorithms, and divide and conquer techniques.

CO2: Familiarize themselves with different design and analysis techniques, including greedy algorithms and dynamic programming.

CO3: Comprehend the methodologies employed in designing various graph algorithms.

CO4: Gain the ability to utilize backtracking and branch-and-bound techniques to solve real-time problems.

CO5: Grasp the concepts of P, NP, and NP-Complete problems.

CO6: Create algorithms while considering space and time complexity, and employ asymptotic notations for analysis.

Elective-I **Subject Code: 2111   Software Testing and Tools**

Course Outcomes:

CO1: List a variety of software testing techniques and strategies, and demonstrate the capability to implement specific automated unit testing methods in projects.

CO2: Differentiate the attributes of structural testing methodologies.

CO3: Illustrate the process of integration testing, which focuses on detecting interaction and compatibility issues at an early stage.

CO4: Examine functional and system testing methods and demonstrate a variety of challenges related to object-oriented testing.

CO5: Assess the requirements to establish suitable testing strategies.

CO6: Implement a diverse array of testing techniques with effectiveness and efficiency.

Elective-I **Subject Code: 2112   Big Data Analytics**

Course Outcomes:

CO1: Realize the real-world applications of Big Data and its analytics.

CO2: Examine Big Data frameworks such as Hadoop and NoSQL for the efficient storage and processing of large datasets to generate analytics.

CO3: Create algorithms for addressing data-intensive problems by employing the MapReduce paradigm.

CO4: Develop and execute Big Data analytics solutions utilizing Pig and Spark to tackle data-intensive issues and produce analytical insights.

CO5: Execute Big Data tasks utilizing Hive.

CO6: Examine data through the utilization of clustering and classification algorithms.

Elective-I Subject Code: 2113   Computer Graphics

Course Outcomes:

CO1: Grasp the fundamentals of computer graphics, diverse graphics systems, and the practical applications of computer graphics.

CO2: Examine a range of algorithms for scan conversion and the filling of basic objects, along with a comparative analysis of their performance.

CO3: Apply geometric transformations to graphic objects and explore their utilization in composite forms.

CO4: Employ various clipping methods to extract scenes and transform them for display on graphics devices.

CO5: Investigate projections and techniques for identifying visible surfaces when displaying 3D scenes on 2D screens.

CO6: Render projected objects to create a natural 2D view of the scene and employ illumination models in this context.

Elective-I
Subject Code: 2114   Enterprise Resource Planning
Course Outcomes:

CO1: Utilize fundamental features of enterprise software and understand its role in co-ordinating business functions.

CO2: Evaluate strategic choices for identifying and implementing Enterprise Resource Planning (ERP) systems.

CO3: Develop strategies for the implementation of ERP systems.

CO4: Formulate reengineered business processes to ensure the successful implementation of ERP solutions.

CO5: Grasp the importance of business systems and processes through a strategic analysis of Enterprise Resource Planning (ERP) systems.

Semester – II

Subject Code: 3101   Object Oriented Programming with Java

Course Outcomes:

After successfully completing this course, students will be able to:

CO1: Understand Object-Oriented programming principles, methodologies, and their practical application, utilizing the Java programming language.

CO2: Enhance problem-solving abilities, enabling the analysis of real-life issues, the formulation of algorithmic solutions, and their implementation in Java.

CO3: Cultivate proficiency in software development and debugging within the Java environment.

CO4: Encourage the creation of real-world projects that incorporate database connectivity through JDBC.

CO5: Competent in comprehending the utility of abstract classes.

CO6: Capable of resolving challenges by employing Java's collection framework and input/output (I/O) classes.

CO7: Skill in creating multithreaded applications with synchronization for improved concurrent processing.

Subject Code: 3102   Data Warehousing and Data Mining

Course Outcomes:

CO1: Explain the roles and functions of different components within data mining and data warehousing systems.

CO2: Recognize both the advantages and constraints of diverse data mining and data warehousing models.

CO3: Elaborate on the analytical methods applied to various types of data.

CO4: Define the array of methodologies employed in data mining and data warehousing.

CO5: Contrast different approaches within the domains of data warehousing and data mining, and evaluate them alongside various technologies.

Subject Code: 3103   Research Methodology

Course Outcomes:

CO1: Gain a comprehensive understanding of the fundamentals in research methodology and effectively apply them to research or project actions.

CO2: Choose a suitable research design.

CO3: Choose a suitable research design.

CO4: Collect, edit, and analyse data systematically to enhance students' success in higher education.

CO5: Cultivate proficiency in both qualitative and quantitative data analysis and effective data presentation techniques.

CO6: Display the capability to select methods that align with research objectives.

Subject Code: 3104   Mobile Application Development Using Android Programming

Course Outcomes:

CO1: Correct Android Application

CO2: Build mobile applications with a user interface (UI) focus.

CO3: Create a mobile application that incorporates diverse sensors for enhanced functionality.

CO4: Architect and build an application that utilizes a database for data management.

CO4: Create easy GUI applications, utilize pre-built widgets and components, and interact with databases for local data storage.

Elective-II **Subject Code: 3121   Image Processing**

Course Outcomes:
CO1: Examine the fundamental principles of a digital image processing system.

CO2: Assess images in the frequency domain through different transforms.

CO3: Appraise methods for enhancing and restoring images.

CO4: Classify a variety of compression techniques.

CO5: Interpret image compression standards.

CO6: Interpret techniques for image segmentation and representation.

Elective-II

Subject Code: 3122   Digital Forensics

Course Outcomes:
CO1: Explore the historical roots of forensic science.

CO2: Differentiate between scientific findings and legal decision-making processes.

CO3: Elaborate on the significance of digital forensics and its connections to conventional forensic science, traditional scientific approaches, and the proper utilization of scientific methodologies.

CO4: Enumerate a variety of scenarios where digital forensics can find relevance.

CO5: Identify and explain contemporary challenges in the field of digital forensic investigations.

Elective-II
Subject Code: 3123   Geographical Information Systems
Course Outcomes:

CO1: Gain an understanding of core principles and methodologies in Geographic Information Systems (GIS) and stay informed about developments in Geospatial Information Science and Technology (GIS&T).

CO2: Employ fundamental graphic and data visualization principles, including colour theory, symbolization, and effective use of white space.

CO3: Exhibit strong organizational proficiency in managing files and databases.

CO4: Utilize GIS analysis to tackle geospatial issues and research queries effectively.

CO5: Show adeptness in employing GIS tools to craft purpose-driven maps that efficiently communicate the intended information.

CO6: Utilize mathematical concepts, including statistical techniques, to process data intended for geospatial analysis.

CO7: Collect and process first-hand data with the assistance of a Global Positioning System (GPS).

Elective-II
Subject Code: 3124   Internet of Things
Course Outcomes:

After successfully completing this course, students will be able to:

CO1: Facilitate comprehension of System On Chip Architectures among learners.

CO2: Foster knowledge acquisition in using the Open Source Platform, covering both hardware and installation.

CO3: Cultivate the ability to create physical interfaces and electronics for Raspberry Pi and program them through hands-on training.

Elective-II **Subject Code: 3125   Multimedia Applications**

Course Outcomes:

After successfully completing this course, students will be able to:

CO1: acquire a solid grasp of the technical aspects of Multimedia Systems.

CO2: comprehend diverse file formats for images, video, text media, colour models, and relevant software tools.

CO3: design interactive multimedia software, program multimedia data, and be capable of designing and implementing media applications.