Programme Outcomes (POs)
PO1 – Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.
PO2 - Identify, formulate, research literature, and solve complex Computing problems reaching substantiated conclusions using fundamental principles of Mathematics, Computing sciences, and relevant domain disciplines
PO3 - Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
PO4 - Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.
PO5 - Create, select, adapt, and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.
PO6: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice.
PO7 - Recognize the need, and have the ability, to engage in independent learning for continual development as a Computing professional.
PO8 - Demonstrate knowledge and understanding of computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO9 - Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.
PO10 - Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.
PO11 - Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.
PO12 - Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

Programme Specific Outcomes (PSOs)
PSO1: Software Development Proficiency - Mapped POs - PO1, PO3, PO5, PO6
Demonstrate the ability to design, develop, and deploy scalable and secure software solutions by applying principles of programming, software engineering, and database management.
PSO2: Advanced Computational Problem-Solving - Mapped to POs - PO1, PO2, PO3, PO4, PO5, PO6, PO10
Apply computational techniques, algorithms, and modern tools to solve real-world complex problems in domains such as artificial intelligence, data analytics, cloud computing, and cybersecurity.
PSO3: Industry-Ready Technological Expertise - Mapped to POs - PO5, PO6, PO7, PO10, PO12
Exhibit expertise in using contemporary technologies and frameworks such as DevOps, cloud platforms, automation tools, and machine learning models to meet industry demands and enhance employability.
PSO4: Leadership and Entrepreneurship in IT - Mapped to POs - PO7, PO8, PO9, PO10, PO11, PO12
Display entrepreneurial skills and leadership qualities by identifying market opportunities, designing innovative IT products and services, and effectively managing teams and projects in the dynamic global environment.

Course Name	Course Outcome
121 - Java Programming	CO1 Understand Basic Concepts of OOPs, Java, Inheritance, Package. (Understand) CO2: Understand Exception handling, arrays and Strings and multi-threading in Java (Understand.) CO3: Understand collection framework (Understand) CO4: Develop GUI using Abstract Windows Toolkit (AWT) and event handling (Apply) CO5: Develop Web application using JSP and Servlet, JDBC (Apply)
122 - Data Structures and Alogrithms	CO1: demonstrate linear data structures linked list, stack and queue (apply) CO2: implement tree, graph, hash table and heap data structures (apply) CO3: apply brute force and backtracking techniques (apply) CO4: demonstrate greedy and divide-conquer approaches (apply) CO5: implement dynamic programming technique (apply)
123 - Object Oriented Software Engineering	CO1: Distinguish different process model for a software development. (Understand) CO2: Design software requirements specification solution for a given problem definitions of a software system. (Analyze) CO3: Apply software engineering analysis/design knowledge to suggest solutions for simulated problems (Analyze) CO4: Design user interface layout for different types of applications (Apply) CO5: Recognize and describe current trends in software engineering (Understand)
124 - Operating System Concepts	CO1: Understand structure of OS, process management and synchronization. (Understand) CO2: Understand multicore and multiprocessing OS. (Understand) CO3: explain Realtime and embedded OS (Understand) CO4: understand Windows and Linux OS fundamentals and administration. (Understand) CO5: solve shell scripting problems (Apply)
125 - Network Technologies	CO1: Understand the basic concepts of Computer Network, and principle of layering (Understand) CO2: Apply the error detection and correction techniques used in data transmission (Apply) CO3: Apply IP addressing schemes and sub netting (Apply) CO4: Understand the concept of routing protocols, Application layer protocols and Network Security (Understand) CO5: Apply the socket programming basics to create a simple chat application (Apply)
128 - Praticals (Java Script, Java Programming, DSA)	CO1: Demonstrate Collection framework (Apply) CO2: Develop GUI using awt and swing (Apply) CO3: Develop Web application using JSP and Servlet, JDBC (Apply) CO4: Apply Data Structure to solve problems using JavaScript (Apply)
129 – Mini Project	CO1 - Create working project using tools and techniques learnt in this semester (Create)

Course Name	Course Outcome
221 Python Programming	CO1: Understand Demonstrate the concepts of python and modular programming. (Understand) CO2: Apply the concepts of concurrency control in python (Apply) CO3: Solve the real-life problems using object-oriented concepts and python libraries (Apply) CO4: Demonstrate the concept of IO, Exception Handling, database (Apply) CO5: Analyze the given dataset and apply the data analysis concepts and data visualization. (Analyze)
222 Software Project Management	CO1: Understand the process of Software Project Management Framework and Apply estimation techniques. (Apply) CO2: Learn the philosophy, principles and lifecycle of an agile project. (Understand) CO3: Demonstrate Agile Teams and Tools and Apply agile project constraints and trade-offs for estimating project size and schedule (Apply) CO4: Explain Project Tracking and Interpretation of Progress Report (Understand) CO5: Analyze Problem statement and evaluate User Stories (Analyze)
223 Optimization Techniques	CO1: Understand the role and principles of optimization techniques in business world (Understand) CO2: Demonstrate specific optimization technique for effective decision making (Apply) CO3: Apply the optimization techniques in business environments (Apply) CO4: Illustrate and infer for the business scenario (Analyze) CO5: Analyze the optimization techniques in strategic planning for optimal gain. (Analyze)
224 Advanced Internet Technologies	CO1: Outline the basic concepts of Advance Internet Technologies (Understand) CO2: Design appropriate user interfaces and implements webpage based on given problem Statement (Apply) CO3: Implement concepts and methods of NodeJS (Apply) CO4: Implement concepts and methods of Angular (Apply) CO5: Build Dynamic web pages using server-side PHP programming with Database Connectivity (Apply)
225 Advanced DBMS	CO1: Describe the core concepts of DBMS and various databases used in real applications (Understand) CO2: Design relational database using E-R model and normalization (Apply) CO3: Demonstrate XML database and nonprocedural structural query languages for data access (Apply) CO4: Explain concepts of Parallel, Distributed and Object-Oriented Databases and their applications (Understand) CO5: Apply transaction management, recovery management, backup and security – privacy concepts for database applications (Apply)
228 Practicals [Python and AIT]	CO1: implement python programming concepts for solving real life problems. (Apply) CO2: Implement Advanced Internet Technologies (Apply)
229 Mini-Project	CO1: Create working project using tools and techniques learnt in this semester (Create)

Course Name	Course Outcome
331 - Mobile Application Development	CO1: Understand Various Mobile Application Architectures. (Understand) CO2: Apply different types of widgets and Layouts. (Apply) CO3: Describe Web Services and Web Views in mobile applications. (Understand) CO4: Implement data storing and retrieval methods in android. (Apply) CO5: Demonstrate Hybrid Mobile App Framework. (Apply)
332 - Datawarehousing and Data Mining	CO1: Understand Data warehouse concepts, architecture and models (Understand) CO2: Learn and understand techniques of preprocessing on various kinds of data (Understand) CO3: Apply association Mining and Classification Techniques on Data Sets (Apply) CO4: Apply Clustering Techniques and Web Mining on Data Sets (Apply) CO5: Understand other approaches of Data mining (Understand)
333 - Software Testing and Quality Assurance	CO1: Understand the role of software quality assurance in contributing to the efficient delivery of software solutions. (Understand) CO2: Demonstrate specific software tests with well-defined objectives and targets. (Apply) CO3: Apply the software testing techniques in commercial environments. (Apply) CO4: Construct test strategies and plans for software testing. (Analyze) CO5: Demonstrate the usage of software testing tools for test effectiveness, efficiency and coverage (Apply)
334 - Knowledge Representation and AI	CO1: Understand basic building block of Artificial Intelligence and Knowledge Representation. (Understand) CO2: Apply Propositional Logic for knowledge representation. (Apply) CO3: Design various models based on Machine Learning methodology (Apply) CO4: Design various models based on Deep Learning methodology (Apply) CO5: Understand various hardware and software aspect used for AI and its application. (Understand)
335- Cloud Computing	CO1: Describe the concepts of Cloud Computing and its Service Models& Deployment Models. (Understand) CO2: Classify the types of Virtualization. (Understand) CO3: Describe the Cloud Management and relate Cloud to SOA. (Understand) CO4: Interpret Architecture and Pharrell Programing of Cloud Computing. (Apply) CO5: Demonstrate practical implementation of Cloud computing. (Apply)
338- Practicals - Mobile App Development and KRAI	CO1: Develop mobile application. (Apply) CO2: Develop ML, DL models using Python (Apply)
339- Mini Project	CO1: Create working project using tools and techniques learnt in this semester (Create)

Course Name	Course Objective
421- DevOps	CO1: describe the evolution of technology & timeline (Understand) CO2: explain Introduction to various Devops platforms (Remember) CO3: demonstrate the building components / blocks of Devops and gain an insight of the Devops Architecture. (Understand) CO4: apply the knowledge gain about Devops approach across various domains (Apply) CO5: build DevOps application (Apply)
422- Principles and Practices of Management and Organizational Behaviour	CO1: Describe and analyze the interactions between multiple aspects of management. (Understand) CO 2: Analyze the role of planning and decision making in Organization (Analyze) CO 3: Justify the role of leadership qualities, Motivation and Team Building. (Analyze) CO 4: Analyze stress management and conflict management (Analyze) CO 5: Describe Personality and Individual Behavior (Understand)
423 - Project	CO1: Create working project using tools and techniques learnt in the programme (Create)

Mapping of Programme Outcomes (POs) to PSOs

PO/PSOs	PSO1	PSO2	PSO3	PSO4
PO1	✓	✓		
PO2		✓		
PO3	✓			
PO4		✓		
PO5	✓	✓	✓	
PO6	✓	✓	✓	
PO7			✓	✓
PO8				✓
PO9				✓
PO10		✓	✓	✓
PO11				✓
PO12			✓	✓

Mapping of Programme Outcomes (POs) to Course Outcomes (COs) (Semester-I)

PO/CO	121 Java Programming	122 Data Structures and Algorithms	123 Object-Oriented Software Engineering	124 Operating System Concepts	125 Network Technologies	128 Practical	129 Mini-Project
PO1	✓	✓	✓	✓	✓	✓	✓
PO2	✓	✓	✓	✓	✓	✓	
PO3	✓	✓	✓	✓	✓		✓
PO4		✓					
PO5	✓	✓	✓	✓	✓	✓	✓
PO6	✓	✓		✓	✓		
PO7	✓	✓	✓	✓	✓	✓	
PO8			✓				✓
PO9			✓		✓		
PO10					✓		
PO11		✓				✓	
PO12							✓