



ADITYA ENGINEERING COLLEGE

An Autonomous Institution

Approved by AICTE • Permanently Affiliated to JNTUK • Accredited by NAAC with 'A' Grade

Recognised by UGC under sections 2(f) and 12(B) of UGC Act, 1956

Aditya Nagar, ADB Road, Surampalem - 533437, Near Kakinada, E.G.Dt., Ph:99498 76662

Programme: Masters in Computer Applications

Regulation: AR-17

Department of Masters in Computer Applications

| Course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students. | | |
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List of courses for Masters in Computer Applications

| S. No. | Semester | Course Code | Course Name |
|--------|----------|-------------|---|
| 1 | I | 173MC1T01 | C Programming & Data Structures |
| 2 | I | 173MC1T02 | Computer Organization |
| 3 | I | 173MC1T03 | Discrete Mathematical Structures & Graph Theory |
| 4 | I | 173MC1T04 | Statistics With R Programming |
| 5 | I | 173MC1T05 | Accounting & Financial Management |
| 6 | I | 173MC1L01 | English Language Communication Skills Lab |
| 7 | I | 173MC1L02 | C Programming Lab |
| 8 | I | 173MC1L03 | Statistics With R Programming Lab |
| 9 | II | 173MC2T06 | Oops Through Java |
| 10 | II | 173MC2T07 | Operating Systems |
| 11 | II | 173MC2T08 | Software Engineering |
| 12 | II | 173MC2T09 | Optimization Techniques |
| 13 | II | 173MC2T10 | Computer Graphics |
| 14 | II | 173MC2L04 | Oops Through Java Lab |
| 15 | II | 173MC2L05 | Data Structures Lab |
| 16 | II | 173MC2L06 | Operating System & Computer Graphics Lab |
| 17 | III | 173MC3T11 | Database Management Systems |
| 18 | III | 173MC3T12 | Computer Networks |
| 19 | III | 173MC3T13 | Unix Programming |
| 20 | III | 173MC3T14 | Management Information System |
| 21 | III | 173MC3T15 | Design & Analysis Of Algorithms |
| 22 | III | 173MC3L07 | Database Management Systems Lab |
| 23 | III | 173MC5E08 | Computer Forensics |
| 24 | III | 173MC3L09 | Computer Networks Lab |
| 25 | IV | 173MC4T16 | Object Oriented Analysis & Design |
| 26 | IV | 173MC4T17 | Advanced Java & Web Technologies |
| 27 | IV | 173MC4T18 | Data Warehousing & Mining |
| 28 | IV | 173MC4E01 | Mobile Computing (Elective – I) |
| 29 | IV | 173MC4E02 | Human Computer Interaction (Elective – I) |
| 30 | IV | 173MC4E03 | Cloud Computing (Elective – I) |
| 31 | IV | 173MC4E04 | Software Project Management (Elective – II) |

| S. No. | Semester | Course Code | Course Name |
|---------------|-----------------|--------------------|--|
| 32 | IV | 173MC4E05 | Artificial Intelligence (Elective – II) |
| 33 | IV | 173MC4E06 | Embedded Systems (Elective – II) |
| 34 | IV | 173MC4L10 | Advanced Java & Web Technologies Lab |
| 35 | IV | 173MC4L11 | Data Warehousing & Mining Lab |
| 36 | IV | 173MC4L12 | Object Oriented Analysis & Design Lab |
| 37 | V | 173MC5T19 | Big Data Analytics |
| 38 | V | 173MC5T20 | Network Programming |
| 39 | V | 173MC5T21 | Python Programming |
| 40 | V | 173MC5E07 | Cyber Security (Elective – III) |
| 41 | V | 173MC5E08 | Computer Forensics (Elective – III) |
| 42 | V | 173MC5E09 | E – Commerce (Elective – III) |
| 43 | V | 173MC5E10 | Internet Of Things (Elective – IV) |
| 44 | V | 173MC5E11 | Multimedia Application Development (Elective – IV) |
| 45 | V | 173MC5E12 | Software Testing Methodologies (Elective – IV) |
| 46 | V | 173MC5L13 | Big Data Analytics Lab |
| 47 | V | 173MC5L14 | Network Programming Lab |
| 48 | V | 173MC5L15 | Python Programming Lab |
| 49 | VI | 173MC6R01 | Seminar |
| 50 | VI | 173MC6P01 | Major Project |



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| S. No. | Course Code | Course Name | CO | Course Outcomes |
|--------|-------------|---|-----|--|
| 1 | 173MC1T01 | C Programming & Data Structures | CO1 | Describe the fundamental concepts of data structure and algorithms. |
| | | | CO2 | Analyze the time and space complexity of an algorithm using various notations. |
| | | | CO3 | Apply various searching and sorting techniques to solve computing problem |
| | | | CO4 | Explain various operations and applications of linear data structures. |
| | | | CO5 | Apply various tree, graph traversing techniques and spanning trees in solving complex problem. |
| 2 | 173MC1T02 | Computer organization | CO1 | Describe the structure and various types of instructions in the computer system. |
| | | | CO2 | Demonstrate the working of CPU, RISC and CISC architecture |
| | | | CO3 | Summarize the computer arithmetic. |
| | | | CO4 | Demonstrate the use of pipeline and vector processing. |
| | | | CO5 | Exemplify I/O and Memory organization. |
| 3 | 173MC1T03 | Discrete Mathematical Structures & Graph Theory | CO1 | Apply the principles of mathematical logic to statement calculus and predicate calculus. |
| | | | CO2 | Compute Transitive closure, equivalence classes of binary relations. |
| | | | CO3 | Apply the principles of number theory and group theory. |

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| | | | CO4 | Solve recurrence relations by various methods. |
| | | | CO5 | Apply the concepts of graph theory to find euler paths, Hamiltonian paths, Spanning trees, minimal spanning trees and chromatic number. |
| 4 | 173MC1T04 | Statistics With R Programming | CO1 | Identify discrete and continuous random variables and data structures in R. |
| | | | CO2 | Apply discrete and continuous probability distributions to the given data and execute R-functions for probability distributions.. |
| | | | CO3 | Explain sampling distribution, estimation and R-functions for constructing confidence intervals. |
| | | | CO4 | Write R program for standard statistical test. |
| | | | CO5 | Apply the concepts of correlation and regression to the given statistical data using R-function and making use of R-graphic functions to visualize the data. |
| 5 | 173MC1T05 | Accounting & Financial Management | CO1 | Explain the Managerial Economic concepts for decision making and forward planning. |
| | | | CO2 | Illustrate the law of demand and its exceptions by using different forecasting methods. |
| | | | CO3 | Identify the cost behavior for managerial decision making and Break Even Point (BEP) of an enterprise |
| | | | CO4 | Classify the different types of business organizations along with basic knowledge on business cycle. |
| | | | CO5 | Make use of the process & principles of accounting for the preparation of final accounts. |
| 6 | 173MC1L01 | English Language Communication Skills Lab-1 | CO1 | Make use of the concepts to communicate confidently and competently in English Language in all spheres. |
| | | | CO2 | Express Creative skills to construct Dialogues / Conversations in Spoken and Written forms. |

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| | | | CO3 | Identify Accent for intelligibility. |
| | | | CO4 | Demonstrate communicative ability in everyday Conversation, JAM Sessions and Public Speaking. |
| | | | CO5 | Demonstrate nuances of Language through Audio – Visual Experience and group activities. |
| 7 | 173MC1L02 | Computer Programming Lab | CO1 | Implement basic programs in C. |
| | | | CO2 | Use Conditional and Iterative statements to solve real time scenarios in C. |
| | | | CO3 | Implement the concept of Arrays and Modularity. |
| | | | CO4 | Apply the Dynamic Memory Allocation functions using pointers. |
| | | | CO5 | Develop programs using structures, and Files. |
| 8 | 173MC1L0 3 | Statistics With R Programming Lab | CO1 | Make use of online resources for R and import new function packages into the R workspace. |
| | | | CO2 | Import, review, manipulate and summarize data-sets in R. |
| | | | CO3 | Explore data-sets to create testable hypotheses and identify appropriate statistical tests. |
| | | | CO4 | Apply appropriate statistical tests using R. |
| | | | CO5 | Design and edit visualizations with R. |
| 9 | 173MC2T06 | OOPS Through Java | CO1 | Understand the use OOP concepts. |
| | | | CO2 | Apply OOP concepts to solve real world problems. |
| | | | CO3 | Understand the concepts of packages and interfaces. |
| | | | CO4 | Understand the concepts of exception handling, multithread applications with synchronization. |
| | | | CO5 | Design the GUI based applications using AWT and Swings. |
| 10 | 173MC2T07 | Operating Systems | CO1 | Interpret the basic structure, services, system calls and architectural components of Operating Systems |

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| | | | CO2 | Solve problems related to process scheduling, synchronization in unit and multi-processing systems.. |
| | | | CO3 | Explain the deadlock handling Mechanism in the processing System |
| | | | CO4 | Summarize the concepts of Memory Management, Virtual Memory Management and Thrashing. |
| | | | CO5 | Describe the concepts of file system and mass storage structure. |
| 11 | 173MC2T08 | Software Engineering | CO1 | Demonstrate an understanding of the key facts, concepts, principles and theories of software engineering.. |
| | | | CO2 | Analyze the effective software engineering process, based on knowledge of widely used development lifecycle models.. |
| | | | CO3 | Explain the various responsibilities and activities of project management. |
| | | | CO4 | Translate a requirements specification into an implementable design, following a structured and organized process. |
| | | | CO5 | Examine a testing strategy for a software system using different testing techniques. |
| 12 | 173MC2T09 | Optimization Techniques | CO1 | Describe clearly a problem, identify its parts and analyze the individual functions. |
| | | | CO2 | Feasibility study for solving an optimization problem. |
| | | | CO3 | Becoming a mathematical translation of the verbal formulation of an optimization problem. |
| | | | CO4 | Design algorithms, the repetitive use of which will lead reliably to finding an approximate solution. |
| | | | CO5 | Discovery, study and solve optimization problems. |
| | | | CO6 | Investigate, study, develop, organize and promote innovative solutions for various applications. |

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| 13 | 173MC2T10 | Computer Graphics | CO1 | Identify the applications of computer graphics and video display devices for implementing graphical user interface. |
| | | | CO2 | Analyse output primitives and filled area primitives in implementing various algorithms. |
| | | | CO3 | Make use of geometric transformations, viewing and clipping in 2D and 3D graphics. |
| | | | CO4 | Illustrate the various visual surface detection methods in 3D graphics. |
| | | | CO5 | Apply OpenGL for general computer animations. |
| | | | CO6 | Analyse different object and color modelling techniques, fractals and ray tracing classifications |
| 14 | 173MC2L04 | OOPS Through Java Lab | CO1 | Apply OOP concepts to solve real time problems. |
| | | | CO2 | Make use of class, inheritance, interface and packages to develop solutions for complex problems. |
| | | | CO3 | Develop a solution for a real time problem using Exception handling. |
| | | | CO4 | Build java applications using Threads. |
| | | | CO5 | Apply applets and event handling to create interactive applications. |
| | | | CO6 | Design GUI using AWT and Swing Components. |
| 15 | 173MC2L05 | Advanced Data Structures Lab | CO1 | Construct the graph traversals and minimum spanning tree for a given graph. |
| | | | CO2 | Develop program to implement lossless data compression algorithm |
| | | | CO3 | Apply the hashing techniques to implement Dictionary. |
| | | | CO4 | Build a Binary Heap using Priority queues. |
| | | | CO5 | Analyze various basic operations of AVL tree, Red-Black tree, B-Tree to improve the efficiency. |
| 16 | 173MC2L06 | Operating System & | CO1 | Implement CPU scheduling algorithms. |

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| | | Computer Graphics Lab | CO2 | Implement page replacement algorithms. |
| | | | CO3 | Execute different types of Linux commands. |
| | | | CO4 | Identify the applications of computer graphics and video display devices for implementing graphical user interface. |
| | | | CO5 | Analyse output primitives and filled area primitives in implementing various algorithms. |
| | | | CO6 | Make use of geometric transformations, viewing and clipping in 2D and 3D graphics. |



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Course Outcomes for the Second Year (III & IV Semester) courses of Masters in Computer Applications

| S. No. | Course Code | Course Name | CO | Course Outcomes |
|--------|-------------|-----------------------------|-----|---|
| 1 | 173MC3T11 | Database Management Systems | CO1 | Summarize the database characteristics. |
| | | | CO2 | Identify various database architectures |
| | | | CO3 | Interpret relational database using SQL. |
| | | | CO4 | Examine issues in data storage and query processing for appropriate solutions.. |
| | | | CO5 | Make use of normalization techniques for real world database design. |
| | | | CO6 | Illustrate the mechanisms of transaction management. |
| 2 | 173MC3T12 | Computer Networks | CO1 | Explain the computer network fundamentals and various topologies. |
| | | | CO2 | Compare the OSI with TCP/IP reference model. |
| | | | CO3 | Summarize the concepts of physical layer and switching techniques. |
| | | | CO4 | Discuss the design issues of data link layer services |
| | | | CO5 | Demonstrate the concept of MAC and Channelization. |
| | | | CO6 | Apply various routing algorithms and Congestion control techniques and describe services provided by the transport layer and application layer. |
| 3 | 173MC3T13 | Unix And Shell Programming | CO1 | Describe UNIX Operating System Architecture and Command Structure. |
| | | | CO2 | Make use of various commands in Unix to control the resources like disk,file and network. |

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| | | | CO3 | Apply GREP and EGREP Commands with wild card and regular expressions to perform Data Manipulation Tasks. |
| | | | CO4 | Develop Shell Script using Shell commands. |
| | | | CO5 | Utilize Filter commands to work on files and documents. |
| 4 | 173MC3T14 | Management Information System | CO1 | Evaluate the role of information systems in business environment. |
| | | | CO2 | Identify problems and also generate solutions by using MIS in organization. |
| | | | CO3 | Demonstrate systems analysis, design and decision making in a business setting. |
| | | | CO4 | Apply MIS to solve business problems and decision making. |
| | | | CO5 | Illustrate how information systems support the activities of managers and end-users in organizations |
| 5 | 173MC3T15 | Design & Analysis of Algorithms | CO1 | Develop algorithms for various computational problems. |
| | | | CO2 | Analyze time and space complexities of an algorithm. |
| | | | CO3 | Construct sorting and searching algorithms using Divide and Conquer approach. |
| | | | CO4 | Apply Greedy method with heuristic approach in tracing the global optimal solution from local optimal solutions. |
| | | | CO5 | Compare the benefits of using Dynamic programming over Greedy method Solve problems using Backtracking strategy. |
| | | | CO6 | Solve problems using Backtracking strategy and exploit problems using Branch and Bound strategy. |
| 6 | 173MC3L07 | Database Management Systems Lab | CO1 | Make use of the concepts of relational model techniques for database design. |
| | | | CO2 | Construct a database schema for a given problem-domain |
| | | | CO3 | Apply Normalization techniques on a database to avoid anomalies. |
| | | | CO4 | Build queries on a database using SQL DML/DDL commands. |

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| | | | CO5 | Apply integrity constraints on a database using RDBMS. |
| | | | CO6 | Develop PL/SQL stored procedures, stored functions, cursors and packages. |
| 7 | 173MC3L09 | Computer Networks Lab | CO1 | Explain about fundamental concepts of computer networks. |
| | | | CO2 | Develop data link layer services of dynamic framing. |
| | | | CO3 | Demonstrate the working of various routing algorithms, error detection and correction techniques. |
| | | | CO4 | Discuss on various protocols for network security to protect against the threats in the networks. |
| | | | CO5 | Make use of ARP/RARP protocols. |
| 8 | 173MC4T16 | Object Oriented Analysis & Design | CO1 | Demonstrate the Conceptual model of UML. |
| | | | CO2 | Illustrate classes, objects and relationships for designing a software system. |
| | | | CO3 | Build use-case and interactive diagrams for different applications. |
| | | | CO4 | Develop activity diagram and its modeling techniques. |
| | | | CO5 | Model events and signals using different modeling techniques. |
| | | | CO6 | Design state machine and state chart diagrams, Component and Deployment Diagrams for real time applications. |
| 9 | 173MC4T17 | Web Technologies | CO1 | Develop web pages using HTML, CSS and JavaScript. |
| | | | CO2 | Summarize DTD, Schema and Parsing tools of XML documents. |
| | | | CO3 | Build web applications using PHP and MySQL database. |
| | | | CO4 | Discuss the integration of PHP with AJAX. |
| | | | CO5 | Develop simple applications using PERL. |
| | | | CO6 | Apply basic features of Ruby in various applications. |
| 10 | 173MC4T18 | Data Warehousing & Mining | CO1 | Analyze OLTP and OLAP. |
| | | | CO2 | Illustrate the Database technologies useful for data mining. |

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| | | | CO3 | Make use of data pre processing techniques in KDD Process. |
| | | | CO4 | Apply decision tree algorithm for classification problems. |
| | | | CO5 | Develop classification model for a given dataset. |
| | | | CO6 | Compare different types of clustering algorithms. |
| 11 | 173MC4E01 | Mobile Computing (Elective - I) | CO1 | Describe the basic concepts and principles in mobile computing. |
| | | | CO2 | Identify the various subsystems in GSM and GPRS architecture. |
| | | | CO3 | Illustrate the concept of Medium Access Control Mechanisms. |
| | | | CO4 | Apply Mobile IP in Wireless environment to handle packet delivery during mobility. |
| | | | CO5 | Compare Traditional TCP and Modified TCP. |
| | | | CO6 | Discuss various database issues and data delivery mechanisms in mobile environment. |
| 12 | 173MC4E02 | Human Computer Interaction (Elective - I) | CO1 | Outline the importance of human computer interaction for a good design. |
| | | | CO2 | Develop a GUI application for Understanding of Users. |
| | | | CO3 | Distinguish Online Vs Paper documentation in various development processes and social networking. |
| | | | CO4 | Analyze screen design of various applications in GUI and Web. |
| | | | CO5 | Compare Device based and Screen based controls. |
| | | | CO6 | Summarize effective feedback guidance and assistance. |
| 13 | 173MC4E03 | Cloud Computing (Elective - I) | CO1 | Explain the fundamentals of computing paradigm and cloud computing. |
| | | | CO2 | Demonstrate the basic concepts of virtualization and implementation levels of Virtualization. |
| | | | CO3 | Illustrate the architecture of cloud computing. |

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| | | | CO4 | Apply the Cloud programming and software environments on any real cloud service. |
| | | | CO5 | Analyze the Cloud Security risks and Mechanisms. |
| 14 | 173MC4E04 | Software Project Management (Elective - II) | CO1 | Explain Software Project Management fundamentals and Planning activities. |
| | | | CO2 | Compare SDLC models in project framework. |
| | | | CO3 | Apply various Effort estimation techniques and tools in real time applications. |
| | | | CO4 | Discuss various Risk categories, Project Monitoring Control and Resource Allocation. |
| | | | CO5 | Demonstrate the concept of Software Quality. |
| 15 | 173MC4E05 | Artificial Intelligence and Machine Learning (Elective - II) | CO1 | Describe the fundamentals of Artificial Intelligence and its applications. |
| | | | CO2 | Analyze the time and space complexities of searching techniques. |
| | | | CO3 | Apply various logical systems to inference the different logical problems. |
| | | | CO4 | Identify the machine learning techniques |
| | | | CO5 | Employ the reduction techniques |
| 16 | 173MC4E06 | Embedded Systems (Elective - II) | CO1 | Illustrate the basic concepts of an embedded systems with hardware components. |
| | | | CO2 | Categorize the microcontrollers required to design an embedded systems |
| | | | CO3 | Identify the different RTOS for various embedded and real time applications. |
| | | | CO4 | Examine the different issues RTOS objects in embedded systems. |
| | | | CO5 | Assess the embedded systems by various implementation and development tools. |
| 17 | 173MC4L10 | WebTechnologies Lab | CO1 | Develop web pages using HTML, CSS and JavaScript. |
| | | | CO2 | Apply DTD to validate the XML Document. |
| | | | CO3 | Build real time applications using PHP and MySQL. |
| | | | CO4 | Construct basic programs using Perl. |
| | | | CO5 | Construct basic programs using Ruby |

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| 18 | 173MC4L11 | Data Warehousing & Mining Lab | CO1 | Determine different steps for pre-processing in Data mining |
| | | | CO2 | Use data mining software system for solving data mining problems. |
| | | | CO3 | Experiment with real data sets in data mining tool R. |
| | | | CO4 | Apply algorithms for Association rule mining. |
| | | | CO5 | Apply Classification methods for data mining. |
| | | | CO6 | Demonstrate Clustering approaches in data mining. |
| 19 | 173MC4L12 | Object Oriented Analysis & Design Lab | CO1 | Explain the importance of system analysis and design in solving complex problems. |
| | | | CO2 | Compare object-oriented approach with traditional approach in system analysis and design. |
| | | | CO3 | Analyze the importance of modeling and design of various applications. |
| | | | CO4 | Construct various UML models using appropriate notations. |
| | | | CO5 | Compare various object relationships. |
| | | | CO6 | Show the role and function of each UML model in developing object- oriented software. |



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| S. No. | Course Code | Course Name | CO | Course Outcomes |
|--------|-------------|---------------------|-----|---|
| 1 | 173MC5T19 | Big Data Analytics | CO1 | Develop various data structures using java collection framework. |
| | | | CO2 | Demonstrate Building blocks of Hadoop |
| | | | CO3 | Choose map reduce approach to solve big data Problems. |
| | | | CO4 | Make use of Pig Framework to work with big data.. |
| | | | CO5 | Utilize Hive to Structure the Data. |
| 2 | 173MC5T20 | Network Programming | CO1 | Explain the client-server paradigm and socket structures. |
| | | | CO2 | Describe the basic concepts of TCP sockets and TCP echo client-server programs |
| | | | CO3 | Discuss the UDP sockets and UDP echo client-server programs. |
| | | | CO4 | Explain Socket options and ability to understand IPC. |
| | | | CO5 | Apply the applications of sockets and demonstrate skill to design simple applications like FTP, TELNET etc. |
| 3 | 173MC5T21 | Python Programming | CO1 | Explain fundamental concepts of Python programming language. |
| | | | CO2 | Develop programs using control statements. |
| | | | CO3 | Make use of data structures in Python to solve various problems. |
| | | | CO4 | Develop programs using functions, strings and files.. |

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| | | | CO5 | Make Use of Standard libraries like math, turtle, tkinter, re etc. in building real time applications. |
| | | | CO6 | Explain Object Oriented Programming concepts, Exceptions and applications using DB connectivity. |
| 4 | 173MC5E07 | Cyber Security (Elective – III) | CO1 | Illustrate cybercrime fundamentals. |
| | | | CO2 | Analyze cyber offence planning. |
| | | | CO3 | Interpret cybercrime on mobile and wireless devices. |
| | | | CO4 | Distinguish type of tools and methods used in cyber crimes. |
| | | | CO5 | Explain the importance of cyber security. |
| 5 | 173MC5E08 | Computer Forensics (Elective – III) | CO1 | Apply security architecture principles. |
| | | | CO2 | Demonstrate the risk management processes and practices. |
| | | | CO3 | Distinguish system and application security threats and vulnerabilities. |
| | | | CO4 | Demonstrate advanced knowledge of programming for network communications. |
| | | | CO5 | Identify security tools and hardening techniques. |
| 6 | 173MC5E09 | E – Commerce (Elective – III) | CO1 | Explain the fundamentals of E-Commerce and its applications in different orientations. |
| | | | CO2 | Compare mercantile process models of different perspectives. |
| | | | CO3 | Contrast on different payment models in E-Commerce applications. |
| | | | CO4 | Discuss on design issues of Intra-Organizational E-Commerce and Inter-Organizational E-Commerce. |
| | | | CO5 | Identify different types of digital documents and their features, advantages and disadvantages. |
| | | | CO6 | Summarize the concepts of digital document management, concepts of marketing strategies in E-Commerce, information search and discovery, different services offered by multimedia to E-Commerce firms. |

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| 7 | 173MC5E10 | Internet of Things (Elective – IV) | CO1 | Demonstrate the need of IoT in the computing world.. |
| | | | CO2 | Identify the Business Process models of IoT. |
| | | | CO3 | Develop the communication protocols and communication technologies. |
| | | | CO4 | Analyze the data storage and acquisition mechanisms for real time applications. |
| | | | CO5 | Describe the involvement of cloud service model platforms in IoT |
| | | | CO6 | Design an IoT application for complex problems. |
| 8 | 173MC5E11 | Multimedia Application Development (Elective – IV) | CO1 | Identify the various Data Representation Techniques. |
| | | | CO2 | Demonstrate the working principle of Text compression Techniques. |
| | | | CO3 | Make use of different compression Techniques on image. |
| | | | CO4 | Compare various Audio compression Techniques. |
| | | | CO5 | Demonstrate the basic operations of Video Compression Techniques. |
| | | | CO6 | Identify different Multimedia Applications. |
| 9 | 173MC5E12 | Software Testing Methodologies (Elective – IV) | CO1 | Explain the fundamentals of software testing. |
| | | | CO2 | Compare the SDLC with STLC. |
| | | | CO3 | Summarize verification and validation activities. |
| | | | CO4 | Design the test cases using different testing strategies. |
| | | | CO5 | Outline the importance of static testing and various levels of software testing. |
| | | | CO6 | Discuss about various Automation Testing tools. |
| 10 | 173MC5L13 | Big Data Analytics Lab | CO1 | Develop linear and nonlinear data structures using Java Collection framework. |
| | | | CO2 | Build the Hadoop Cluster using various installation modes. |
| | | | CO3 | Apply hadoop commands to interact with HDFS. |

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| | | | CO4 | Solve Big Data Problems using Map Reduce approach. |
| | | | CO5 | Analyse the big data using Pig Latin. |
| | | | CO6 | Build queries using Hive Query Language. |
| 11 | 173MC5L14 | Network Programming Lab | CO1 | Demonstrate advanced knowledge of networking. |
| | | | CO2 | Design the key protocols which support the Internet. |
| | | | CO3 | Explain programming interfaces for network communication. |
| | | | CO4 | Demonstrate advanced knowledge of programming for network communications. |
| | | | CO5 | Develop TCP/UDP Sockets. |
| 12 | 173MC5L15 | Python Programming Lab | CO1 | Build basic programs in Python. |
| | | | CO2 | Develop programs using conditional and iterative statements. |
| | | | CO3 | Make use of different data structures in solving complex problems. |
| | | | CO4 | Apply standard libraries in building real time applications. |
| | | | CO5 | Analyze the Object Oriented concepts in Python. |
| 13 | 173MC6P01 | Major Project | CO1 | Perceive, leadership and management skills required for project development and product delivery. |
| | | | CO2 | Build a model/idea/method/algorithm for societal problems. |
| | | | CO3 | Develop inventive or innovative thought making process using software engineering principles. |
| | | | CO4 | Apply relevant tools for collecting /processing/Analyze the required information for a project completion. |
| | | | CO5 | Adapt to work as a team and adhering professional ethics in presenting the results in written and oral formats. |