



**COMPUTER SCIENCE AND ENGINEERING DEPARTMENT
UNIVERSITY DEPARTMENTS, RTU, KOTA**

Course Outcomes (COs)

B.Tech. Information Technology

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| ELECTRONIC DEVICES & CIRCUITS | CO1 | Explain basic knowledge on the working of various Semiconductor Devices. |
| | CO2 | Categories the applicability, strength, and weakness of the various transistors. |
| | CO3 | Develop intelligent system by assembling solutions of JFET and MOSFET. |
| | CO4 | Develop an interest in the Advantage of Small Signal Amplifiers at Low Frequency |
| DATA STRUCTURES & ALGORITHMS | CO1 | To Understand and Examine asymptotic analysis of any algorithm. |
| | CO2 | To Evaluate and Analyse the implementation and application of various ADTs such as Stack, Queue etc. |
| | CO3 | To Design tree based data structures such as Binary Tree, BST, AVL Tree etc and Applications of it. |
| | CO4 | To Design and Implement graph and hashing based data structure. |
| DIGITAL ELECTRONICS | CO1 | Recollect basics of number systems and Digital Electronics (K1) |
| | CO2 | Appraise the understanding to Clarify the concept of logic gates (K2) |
| | CO3 | Applying Boolean laws to rearrange and Modify them by logic gates to validate in minimized form. (K3) |
| | CO4 | Illustrate and Examine different sequential systems. (K4) |
| | CO5 | Classify and Inspect different registers and counters (K4) |
| SOFTWARE ENGINEERING | CO1 | Understand the basic implementation model SDLC and its types (K1) . |
| | CO2 | Explain the process of SRS document of a project (K2) . |
| | CO3 | Capable to apply implementation process of validation and verification methods in software project (K3) . |
| | CO4 | Capable to implement testing techniques on SDLC phases (K4) . |
| | CO5 | Analyze and apply project management techniques on real time project (K4) . |

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| OBJECT ORIENTED PROGRAMMING | CO1 | Relate the different programming paradigms and their structure. (K2) |
| | CO2 | Compare dynamic memory management techniques and apply using pointers, constructors, destructors. (K2) |
| | CO3 | Describe the concept of function overloading, operator overloading, virtual functions and polymorphism to solve complex problems. (K2) |
| | CO4 | Classify inheritance with the understanding of early and late binding and design solutions. (K2) |
| | CO5 | Model solutions for exception handling. (K3) |
| ADVANCED ENGINEERING MATHEMATICS | CO1 | Apply Laplace transformation to solve real life application based problems. |
| | CO2 | Develop Fourier transform for the solution of partial differential equations with special reference to heat equation and wave equation. |
| | CO3 | Examine harmonic analysis and calculate total harmonic distortion. |
| | CO4 | Calculate line integral in complex domain of simple applications through Cauchy's integral formula. |
| | CO5 | Develop Taylor's series and Laurent's series to different functions. |
| ELECTRONIC DEVICES AND CIRCUITS LAB | CO1 | Access knowledge of analog and digital multi-meters, regulated dc supplies, analog CRO's. |
| | CO2 | Analyze V-I characteristics of P-N junction Diodes, Zener Diodes. |
| | CO3 | Discuss applications of diodes as clipper and clamper. |
| | CO4 | Analyze characteristics of BJT in CB, CE and CC Configuration. |
| DATA STRUCTURES AND ALGORITHMS LAB | CO1 | Describe basic concepts of Function, Array and Link-list. |
| | CO2 | Able to distinguish how several fundamental algorithms work particularly those concerned with Stack, Queues, Trees and various Sorting algorithms. |
| | CO3 | Measure the performance of various algorithms |
| | CO4 | Design new algorithms or modify existing ones for new applications and able to analyze the space & time complexity. |
| DIGITAL ELECTRONICS LAB | CO1 | Originate fundamental concepts of basic logic gates, universal logic gates and their realization. |
| | CO2 | Demonstrate SOP & POS, combinational circuits and their realization. |
| | CO3 | Implement & Examine ripple adder/ subtractor, multiplexer, de-multiplexer and their realization. |

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| | CO4 | Examine the seven segment displays |
| | CO5 | Construct sequential circuits like flip flops, counters, registers and their realization |
| OBJECT ORIENTED PROGRAMMING LAB | CO1 | Identify complex problems and develop solutions using objects and classes. (K1) |
| | CO2 | Programs to demonstrate the implementation of friend function, constructors and destructors (K2) |
| | CO3 | Make use of operator overloading using unary and binary operators. (K3) |
| | CO4 | Analyze and implement algorithmic problems including inheritance, and polymorphism. (K4) |
| | CO5 | Inspect the concept of Templates and implement exception handling |
| DISCIPLINE & EXTRA-CURRICULAR ACTIVITY | CO1 | Develop and understand diverse philosophies and cultures across societies through NCC and sports activities. |
| | CO2 | Learn role of creativity, innovation and disciplines by participating literary, cultural and technical activities. |
| | CO3 | Acquire skills for effective citizenship and life-long learning through professional development activities |
| | CO4 | Learn public speaking skills being involved in community work and social-culture activities. |
| MICROPROCESSOR AND INTERFACES | CO1 | Describe 8085 architecture and programming in assembly language. (K1) |
| | CO2 | Discuss different types of instruction set and addressing modes. (K2) |
| | CO3 | Apply concepts of interfacing memory and peripheral devices to a microprocessor. (K3) |
| | CO4 | Analyse different applications of microprocessor. (K4) |
| Discrete Mathematics Structures | CO1 | Be familiar with fundamental mathematical concepts such as sets and apply them. |
| | CO2 | Students analyze basics knowledge gained by mathematical relation and apply them |
| | CO3 | To be able to understand fundamental of functions such as (domain, co-domain, range, image, inverse image and composition) and types of functions. |
| | CO4 | Use mathematical propositions and proof techniques to check the truthfulness of a real life situation and to apply the notion of mathematical thinking, mathematical proofs and logics such as predicate logic, propositional logic and inference rules. |
| | CO5 | Use graph theory and trees to formulate the problems and solve them. |
| LINUX AND SHELL PROGRAMMING | CO1 | Understanding of Unix/Linux operating system, and its basic commands to operate. |

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| | CO2 | Able to understand the vi editor and its basic commands for creating and editing files in Unix/Linux environment and analysis of C environment |
| | CO3 | Understanding of X-window system and its environment. |
| | CO4 | Able to understand the shell with its basic features and working of BASH |
| | CO5 | Apply the concept of shell programming to solve various problems |
| ANALYSIS OF ALGORITHMS | CO1 | To review algorithms and to define the concepts related. (K2) |
| | CO2 | To analyze certain methods involved such as Greedy, Divide and conquer. (K4) |
| | CO3 | To describe algorithms involved such as Randomized, Pattern matching, Number Theoretic. (K1) |
| | CO4 | To illustrate several Problems related to Dynamic Programming, Branch and Bound and Assignment Problems. (K4) |
| PRINCIPLE OF COMMUNICATION | CO1 | Illustrate analog modulation techniques. |
| | CO2 | Analyse pulse modulation and sampling techniques for analog communication. |
| | CO3 | To be able to understand PCM and DELTA Modulation system. |
| | CO4 | Explain digital Modulation techniques. |
| | CO5 | Define various techniques used in spread-spectrum modulation. |
| COMPUTER NETWORK | CO1 | Describe the functions of each layer in OSI and TCP/IP model.(K2) |
| | CO2 | Describe the functions of data link layer and protocols used in MAC sub layer.(K2) |
| | CO3 | Building the skills of IP addressing, Routing Mechanisms and Congestion Control technique.(K3) |
| | CO4 | Identify the essential principles of a transport layer protocol and session layer protocol.(K3) |
| | CO5 | Illustrate the features and operations of various application layer protocols such as HTTP, DNS, SMTP, etc.(K2) |
| MICROPROCESSOR LAB | CO1 | Describe architecture and instruction set of 8085 microprocessor (K1) . |
| | CO2 | Develop experience with Assembly Language Programming (K3) . |
| | CO3 | Demonstrate the students with interfacing of various peripheral devices with 8085 microprocessor (K4) . |
| | CO4 | Design and implement programs on 8085 microprocessor (K2) . |
| COMMUNICATION LAB | CO1 | To analyse digital communications with a software to understand how each component works together. |
| | CO2 | To analyse, design and implement AM and FM |

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| | | modulation experiments using discrete electronic components. |
| | CO3 | To understand the basic of MATLAB and PSPICE which are used to simulate the circuit operations. |
| | CO4 | To illustrate the concepts of communication techniques which are useful for sending information from transmitter to receiver |
| | CO5 | To demonstrate and compare different analog modulation schemes. |
| LINUX SHELL PROGRAMMING LAB | CO1 | Understanding the installation procedure of the Linux operating system, hands on with simple commands and Installation of Linux packages into the operating system. |
| | CO2 | Able to apply the concepts of file handling, and regular expression using shell programming. |
| | CO3 | Capable to apply and implement grep, awk script. |
| | CO4 | Ability to develop and evaluate shell script program that handle processes. |
| | CO5 | Apply the concepts of debugging and execute shell programming. |
| ADVANCED DATA STRUCTURES LAB | CO1 | Able to prove all the correctness and analyse the running time of the basic algorithms for the classic problems in various domain. (K4) |
| | CO2 | Capable to apply the algorithms and design techniques to solve classic problems. (K3, K5) |
| | CO3 | Analyse the complexities of various problems in different domains. (K4) |
| | CO4 | Capable to create the efficient algorithms for real life problems. (K5) |
| DISCIPLINE & EXTRA-CURRICULAR ACTIVITY | CO1 | Develop and understand diverse philosophies and cultures across societies through NCC and sports activities. |
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| | CO4 | Learn public speaking skills being involved in community work and social-culture activities. |
| DATABASE MANAGEMENT SYSTEM | CO1 | Describe data models and schemas in DBMS. |
| | CO2 | Apply logical database design principles, including E-R diagrams and database normalization. |
| | CO3 | Construct simple and moderately advanced database queries using relational Algebra. |
| | CO4 | To understand the concept of Transaction and Concurrency Control. |
| | CO5 | To understand the concept of Failure and Recovery. |
| OPERATING SYSTEM | CO1 | To identify the basics of Operating Systems, |

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| | | Services, Functions provided. (K1) |
| | CO2 | Analyze the various types of process scheduling. (K4) |
| | CO3 | Describe the concepts of Process Management and Memory management (K2) |
| | CO4 | To analyse the concept of deadlock. (K4) |
| | CO5 | To generalise the concept of Inter process communication. (K2) |
| | CO6 | Discuss File systems and other Input-Output subsystems. (K2) |
| | CO7 | To interpret the concept of Virtual memory and various page replacement algorithms and related concepts. (K3) |
| THEORY OF COMPUTATION | CO1 | Understand concepts of formal languages and draw finite automata for regular languages. (K3) |
| | CO2 | Construct context free grammar for various languages. (k3) |
| | CO3 | Demonstrate the push down automaton model for the given language. (K4) |
| | CO4 | Apply Turing machine concept to solve the problems. (K3) |
| | CO5 | Analyze decidability or undecidability for variety of real world problems. (K4) |
| COMPUTER ARCHITECTURE AND ORGANIZATION | CO1 | Describe classification of Computer Architecture and Micro Operations (K1) . |
| | CO2 | Categorise memory organization (K4) and explain the function of each element of a memory hierarchy (K2) . |
| | CO3 | To Use addressing modes, instruction format and pipelining structure (K3) . |
| | CO4 | Demonstrate computer Arithmetic (K3) . Identify and compare different methods for computer I/O mechanisms (K2) . |
| INFORMATION THEORY AND CODING | CO1 | Design the channel performance using Information theory. |
| | CO2 | Comprehend various error control code properties. |
| | CO3 | Apply linear block codes for error detection and correction. |
| | CO4 | Design BCH & RS codes for Channel performance improvement against burst errors. |
| | CO5 | Apply convolution codes for performance analysis & cyclic codes for error detection and correction. |
| EMBEDDED SYSTEMS | CO1 | Define Embedded System and its Components |
| | CO2 | Illustrate bus configuration and memory organization |
| | CO3 | Convert C program into assembly language using |

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| | | ARM instruction set. |
| | CO4 | Identify correct optimization technique for assembly language program |
| HUMAN COMPUTER INTERACTION | CO1 | Understand the capabilities of both humans and computers from the viewpoint of human information processing. (K2) |
| | CO2 | Describe typical human–computer interaction (HCI) models, styles, and various historic HCI paradigms. (K1) |
| | CO3 | Identify and apply the use HCI design principles, standards and guidelines. (K3) |
| | CO4 | Analyze user models, user support, socio-organizational issues, and stakeholder requirements of HCI systems. (K4) |
| | CO5 | Discuss HCI issues in groupware, ubiquitous computing, virtual reality, multimedia, and Word Wide Web-related environments (K2) |
| VLSI DESIGN | CO1 | Outline Complexity in microelectronic circuit design and design styles. |
| | CO2 | Illustrate the design of Boolean functions and hardware abstract models. |
| | CO3 | Be able to understand architectural synthesis and various scheduling algorithms. |
| | CO4 | Examine Resource Sharing & Binding in sequencing graphs and to use Two-level logic optimization principles |
| | CO5 | To develop the understanding of physical design and global routing methods |
| DATABASE MANAGEMENT LAB | CO1 | Construct problem definition for real life applications and design a database for the same. (K6) |
| | CO2 | Build conceptual models of a database using ER modeling for real life applications(K3) |
| | CO3 | Analyze concepts of normalization to design an optimal database. (K4) |
| | CO4 | Create queries in SQL to retrieve any type of information from a data base. (K5) |
| | CO5 | Compare the access control in standalone system and client server environment. (K4) |
| JAVA LAB | CO1 | Understand and apply various object oriented features like inheritance, data abstraction, encapsulation and polymorphism to solve various computing problems using Java language. |
| | CO2 | Develop Java programs for real applications using java constructs and libraries. |
| | CO3 | Implement Exception Handling and Multithreading in java. |
| | CO4 | Develop and deploy Applet in java. |
| WEB PROGRAMMING | CO1 | Identify, describe, analyse and then apply the |

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| LAB | | various scripting languages which require to develop web applications. |
| | CO2 | Investigate and Develop Experiments for showing the application of dynamic page functionality in web pages using Servlets, JSP etc. |
| | CO3 | Design E-Commerce application. |
| | CO4 | Recognise Active Server Pages, PHP etc which can be used in developing web applications. |
| CASE LAB | CO1 | Recognise modules of UML for system description and implementation (K2) |
| | CO2 | Construct use case model and communication model for product development (K3) |
| | CO3 | Use structural diagrams for system description (K3) |
| | CO4 | Examine behavioral diagrams for product development (K3) |
| | CO5 | Analyze a business process model and apply UML models (K4) |
| DISCIPLINE & EXTRA-CURRICULAR ACTIVITY | CO1 | Develop and understand diverse philosophies and cultures across societies through NCC and sports activities. |
| | CO2 | Learn role of creativity, innovation and disciplines by participating literary, cultural and technical activities. |
| | CO3 | Acquire skills for effective citizenship and life-long learning through professional development activities |
| | CO4 | Learn public speaking skills being involved in community work and social-culture activities. |
| COMPUTER GRAPHICS | CO1 | Understand the basics of computer graphics, different graphics systems and applications of computer graphics.(K1) |
| | CO2 | Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.(K2) |
| | CO3 | Use of geometric transformations on graphics objects and their application in composite form.(K3) |
| | CO4 | Reconstruct scene with different clipping methods and its transformation to graphics display device.(K5) |
| | CO5 | Determine projections and visible surface detection techniques for display of 3D scene on 2D screen.(K4) |
| | CO6 | Render projected objects to naturalize the scene in 2D view and use of illumination models for this.(K3) |
| INFORMATION SYSTEM SECURITY | CO1 | Provide an understanding of principal concepts, technologies and basic approaches in information security. |

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| | CO2 | Apply different types of encryption techniques and algorithms (AES, DES, RSA). |
| | CO3 | Identify and classify different types of attacks |
| | CO4 | understand the CIA triad of Confidentiality, Integrity and Availability as well as protocols to implement such policies in the form of message exchanges. |
| COMPILER CONSTRUCTION | CO1 | Explain the concept of System Software such as Translators, Assemblers, and different phases of compilers. (K2) |
| | CO2 | Classify and Analyze lexical, syntax, semantic rules and grammars for a programming language. (K4) |
| | CO3 | Analyze the principles, algorithms, and data structures involved in the design and construction of compilers and parsers by applying theory of computation. (K4) |
| | CO4 | Assess code optimization and memory allocation techniques in programming. (K4) |
| INFORMATION STORAGE AND MANAGEMENT | CO1 | Recognize complexity of Information Management, its key issues and solutions |
| | CO2 | Classify storage environment and various storage system architecture |
| | CO3 | Demonstrate different types of network storage devices. |
| | CO4 | Distinguish various SAN architectures. |
| | CO5 | Conclude business continuity management and monitoring process. |
| MOBILE COMPUTING | CO1 | Review mobile computing devices in the context of wireless network systems (K2) |
| | CO2 | Recognise challenges faced in data dissemination , bandwidth allocation and management (K2) |
| | CO3 | Discuss middleware for application development (K2) |
| | CO4 | Discover the concept of mobile agent and world wide web (K3) |
| | CO5 | Examine Ad Hoc Networks and routing protocols (K3) |
| ARTIFICIAL INTELLIGENCE | CO1 | Define different AI branches i.e. problem solving, natural language, learning, knowledge representation, perception, common sense. (K1) |
| | CO2 | Explain searching technique, learning method, and language processing. (K2) |
| | CO3 | Solving a gaming problem, searching problem and learning problem with uncertain information .(K3) |
| | CO4 | Illustrate fuzzy system, expert system and neural network.(K4) |

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| | CO5 | Design a small intelligent system using learning method for a specific application. (K5) |
| DATA MINING AND WAREHOUSE | CO1 | Discuss the functionality of the different data mining components. (K2) |
| | CO2 | Discover the strengths and limitations of various data mining models. (K3) |
| | CO3 | Examine different classifiers. (K3) |
| | CO4 | Demonstrate the use of clustering methodologies. (K3) |
| | CO5 | Describe a range of techniques for designing data warehousing and data mining systems for real-world applications. (K2) |
| FUZZY LOGIC AND APPLICATIONS | CO1 | Understand need of fuzzy sets, arithmetic operations on fuzzy sets, possibility theory, fuzzy logic, and its applications. |
| | CO2 | Know about fuzzy inference rule and decision making. |
| | CO3 | Apply different operation on fuzzy set, fuzzy relation. |
| | CO4 | Evaluate Fuzzy logic using evidence theory, necessity and Belief measures |
| COMPUTER GRAPHICS AND MULTIMEDIA | CO1 | Recollect knowledge of different geometrical shapes and coordinate properties (K1) |
| | CO2 | Illustrate different clipping algorithms to clip an object in a window.(K2) |
| | CO3 | Apply transformations on various objects like line, circle and polygon.(K3) |
| | CO4 | Practice different shape drawing algorithm(K3) |
| COMPILER CONSTRUCTION LAB | CO1 | Understand the structure of compilers. |
| | CO2 | Create program for solving parser problems. |
| | CO3 | Understand the use of regular expression and transition diagrams. |
| | CO4 | Understand the basic data structures used in compiler construction such as abstract syntax trees, symbol tables, three-address code, and stack machines. |
| ADVANCE JAVA LAB | CO1 | Recall the concepts of basic java language. (K1) |
| | CO2 | Design simple GUI applications using JSP, Applet, Swing. (K3) |
| | CO3 | Implement database through Java programs, using Java Data Base Connectivity (JDBC). (K3) |
| | CO4 | Use of certain technologies by implementing them in the Java programming language to solve the given problem (K4) |
| | CO5 | Apply event handling, multithreading on given problem. (K3) |
| DISCIPLINE & EXTRA-CURRICULAR ACTIVITY | CO1 | Develop and understand diverse philosophies and cultures across societies through NCC and sports activities. |

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| | CO2 | Learn role of creativity, innovation and disciplines by participating literary, cultural and technical activities. |
| | CO3 | Acquire skills for effective citizenship and life-long learning through professional development activities |
| | CO4 | Learn public speaking skills being involved in community work and social-culture activities. |
| CLOUD COMPUTING | CO1 | Describe concept of cloud computing and its characteristics, challenges and risk involved in it.(K2) |
| | CO2 | Discuss cloud service, deployment models and map reduce programming concept.(K2) |
| | CO3 | Illustrate concept of virtualization, cloud enabling technology and green computing.(K3) |
| | CO4 | Integration of security polices in multi tenancy cloud environment with cloud applications.(K4) |
| | CO5 | Analyze cloud systems like Google cloud platform, Amazon web services using different cost metrics and pricing models.(K4) |
| REAL TIME SYSTEM | CO1 | To identify the basics of Real Time Systems. (K2) |
| | CO2 | Generalize the Periodic and Aperiodic task scheduling. (K2) |
| | CO3 | To recognize certain concepts of Resource Access Control. (K1) |
| | CO4 | To memorize the parameters, constraints and dependencies of several task models. (K1) |
| | CO5 | To analyze several types of scheduling. (K4) |
| SOFTWARE TESTING AND PROJECT MANAGEMENT | CO1 | Illustrate the Basic testing methods, project planning and planning process |
| | CO2 | Learn W5HH principle and quality improvement approaches |
| | CO3 | Applying different types of cost estimation approaches on real time case studies. |
| | CO4 | Analyse the cost estimation results and illustrate the project management approaches |
| DIGITAL IMAGE PROCESSING | CO1 | Review the fundamental concepts of a digital image processing systems.(K2) |
| | CO2 | Analyze images in the spatial domain using various transforms.(K4) |
| | CO3 | Evaluate the techniques for image enhancement and image restoration.(K5) |
| | CO4 | Categorize various compression techniques and transformation functions.(K5) |
| DISTRIBUTED SYSTEM | CO1 | To understand the basic concept, principles and techniques behind the design of distributed systems (K2) |
| | CO2 | Study software components of distributed |

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| | | computing systems. Know about the communication and interconnection architecture of multiple computer systems. (K1) |
| | CO3 | Appreciation of the differences in the handling of issues like mutual exclusion, deadlock detection, fault handling, etc. in a centralized system and a distributed system. (K1) |
| | CO4 | Discuss the security issues and student should able to built fault tolerant distributed system. (K2) |
| | CO5 | To understand the issues, challenges, and solutions related to the design and implementations of distributed applications in practice. (K2) |
| Cyber Security | CO1 | Gain a fundamental knowledge of what Cyber Security is and Apply knowledge of computer science to provide security. |
| | CO2 | Classify different type of attack and how to identify and prevent. |
| | CO3 | Identify issues to protect digital assets in compliance with cyber laws. |
| | CO4 | Determine the vulnerability to detects and classifies system weaknesses in networks, application and predicts the effectiveness of countermeasures. |
| | CO5 | Acquire knowledge about network security tools and authentication applications and apply legal and ethical aspects to manage and audit digital assets. |
| INTERNET OF THINGS | CO1 | Discuss IOT and its logical and physical design. (K2) |
| | CO2 | Review enabling technologies of IOT, hardware, software components, and architecture of IOT. (K2) |
| | CO3 | Discover challenges of IOT and its dissimilarity with M2M. (K3) |
| | CO4 | Explain various IOT protocols. (K2) |
| | CO5 | Examine case studies related to domain specific IOTs. (K3) |
| DIGITAL IMAGE PROCESSING LAB | CO1 | Manipulate Color image segmentation algorithms. (K3) |
| | CO2 | Compare image coding and compression techniques. (K4) |
| | CO3 | Examine image enhancement techniques. (K3) |
| | CO4 | Understand Computer vision for skin tumor image evaluation and New Border Images. (K2) |
| Android Lab | CO1 | Explain Android Platform, Architecture and features |
| | CO2 | Design User Interface and develop activity for Android App. |
| | CO3 | Implement various basic concepts of Android during application development |
| | CO4 | Select and Use best GUI components which are user friendly |

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| | CO5 | Defend the use of appropriate strategies in developed application |
| Project-1 | CO1 | Able to demonstrate sound technical knowledge for their project work. |
| | CO2 | Problem identification, formulation and its solution. |
| | CO3 | Acquire collaborative skills through teamwork. |
| | CO4 | Acquire skills for effective communication and to present the idea clearly and coherently to particular audience in both written and oral format. |
| | CO5 | Cost estimation and resource requirement for overall effective utilization. |
| SEMINAR | CO1 | Acquire awareness on latest technology and current trends in the field of Computer science. |
| | CO2 | Use of various tools, data etc. for literature survey in the defined area. |
| | CO3 | Improve communication skills, presentation skills, and other soft skills for delivering seminar in selected topic. |
| | CO4 | Prepare technical report in selected topic. |
| DISCIPLINE & EXTRA-CURRICULAR ACTIVITY | CO1 | Develop and understand diverse philosophies and cultures across societies through NCC and sports activities. |
| | CO2 | Learn role of creativity, innovation and disciplines by participating literary, cultural and technical activities. |
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| PATTERN RECOGNITION | CO1 | Describe the basics of pattern recognition and its applications in different fields. |
| | CO2 | Identify the strengths and weaknesses of different type of pattern classifier and clustering techniques. |
| | CO3 | Apply various dimensionality reduction methods whether through feature selection or feature extraction. |
| | CO4 | compare different pattern recognition techniques for practical problems. |
| BIG DATA USING HADOOP | CO1 | Describe about the sources of Big Data and Analyzing Tools. |
| | CO2 | Interpret mapping statistical methods to analyze huge data. |
| | CO3 | Apply the other frameworks in Distributed File Systems. |
| | CO4 | Create cluster in Hadoop distributed file system. |
| | CO5 | Apply Map Reduction in HDFS. |
| COMPUTER VISION | CO1 | Identify basic concepts, terminology, theories, models and methods in the field of computer vision. |

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| | CO2 | Describe basic methods of computer vision related to multi-scale representation, edge detection and detection of other primitives, stereo, motion and object recognition. |
| | CO3 | Implement basic image processing and computer vision techniques. |
| | CO4 | Appreciate typical pattern recognition techniques for object recognition. |
| ADVANCE OPERATING SYSTEM | CO1 | To identify the basics of Operating Systems along with Scheduling and Synchronization. (K2) |
| | CO2 | To analyze the Distributed Operating system and it's concepts at a glance. (K4) |
| | CO3 | To classify failures and required preventive Recovery methods. (K4) |
| | CO4 | To memorize the Distributed Scheduling and mutual exclusion algorithms as well as issues related. (K1) |
| | CO5 | To examine the Real time OS and concepts related. (K1) |
| WIRELESS SENSOR NETWORKS | CO1 | Describe design objectives and challenges of wireless sensor networks |
| | CO2 | Discuss technological background and future research on WSN |
| | CO3 | Explain MAC protocols and deployment mechanisms |
| | CO4 | Describe network clustering and QoS Management |
| | CO5 | Review different routing protocols |
| BIG DATA USING HADOOP LAB | CO1 | Able to Apply analytics on Structured, Unstructured Data. |
| | CO2 | Implement several Data Intensive tasks using the Map Reduce Paradigm. |
| | CO3 | Demonstrate an ability to use frameworks like Hadoop to efficiently store retrieve and process Big Data for analytics. |
| | CO4 | To enable students to have skills that will help them to solve complex real-world problems in for decision support. |
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| | CO2 | Use of various tools, data etc. for literature survey in the defined area. |
| | CO3 | Improve communication skills, presentation skills, and other soft skills for delivering seminar in selected topic. |
| | CO4 | Prepare technical report in selected topic. |
| Project | CO1 | Able to demonstrate sound technical knowledge for their project work. |
| | CO2 | Problem identification, formulation and its solution. |

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| | CO3 | Acquire collaborative skills through teamwork. |
| | CO4 | Acquire skills for effective communication and to present the idea clearly and coherently to particular audience in both written and oral format. |
| | CO5 | Cost estimation and resource requirement for overall effective utilization. |
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| | CO2 | Learn role of creativity, innovation and disciplines by participating literary, cultural and technical activities. |
| | CO3 | Acquire skills for effective citizenship and life-long learning through professional development activities |
| | CO4 | Learn public speaking skills being involved in community work and social-culture activities. |