



IDEAL INSTITUTE OF TECHNOLOGY

(Approved by AICTE, New Delhi & Affiliated to JNTUK, Kakinada)

Vidyut Nagar, KAKINADA - 533 003. (A.P.)

Department of COMPUTER SCIENCE AND ENGINEERING

Course Outcomes (COs)

At the end of the course the student will be able to:

Regulation	Year-Semester	Subject	Course Outcomes	
		COMMUNICATIVE ENGLISH	CO1	Facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers
			CO2	Focus on appropriate reading strategies for comprehension of various academic texts and authentic materials
			CO3	Help improve speaking skills through participation in activities such as role plays, discussions and structured talks/oral presentations
			CO4	Impart effective strategies for good writing and demonstrate the same in summarizing, writing well organized essays, record and report useful information
			CO5	Provide knowledge of grammatical structures and vocabulary and encourage their appropriate use in speech and writing
		M-I	CO1	utilize mean value theorems to real life problems (L3)
			CO2	solve the differential equations related to various engineering fields (L3)
			CO3	Familiarize with functions of several variables which is useful in optimization (L3)
			CO4	Apply double integration techniques in evaluating areas bounded by region (L3)
			CO5	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2-dimensional and 3-dimensional coordinate systems. (L5)
			CO1	Explain the need of coherent sources and the conditions for sustained interference (L2). Identify the applications of interference in engineering (L3). Analyze the differences between interference and diffraction with applications (L4). Illustrate the concept of polarization of light and its applications (L2). Classify ordinary refracted light and extraordinary refracted rays by their states of polarization (L2)

I- I	APPLIED PHYSICS	CO2	Explain various types of emission of radiation (L2). Identify the role of laser in engineering applications (L3). Describe the construction and working principles of various types of lasers (L1). Explain the working principle of optical fibers (L2). Classify optical fibers based on refractive index profile and mode of propagation (L2). Identify the applications of optical fibers in medical, communication and other fields (L2). Apply the fiber optic concepts in various fields (L3).
		CO3	Describe the dual nature of matter (L1). Explain the significance of wave function (L2). Identify the role of Schrodinger's time independent wave equation in studying particle in one dimensional infinite potential well (L3). Identify the role of classical and quantum free electron theory in the study of electrical conductivity (L3). Classify the energy bands of solids (L2).
		CO4	Explain the concept of dielectric constant and polarization in dielectric materials (L2). Summarize various types of polarization of dielectrics (L2). Interpret Lorentz field and Claussius-Mosotti relation in dielectrics (L2). Classify the magnetic materials based on susceptibility and their temperature dependence (L2). Explain the applications of dielectric and magnetic materials (L2). Apply the concept of magnetism to magnetic devices (L3)
		CO5	Outline the properties of charge carriers in semiconductors (L2). Identify the type of semiconductor using Hall effect (L2). Identify applications of semiconductors in electronic devices (L2). Classify superconductors based on Meissner's effect (L2). Explain Meissner's effect, BCS theory & Josephson effect in superconductors (L2)
	PROGRAMMING FOR PROBLEM SOLVING USING C	CO1	To write algorithms and to draw flowcharts for solving problems
		CO2	To convert flowcharts/algorithms to C Programs, compile and debug programs
		CO3	To use different operators, data types and write programs that use two-way/ multi-way selection
		CO4	To select the best loop construct for a given problem
		CO5	To design and implement programs to analyze the different pointer applications
		CO6	To decompose a problem into functions and to develop modular reusable code
		CO7	To apply File I/O operation

I- II

M-II	CO1	develop the use of matrix algebra techniques that is needed by engineers for practical applications (L6)
	CO2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel (L3)
	CO3	evaluate the approximate roots of polynomial and transcendental equations by different algorithms (L5)
	CO4	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals (L3)
	CO5	apply numerical integral techniques to different Engineering problems (L3)
	CO6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations (L3)
APPLIED CHEMISTRY	CO1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.
	CO2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion
	CO3	Synthesize nanomaterials for modern advances of engineering technology. Summarize the preparation of semiconductors; analyze the applications of liquid crystals and superconductors.
	CO4	Analyze the principles of different analytical instruments and their applications. • Design models for energy by different natural sources.
	CO5	Obtain the knowledge of computational chemistry and molecular machines
COMPUTER ORGANIZATION	CO1	Demonstrate and understanding of the design of the functional units of a digital computer system
	CO2	Relate Postulates of Boolean algebra and minimize combinational functions
	CO3	Recognize and manipulate representations of numbers stored in digital computers
	CO4	Build the logic families and realization of logic gates.
	CO5	Design and analyze combinational and sequential circuits
	CO6	Recall the internal organization of computers, CPU, memory unit and Input/Outputs and the relations between its main components
	CO7	Solve elementary problems by assembly language programming
PYTHON PROGRAMMING	CO1	Develop essential programming skills in computer programming concepts like data types, containers
	CO2	Apply the basics of programming in the Python language
	CO3	Solve coding tasks related conditional execution, loops
	CO4	Solve coding tasks related to the fundamental notions and techniques used in object-oriented programming

	DATA STRUCTURES	CO1	Summarize the properties, interfaces, and behaviors of basic abstract data types
		CO2	Discuss the computational efficiency of the principal algorithms for sorting & searching
		CO3	Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
		CO4	Demonstrate different methods for traversing trees
	MFCs	CO1	Demonstrate skills in solving mathematical problems
		CO2	Comprehend mathematical principles and logic
		CO3	Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software
		CO4	Manipulate and analyze data numerically and/or graphically using appropriate Software
		CO5	Communicate effectively mathematical ideas/results verbally or in writing
	M-III	CO1	Interpret the physical meaning of different operators such as gradient, curl and divergence (L5)
		CO2	Solve the differential equations related to various engineering fields (L3)
		CO3	Familiarize with functions of several variables which is useful in optimization (L3)
		CO4	Apply double integration techniques in evaluating areas bounded by region (L3)
		CO5	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2-dimensional and 3-dimensional coordinate systems. (L5)
	OOPS CPP	CO1	Classify object oriented programming and procedural programming
		CO2	Estimate the work done against a field, circulation and flux using vector calculus (L5)
		CO3	Apply the Laplace transform for solving differential equations (L3)
		CO4	Find or compute the Fourier series of periodic signals (L3)
		CO5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (L3)
		CO6	Identify solution methods for partial differential equations that model physical processes (L3)
	OPERATING SYSTEM	CO1	Describe various generations of Operating System and functions of Operating System
		CO2	Describe the concept of program, process and thread and analyze various CPU Scheduling Algorithms and compare their performance
		CO3	Solve Inter Process Communication problems using Mathematical Equations by various methods
		CO4	Compare various Memory Management Schemes especially paging and Segmentation in Operating System and apply various Page Replacement Techniques
		CO5	Outline File Systems in Operating System like UNIX/Linux and Windows

II-II	SOFT WARE ENGINEERING	CO1	Ability to transform an Object-Oriented Design into high quality, executable code
		CO2	Skills to design, implement, and execute test cases at the Unit and Integration level
		CO3	Compare conventional and agile software methods
	DBMS	CO1	Describe a relational database and object-oriented database
		CO2	Create, maintain and manipulate a relational database using SQL
		CO3	Describe ER model and normalization for database design
		CO4	Examine issues in data storage and query processing and can formulate appropriate solutions
		CO5	Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage
	FLAT	CO1	Classify machines by their power to recognize languages.
		CO2	Summarize language classes & grammars relationship among them with the help of Chomsky hierarchy
		CO3	Employ finite state machines to solve problems in computing
		CO4	Illustrate deterministic and non-deterministic machines
		CO5	Quote the hierarchy of problems arising in the computer science
JAVA	CO1	Able to realize the concept of Object Oriented Programming & Java Programming Constructs	
	CO2	Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords	
	CO3	Apply the concept of exception handling and Input/ Output operations	
	CO4	Able to design the applications of Java & Java applet	
	CO5	Able to Analyze & Design the concept of Event Handling and Abstract Window Toolkit	
MEFA	CO1	The Learning objectives of this paper are to understand the concept and nature of Managerial Economics and its relationship with other disciplines and also to understand the Concept of Demand and Demand forecasting	
	CO2	To familiarize about the Production function, Input Output relationship, Cost-Output relationship and Cost-Volume-Profit Analysis	
	CO3	To understand the nature of markets, Methods of Pricing in the different market structures and to know the different forms of Business organization and the concept of Business Cycles	
	CO4	To learn different Accounting Systems, preparation of Financial Statement and uses of different tools for performance evaluation	
	CO5	Finally, it is also to understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals	
	CO1	Classify the concepts of data science and its importance (L4) or (L2)	
	CO2	Interpret the association of characteristics and through correlation and regression tools (L4)	

	P & S	CO3	Make use of the concepts of probability and their applications (L3)
		CO4	Apply discrete and continuous probability distributions (L3)
		CO5	Design the components of a classical hypothesis test (L6)
		CO6	Infer the statistical inferential methods based on small and large sampling tests (L4)
III- I	COMPUTER NETWORKS	CO1	Demonstrate different network models for networking links OSI, TCP/IP, B-ISDN, N-BISDN and get knowledge about various communication techniques, methods and protocol standards.
		CO2	Discuss different transmission media and different switching networks
		CO3	Analyze data link layer services, functions and protocols like HDLC and PPP.
		CO4	Compare and Classify medium access control protocols like ALOHA, CSMA, CSMA/CD, CSMA/CA, Polling, Token passing, FDMA, TDMA, CDMA protocols
		CO5	Determine application layer services and client server protocols working with the client server paradigms like WWW, HTTP, FTP, e-mail and SNMP etc.
	DESIGN ANALYSIS AND ALGORITHMS	CO1	Analyze the performance of a given algorithm, denote its time complexity using the asymptotic notation for recursive and non-recursive algorithms
		CO2	List and describe various algorithmic approaches and Solve problems using divide and conquer & greedy Method
		CO3	Synthesize efficient algorithms dynamic programming approaches to solve in common engineering design situations
		CO4	Organize important algorithmic design paradigms and methods of analysis: backtracking, branch and bound algorithmic approaches
		CO5	Demonstrate NP- Completeness theory ,lower bound theory and String Matching
	DATA WARE HOUSING AND DATA MINING	CO1	Illustrate the importance of Data Warehousing, Data Mining and its functionalities and Design schema for real time data warehousing applications
		CO2	Demonstrate on various Data Preprocessing Techniques viz. data cleaning, data integration, data transformation and data reduction and Process raw data to make it suitable for various data mining algorithms
		CO3	Choose appropriate classification technique to perform classification, model building and evaluation
		CO4	Make use of association rule mining techniques viz. Apriori and FP Growth algorithms and analyze on frequent itemsets generation.
		CO5	Identify and apply various clustering algorithm (with open source tools), interpret, evaluate and report the result.
	ARTIFICIAL INTELLIGENCE	CO1	Understand the fundamental concepts in Artificial Intelligence
		CO2	Analyze the applications of search strategies and problem reductions
		CO3	Apply the mathematical logic concepts
		CO4	Develop the Knowledge representations in Artificial Intelligence.
		CO5	Explain the Fuzzy logic systems.
		CO1	Explain the fundamental usage of the concept Machine Learning system

III- II	MACHINE LEARNING	CO2	Demonstrate on various regression Technique
		CO3	Analyze the Ensemble Learning Methods
		CO4	Illustrate the Clustering Techniques and Dimensionality Reduction Models in Machine Learning.
		CO5	Discuss the Neural Network Models and Fundamentals concepts of Deep Learning
	COMPILER DESIGN	CO1	Demonstrate phases in the design of compiler
		CO2	Organize Syntax Analysis, Top Down and LL(1) grammars
		CO3	Design Bottom Up Parsing and Construction of LR parsers
		CO4	Analyze synthesized, inherited attributes and syntax directed translation schemes
		CO5	Determine algorithms to generate code for a target machine
	CRYPTOGRAPHY AND NETWORK SECURITY	CO1	Explain different security threats and countermeasures and foundation course of cryptography mathematics
		CO2	Classify the basic principles of symmetric key algorithms and operations of some symmetric key algorithms and asymmetric key cryptography
		CO3	Revise the basic principles of Public key algorithms and Working operations of some Asymmetric key algorithms such as RSA, ECC and some more
		CO4	Design applications of hash algorithms, digital signatures and key management techniques
		CO5	Determine the knowledge of Application layer, Transport layer and Network layer security Protocols such as PGP, S/MIME, SSL,TSL, and IPsec
	MOBILE COMPUTING	CO1	Develop a strong grounding in the fundamentals of mobile Networks
		CO2	Apply knowledge in MAC, Network, and Transport Layer protocols of Wireless Network
		CO3	Comprehend, design, and develop a lightweight network stack
		CO4	Analyze the Mobile Network Layer system working
		CO5	Explain about the WAP Model
	MEAN STACK DEVELOPMENT	CO1	Build static web pages using HTML 5 elements
		CO2	Apply JavaScript to embed programming interface for web pages and also to perform Client side validations.
		CO3	Build a basic web server using Node.js, work with Node Package Manager (NPM) and recognize the need for Express.js.
		CO4	Build a basic web server using Node.js, work with Node Package Manager (NPM) and recognize the need for Express.js.
		CO5	Utilize Angular JS to design dynamic and responsive web pages.
	CRYPTOGRAPHY AND NETWORK SECURITY	CO1	Explain the fundamental usage of the concept Machine Learning system
		CO2	Demonstrate on various regression Technique
		CO3	Analyze the Ensemble Learning Methods
		CO4	Illustrate the Clustering Techniques and Dimensionality Reduction Models in Machine Learning.

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	CO5	Discuss the Neural Network Models and Fundamentals concepts of Deep Learning
UML & DESIGN PATTERNS	CO1	Illustrate software design with UML diagrams
	CO2	Design software applications using OO concepts
	CO3	Identify various scenarios based on software requirements
	CO4	Apply UML based software design into pattern based design using design patterns
	CO5	Illustrate the various testing methodologies for OO software
MACHINE LEARNING	CO1	Identify machine learning techniques suitable for a given problem
	CO2	Solve the problems using various machine learning technique
	CO3	Apply Dimensionality reduction techniques
	CO4	Design application using machine learning techniques
MOBILE COMPUTING	CO1	Interpret Wireless local area networks (WLAN): MAC design principles, 802.11 WIFI
	CO2	Discuss fundamental challenges in mobile communications and potential Techniques in GSM
	CO3	Demonstrate Mobile IP in Network laye
	CO4	Elaborate TCP/IP Protocols and database issue
	CO5	Illustrate different data delivery methods and synchronization protocols
	CO6	Develop applications that are mobile-device specific and demonstrate current Practice in mobile computing context

		CLOUD COMPUTING	CO1	Interpret the key dimensions of the challenge of Cloud Computing		
			CO2	Examine the economics, financial, and technological implications for selecting cloud computing for own organization		
			CO3	Assessing the financial, technological, and organizational capacity of employer's for actively initiating and installing cloud-based applications		
			CO4	Evaluate own organizations' needs for capacity building and training in cloud computing related IT area		
			CO5	Illustrate Virtualization for Data-Center Automation		
R19	IV- II	MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR	CO1	After completion of the Course the student will acquire the knowledge on management functions, global leadership and organizational structure		
			CO2	Will familiarize with the concepts of functional management that is HRM and Marketing of new product developments		
			CO3	The learner is able to think in strategically through contemporary management practices		
			CO4	The learner can develop positive attitude through personality development and can equip with motivational theories		
			CO5	The student can attain the group performance and grievance handling in managing the organizational culture		
		BLOCK CHAIN TECHNOLOGY	CO1	Demonstrate the foundation of the Block chain technology and understand the processes in payment and funding.		
			CO2	Identify the risks involved in building Block chain applications.		
			CO3	Review of legal implications using smart contracts.		
			CO4	Choose the present landscape of Blockchain implementations and Understand Crypto currency markets		
CO5	Examine how to profit from trading crypto currencies.					