



AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

(Approved by A.I.C.T.E., New Delhi & Permanently Affiliated to JNTU-GV, Vizianagaram)

NAAC "A+" Accredited Institute

Cherukupally (Village), Near Tagarapuvalasa Bridge, Vizianagaram (Dist.), A.P, Pin-531162.

www.aietta.ac.in, principal@aietta.ac

Department of Computer Science and Engineering

Program: B. Tech Computer Science and Engineering

Regulation: R20

Course Outcomes

No. Of course: 62

I-I	Course Code: C101	Course Name: Communicative English
CO1	Understand social or transactional dialogues and identify context, topic and specific information.	
CO2	Ask and answer general questions on familiar topics and introduce oneself/others effectively.	
CO3	Employ suitable strategies for skimming and scanning to locate general ideas and specific information.	
CO4	Recognize paragraph structure and match beginnings/endings/headings with paragraphs.	
CO5	Form sentences using proper grammatical structures, correct word forms and vocabulary	
I-I	Course Code: C102	Course Name: Mathematics I (Calculus and Differential Equations)
CO1	Analyze convergence /divergence of series using various tests and apply mean value theorems	
CO2	Solve first-order differential equations and apply them to engineering problems	
CO3	Solve higher-order differential equations and analyze engineering applications like circuits and SHM	
CO4	Apply partial derivatives and optimization techniques to solve multivariable problems	
CO5	Evaluate multiple integrals and apply them to compute areas and volumes	
I-I	Course Code: C103	Course Name: Applied Physics
CO1	Analyze the differences between interference and diffraction with applications	
CO2	Apply the fiber optic concepts in various fields	
CO3	Describe the role of classical and quantum free electron theory in the study of electrical conductivity	
CO4	Explain the applications of dielectric and magnetic materials	
CO5	Identify applications of semiconductors in electronic devices	
I-I	Course Code: C104	Course Name: Programming for Problem Solving using C
CO1	Understand computer basics, Algorithms, Flowcharts, number systems, and write simple C programs.	
CO2	Use operators, make decisions, and write loops in C programs.	



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CO3	Work with arrays, strings, structures, unions, and write programs using them.
CO4	Understand pointers, pointer arithmetic, and apply them in C programming.
CO5	Learn functions, recursion, and read/write files using C programs
I-I	Course Code: C105 Course Name: Computer Engineering Workshop
CO1	Understand the basic components of a computer system such as hardware, peripherals, memory, and storage devices, and perform installation and configuration of operating systems and virtual machines.
CO2	Apply Linux commands and networking tools to manage files, processes, and system operations, and use internet services with basic security features like firewall and antivirus.
CO3	Develop simple web pages using HTML and CSS, and use various productivity tools such as text editors, MS Office, and LaTeX, along with basic knowledge of IoT concepts.
I-I	Course Code: C106 Course Name: English Communication Lab
CO1	Demonstrate correct pronunciation, phonetic transcription, and appropriate use of stress, rhythm, and intonation in spoken English.
CO2	Comprehend spoken and written texts by identifying context, main ideas, and specific information using listening and reading strategies.
CO3	Apply appropriate vocabulary, structures, and communication skills in speaking and writing using real-world inputs such as audio materials and newspapers.
I-I	Course Code: C107 Course Name: Applied Physics Lab
CO1	Demonstrate the modern engineering physics techniques and tools in real times applications in engineering studies.
CO2	Develop the laboratory skills in handling of electrical and optical instruments.
CO3	Compare the experimental results with standard values and estimate errors
I-I	Course Code: C108 Course Name: Programming for Problem Solving using C Lab
CO1	Apply fundamental concepts of C programming to solve basic problems using operators, control structures, and simple logic.
CO2	Develop C programs using arrays, strings, functions and structures to solve intermediate level computational problems.
CO3	Implement advanced programming concepts such as pointers, dynamic memory allocation and file handling to build efficient solutions
I-II	Course Code: C109 Course Name: Mathematics–II (Linear Algebra and Numerical



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	Methods)
CO1	Solve systems of linear equations and determine eigen values and eigen vectors.
CO2	Apply Cayley–Hamilton theorem and analyze quadratic forms and matrix decompositions.
CO3	Use iterative and numerical methods to solve equations and systems.
CO4	Apply interpolation techniques to estimate unknown values.
CO5	Perform numerical differentiation, integration, and solve differential equations.
I-II	Course Code: C110 Course Name: 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.
I-II	Course Code: C111 Course Name: Computer Organization
CO1	Analyze and apply number systems, data representation techniques, and Boolean algebra principles to design and simplify logical circuits.
CO2	Design and implement combinational and sequential logic circuits using universal gates, counters, and registers for digital system applications.
CO3	Perform arithmetic operations using algorithms, describe register transfer language, and explain the organization and functioning of a basic computer system.
CO4	Design microprogrammed control units and evaluate CPU organization, instruction formats, and addressing modes for efficient program execution.
CO5	Explain memory hierarchy, cache and associative memory, and evaluate input-output organization including interrupts and direct memory access (DMA).
I-II	Course Code: C112 Course Name: Python Programming
CO1	Understand and apply basic Python concepts including data types, operators, decision structures, and loops to develop simple programs.
CO2	Use control statements, strings, and text file operations to process and manipulate data in Python.



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CO3	Implement lists, dictionaries, functions, and modules to develop modular and structured Python programs.
CO4	Develop programs using file handling and object-oriented programming concepts in Python.
CO5	Apply exception handling and GUI concepts to develop interactive and error-free Python applications.
I-II	Course Code: C113 Course Name: Data Structures
CO1	Understand basic data structures, algorithm complexity, and apply searching and sorting techniques to solve problems.
CO2	Perform operations on single, double, and circular linked lists and apply them to simple applications.
CO3	Implement stack and queue data structures using arrays and linked lists and apply them to basic problems.
CO4	Use tree concepts and implement binary trees, binary search trees, and AVL trees with basic operations and applications.
CO5	Understand graph representations and apply traversal and shortest path algorithms to solve simple graph problems.
I-II	Course Code: C114 Course Name: Applied Chemistry Lab
CO1	Classify different types of titrations and apply appropriate methods to determine the concentration of unknown solutions using standard solutions.
CO2	Perform conductometric titrations for acid–base reactions (strong–strong, weak–strong) and determine the equivalence point from conductance measurements.
CO3	Design and standardize suitable analytical procedures for the estimation of components in food and pharmaceutical samples.
I-II	Course Code: C115 Course Name: Python Programming Lab
CO1	Apply basic Python programming concepts to develop simple programs using control structures and data types.
CO2	Design and implement Python programs using functions, lists, and strings to solve real-world problems.
CO3	Develop applications using advanced features such as file handling, object-oriented programming, and exception handling.
I-II	Course Code: C116 Course Name: Data Structures Lab
CO1	Implement recursive and non-recursive searching algorithms (Linear Search, Binary Search) and sorting algorithms (Bubble Sort, Quick Sort, Insertion Sort, Radix Sort, Merge Sort)



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	using C programming
CO2	Apply linear data structures such as Singly Linked Lists, Stacks, and Queues using both array-based and linked list-based approaches in C, and use stack operations to evaluate postfix expressions.
CO3	Develop non-linear data structures including Binary Trees and Binary Search Trees (BST), perform tree traversals (Preorder, Inorder, Postorder), and execute insertion and deletion operations using C programming.
II-I	Course Code: C201 Course Name: Mathematics–III
CO1	Apply vector differentiation and integration concepts including gradient, divergence, curl, and integral theorems.
CO2	Apply Laplace transforms to solve differential equations and engineering problems.
CO3	Analyze periodic functions using Fourier series and Fourier transforms.
CO4	Formulate and solve first-order partial differential equations.
CO5	Solve second-order PDEs and apply them to problems like heat, wave, and Laplace equations.
II-I	Course Code: C202 Course Name: Object Oriented Programming through C++
CO1	Explain the principles of Object-Oriented Programming (OOP) and differentiate between procedural programming (C) and object-oriented programming (C++).
CO2	Design and implement classes and objects in C++ using constructors, destructors, access specifiers, and member function overloading to develop modular programs.
CO3	Design and implement classes and objects in C++ using constructors, destructors, access specifiers, and member function overloading to develop modular programs.
CO4	Demonstrate the use of pointers, dynamic binding, polymorphism, and virtual functions to implement runtime behavior in object-oriented applications.
CO5	Develop generic and robust applications using templates, exception handling mechanisms, and Standard Template Library (STL) components such as containers, iterators, and algorithms.
II-I	Course Code: C203 Course Name: Operating Systems
CO1	Understand the basic functions, structure, and working of operating systems.
CO2	Explain process management, process scheduling, threads, and inter-process communication.
CO3	Understand memory management techniques such as paging, segmentation, and virtual memory.
CO4	Explain deadlocks, file systems, disk scheduling, and storage management.
CO5	Understand system protection, security concepts, and compare Linux and Microsoft Windows.



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	that require dynamic behavior, code reusability, and runtime polymorphism.
CO3	Develop generic and robust applications using templates, exception handling, STL, and user-defined string processing to handle diverse programming scenarios efficiently.
II-I	Course Code: C207 Course Name: Operating Systems Lab
CO1	Apply Unix/Linux commands, shell programming concepts, file systems, and environment variables to perform basic operating system tasks.
CO2	Develop C programs using system calls, process management, inter-process communication, shared memory, semaphores, and multithreading concept
CO3	Simulate and analyze CPU scheduling, memory management, deadlock handling, page replacement, and file allocation algorithms in operating systems.
II-I	Course Code: C208 Course Name: Software Engineering Lab
CO1	Analyze software requirements and prepare SRS, E-R diagrams, DFDs, CFDs, and structured charts for various software applications.
CO2	Apply software estimation techniques such as COCOMO and Function Point models to estimate effort for software projects.
CO2	Design UML diagrams, develop test cases, and model software applications such as e-commerce systems, mobile applications, and ATM systems.
II-II	Course Code: C209 Course Name: Web Application Development Using Full Stack - Frontend Development – Module-I
CO1	Analyze web pages by identifying HTML elements and attributes, and design simple static web pages using essential HTML tags with proper separation of content and presentation using CSS.
CO2	Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone.
CO3	Create web pages using HTML and Cascading Style Sheets
II-II	Course Code: C211 Course Name: Probability and Statistics
CO1	Acquire knowledge in finding the analysis of the data quantitatively or categorically and various statistical elementary tools
CO2	Develop skills in designing mathematical models involving probability, random variables and the critical thinking in the theory of probability and its applications in real life problems.
CO3	Apply the theoretical probability distributions like binomial, Poisson, and Normal in the relevant application areas.
CO4	Analyze to test various hypotheses included in theory and types of errors for large samples.
CO5	Apply the different testing tools like t-test, F-test, chi-square test to analyze the relevant real-



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	life problems.
II-II	Course Code: C212 Course Name: Database Management Systems
CO1	Develop a clear understanding of database fundamentals, architecture, and the role of DBMS in data management.
CO2	Apply relational model concepts and construct basic SQL queries to store and retrieve data efficiently.
CO3	Design conceptual database models using ER diagrams to represent real-world data relationships.
CO4	Utilize advanced SQL techniques including joins, subqueries, and constraints for effective data manipulation.
CO5	Analyze and normalize database schemas to improve data integrity and reduce redundancy.
II-II	Course Code: C213 Course Name: Formal Languages and Automata Theory
CO1	Understand the fundamentals of automata theory, including finite automata and transition systems.
CO2	Analyze and prove equivalence between regular expressions and finite automata.
CO3	Analyze ambiguity and apply pumping lemma and closure properties for CFGs.
CO4	Apply theoretical concepts to determine computational feasibility of problems.
CO5	Analyze classical undecidable problems such as the Halting Problem and Post's Correspondence Problem.
II-II	Course Code: C214 Course Name: Java Programming
CO1	Understand and apply fundamental concepts of Java such as data types, operators, control statements, and object-oriented principles to develop basic programs.
CO2	Design and implement Java classes using constructors, methods, inheritance, and polymorphism to solve real-world problems.
CO3	Implement arrays, inheritance, and interfaces to develop efficient, reusable, and flexible Java applications.
CO4	Apply packages, Java libraries, and exception handling mechanisms to develop modular, reliable, and error-free Java applications.
CO5	Develop Java applications using string handling, multithreading, and JDBC for efficient processing and database interaction.
II-II	Course Code: C215 Course Name: Managerial Economics and Financial Accountancy
CO1	Student can learn the concept of demand and demand elasticity for a product.



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CO2	Student can learn input-output-cost relationships and identify the least-cost combination of inputs.
CO3	Student can learn different market structures and price-output determination under various market conditions, along with knowledge of different business units.
CO4	Student can learn to prepare financial statements and use accounting tools for analysis.
CO5	Student can learn to evaluate different investment opportunities
II-II	Course Code: C216 Course Name: Database Management Systems Lab
CO1	Apply SQL commands and queries (DDL, DML, joins, subqueries, and functions) to create and manipulate databases.
CO2	Develop PL/SQL programs using control structures, procedures, functions, cursors, and exception handling.
CO3	Design and optimize databases using views, triggers, indexing, and transaction control techniques.
II-II	Course Code: C217 Course Name: R Programming Lab
CO1	Understand and apply basic R programming concepts including data input/output, object handling, vectors, matrices, arrays, and simple visualizations.
CO2	Analyze and manipulate data using R by working with data frames, matrices, vectors, and performing statistical operations such as sum, mean, and product.
CO3	Apply advanced R programming concepts including lists, nested structures, factors, and data organization techniques for effective data analysis.
II-II	Course Code: C218 Course Name: Java Programming Lab
CO1	Understand basic programming concepts like data types, operators, control statements, and strings, and apply object-oriented concepts such as classes and objects.
CO2	Illustrating simple inheritance, multi-level inheritance, Exception handling mechanism
CO3	Construct Threads, Event Handling, implement packages, developing applets
II-II	Course Code: C219 Course Name: Web Application Development Using Full Stack - Frontend Development –Module-II
CO1	Develop static and interactive web applications using HTML5, CSS, JavaScript, AngularJS, and TypeScript by implementing client-side scripting, form validation, and responsive web page design pages and separate design from content using Cascading Style sheet
CO2	Design and implement server-side web applications using Node.js, Express.js, Node Package Manager (NPM), and MongoDB for developing dynamic and database-driven web applications.



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CO3	Apply modern web development technologies, frameworks, and programming practices to build secure, efficient, scalable, and maintainable full-stack web applications.
III-I	Course Code: C301 Course Name: Computer Network
CO1	Demonstrate different network models for networking links OSI, TCP/IP, B-ISDN, N -B ISDN and get knowledge about various communication techniques, methods and protocol standards. Discuss different transmission media and different switching networks.
CO2	Analyze datalink layer services, functions and protocols like HDLC and PPP
CO3	Compare and classify medium access control protocols like ALOHA, CSMA, CSMA/CD, CSMA/ CA, Polling, Token passing, FDMA, TDMA, CDMA protocols
CO4	Solve problems related to Flow control, Error control, Congestion control and Network Routing. Design and compute subnet masks and addresses for networking requirements
CO5	Determine application layer services and client server protocols working with the client server paradigms like WWW, HTTP, FTP, e-mail and SNMP etc.
III-I	Course Code: C302 Course Name: Design and Analysis of 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
III-I	Course Code: C303 Course Name: Data Warehousing 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 item sets generation
CO5	Identify and apply various clustering algorithm (with opensource tools), interpret, evaluate and report the result.



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III-I	Course Code: C304 Course Name: Basic Electronics
CO1	Understand semiconductor fundamentals, diode characteristics, rectifiers, filters, and regulator circuits
CO2	Explain the operation and applications of special-purpose diodes such as Zener, Varactor, and Optical diodes.
CO3	Analyze the characteristics and applications of Bipolar Junction Transistors as amplifiers and switches.
CO4	Understand the operation, characteristics, and biasing of JFETs and MOSFETs.
CO5	Explain the working and applications of SCR, UJT, IGBT, phototransistors, and optical couplers.
III-I	Course Code: C305 Course Name: Software Project Management
CO1	Understand conventional and modern software management, including economics and process improvement.
CO2	Explain software life cycle phases and associated artifacts.
CO3	Apply model-based architectures, workflows, and iterative planning techniques.
CO4	Analyze project organization, metrics, and process automation for effective control.
CO5	Implement Agile and DevOps practices in software development projects.
III-I	Course Code: C306 Course Name: Data Warehousing and Data Mining Lab
CO1	Understand and apply data warehousing concepts, OLAP operations, and use WEKA tool for data exploration, preprocessing, association rule mining, classification, and clustering.
CO2	Apply data mining techniques using tools and programming (Java/Python) for knowledge flow, association rule mining, classification, and statistical analysis.
CO3	Develop and implement advanced data mining algorithms and data analysis techniques using programming languages, and visualize data for meaningful interpretation.
III-I	Course Code: C307 Course Name: Computer Networks Lab
CO1	Explain how reliable data communication is achieved through the data link layer and analyze its mechanisms.
CO2	Suggest and apply appropriate routing algorithms for network communication.
CO3	Provide internet connectivity, perform system installation, and work with network management tools.
III-II	Course Code: C308 Course Name: Animation design



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CO1	Learn and use tools for creating 2D animations.
CO2	Understand production pipelines and styles for 2D and 3D content.
CO3	Apply tools to create effective 2D animations and 3D models with texturing and lighting.
III-I	Course Code: C310 Course Name: Summer Internship 2 Months (Mandatory) after second year (to be evaluated during V semester)
CO1	Identify community needs, analyze societal problems, apply appropriate engineering solutions, and prepare comprehensive project documentation demonstrating measurable community impact.
CO2	Demonstrate effective teamwork, leadership, communication, and presentation skills while planning, executing, and presenting community-based projects.
CO3	Evaluate the societal, ethical, environmental, and sustainability aspects of community projects and recommend responsible engineering practices for long-term societal benefit
III-II	Course Code: C311 Course Name: Machine Learning
CO1	Understand the basic concepts of Artificial Intelligence and Machine Learning, types of ML systems, and fundamental ideas of statistical learning.
CO2	Apply supervised learning techniques such as regression and classification using algorithms like k-NN, Decision Trees, Naïve Bayes, and SVM.
CO3	Use ensemble learning methods and Support Vector Machines to improve model performance and accuracy.
CO4	Apply clustering and dimensionality reduction techniques like K-Means and PCA for analyzing and simplifying data.
CO5	Develop basic neural network models using TensorFlow and Keras for deep learning tasks.
III-II	Course Code: C312 Course Name: Compiler Design
CO1	To understand the basics of compiler design.
CO2	To learn lexical and syntax analysis techniques.
CO3	To understand parsing and intermediate code generation.
CO4	To learn code optimization methods.
CO5	To understand run-time environment and code generation.
III-II	Course Code: C313 Course Name: Cryptography and Network Security
CO1	Understand core Cryptography principles including security goals, attacks, and mathematical foundations.
CO2	Apply concepts of Symmetric Encryption and analyze standard algorithms like DES and AES



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CO3	Explain and utilize Asymmetric Encryption for secure communication and key exchange.
CO4	Evaluate mechanisms for data integrity using Digital Signature, hash functions, and key management techniques
CO5	Analyze network security protocols such as Transport Layer Security, IPSec, and application-layer security solutions.
III-II	Course Code: C314 Course Name: Object Oriented Analysis and Design
CO1	Analyze the nature of complex system and its solutions
CO2	Illustrate & relate the conceptual model of the UML, identify & design the classes and relationships
CO3	Analyze & Design Class and Object Diagrams that represent Static Aspects of a Software System and apply basic and Advanced Structural Modeling Concepts for designing real time applications.
CO4	Analyze & Design behavioral aspects of a Software System using Use Case, Interaction and Activity Diagrams.
CO5	Analyze & Apply techniques of State Chart Diagrams and Implementation Diagrams to model behavioral aspects and Runtime environment of Software Systems.
III-II	Course Code: C315 Course Name: Digital Logic Design
CO1	Understand and apply number systems, codes, Boolean algebra, and logic gates to represent data and analyze basic digital circuits.
CO2	Minimize Boolean expressions and design combinational logic circuits using K-map and standard arithmetic circuit implementations.
CO3	Design and implement combinational circuits using MSI/LSI components and programmable logic devices (PLDs).
CO4	Analyze and design sequential circuits including flip-flops, counters, and registers for digital system applications.
CO5	Design and analyze finite state machines and sequence detectors for clocked sequential circuit applications.
III-II	Course Code: C316 Course Name: Machine Learning using Python Lab
CO1	Apply basic machine learning algorithms such as FIND-S, Candidate Elimination, Decision Trees, Regression, and k-NN using programming.
CO2	Implement and analyze advanced machine learning techniques including Neural Networks, Naïve Bayes, SVM, PCA, clustering, and model evaluation methods
CO3	Perform data preprocessing, visualization, and exploratory data analysis using tools like Pandas and Matplotlib for real-world datasets.



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III-II	Course Code: C317 Course Name: Compiler Design Lab
CO1	Understand and implement lexical analysis using C, LEX, and YACC.
CO2	Understand and implement different parsing techniques.
CO3	Understand intermediate code generation and code generation.
III-II	Course Code: C318 Course Name: Cryptography and Network Security Lab
CO1	Apply the knowledge of symmetric cryptography to implement encryption and decryption using Ceaser Cipher, Substitution Cipher, Hill Cipher
CO2	Demonstrate the different algorithms like DES, BlowFish, and Rijndael, encrypt the text “Hello world” using Blowfish Algorithm
CO3	Analyze and implement public key algorithms like RSA, Diffie-Hellman Key Exchange mechanism, the message digest of a text using the SHA-1 algorithm
III-II	Course Code: C319 Course Name: MEAN Stack Technologies-Module I (HTML 5, JavaScript, Node.js, Express.js and Type Script)
CO1	Develop responsive and interactive web applications using HTML5, CSS, JavaScript, and TypeScript by applying appropriate programming concepts and client-side validation techniques.
CO2	Design and implement server-side web applications using Node.js, Express.js, middleware, routing, session management, APIs, and database connectivity.
CO3	Apply modern web development tools, frameworks, debugging techniques, and best practices to develop secure, efficient, and maintainable web applications for real-world problems.
IV-I	Course Code: C401 Course Name: Cloud Computing
CO1	Illustrate the key dimensions of the challenge of Cloud Computing
CO2	Classify the Levels of Virtualization and mechanism of tools.
CO3	Analyze Cloud infrastructure including Google Cloud and Amazon Cloud.
CO4	Create Combinatorial Auctions for cloud resource and design scheduling algorithms for computing cloud
CO5	Assess control storage systems and cloud security, the risks involved its impact and develop cloud application
IV-I	Course Code: C402 Course Name: Deep Learning Techniques
CO1	Analyze the fundamentals and evolution of machine learning and evaluate model performance considering overfitting and underfitting issues.



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CO2	Apply deep learning principles to design and train artificial neural networks for vision and language-related tasks.
CO3	Develop and implement neural network models using frameworks such as Keras and TensorFlow for binary and multiclass classification problems.
CO4	Design and implement convolutional and recurrent neural network models using deep learning frameworks such as PyTorch.
CO5	Analyze advanced deep learning architectures including GANs, autoencoders, reinforcement learning, and deep generative models for real-world applications.
IV-I	Course Code: C403 Course Name: Block-Chain Technologies
CO1	Demonstrate the block chain basics, Crypto currency
CO2	To compare and contrast the use of different private vs. public block chain and use cases
CO3	Design an innovative Bit coin Block chain and scripts, Block chain Science on varies coins
CO4	Classify Permission Block chain and use cases – Hyper ledger, Corda
CO5	Make Use of Block-chain in E-Governance, Land Registration, Medical Information Systems and others
IV-I	Course Code: C404, Course Name: Introduction to Artificial Intelligence and Machine Learning
CO1	Discuss basic concepts of artificial intelligence, neural networks and genetic algorithms.
CO2	Apply the principles of knowledge representation and reasoning.
CO3	Learn about bayesian and computational learning and machine learning.
CO4	Utilize various machine learning techniques.
CO5	Apply the machine learning analytics and deep learning techniques.
IV-I	Course Code: C405 Course Name: IOT and Applications
CO1	Understand basic concepts, architecture, and applications of IoT.
CO2	Identify IoT hardware components like Arduino, Raspberry Pi, and ARM processors.
CO3	Develop simple IoT applications using sensors, actuators, and communication protocols.
CO4	Understand data handling, cloud integration, and security in IoT systems.
CO5	Apply IoT knowledge to real-world areas like agriculture, healthcare, and smart homes.
IV-I	Course Code: C406 Course Name: Universal Human Values Understanding Harmony



AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

(Approved by A.I.C.T.E., New Delhi & Permanently Affiliated to JNTU-GV, Vizianagaram)

NAAC “A+” Accredited Institute

Cherukupally (Village), Near Tagarapuvalasa Bridge, Vizianagaram (Dist.), A.P, Pin-531162.

www.aietta.ac.in, principal@aietta.ac

CO1	Develop self-awareness and understanding of relationships with family, society, and nature, and evaluate their impact on sustainable living
CO2	Analyze real-life problems and propose responsible and sustainable solutions considering human values and societal well-being.
CO3	Exhibit effective communication and interpersonal skills in understanding and maintaining human relationships in diverse environments.
CO4	Demonstrate ethical behavior, responsibility, and commitment in personal and professional decision-making.
CO5	Exhibit effective communication and interpersonal skills in understanding and maintaining human relationships in diverse environments.
IV-I	Course Code: C407 Course Name: MEAN Stack Technologies-Module II- Angular JS and MongoDB
CO1	Build a component-based application using Angular components and enhance functionality using directives. Utilize data binding techniques to develop Angular forms and bind them effectively with model data.
CO2	Apply Angular built-in or custom pipes to format and display data. Develop a single-page application (SPA) using Angular routing with both synchronous and asynchronous navigation.
CO3	Perform CRUD operations on a document database using MongoDB queries and integrate them with the Angular application for dynamic data handling.
IV-I	Course Code: C408 Course Name: Industrial/Research Internship 2 months (Mandatory) after third year (to be evaluated during VII semester)
CO1	Apply engineering knowledge and modern tools to analyze industrial practices and solve engineering problems
CO2	Prepare technical reports and present internship outcomes effectively using professional communication skills.
CO3	Evaluate industrial experiences, demonstrate ethics and teamwork, and reflect on professional growth for lifelong learning.
IV-II	Course Code: C409 Course Name: Major Project Work, Seminar Internship
CO1	Identify, analyze, and formulate real-world engineering problems through literature survey, and design appropriate solutions using relevant engineering tools and methodologies.
CO2	Implement, test, and evaluate the proposed solution while demonstrating teamwork, project management skills, and adherence to professional ethics.
CO3	Communicate project outcomes effectively through technical reports and presentations, and assess societal, environmental, and sustainability impacts of the solution