



**Department of Computer Science & Engineering**  
**Accredited by NBA**

**Course Outcomes**

<b>R20</b>
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**Class: I Year I Semester**

Course Name with Code	Course Outcome	
<b>COMMUNICATIVE ENGLISH (C111)</b>	CO1	Understand past culture, tradition, speaking English in real life situations
	CO2	Infer and interpret the admonitions of a father to his daughter answering a series of questions, greetings and leave takings
	CO3	Apply mechanics of writing in writing letters on various contexts, cover letters, CVs, E-mail etiquette, academic proposals, research articles and biographies.
	CO4	Understanding societal problems and finding the suitable solution with reference to Wangari Maathai
	CO5	Compare and contrast racial discrimination, better listening for better speaking and using right vocabulary
	CO6	Understand the importance of soft skills, effective communication skills, usage of functional grammar in communication.
<b>MATHEMATICS-I (C112)</b>	CO1	Discuss the Ratio test and Mean value theorems
	CO2	Solve First order Linear differential equations
	CO3	Solve the Higher order non-homogeneous Differential Equations
	CO4	Model physical phenomena of LCR series circuit and Simple Harmonic Motion.
	CO5	Determine the extreme values for the function of two variables.
	CO6	Compute double and triple integrals to find Area and Volume.
<b>APPLIED PHYSICS (C113)</b>	CO1	Understand the concepts of interference, diffraction and polarization: connect it to a few engineering applications.
	CO2	Explain concepts of lasers and Optical fibers
	CO3	Explain the fundamental concepts of Quantum behavior of matter and electron theory.
	CO4	Describe basics of dielectrics and magnetism.
	CO5	Comprehend the use of concepts of semiconductor physics. Explore a few of their technological applications.

	CO6	Illustrate basics of Superconductivity and its applications.
<b>PROGRAMMING FOR PROBLEM SOLVING USING C (C114)</b>	CO1	To discuss machine language with the help of numbering system and recognize different variables different statements and different storages to write a program
	CO2	To predict for which problem we have to use which type of decision statements and which type of loop
	CO3	To classify the data by storing data in different formats like arrays structures and unions
	CO4	To analyze diff application of pointers to access values of memory locations through address and variable
	CO5	To subdivide the problem into functions and retrieving file information using file operations
	CO6	To operate data in file information using file operations
<b>COMPUTER ENGINEERING WORKSHOP LAB (C115)</b>	CO1	Identify the peripherals of a computer
	CO2	Demonstrate Virtual machine setup and operating system installation.
	CO3	Describe various UNIX commands, HTML Tags and IOT fundamentals
	CO4	Discuss various Text Editors, Microsoft Word, Power Point, Microsoft Excel & LaTeX
<b>ENGLISH COMMUNICATION SKILLS LAB (C116)</b>	CO1	Identify 44 sounds of language and develop correct pronunciation learning Phonetics
	CO2	Demonstrate language functions: LSRW Skills
	CO3	Develop and practice correct accent, intonation, and rhythm to get acquaintance with language.
	CO4	Develop speaking skills through participation in activities and vocabulary
<b>APPLIED PHYSICS LAB (C117)</b>	CO1	Determine the various parameters like wavelength of different light sources, curvature of lens using spectrometer and travelling microscope
	CO2	Apply the concepts related to semiconductors, electric and magnetic fields
	CO3	Demonstrate the photo electric effect

	CO4	Apply theoretical principles for measurements in the laboratory
<b>PROGRAMMING FOR PROBLEM SOLVING USING C LAB  (C118)</b>	CO1	Knowledge on various concepts of C language.
	CO2	Design and development of C program using loops
	CO3	Design and development of C problem solving skills using arrays
	CO4	Design and develop programs on functions

**Class: I Year II Semester**

<b>Course Name with Code</b>	<b>Course Outcome</b>	
<b>MATHEMATICS -II (C121)</b>	CO1	Explain system of linear algebraic equations using Gauss Elimination method
	CO2	Use Cayley-Hamilton theorem to find the inverse and power of a matrix problems
	CO3	Solve the approximate roots of polynomial and transcendental equations by using Iterative methods
	CO4	Solve the system of linear equations using Gauss Jacobi and Gauss-Seidal methods
	CO5	Apply Newton's forward and backward interpolation forequal intervals and Lagrange's formula for unequal intervals
	CO6	Apply Numerical Integral techniques to different Engineering problems
<b>APPLIED CHEMISTRY (C122)</b>	CO1	Explain about fabrication of plastic and recycling of e waste.
	CO2	Explain types of batteries and control methods of corrosion.
	CO3	Determine the preparation of Non elemental semiconducting materials
	CO4	Determine the synthesis of nano materials and its applications.
	CO5	Analyse spectroscopic instrumentations and compare sources of energy.
	CO6	Discuss molecular machines and molecular motors
<b>COMPUTER ORGANISATION  (C123)</b>	CO1	To Solve Boolean expressions using K-Maps and also to discuss error detecting and correcting methods and numbering systems
	CO2	To construct combinational circuits for Boolean equations and to construct one flip-flop using another flip-flop

	CO3	To explain computer arithmetic operations and discuss types of flip-flops and sequential circuits
	CO4	To analyse computer arithmetic operations and execution of computer instructions using algorithms
	CO5	To discuss 8086 microprocessor and micro programs
	CO6	To explain the organisation of memory and I/O module
<b>PYTHON PROGRAMMING (C124)</b>	CO1	To acquire programming skills in core Python.
	CO2	Solve coding tasks related to conditional statements, loops
	CO3	How to read and write files using python
	CO4	Experiment with with lists, tuples and dictionaries
	CO5	Able to work with CSV files
	CO6	Apply Object Oriented Skills in Python
<b>DATA STRUCTURES (C125)</b>	CO1	Discuss the computational efficiency of the principal algorithms for sorting & searching
	CO2	Summarize the properties and types of linked list
	CO3	Use arrays, stacks, queues, trees, and Graphs in writing programs.
	CO4	Demonstrate different methods for traversing trees.
	CO5	Implement algorithms on Graphs
	CO6	Implement applications on Graphs
<b>APPLIED CHEMISTRY LAB (C126)</b>	CO1	Explain volumetric analysis with different indicators
	CO2	Calculate the Hardness of water by EDTA
	CO3	Calculate the Alkalinity of water sample by HCl solution
	CO4	Analyse the quantity of ions in organic solutions
<b>PYTHON PROGRAMMING LAB (C127)</b>	CO1	Develop key programming abilities in data types, containers, and other computer programming topics.
	CO2	Utilize the fundamentals of programming with the Python programming language.
	CO3	Solve code problems involving conditional execution and loops.
	CO4	Find out how to do coding tasks that relate to the basic ideas and techniques used in object-oriented programming.

<b>DATA STRUCTURES LAB (C128)</b>	CO1	Use various searching and sorting algorithms
	CO2	Use basic data structure linked list
	CO3	Design and development of Queues and Stacks
	CO4	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths.

**Class: II Year I Semester**

Course Name with Code	Course Outcome	
<b>MATHEMATICS- III (C211)</b>	CO1	Explain system of linear algebraic equations using Gauss Elimination method
	CO2	Use Cayley-Hamilton theorem to find the inverse and power of a matrix problems
	CO3	Solve the approximate roots of polynomial and transcendental equations by using Iterative methods
	CO4	Solve the system of linear equations using Gauss Jacobi and Gauss-Seidal methods
	CO5	Apply Newton's forward and backward interpolation forequal intervals and Lagrange's formula for unequal intervals
	CO6	Apply Numerical Integral techniques to different Engineering problems
<b>OBJECT ORIENTED PROGRAMMING THROUGH C++(C212)</b>	CO1	Compare differences between Procedure and Object Oriented Programming and able to know key concepts of Object oriented programming
	CO2	Understanding about how to build Programs using OOPs and Constructors, Destructors
	CO3	Determine different types of inheritance and operator overloading
	CO4	Demonstrate familiarity with Pointers and Binding
	CO5	Analyze the concepts of exception handling and able to write programs
	CO6	Understand the key concepts of Templates & Standard Template Library
<b>OPERATING SYSTEMS (C213)</b>	CO1	Define the different types of computer architectures and various generations of Operating Systems, Services, functions of Operating System and System Calls
	CO2	Define the concept of process and thread and analyse various CPU Scheduling Algorithms and compare their performance. Describe Inter process Communication and about Process Synchronization

	CO3	Compare and contrast various memory management mechanisms
	CO4	Apply various Page Replacement Techniques
	CO5	Apply various file management systems, Disk Scheduling Algorithms and Discuss concepts of deadlocks, various techniques to handle deadlocks.
	CO6	Demonstrate the various method of providing System Protection and System Security for windows and Linux
<b>SOFTWARE ENGINEERING(C214)</b>	CO1	Explain Software Process and Process models
	CO2	Explain requirement analysis and specification and software design
	CO3	Construct functional oriented software design and identify user interface design
	CO4	Develop coding and testing software
	CO5	Explain software reliability and quality management
	CO6	Evaluate software Maintenance and reuse
<b>MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE(C215)</b>	CO1	Discuss the validity of logical argument.
	CO2	Use logical notations to formulate and reason about fundamental concept such as sets, relations and functions.
	CO3	Explain the concept permutation, combination, binomial and multiple coefficients.
	CO4	Apply various properties of integers including the primes and unique factorization.
	CO5	Solve and formulate generating function and recurrence functions
	CO6	Identify various graphs, types of graphs and properties of graphs
<b>OBJECT ORIENTED PROGRAMMING THROUGH C++ LAB (C216)</b>	CO1	Use programming constructs in solving problems.
	CO2	Apply object oriented techniques to solve problems.
	CO3	Apply object oriented techniques to solve problems.
	CO4	Apply exception handling technique to handle various errors.
	CO5	Develop programs using Inline, friend functions, reference variable, this pointer, operator Overloading, static and dynamic binding, template and STL
	CO6	Demonstrate the use of various OOPs concepts with the help of programs.

<b>OPERATING SYSTEMS LAB (C217)</b>	CO1	Apply the scheduling algorithms for the given problem and apply multi programming for given problem
	CO2	Experiment algorithms for deadlock avoidance, detection ,file allocation strategies and page replacement
	CO3	Demonstrate various Unix commands and vi editor, Bash shell, Bourne shell and C shell, Linux file system, Environment variables.
	CO4	Use various system calls for file copying and for various command execution
	CO5	Build Programs for Process Communication, Process Synchronization and for thread execution
<b>SOFTWARE ENGINEERING LAB (C218)</b>	CO1	Understand to do requirement elicitation and prepare SRS documentation
	CO2	Can draw the E-R diagrams,DFD,CFD
	CO3	Can have knowledge on COCOMO model
	CO4	Can have knowledge on FP oriented estimation model
	CO5	Can able to draw UML diagrams
	CO6	Can write Test cases for different scenarios by analyzing
<b>APPLICATIONS OF PYTHON- NUMPY(C219)</b>	CO1	Explain how data is collected, managed and stored for processing
	CO2	Analyze the workings of various numerical techniques, different descriptive measures of Statistics, correlation and regression to solve the engineering problems
	CO3	Apply some linear algebra operations to n-dimensional arrays
	CO4	Develop common data wrangling tasks using Jumpy in Python
	CO5	Develop common data computational tasks in Python

**Class: II Year II Semester**

<b>Course Name with Code</b>	<b>Course Outcome</b>	
<b>PROBABILITY &amp; STATISTICS (C221)</b>	CO1	Define complex variation and function also State and Prove Cauchy integral theorem and
	CO2	Explain line integral and also use expand taylor's and Laurent series expression
	CO3	Explain the concept of probability and probability distributions. Also calculate mean and variance of different probability distributions.
	CO4	Differentiate the concept of sampling and non sampling procedures
	CO5	Predict Confidence interval estimation and determination of sample size
	CO6	Setup hypothesis and parameters are verified through the sample
<b>DATABASE MANAGEMENT SYSTEMS(C222)</b>	CO1	Define the Basic Concepts of Database Management Systems
	CO2	Classify and illustrate Relational Model, Conceptual designs, Key

		Constraints, various relational calculus and various set operations
	CO3	Develop queries related to DBMS using SQL
	CO4	Categorize different types of functional dependencies and normalization techniques
	CO5	Summarize concepts related to Transactions and Concurrency Control
	CO6	Compare various storage techniques.
<b>FORMAL LANGUAGES AND AUTOMATA THEORY(C223)</b>	CO1	Define the mathematical principles behind theoretical Computer Science
	CO2	Differentiate and Give examples for the different types of Automata concepts
	CO3	Correlate the different types of Automata to real world applications using Context Free Grammars
	CO4	Apply Context Free Grammars Normal Forms conversion
	CO5	Choose and design appropriate automata for the different requirements outlined by theoretical Computer Science
	CO6	Identify the different Computational problems and their associated complexity
<b>JAVA PROGRAMMING (C224)</b>	CO1	Describe data types, variables, operators, strings and simple programs and java programming environment
	CO2	Explain control statements and arrays with example programs
	CO3	Discuss classes, objects creation and methods and constructor overloading
	CO4	Describe inheritance and interfaces with example programs
	CO5	Apply the concepts packages and create the packages and Exception handling with examples
	CO6	Solve problems using Multithreading and Java Database connectivity.
<b>MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTANCY (C225)</b>	CO1	Knowing what are economic principles
	CO2	Understanding the relations between supply and demand of products
	CO3	Remembering the economic principles and its influence in daily life
	CO4	To learn how to maintain the book of accounts relating to debit and credit transactions
	CO5	Knowing the allocation of capital or resources in various business activities
	CO6	To learn how to apply the economic principles to make good decisions
<b>DATABASE MANAGEMENT</b>	CO1	Ability to design database schema for a given application and apply normalization

<b>SYSTEM LAB (C226)</b>	CO2	Ability to acquire skills in using SQL commands for data definition and data manipulation
	CO3	Develop queries related to DBMS using SQL
	CO4	Ability to Develop solutions for database applications using procedures
	CO5	Create SQL programs using functions, cursors and triggers
	CO6	Extend normalization for the development of application software's
<b>R PROGRAMMING LAB (C227)</b>	CO1	Explain taking input from the user and displaying values and objects information
	CO2	Explain to use mathematical and different predefined functions
	CO3	Applying the concepts of Vectors, Matrices and arrays in R
	CO4	Explain concepts of Lists and nested lists and its operations
	CO5	Explain the concepts of factors and levels of factors
	CO6	Analyze the concepts of vectors, lists, arrays and perform operations
<b>JAVA PROGRAMMING LAB(C228)</b>	CO1	Able to evaluate default value of primitive data type, Operations , expressions , control flow, strings.
	CO2	Able to write programs using abstract classes.
	CO3	Able to determine Class, Objects, Methods, Inheritance and Polymorphism
	CO4	Able to write multithreaded programs
	CO5	Able to implement Exception handling mechanism for various problems
	CO6	Able to create packages and develop GUI applications using Applets
<b>APPLICATIONS OF PYTHON- PANDAS(C229)</b>	CO1	Use Pandas to create and manipulate data structures like Series and Data Frames
	CO2	Experiment with arrays, queries, and data frames
	CO3	Apply data frame structures for cleaning and processing and manipulating files
	CO4	Apply data frame structures for manipulating files
	CO5	Develop basic charts to display data from data frames.

**Class: III Year I Semester**

<b>Course Name with Code</b>	<b>Course Outcome</b>	
<b>COMPUTER NETWORKS(C311)</b>	CO1	Provide a comprehensive knowledge about Protocols architectures and their services
	CO2	Make them understand the principles and issues of key protocols
	CO3	Support in analyzing the applications of various network layers
	CO4	Provide knowledge regarding web services, mail services and underlying protocols
	CO5	Support in gaining conceptual knowledge of various Networking Algorithms
<b>DESIGN AND ANALYSIS OF ALGORITHMS(C312)</b>	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	Analyze the performance of dynamic programming approaches
	CO5	Organize important algorithmic design paradigms and methods of analysis: backtracking, branch and bound algorithmic approaches
	CO6	Demonstrate NP- Completeness theory ,lower bound theory and String Matching
<b>DATA WAREHOUSING AND DATA MINING(C313)</b>	CO1	Illustrate the importance of Data Warehousing and its functionalities and Design schema for real time data warehousing applications.
	CO2	Identify the scope and necessity of Data Mining
	CO3	Demonstrate on various Data Preprocessing Techniques and Process raw data to make it suitable for various data mining algorithms.
	CO4	Choose appropriate classification technique to perform classification, model building and evaluation.
	CO5	Make use of association rule mining techniques viz. Apriori and FP Growth algorithms and analyze on frequent itemsets generation.
	CO6	Identify and apply various clustering algorithm, interpret, evaluate and report the result.

<b>RENEWABLE ENERGY SOURCES(C314)</b>	CO1	Understand solar radiation data, PV cell and its I-V & P-V characteristics, storage.
	CO2	Describe the concepts of Wind Energy Conversion & its applications
	CO3	Explain the principle of biomass conversion technologies.
	CO4	Outline the principle of geothermal energy.
	CO5	Discuss the principle of Ocean Thermal Energy Conversion (OTEC), motion of waves, tides and power associated with it.
	CO6	Summarize the concepts of chemical energy sources such as Fuel cell, Hydrogen energy and Magento Hydro-Dynamic (MHD) power generation.
<b>SOFTWARE PROJECT MANAGEMENT(C315)</b>	CO1	Understand about how to plan and manage project Scope and deliverables
	CO2	Understand different life cycle phases and process Artifacts
	CO3	Perform Periodic Status Assessments and Estimate check points
	CO4	Apply Project Control and Process instrumentation Techniques
	CO5	Implement a emerging Software Engineering methodology
	CO6	Define quality measures planning and management of quality
<b>DATA WAREHOUSING AND DATA MINING LAB(C316)</b>	CO1	Design a data mart or data warehouse for any organization
	CO2	Demonstrate the working of WEKA Data Mining/Machine Learning Toolkit
	CO3	Extract knowledge using data mining techniques and enlist various algorithms used in information analysis of Data Mining Techniques
	CO4	Demonstrate the working of algorithms for data mining tasks such as association rule mining, classification for realistic data
	CO5	Implement and Analyze on knowledge flow application on data sets
	CO6	Apply the suitable visualization techniques to output analytical results
<b>COMPUTER NETWORKS LAB(C317)</b>	CO1	Learning basic concepts of networking and acquire practical knowledge
	CO2	Understanding Data Link Layer protocols with practical implementation
	CO3	Gain knowledge about Ethernet/Internet Working
	CO4	Practically analyzing the network layer algorithms in routing data
	CO5	Understanding the Network Simulator and its application
	CO6	Understanding with implementation about various broadcasting techniques in computer networks
<b>CONTINUOUS INTEGRATION AND</b>	CO1	Categorize the various phases of SDLC and agile software development

<b>CONTINUOUS DELIVERY USING DEVOPS(C318)</b>	CO2	Understand the fundamentals of DevOps ,adoption in projects
	CO3	Simulate the commands on GITHUB/GITLAB
	CO4	Illustrate the importance of Jenkins to Build, Deploy and Test Software Applications
	CO5	Report generation on testing of software product using Sonarqube and jacoco
	CO6	Create an automated CICD pipeline using a stack of tools

**Class: III Year II Semester**

<b>Course Name with Code</b>	<b>Course Outcome</b>	
<b>MACHINE LEARNING(C321)</b>	CO1	Illustrate the fundamentals of Artificial Intelligence (AI), Machine Learning & Statistical Learning.
	CO2	Analyze Various Supervised Learning Techniques (Classification & Regression)
	CO3	Examine Various Ensemble Learning Techniques & Random Forests
	CO4	Explain different Support Vector Machine Methods
	CO5	Illustrate about Unsupervised Learning Techniques
	CO6	Explain the concepts of Neural Networks & Deep Learning
<b>COMPILER DESIGN(C322)</b>	CO1	Classify different Phases and passes of Compiler and specifying different types of Tokens by Lexical Analyzer and also able to use the Compiler tools LEX, YAAC
	CO2	Build Parsers and its types
	CO3	Construction of LL, SLR, CLR and LALR Parse table
	CO4	Construct the intermediate code representations and generation
	CO5	Explain the Run time environment concepts
	CO6	Apply for various optimization techniques for Data flow Analysis
<b>CRYPTOGRAPHY AND NETWORK SECURITY(C323)</b>	CO1	Understand network security services model and describe a security services and mechanisms with a clear understanding of its importance
	CO2	Discuss the cryptographic techniques to illustrate symmetric and asymmetric cryptography
	CO3	Summarize the number of secret key and public key cryptographic algorithms
	CO4	Demonstrate integrity ,authentication and implement hash and digital signature techniques
	CO5	Apply network security applications of Email security ,Web

		security and IP security(PGP,S/MIME,SSL,IP Security, etc)
	CO6	Understand security threats and counter measures to implement system level security applications
<b>MOBILE COMPUTING(C324)</b>	CO1	Interpret the basic concepts, principles in mobile computing, Cellular system and develop new protocols related to mobile environment.
	CO2	Apply various access control techniques for Efficient and scalable Mobile Communication.
	CO3	Illustrate Mobile IP, packet delivery and Dynamic Host Configuration Protocols.
	CO4	Design and develop a lightweight network stack ,Solve any new technical issue related to this new paradigm.
	CO5	Summarize data delivery mechanisms, data dissemination and data Synchronization and develop new mobile applications.
	CO6	Develop new wireless applications protocol model and/or algorithms/protocols and wireless telephone applications
<b>MEANSTACK DEVELOPMENT(C325)</b>	CO1	Build static web pages using HTML5.
	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	Develop JavaScript applications using typescript and work with document database using MongoDB.
	CO5	Apply typescript for strict typing in applications and perform CRUD operations using MongoDB.
	CO6	Utilize Angular JS to design dynamic and responsive web pages.
<b>MACHINE LEARNING USING PYTHON LAB(C326)</b>	CO1	Develop Python Programs for FIND-S Algorithm, Candidate Elimination Algorithm and Decision Tree Based ID3 Algorithm
	CO2	Develop a program for Bias, Variance, Remove duplicates , Cross Validation, Categorical Encoding, One-hot Encoding, a) Linear Regression b) Logistic Regression c) Binary Classifier
	CO3	Build an Artificial Neural Network by implementing the Back propagation algorithm-Nearest Neighbour algorithm, Locally Weighted Regression algorithm
	CO4	Apply naïve Bayesian Classifier, EM algorithm to cluster a Heart Disease Data Set
	CO5	Write programs for Data Analysis for classification using Pandas &Matplotlib, Construct Bayesian network using medical data

	CO6	Implement Support Vector Machines and Principle Component Analysis
<b>COMPILER DESIGN LAB (C327)</b>	CO1	Demonstrate the working of LEX and YACC compiler for debugging of programs
	CO2	Illustrate and use Context Free Grammar, and Parse tree construction
	CO3	Solve and use the new Tools and Technologies used for designing compiler
	CO4	Develop program for solving parser problems
	CO5	Simplify how to write programs that execute faster
<b>CRYPTOGRAPHY AND NETWORK SECURITY LAB(C328)</b>	CO1	Explain security concepts, Ethics in Network Security. Identify and classify various Attacks and explain the same.
	CO2	Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to various attacks.
	CO3	Explain the role of third-party agents in the provision of authentication services.
	CO4	Comprehend and apply authentication, email security, web security services and mechanisms.
	CO5	Distinguish and explain different protocol like SSL, TLS Vis-à-vis their applications
	CO6	Discuss the effectiveness of passwords in access control. Explain firewall principles.
<b>MEANSTACK TECHNOLOGIES- MODULE-1 (C329)</b>	CO1	Develop professional web pages of an application using HTML elements like lists, navigations, tables, various form elements, embedded media which includes images, audio, video and CSS Styles.
	CO2	Utilize JavaScript for developing interactive HTML web pages and validate form data.
	CO3	Build a basic web server using Node.js and also working with Node Package Manager (NPM).
	CO4	Build a web server using Express.js
	CO5	Apply typescript for strict typing in applications
	CO6	Utilize API to fetch API in designing web pages.

**Class: IV Year I Semester**

<b>Course Name with Code</b>	<b>Course Outcome</b>	
<b>CLOUD COMPUTING(C411)</b>	CO1	Understanding Cloud Computing Concepts and Models
	CO2	Understanding Cloud Architecture
	CO3	Understanding Virtualization
	CO4	Skills in Cloud Services and Offerings
	CO5	Analyze Cloud Infrastructure like Google Cloud and Amazon Cloud
	CO6	Assess control storage systems and cloud security
<b>SOCIAL NETWORKS &amp; SEMANTIC WEB(C412)</b>	CO1	Demonstrate social network analysis and learn web intelligence
	CO2	Learn Knowledge Representation for the Semantic Web and navigate social networks data, Design web services and its applications.
	CO3	Analyze the key aspects of ontology engineering and the Integration of Social Networks and Semantic Web
	CO4	Learn Semantic Web Applications, Services and Technology
	CO5	Learn and Compare the Semantic Web Services and Applications from social network Structure.
	CO6	Analyze and Building Semantic Web Applications with social network features and Critical Thinking and Problem-Solving
<b>BLOCK-CHAIN TECHNOLOGIES(C413)</b>	CO1	Demonstrate the Block chain basics and Crypto currency
	CO2	To compare and contrast to use of different private and public block chain and use cases
	CO3	Design and innovative Bit coin block chain and scripts, Block chain science on various coins
	CO4	Analyzing various Block chain frameworks and their applications
	CO5	Classify permission Block chain and use cases – Hyper Ledger, Corda
	CO6	Make use of Block chain in E-Governance Land registration, Medical information systems and others
	CO1	Understand the importance of spring & spring framework
	CO2	Develop a springboot application using logger and AOP

<b>API&amp;MICRO SERVICES(C414)</b>	CO3	Develop a Spring Data JPA application with Spring Boot
	CO4	Illustrate Spring Transaction using Spring Data JPA
	CO5	Develop RESTful endpoints using Spring REST Processing URI parameters
	CO6	Write Spring based REST clients to consume RESTul services programmatically
<b>SECURE CODING TECHNIQUES(C415)</b>	CO1	Classify and assess different cyber-attacks and vulnerabilities
	CO2	Understand the trend, reasons and impact of the recent Cyber-attacks.
	CO3	Understand OWASP design principles while designing a web application
	CO4	Apply their knowledge of secure coding to create software systems that are safe, reliable, and secure as measured by objective criteria
	CO5	Apply static and dynamic code analysis tools to discover coding flaws and vulnerabilities
	CO6	Write Secure Coding using some of the practices in C/C++/Java and Python Programming languages
<b>UNIVERSAL HUMAN VALUES(C416)</b>	CO1	Understand and analyse the essentials of human values and skills, self exploration, happiness and prosperity.
	CO2	Evaluate coexistence of the “I” with the body.
	CO3	Identify and evaluate the role of harmony in family, society and universal order.
	CO4	Understand and associate the holistic perception of harmony at all levels of existence.
	CO5	Develop appropriate technologies and management patterns to create harmony in professional and personal lives.
<b>MEANSTACK TECHNOLOGIES- MODULEII-ANGULAR JS AND MONGODB (C417)</b>	CO1	Build a component-based application using Angular components and enhance their functionality using directives.
	CO2	Utilize data binding for developing Angular forms and bind them with model data.
	CO3	Apply Angular built-in or custom pipes to format the rendered data.
	CO4	Develop a single page application by using synchronous or asynchronous Angular routing.
	CO5	Develop applications by integrating mongo DB with NODEJS
	CO6	Make use of MongoDB queries to perform CRUD operations on document database.