



# BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(Approved by AICTE, New Delhi, Accredited by NAAC 'A' Grade  
Permanently Affiliated to JNTUK, Kakinada)

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## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

**BATCH: 2019-23**

**COURSE OUTCOMES**

COURSE CODE	COURSE OUTCOME	BLOOMS TAXONOMY LEVEL
<b>I YEAR I SEMESTER</b>		
<b>COURSE NAME: ENGLISH I (C111)</b>		
C111.1	Identify the various sources of happiness and using function words to express in a structured form following the mechanics of writing.	Apply
C111.2	Motivate others by powerful writing, using appropriate forms of writing following the basics of English Grammar.	Analyze
C111.3	Estimate the influence of powerful personalities by following the various methods of reading.	Create
C111.4	Assess the significance of various movements relating to environmental protection.	Evaluate
C111.5	Illustrate with examples of the various stages of development of eminent personalities.	Understand
<b>COURSE NAME: MATHEMATICS-I (C112)</b>		
C112.1	Utilize mean value theorems to related to various engineering fields.	Apply
C112.2	Solve the first order differential equations and able to apply physical problems.	Apply
C112.3	Solve higher order linear differential equations with constant coefficients.	Apply
C112.4	Find the partial derivative of different orders, finding maxima and minima of function of two variable, three variables and functional dependence.	Evaluation
C112.5	Apply double integration techniques in evaluating areas bounded by region and also learn important tools of calculus in higher dimensions like 2-dimensional and 3-dimensional coordinate	Apply

	systems.	
<b>COURSE NAME: APPLIED CHEMISTRY (C113)</b>		
C113.1	Define composite plastic materials and study the mechanism of conduction in conducting polymers	Understand
C113.2	Classify different types of electrodes and batteries for technological applications	Remember
C113.3	Summarize the importance of engineering materials like nano materials ,plastics and rubbers	Understand
C113.4	Explain various methods of preparation and applications of liquid crystals	Understand
C113.5	Explain various models for energy by different natural sources	Understand
<b>COURSE NAME: FUNDAMENTALS OF COMPUTER SCIENCE (C114)</b>		
C114.1	Illustrate input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.	Understand
C114.2	Apply the basic concepts of programming language for Problem Solving and Programming.	Apply
C114.3	Illustrate the basic concepts of Computer networks, types of networks and topologies	Understand
C114.4	Illustrate the basic concepts of Databases and System design	Understand
C114.5	Illustrate Advanced Computer Technologies like Distributed Computing & Wireless Networks	Understand
<b>COURSE NAME: ENGINEERING DRAWING (C115)</b>		
C115.1	To introduce the students to use drawing instruments and to draw polygons, Engg curves.	Understand
C115.2	To introduce the students to use orthographic projections, projections of points & simple lines. To make the students draw the projections of the lines inclined to both the planes.	Apply
C115.3	The objective is to make the students draw the projections of the plane inclined to both the planes	Analysing
C115.4	Objective: The objective is to make the students draw the projections of the various types of solids in different positions inclined to one of the planes	Analysing
C115.5	The objective is to represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa	Apply
<b>COURSE NAME: ENGLISH LAB (C116)</b>		

C1116.1	Develop the nuances of Pronunciation and make use of International Phonetic Alphabet in order to improve pronunciation while Speaking and Listening.	Apply
C1116.2	Divide the words properly into syllables and identify the word stress in di-syllabic, Poly-syllabic words.	Analyze
C1116.3	Analyze and understand the stress in compound words, Stress Timed Rhythm and accent neutralizations while listening and speaking.	Analyze
C1116.4	Classify the words into syllables and spell and stress them as per conventions.	Apply
C1116.5	Identify the context and specific information while reading and listening to various pieces of texts.	Apply
<b>COURSE NAME: APPLIED CHEMISTRY LAB (C117)</b>		
C117.1	Develop better understanding of titration	Understand
C117.2	Explain the difference between Solubility and dissociation in water and apply this knowledge to acids and bases	Apply
C117.3	Estimate the hardness of water in terms of Calcium and Magnesium ions	Apply
C117.4	Apply safety rules in practice of laboratory investigations	Apply
C117.5	Explain the different instrumental methods of chemical analysis	Apply
<b>COURSE NAME: IT WORKSHOP (C118)</b>		
C118.1	Assemble and disassemble components of a PC	Understand
C118.2	Construct a fully functional virtual machine, Summarize various Linux operating system commands	Apply
C118.3	Secure a computer from cyber threats, Learn and practice programming skill in Github, Hackerrank, Codechef, HackerEarth etc	Create
C118.4	Recognize characters & extract text from scanned images, Create audio files and podcasts	Analyze
C118.5	Create video tutorials and publishing, Use office tools for documentation, Build interactive presentations, Build websites, Create quizzes & analyze responses.	Create
<b>COURSE NAME: ENVIRONMENTAL SCIENCE (C119)</b>		
C119.1	Overall understanding of the natural resources.	Understand
C119.2	Basic understanding of the ecosystem and its diversity	Understand
C119.3	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities	Analyze
C119.4	An understanding of the environmental impact of developmental activities	Understand
C119.5	.Awareness on the social issues, environmental legislation and global treaties	Apply

**I YEAR II SEMESTER**

<b>COURSE NAME: MATHEMATICS-II (C121)</b>		
C121.1	Find Rank and Solve the linear system of equations by using different methods.	Apply
C121.2	Find the inverse and power of a matrix by using Cayley Hamilton theorem. And also diagonalize the matrix by using various methods. Finding Rank, Index, Signature and Nature of a Quadratic form.	Apply
C121.3	Solve the algebraic and transcendental equations by different methods.	Apply
C121.4	Apply Newton's forward and back ward interpolation and Lagrange's formulae for equal and unequal intervals.	Apply
C121.5	Find the Quadrature, the solutions of ordinary differential equations by different formulae.	Apply
<b>COURSE NAME: MATHEMATICS - III (C122)</b>		
C122.1	Utilize the vector differential operators (Gradient, Divergence and Curl) and Estimate the work done against a field, circulation and flux using vector .	Evaluation
C122.2	Solve the differential equations using Laplace transforms.	Application
C122.3	find the Fourier series of periodic signals.	Application
C122.4	Able to form the PDE and identify the solutions of linear and non linear PDE .	Application
C122.5	identify the solution methods for 2nd order partial differential equations representing physical problems.	Application
<b>COURSE NAME: APPLIED PHYSICS (C123)</b>		
C123.1	Explain concept of interference, Diffraction, resolving power of Microscope, Telescope and Grating	Apply
C123.2	Explain concept of Davisson Germer experiment ,G.P Thomson experiment and derive schrodinger wave equations	Apply
C123.3	Explain the concept of K-P model , classical and quantum free electron theories, effective mass of electron .	Apply
C123.4	Explain the concept of types of semiconductors, hall effect and drift,diffusion currents.	Apply
C123.5	Describe the concept of classification of magnetic materials, domain concept, Hysteresis-soft, hard magnetic materials and dielectric materials, types of polarization, Lorentz internal field and claussius - mossoti equation.	Understand
<b>COURSE NAME: PROGRAMMING FOR PROBLEM SOLVING USING C(C124)</b>		
C124.1	Illustrate the basic concepts of C Programming language.	Apply
C124.2	Develop C-programs by utilizing various operators and control structures.	Create

C124.3	Analyze and classify various types of arrays, strings and userdefined datatypes.	Analyze
C124.4	Demonstrate the ideas of pointers usage	Apply
C124.5	Solve real world problems using the concept of functions and File operations.	Create
<b>COURSE NAME: DIGITAL LOGIC DESIGN (C125)</b>		
C125.1	classify different number systems and apply to generate various codes.	Understand
C125.2	Apply the concept of Boolean algebra in minimization of switching functions	Apply
C125.3	Analyse different types of combinational logic circuits.	Analyze
C125.4	apply knowledge of flip-flops in designing of Registers and counters	Apply
C125.5	produce innovative designs by modifying the traditional design techniques.	Analyze
<b>COURSE NAME: APPLIED PHYSICS LAB (C126)</b>		
C126.1	Apply the knowledge of interference ,determine wavelength of a source-diffraction grating,radius of curvature of plano convex lens using newton's rings	Apply
C126.2	Analyze the knowledge of semiconductors determine energy gap of p-n junction diode,study of B-H curve,Hall voltage and Hall coefficients.	Analyze
C126.3	Explain the resolving power of telescope , grating and dispersive power of diffraction grating.	Apply
C126.4	Analyze the variation of dielectric constant with temperature and explain dielectric constant by charging and discharging method.	Analyze
C126.5	Analyze the characteristics of Thermistor- temperature coefficients..	Analyze
<b>COURSE NAME: COMMUNICATION SKILLS LAB (C127)</b>		
C127.1	Understand the meaning, process and importance of communication and overcome communication barriers.	Understand
C127.2	Demonstrate correct usage of grammar.	Apply
C127.3	Write cohesive paragraphs, reports and letters.	Create
C127.4	Analyze the short stories of renowned authors.	Analyze
C127.5	Analyze the content and comprehending the appropriate use of language and literary terms.	Analyze
<b>COURSE NAME: PROGRAMMING FOR PROBLEM SOLVING USING C LAB (C128)</b>		
C128.1	Illustrate the basic concepts of C Programming language	Apply
C128.2	Develop C-programs by utilizing various operators and control structures.	Create
C128.3	Analyze and classify various types of arrays, strings and userdefined datatypes.	Analyze

C128.4	Demonstrate the ideas of pointers usage	Apply
C128.5	Solve real world problems using the concept of functions and File operations.	Create
<b>COURSE NAME: ENGINEERING EXPLORATION PROJECT (C129)</b>		
C129.1	Interpret and debug programs in C language, Demonstrate syntaxes, predefined functions and operators in computer programming languages.	Understand
C129.2	Demonstrate C programs involving decision making statements, iterative statements and understanding the control flow of the programs	Apply
C129.3	Classify Arrays, Strings and Develop C programs using String manipulation functions	Analyze
C129.4	Design programs using pointers and dynamic memory management functions	Create
C129.5	Construct functions, create files and develop programs using file handling functions	Create
<b>COURSE NAME: CONSTITUTION OF INDIA (C1210)</b>		
C1210.1	Outline historical background of the constitution making and its importance for building a democratic India.	Understand
C1210.2	Summarize the functioning of three wings of the government i.e., executive, legislative and judiciary	Understand
C1210.3	Interpret the value of the fundamental rights and duties for becoming good citizen of India.	Understand
C1210.4	Analyze the decentralization of power between central, state and local self-government.	Analyze
C1210.5	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy	Apply
<b>II YEAR I SEMESTER</b>		
<b>COURSE NAME: MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE (C211)</b>		
C211.1	Understand the skills in various solving mathematical problems	Understand
C211.2	Apply mathematical principles and logic	Apply
C211.3	Analyze knowledge of mathematical modeling and proficiency in using algebraic system.	Analyze
C211.4	Solve mathematical calculations using techniques such as permutations and combinations	Create
C211.5	Communicate effectively mathematical ideas/results verbally or in writing and Create the data numerically and / or graphically using appropriate mathematical algorithms	Create
<b>COURSE NAME: SOFTWARE ENGINEERING (C212)</b>		
C212.1	Identify suitable life cycle models to be used.	Understand

C212.2	Compare conventional and agile software methods.	Analyze
C212.3	Analyze the problem and create a model to the problem.	Analyze
C212.4	Translate a requirement specification to a design using an appropriate software engineering methodology.	Create
C212.5	Skills to design, implement, and execute test cases and perform debugging.	Apply
<b>COURSE NAME: PYTHON PROGRAMMING (C213)</b>		
C213.1	Develop programming skills in computer programming concepts like data types, conditional and looping statements	Apply
C213.2	Design and implement Programs on strings	Create
C213.3	Illustrates functions, modules and packages	Understand
C213.4	Solve coding tasks related to the fundamental notions and techniques used in object-oriented programming	Apply
C213.5	Solve Exceptions and GUI based programs	Apply
<b>COURSE NAME: DATA STRUCTURES (C214)</b>		
C214.1	Discuss the computational efficiency of the principal algorithms for sorting & searching	Understand
C214.2	Use Linked List Structure to perform various operations like traverse, searching Operations in Writing Programs	Apply
C214.3	Use arrays, records, linked structures, stacks, queues, in writing programs	Apply
C214.4	Demonstrate different methods for traversing trees	Apply
C214.5	Construct various Graph Traverse Techniques using Different Types of Algorithms	Create
<b>COURSE NAME: OBJECT ORIENTED PROGRAMING THROUGH C++ (C215)</b>		
C215.1	Enumerate the key concepts of Object Oriented Programming	Understand
C215.2	Use of Object Oriented Technology to experiment special class operations	Apply
C215.3	Implement the concept of polymorphism through operator overloading that enhances reusability	Apply
C215.4	Analyze binding, polymorphism and virtual functions	Analyze
C215.5	Apply Exception handling techniques for resolving run-time errors and use of templates to provide generic programming	Apply
<b>COURSE NAME: COMPUTER ORGANIZATION (C216)</b>		
C216.1	Summarise the computer systems and different number systems, binary	Understand
	addition and subtraction, floating-point	
C216.2	Demonstrate the organization of computer and micro operations	Apply
C216.3	Develop a detailed understanding of architecture and functionality of central processing unit	Apply

C216.4	Ability to analyze memory hierarchy and its impact on computer Cost/performance.	Analyze
C216.5	Illustrate concepts of parallel processing, pipelining and inter processor communication	Apply
<b>COURSE NAME: PYTHON PROGRAMMING LAB (C217)</b>		
C218.1	Apply basic features of C++ and explain object oriented programming concepts including identifying the features of C++ programming language and Apply the various OOPs concepts with the help of programs.	Apply
C218.2	Design and implement programs using C++.	Create
C218.3	Illustrate how to apply reusability in object oriented programming though C++.	Understand
C218.4	Utilize basic data structures such as arrays and linked list and Utilize various searching and sorting algorithms.	Apply
C218.5	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths.	Understand
<b>COURSE NAME: ESSENCE OF INDIAN TRADITION AND KNOWLEDGE(C219)</b>		
C219.1	Understand the concept of Traditional knowledge and its importance	Understand
C219.2	Know the need and importance of protecting traditional knowledge	Understand
C219.3	Know the various enactments related to the protection of traditional knowledge	Apply
C219.4	Understand the concepts of Intellectual property to protect the traditional knowledge	Understand
C219.5	Ability to analyze traditional knowledge in various sectors/engineering	Analyze
<b>COURSE NAME: EMPLOYABILITY SKILLS - 1 (C2110)</b>		
C2110.1	Recite the corporate etiquette.	Understand
C2110.2	Make presentations effectively with appropriate body language	Apply
C2110.3	Be composed with positive attitude	Apply
C2110.4	Apply their core competencies to succeed in professional and personal life	Apply
<b>II YEAR II SEMESTER</b>		
<b>COURSE NAME: SOFTWARE ENGINEERING (C221)</b>		
C221.1	Find the averages, deviation and give pictorial representation by using the given data.	Application
C221.2	Use least squares approximation to find the best fit linear curve for a given set of data points.	Application
C221.3	Construct the probability distribution of random variable, and use it to compute expectation and variance.	Apply



C221.4	Use the normal distribution to test statistical hypothesis and to compute confidence interval.	Application
C221.5	Perform and analyze hypothesis tests of means, proportions and variances using one and two sample datasets and small samples .	Evaluation
<b>COURSE NAME: JAVA PROGRAMMING ( C222)</b>		
C222.1	Identify basic concepts of Java Programming Language	Understand
C222.2	Analyze and implement the role of packages, interfaces in program design using Java	Analyze
C222.3	Choose the basic principles of creating java Arrays, Inheritance and Interfaces.	Evaluate
C222.4	Design Java programs that uses Packages and implements Exception Handlings.	Create
C222.5	Analyze applications of Strongs and Java Multi Threading and Exception Handling .	Analyze
<b>COURSE NAME: OPERATING SYSTEMS (C223)</b>		
C223.1	Define various generations of Operating System and functions of Operating System.	Understand
C223.2	Analyze process scheduling algorithms and various IPC mechanisms.	Analyze
C223.3	Analyze different page replacement methods, various File management techniques.	Analyze
C223.4	Understand the process synchronization, different ways for deadlocks handling.	Understand
C223.5	Understand Linux and Android environment and behavior.	Understand
<b>COURSE NAME: DATABASE MANAGEMENT SYSTEM (C224)</b>		
C224.1	Understand the basic principles of database management systems.	Understand
C224.2	Draw Entity-Relationship diagrams to represent simple database application	Apply
C224.3	write SQL queries for a given context in relational database.	Apply
C224.4	Discuss normalization techniques with simple examples.	Analyze
C224.5	Describe transaction processing and concurrency control concepts.	Apply
<b>COURSE NAME: FORMAL LANGUAGES AND AUTOMATA THEORY (C225)</b>		
C225.1	Classify Machines by their power to Recognize Languages understanding of the Automata theory concepts such as DFA's, NFA's. Understand	Understand
C225.2	Classify the Automata theory concepts such as RE's Analyze	Analyze
C225.3	Summarize language classes & Grammars Relationship among them with the help of Chomsky hierarchy and minimize FA's and Grammars of Context Free Languages Understand	Understand
C225.4	Illustrate PDA , Deterministic PDA and non-deterministic PDA machines	Understand

C225.5	Design and solve the Turing Machine Problems , halting Problems	Create
<b>COURSE NAME: JAVA PROGRAMMING LAB (C226)</b>		
C226.1	Illustrate Java based software code of medium-to-high complexity .	Understand
C226.2	Design elementary modifications to Java programs that solve real world problems.	Create
C226.3	Apply the basic approaches to design software applications by using an IDE to develop OOP	Apply
C226.4	Analyze applications of Java Applets & Event handling .	Analysing
C226.5	Choose the basic principles of creating java applications with Graphical user interface	Evaluate
<b>COURSE NAME:UNIX &amp; OPERATING SYSTEM LAB(C227)</b>		
C227.1	To use Unix utilities and perform basic shell control of the utilities	Apply
C227.2	To use the Unix file system and file access control•	Apply
C227.3	To use of an operating system to develop software	Apply
C227.4	Students will be able to use Linux environment efficiently	Apply
C227.5	Solve problems using bash for shell scripting	Apply
<b>COURSE NAME:JAVA PROGRAMMING LAB (C228)</b>		
C228.1	Illustrate Java based software code of medium-to-high complexity	Understand
C228.2	Design elementary modifications to Java programs that solve real world problems	Create
C228.3	Apply the basic approaches to design software applications by using an IDE to develop OOP	Apply
<b>COURSE NAME:PROFESSIONAL ETHICS AND HUMAN VALUES(C229)</b>		
C229.1	Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field	Understand
C229.2	Identify the multiple ethical interests at stake in a real-world situation or practice	Understand
C229.3	Articulate what makes a particular course of action ethically defensible	Apply
C229.4	Assess their own ethical values and the social context of problems	Analyze
C229.5	Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects	Apply
<b>COURSE NAME: SOCIALLY RELEVANT PROJECT (C2210)</b>		

C2210.1	Simulate or develop a program or prototype for his/her project	Apply
C2210.2	Analyze, compare and discuss their results and models and present his/her work to the panel	Analyze
C2210.3	Utilize conventional or latest technologies for problem solving and identify the future enhancement for the project work	Apply
C2210.4	Design models, database and test cases and use tools for testing a project	Create
C2210.5	Make use of literature survey and analyze it	Evaluate
C2210.6	build thesis or report in a required format and present their work to the panel	Create
<b>III YEAR I SEMESTER</b>		
<b>COURSE NAME: DATA WAREHOUSING AND DATA MINING (C311)</b>		
C311.1	Design a Data warehouse system and perform business analysis with OLAP tools	Create
C311.2	Apply suitable pre-processing and visualization techniques for data analysis	Apply
C311.3	Construct frequent pattern and association rule mining techniques for data analysis	Apply
C311.4	Distinguish appropriate classification techniques for data analysis	Analyze
C311.5	Determine appropriate clustering techniques for data analysis	Evaluate
<b>COURSE NAME: COMPUTER NETWORKS (C312)</b>		
C312.1	Study of OSI and TCP/IP models and physical layer	Analyze
C312.2	Survey on MAC layer protocols.	Apply
C312.3	Illustration of LAN technologies and applications using internet protocols	Analyze
C312.4	Classify routing and congestion control algorithms	Evaluate
C312.5	Outline transport layer and Development of application layer protocols	Apply
<b>COURSE NAME: COMPILER DESIGN(C313)</b>		
C313.1	Interpret the various transformations of source language to generate Target code	Understand
C313.2	Analyze the concepts and features of a lexical analyzer.	Analyze
C313.3	Identify the techniques of Intermediate code generation .	Apply
C313.4	Build target code by using optimization and understand the Run time environment of compiler.	Create
C313.5	Identify important issues in code generation schemes.	Apply
<b>COURSE NAME: ARTIFICIAL INTELLIGENCE (C314)</b>		
C314.1	Outline problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem	Understand
C314.2	Apply the language/framework of different AI methods for a given problem.	Apply

C314.3	Implement basic AI algorithms- standard search algorithms or dynamic programming	Apply
C314.4	Design and carry out an empirical evaluation of different algorithms on problem formalization, and state the conclusions that the evaluation supports	Create
C314.5	Implement various knowledge representation techniques for acquisition and validate various structures in expert's system domain.	Apply
<b>COURSE NAME: SOFTWARE TESTING METHODOLOGIES (C315)</b>		
C315.1	List a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing method to the projects.	Apply
C315.2	Distinguish characteristics of structural testing methods.	Analyze
C315.3	Demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible.	Apply
C315.4	Discuss about the functional and system testing methods	Understand
C315.5	Demonstrate various issues for object oriented testing	Apply
<b>COURSE NAME: COMPUTER NETWORKS LAB (C316)</b>		
C316.1	Understand the basics of Physical Layer in real time applications	Understand
C316.2	Apply data link layer concepts, design issues, and protocols	Apply
C316.3	Implementation Network layer routing protocols	Apply
C316.4	Analyze the protocols of transport layer for IP addressing	Analyze
<b>COURSE NAME: AI TOOLS &amp; TECHNIQUES LAB(C317)</b>		
C317.1	Identify problems that are amenable to solution by AI methods	Understand
C317.2	Apply the language/framework of different AI methods for a given problem.	Apply
C317.3	Use language/framework of different AI methods for solving problems	Apply
C317.4	Implement basic AI algorithms	Apply
C317.5	Design and carry out an empirical evaluation of different algorithms on problem formalization, and state the conclusions that the evaluation supports problem formalization, and state the conclusions that the evaluation supports	Analyze
<b>COURSE NAME: DATA MINING LAB (C318)</b>		
C318.1	Design a Data warehouse system and perform business analysis with OLAP tools	Create
C318.2	Apply suitable pre-processing and visualization techniques for data analysis (Apply)	Apply
C318.3	Construct frequent pattern and association rule mining techniques for data analysis	Apply

C318.4	Distinguish appropriate classification techniques for data analysis	Analyze
C318.5	Determine appropriate clustering techniques for data analysis	Evaluate
<b>COURSE NAME: EMPLOYABILITY SKILLS -II (C319)</b>		
C319.1	Recite the corporate etiquette.	Understand
C319.2	Make presentations effectively with appropriate body language	Apply
C319.3	Be composed with positive attitude	Apply
C319.4	Apply their core competencies to succeed in professional and personal life	Apply
<b>III YEAR II SEMESTER</b>		
<b>COURSE NAME: WEB TECHNOLOGIES (C321)</b>		
C321.1	Illustrate the basic concepts of HTML and CSS & apply those concepts to design static web pages	Analyze
C321.2	Identify and understand various concepts related to dynamic web pages and validate them using JavaScript	Apply
C321.3	Outline the concepts of Extensible markup language & AJAX	Apply
C321.4	Develop web Applications using Scripting Languages & Frameworks	Create
C321.5	Create and deploy secure, usable database driven web applications using PHP	Create
<b>COURSE NAME: DISTRIBUTED SYSTEMS (C322)</b>		
C322.1	To understand the foundations of distributed systems	Understand
C322.2	Understand the various synchronization issues and global state for distributed systems	Understand
C322.3	Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems	Understand
C322.4	Describe the agreement protocols and fault tolerance mechanisms in distributed systems	Understand
C322.5	Describe the features of peer	Apply
C322.1	To understand the foundations of distributed systems	Understand
<b>COURSE NAME: DESIGN &amp; ANALYSIS OF ALGORITHMS (C323)</b>		
C323.1	Apply different ways to analyze randomized algorithms (expected running time, probability of error). Recite algorithms that employ randomization	Apply
C323.2	Summarize divide-and conquer algorithms, Demonstrate the greedy paradigm, Derive and solve recurrences describing the performance of divide and-conquer & greedy algorithms.	Understand
C323.3	Solve dynamic programming algorithms, and analyze them.	Application
C323.4	Determine the backtracking paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm.	Evaluate

C323.5	Applies the branch & bound paradigm and explain when an algorithmic design situation calls for it. Synthesize branch & bound algorithms, and analyze them	Application
<b>COURSE NAME: INFORMATION RETRIEVAL SYSTEM (C324)</b>		
C324.1	Describe the objectives of information retrieval systems	Understand
C324.2	Describe models like vector-space, probabilistic and language models to identify the similarity of query and document	Understand
C324.3	Implement clustering algorithms like hierarchical agglomerative clustering and k-means algorithm	Create
C324.4	Understand the method to construct thesauri automatically and Manually	Understand
C324.5	Design the method to build inverted index	Create
<b>COURSE NAME: ESSENTIALS OF ANALOG &amp; DIGITAL ELECTRONICS (C325)</b>		
C325.1	Explain about rectifiers , clippers and zener diode regulators.	Understand
C325.2	Analyze CDMA process and related topics of wireless communication.	Analyze
C325.3	Analyze multiple input multiple output of wireless communication.	Analyze
C325.4	Apply OFDM concepts to wireless communication.	Apply
C325.5	Explain about Satellite wireless systems like transponder and Geostationary Satellite	Understand
<b>COURSE NAME: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS (C326)</b>		
C326.1	Define the fundamental concepts of managerial economics.	Remember
C326.2	Classify and compare various costs in managerial decision making process.	Understand
C326.3	Identify the features of different market structures and various forms of Business organisations	Apply
C326.4	Identify fundamental concepts of accounting and Analyze financial statements.	Apply
C326.5	Evaluate various alternative investment proposals to make a better capital budgeting decision	Evaluate
<b>COURSE NAME: WEB TECHNOLOGIES LAB (C327)</b>		
C327.1	Analyze and apply the role of languages like HTML, CSS, XML	Analyze
C327.2	Apply Web Application Terminologies, Internet Tools and web services	Apply
C327.3	JavaScript, PHP and protocols in the workings of the web and web applications	Create
C327.4	Develop and Analyze dynamic Web Applications using PHP & MySql	Create
<b>IV YEAR I SEMESTER</b>		
<b>COURSE NAME: CRYPTOGRAPHY AND NETWORK SECURITY (C411)</b>		
C411.1	Summarize various network security problems and the techniques	

	that could be used to protect the software from security threats	Understand
C411.2	Apply various symmetric key cryptography algorithms	Apply
C411.3	Demonstrate number theory and apply it in asymmetric key cryptography algorithms	Apply
C411.4	Know how to provide security to e-mail	Understand
C411.5	Apply knowledge of cryptographic utilities & authentication mechanism to design secure applications	Apply
<b>COURSE NAME: UML &amp; DESIGN PATTERNS (C412)</b>		
C412.1	Examine the concepts of object oriented modelling using UML.	Understand
C412.2	Analyze the software problem using UML Diagram.	Analyze
C412.3	Design the solution for the software application using UML Diagrams.	Create
C412.4	Demonstrate the design patterns to solve design problems.	Understand
C412.5	Apply the suitable design patterns to solve design problems.	Apply
<b>COURSE NAME: MACHINE LEARNING (C413)</b>		
C413.1	Analyze a learning system for a given problem	Analyze
C413.2	Solve different problems in Decision Tree Learning and evaluate its performance	Evaluate
C413.3	Apply Dimensionality Reduction techniques	Apply
C413.4	Build application using Artificial Neural Networks and Support Vector Machines	Create
C413.5	Apply probability theory in learning algorithms	Apply
<b>COURSE NAME: EMBEDDED SYSTEMS (C414)</b>		
C414.1	Understand the basic concepts of an embedded system and know the characteristics of an embedded system.	Understand
C414.2	Explain the components required for an embedded system.	Understand
C414.3	Analyse various embedded firmware design approaches on embedded environment.	Analyze
C414.4	Discuss the operating system basics and its components, list operating systems and know hardware software co-design.	Understand
C414.5	Describe the embedded system development tools and learn the testing process.	Understand
<b>COURSE NAME: SOFTWARE PROJECT MANAGEMENT (C415)</b>		
C415.1	Apply the process to be followed in the software development life-cycle models	Apply
C415.2	Apply the concepts of project management & planning	Apply
C415.3	Implement the project plans through managing people, communications and change	Create

C415.4	Conduct activities necessary to successfully complete and close the Software projects	Understand
C415.5	Implement communication, modeling, and construction & deployment practices in software development	Create
<b>COURSE NAME: CLOUD COMPUTING (C416)</b>		
C416.1	Interpret the key dimensions of the challenge of Cloud Computing.	Understand
C416.2	Examine the economics, financial, and technological implications for selecting cloud computing for own organization	Apply
C416.3	Assessing the financial, technological, and organizational capacity of employer's for actively initiating and installing cloud-based applications.	Evaluate
C416.4	Evaluate own organizations' needs for capacity building and training in cloud computing related IT areas	Evaluate
C416.5	Illustrate Virtualization for Data-Center Automation.	Apply
<b>COURSE NAME: UNIFIED MODELLING LANGUAGE LAB (C417)</b>		
C417.1	Identify Events, Usecases and domain classes of a software system	Apply
C417.2	Analyze Software Requirements for the given Software Application.	Analyze
C417.3	Develop Design solutions for software systems using UML & Design patterns	Create
C417.4	Create software code from UML diagrams	Create
C417.5	Test and document the artifacts of a software systems	Create
<b>COURSE NAME: SOFTWARE TESTING LAB (C418)</b>		
C418.1	Simulate or develop a program or prototype for his/her project	Apply
C418.2	Analyze, compare and discuss their results and models and present his/her work to the panel	Analyze
C418.3	Utilize conventional or latest technologies for problem solving and identify the future enhancement for the project work	Apply
C418.4	Design models, database and test cases and use tools for testing a project	Create
C418.5	Make use of literature survey and analyze it	Evaluate
C418.6	build thesis or report in a required format and present their work to the panel	Create
<b>COURSE NAME: IPR &amp; PATENTS (C419)</b>		
C419.1	Illustrate IPR Laws and patents pave the way for innovative ideas which are instrumental for inventions to seek Patents	Understand
C419.2	Student can illustrate Copyrights and copyright laws	Understand
C419.3	Explain patent registration, patent grant and patent laws	Understand
C419.4	Explore trademark registration, trade mark grant and trademark laws	Understand



C419.5	Analyse Trade Secrets & Cyber Law and Cyber Crime.	Analyze
<b>IV YEAR II SEMESTER</b>		
<b>COURSE NAME: MANAGEMENT &amp; ORGANIZATION LA BEHAVIOUR (C421)</b>		
C421.1	Explain the fundamental concepts of management and organization	Understand
C421.2	Identify the functional areas of management	Apply
C421.3	Examine various elements of strategic management	Analysing
C421.4	Find the impact of motivation and other factors which shape individual behaviour	Remember
C421.5	Interpret the strategies for effective management of groups, culture and conflicts in an organization	Understand
<b>COURSE NAME: ENVIRONMENTAL POLLUTION &amp; CONTROL (C422)</b>		
C422.1	Identify the air pollutant control devices	Remember
C422.2	Have knowledge on the NAAQ standards and air emission stand	Remember
C422.3	The treatment techniques used for sewage and industrial wastewater treatment methods.	Analyze
C422.4	The fundamentals of solid waste management, practices adopted in his town/village and its importance in keeping the health of the city.	Understand
C422.5	The importance of sustainable development while planning a project or executing an activity.	Create
<b>COURSE NAME: DEVOPS (C423)</b>		
C423.1	Recall the Concepts of various Software development models	Remember
C423.2	Demonstrate DevOps & Dev SecOps methodologies and their key concepts	Understand
C423.3	Apply devops tools for continuous integration and Continuous deployment	Apply
C423.4	Create the devops pipeline to automate the entire development process	Create
C423.5	Examine Key factors and stages of DevOps maturity model	Analyze
<b>COURSE NAME: PROJECT –II (C424)</b>		
C424.1	Simulate or develop a program or prototype for his/her project	Apply
C424.2	Analyze, compare and discuss their results and models and present his/her work to the panel	Analyze
C424.3	Utilize conventional or latest technologies for problem solving and identify the future enhancement for the project work	Apply
C424.4	Design models, database and test cases and use tools for testing a project	Create
C424.5	Make use of literature survey and analyze it	Evaluate
C424.6	build thesis or report in a required format and present their work to the panel	Create