1. Course Outcomes of B. Tech. CSE First Year – First Semester

COURSE NAME	CO NO.	Course Outcomes
English (C111)	C111.1	Identifying the life of people, culture and tradition interpreting the information, speaking English to elicit information, identifying the vocabulary and Nouns
	C111.2	Understanding the responsibility and values , conversing for expressing greetings and leave takings, usage of articles, prepositions
	C111.3	Remembering life and contributions of Stephen Hawking discuss about specific topics practice letter writing, CVs, E-mail etiquette, application of verb forms
	C111.4	Understanding the life of Wangari Maathai, Role plays, use of adjectives and adverbs, vocabulary
	C111.5	Understanding way of life and values,, Technical writing and presentation, Vocabulary, common errors
	C111.6	Understanding soft skills, recognize Scientific and Technical English
Mathematics-I (C112)	C112.1	Utilize mean value theorems to real life problems
	C112.2	Able to form differential equation from physical problems and to solve various first order differential equations.
	C112.3	Solve the differential equations related to various engineering fields
	C112.4	Familiarize with functions of several variables which is useful in optimization
	C112.5	Apply double integration techniques in evaluating areas bounded by region
	C112.6	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2-dimensional and 3-dimensional coordinate systems
Applied Physics (C113)	C113.1	Understand the concept of error and its analysis.
	C113.2	Compare the theory and correlate with experiment findings.
	C113.3	Understand and apply the fundamentals of wave optics.
	C113.4	Develop experimental skills on basic physics experiments.
PPSC (C114)	C114.1	To write algorithms and to draw flowcharts for solving problems, converts both to C program finally compile and debug the programs.
	C114.2	To use different operators, data types and write programs that use two-way/ multi-way selection.
	C114.3	To select the best loop construct for a given problem
	C114.4	To design and implement programs to analyze the different pointer applications
	C114.5	To decompose a problem into functions and to develop modular reusable code
	C114.6	To apply File I/O operation
PPSC Lab (C115)	C115.1	Gains Knowledge on various concepts of a C language.
	C115.2	Able design and development of C problem solving skills.
	C115.3	Able to design and develop modular programming skills.
	C115.4	Able to design and develop file programming skills
CE Workshop (C116)	C116.1	Identify, assemble and update the components of a computer
	C116.2	Configure, evaluate and select hardware platforms for the implementation and execution of computer applications, services and systems
	C116.3	Make use of tool for converting pdf to word and vice verse
	C116.4	Develop presentation, documents and small applications using productivity tools such as word processor, presentation tools, spreadsheets, HTML, LaTex
English (C117)	C117.1	Articulate better pronunciation through stress or word accent, intonation, and rhythm.
	C117.3	Acting out about a consistent accent and intelligibility in their pronunciation of English by providing an opportunity for practice in speaking.
	C117.4	Experimenting the fluency in spoken English and neutralize mother tongue influence
Applied Physics (C118)	C118.1	Understand the concept of error and its analysis.
	C118.2	Compare the theory and correlate with experiment findings.
	C118.3	Understand and apply the fundamentals of wave optics.
	C118.4	Develop experimental skills on basic physics experiments.

2. Course Outcomes of B. Tech. CSE First Year – Second Semester

Course Names	CO No.	COURSE OUTCOMES
Mathematics–II (C121)	C121.1	Solve the system of linear algebraic equations using Matrix techniques
	C121.2	Determine the Eigen values and Eigen vectors of a system represented by a matrix
	C121.3	Compute the approximate roots of algebraic and transcendental equations using Iterative methods
	C121.4	Apply various interpolation methods to estimate the unknown values from a known data values
	C121.5	Apply numerical integral techniques to different Engineering problems
	C121.6	Solve the ordinary differential equations of first order with initial conditions using numerical techniques
Applied Chemistry (C122)	C122.1	Analyze the different types of plastic materials and the mechanism of conduction in conducting polymers.
	C122.2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning engineering products and the reasons for corrosion and study methods to control corrosion.
	C122.3	Synthesize nanomaterials for modern advances of engineering technology
	C122.4	Summarize the preparation of semiconductors; Analyze the applications of liquid crystals and superconductors.
	C122.5	Analyze the principles of different spectroscopic methods and their applications and design models for energy by different natural sources.
	C122.6	Obtain the knowledge of computational chemistry and molecular machines
Applied Chemistry Lab(C123)	C123.1	Understand different types of chemical analysis
	C123.2	Experiment volumetric analysis of various classes
	C123.3	Use some commonly employed simple instruments
Environmental Science (MC) (C124)	C124.1	Overall understanding of the natural resources
	C124.2	Basic understanding of the ecosystem and its diversity
	C124.3	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities.
	C124.4	An understanding of the environmental impact of developmental activities
	C124.5	Awareness on the social issues and global treaties.
	C124.6	An understanding of the environmental legislation
Computer Organisation (C125)	C125.1	Demonstrates data representation and postulates of boolean algebra for digital computers.
	C125.2	Analyses combinational and sequential switching circuits.
	C125.3	Discuss about basic computer arithmetic and organization of registers in computer.
	C125.4	Explain about micro programmed control unit and central processing unit.
	C125.5	Explain about memory and input/output organization of computer.
Phyton Programming(C126)	C126.1	Develop essential programming skills in programming concepts like datatypes, input-output, operators.
	C126.2	Use of strings and python and control structures
	C126.3	Recognize concepts like lists, dictionaries,function, and higher order functions.
	C126.4	Analyze modules and packages of python and its functions.
	C126.5	Recognize file operations and object-oriented programming in python.
	C126.6	Recognize Exceptions, graphical user interface programming in python and use of scratch programming.
Python Programming (C127)	C127.1	Develop essential programming skills in programming concepts like datatypes, input-output, operators.
	C127.2	Use of strings and python and control structures
	C127.3	Recognize concepts like lists, dictionaries,function, and higher order functions.
	C127.4	Analyze modules and packages of python and its functions.
Data Structures (C128)	C128.1	Data structures concepts with arrays, stacks, queues.
	C128.2	Complexity of algorithms and strings as Abstract data types
	C128.3	Linked lists for stacks, queues and for other applications.
	C128.4	Traversal methods in the Trees.
	C128.5	various algorithms available for the graphs.
	C128.6	Sorting and searching in the data retrieval applications.
Data Structures Lab (C129)	C129.1	Be able to design and analyze the time and space efficiency of the data structure
	C129.2	Be capable to identity the appropriate data structure for given problem.
	C129.3	Have practical knowledge on the applications of data structures.

3. Course Outcomes of B. Tech. CSE Second Year – First Semester

Course Name with Code	CO No.	Course Outcomes
Mathematical Foundations of ComputerScience (C211)	**C211.1**	Ability to apply mathematical logic to solve Problems
	C211.2	Understand sets, relations, functions and discrete Structures
	C211.3	Able to use logical notations to define and reason about fundamental mathematical concepts such as sets relations and functions
	C211.4	Able to formulate problems and solve recurrence Relations
	C211.5	Able to model and solve real world problems using graphs and trees
Software Engineering (C212)	**C212.1**	Ability to understand Software Development life cycle process Models
	C212.2	Student able to know various models in Agile
	C212.3	Student able to understand the requirement analysis and transform those requirements to executable code
	C212.4	Students will be able perform various life cycle activities like analysis ,design and implementation
	C212.5	Skills to perform to testing and execute the test cases
	C212.6	Skill to design ,Implement and execute test cases at integration level
Python Programming (C213)	**C213.1**	Write, Test and Debug Python Programs
	C213.2	Use Conditionals and Loops for Python Programs
	C213.3	Use functions and modules in python programming.
	C213.4	Test Compound data using Lists, Tuples and Dictionaries
	C213.5	Discuss Object Oriented Programming in Python.
	C213.6	Use various applications using python.
Data Structures (C214)	**C214.1**	Summarize the properties, interfaces, and behaviors of basic abstract data types
	C214.2	Summarize the properties, interfaces, and behaviors of basic abstract data types
	C214.3	Illustrate the computational efficiency of the principal algorithms for sorting & searching
	C214.4	Develop arrays, records, linked structures, stacks, queues, trees, and Graphs in writing program
	C214.5	Develop different methods for traversing trees
	C214.6	Develop different methods for traversing trees
Object Oriented Programming through C++(C215)	**C215.1**	Classify object oriented programming and procedural programming
	C215.2	Understand and Apply the concepts of Classes & Objects, friend function , constructors & destructors in program design
	C215.3	Apply various forms of inheritance
	C215.4	Apply and analyze operator overloading and function overloading.
	C215.5	Understand dynamic memory management techniques using pointers
	C215.6	Apply generic programming with templates, file I/O and exception handling on various applications
Computer Organization (C216)	**C216.1**	Understand Basic Structure of computers ,Data Representations and Computer Arithmetic
	C216.2	Describe Register transfer language and Basic Computer Organization and Design concepts
	C216.3	Outline about Central Processing Unit
	C216.4	explain about micro controlled programmed
	C216.5	Distinguish memory organization and Input and Output Organization
	C216.6	Illustrate multi processors , parallel and pipeline processors
Python Programming Lab (C217)	**C217.1**	Design, Test and Debug Python Programs
	C217.2	Use Conditionals and Loops for Python Programs
	C217.3	Use functions and modules in python programming.
	C217.4	Test Compound data using Lists, Tuples and Dictionaries
	C217.5	Discuss Object Oriented Programming in Python.
	C217.6	Use various applications using python.
Data Structures through C++ Lab (C218)	**C218.1**	Develop skills to design and analyze simple linear and nonlinear data structures
	C218.2	Perform practical applications of data structures
	C218.3	Strengthen the ability to identify and apply the suitable data structure for the given real world problem
	C218.4	Apply the linear / non-linear data structure operations for a given problem based on the user needs
	C218.5	Gain knowledge in practical applications of data structures
	C218.6	Express the Engineering activities with effective presentation and report.
Essence of Indian Traditional Knowledge(C219)	**C219.1**	Identify the concept,characteristics and various contexts of Traditional knowledge and its importance
	C219.2	Explain the need and significance of protecting traditional knowledge.
	C219.3	Illustrate the various enactments related to the protection of traditional knowledge
	C219.4	Discussing traditional knowledge and IPR
	C219.5	Analyse the legal concepts for the protection of Traditional Knowledge and evaluate strategies to increase the protection of Traditional Knowledge.
	C219.6	Analyzing the use of traditional knowledge in various sectors of engineering and life sciences.
Employability Skills- I(C2110)	**C2110.1**	Explain the importance of Communication skills
	C2110.2	Develop the self discovery,belives,attitude and values
	C2110.3	Develop positive thinking and motivation
	C2110.4	Develop the interpersonal communication skills,listening skills and public speaking skills
	C2110.5	Develop learning and non-verbal communication skills for effective discussions
	C2110.6	Develop teamwork and leadership skills.

4. Course Outcomes of B. Tech. CSE Second Year – Second Semester

Course Name with Code	CO No.	Course Outcomes
Probability and Statistics (C221)	**C221.1**	Classify the concepts of data science and its importance
	C221.2	Interpret the association of characteristics and through correlation and regression tools and fit different curves to the given data
	C221.3	Make use of the concepts of probability and their applications
	C221.4	Apply discrete and continuous probability distributions
	C221.5	Design the components of a classical hypothesis test and do interval estimation
	C221.6	Infer the statistical inferential methods based on small and large sampling tests
Java Programming (C222)	**C222.1**	Develop java programs using basic programming constructs in java, and able to use Control structures in the program development
	C222.2	Experiment with Object Oriented Concepts like classes, objects.
	C222.3	Apply and create programs using Object Oriented Constructs such as Inheritance, interfaces, and exception handling.
	C222.4	Construct applications using code reusability and extend the code to enhance existing programs
	C222.5	Design programs using object oriented construct and handle any time of run time errors
	C222.6	Implement multithreading concepts in application development with database connectivity.
Operating Systems (C223)	**C223.1**	Describe the general architecture of computers, various operating Systems structures
	C223.2	Evaluate Scheduling algorithms for process management.
	C223.3	Analyzing various memory management schemes
	C223.4	Explain about principles of deadlock.
	C223.5	Describe the file system with its implementation and mass storage structure
	C223.6	Discuss about Android operating system services
Database Management Systems(C224)	**C224.1**	Describe a relational database and object oriented database and types of database
	C224.2	Create ,Maintain, Manipulate and fetch a relation database using Sql
	C224.3	Describe ER-MODEL for understanddatabase design and understand more queries like join and aggregation,grouping and sub queries
	C224.4	Describe normalization for design the database
	C224.5	student able to understand issues in data storage and query processing
	C224.6	describe the management of data such as efficiency , privacy.security,ethical responsibility and strategic advantage
Formal Languages and Automata Theory (C224)	**C225.1**	understanding Automata concept and types of Automata , designing and their equivalences and Applications
	C225.2	regular expressions and equivalences , concept of Formal languages and Chomsky hierarchy, problems on inter conversions
	C225.3	Context Free grammar and languages and simplification
	C225.4	Push down automata(PDA) with one and two stacks and designing and its applications, problems on designing of PDA
	C225.5	Comparative study of Finite Automata without output (DFA,NFA,PDA) and Finite Automata with output(Moore, Mealy machines) introduction of Turing Machine
	C225.6	Turing machine(TM) concept and designing and Un decidability, Problems on designing TM
Java Programming Lab(C226)	**C226.1**	Evaluate default value of all primitive data type,
	C226.2	Demonstrate various operations using operator and expressions, experiment with various Control-flow and Strings.
	C226.3	Determine Class, Objects, Methods, Inheritance, Exception, Runtime Polymorphism, User defined Exception handling mechanism
	C226.4	Illustrate reusability of code using various inheritance techniques
	C226.5	Experiment with run time errors and handle exceptions.
	C226.6	Construct Threads, Event Handling, implement packages, developing applets
UNIX Operating System Lab(C227)	**C227.1**	Demonstrating the UNIX/LINUX general purpose utility commands
	C227.2	Analyze the different CPU Schedulings
	C227.3	Analyze the different multiprogramming memory allocation techniques.
	C227.4	Analyze the deadlock avoidance and prevention
	C227.5	Analyze the page replacement algorithms
	C227.6	Experiment with semaphores
Database Management Systems Lab(C228)	**C228.1**	Understand, appreciate and effectively explain the underlying concepts of database technologies
	C228.2	Design and implement a database schema for a given problem-domain
	C228.3	Normalize a database
	C228.4	Populate and query a database using SQL DML/DDL commands.
	C228.5	Declare and enforce integrity constraints on a database using a state-of-the-art RDBMS
	C228.6	Programming PL/SQL including stored procedures, stored functions, cursors, packages.
Professional Ethics & Human Values(C229)	**C229.1**	Understand about morals,values ,work ethics, learn to respect others and develop civic virtue
	C229.2	Discuss about Customs and Traditions and human rignts and value.
	C229.3	Demonstrate knowledge to become a social experimenter.
	C229.4	Understand about the ethical responsibilities of the engineers.
	C229.5	Demonstrate the duties of an Engineers
	C229.6	Develop knowledge about global issues.
Socially Relevant Project(C2210)	**C2210.1**	Express their ideas to solve and design a real world problems as project
	C2210.2	Analyze problem of real world problem for project design
	C2210.3	Use scientific reasoning to gather ideas
	C2210.4	Evaluate and interpret scientific reasoning of idea
	C2210.5	Design solutions to solve the ideas
	C2210.6	Use one or more creative tools to complete the project design

5. Course Outcomes of B. Tech. CSE Third Year – First Semester

Course Name with Code	CO No.	Course Outcomes
Compiler Design (C311)	C311.1	Distinguish various language processors and understands about structure of compiler, Lexical Analysis
	C311.2	Design Top down and Bottom up Parsers
	C311.3	Develop More powerful LR Parsers and Understands Syntax Directed Definitions and Syntax Directed Translations
	C311.4	Describe techniques of Intermediate Code Generator
	C311.5	Discuss about runtime environment concepts and code generator with illustration.
	C311.6	Apply various machine independent optimization techniques
Unix Programming (C312)	C312.1	Documentation will demonstrate good organization and readability.
	C312.2	File processing projects will require data organization, problem solving and research.
	C312.3	Scripts and programs will demonstrate simple effective user interfaces.
	C312.4	Scripts and programs will demonstrate effective use of structured programming.
	C312.5	Scripts and programs will be accompanied by printed output demonstrating completion of a test plan.
	C312.6	Testing will demonstrate both black and glass box testing strategies.
Object Oriented Analysis and Design using UML (C313)	C313.1	Discuss the complex problem solutions using object oriented approach
	C313.2	Discribe the classes and objects responsibilities and states using UML notation
	C313.3	Identify the Basic UML Modelling Techniques
	C313.4	Model the Use case diagrams, Interaction and Activity Diagrams
	C313.5	Model the State chart diagrams
	C313.6	Design the Architectural modeling Diagrams and real time applications
Database Management Systems (C314)	C314.1	Understand the database systems, Data independence and Architecture of Database systems
	C314.2	Explain ER model, Relational Model, Relational Algebra and Relational Calculus. Apply the models and Build database system for a given real world problem
	C314.3	Create, Maintain and Manipulate a Relational Database using SQL.
	C314.4	Discuss about redundancy issues and Solve it using Normalization in database design. Explain issues in data storage and query processing and can formulate appropriate solutions.
	C314.5	Understand the concepts of Transaction Management and Concurrent execution of transactions. Solve the issues raised due to Concurrent execution of the Transactions.
	C314.6	Describe the storage structures and indexing techniques in databases
Operating Systems(C315)	C315.1	Describe the general architecture of computers, various operating Systems structures
	C315.2	Evaluate Scheduling algorithms for process management.
	C315.3	Analysing various memory management schemes
	C315.4	Explain about principles of deadlock.
	C315.5	Describe the file system with its implementation and mass storage structure
	C315.6	Discuss about Android operating system services
Unified Modeling Lab(C316)	C316.1	Explain the Case studies and design the Model.
	C316.2	Describe how design patterns solve design problems using usecase diagrams
	C316.3	Create design solutions using sequence diagram.
	C316.4	Create design solutions using component diagram
	C316.5	Create design solutions using state chart and activity diagram
Operating System & Linux Programming Lab(C317)	C316.1	Demonstrate the process CPU scheduling algorithms
	C316.2	Use system calls in the operating system
	C316.3	Describe and develop various page replacement algorithms.
	C316.4	Explain and write programs for dead lock avoidance and prevention
	C316.5	Develop C programs by applying various Linux commands like ls, cp etc.
	C316.6	Develop C programs for process communication, threads and synchronization
Database Management System Lab (C318)	C317.1	Understand, appreciate and effectively explain the underlying concepts of database technologies
	C317.2	Design and implement a database schema for a given problem-domain
	C317.3	Normalize a database
	C317.4	Populate and query a database using SQL DML/DDL commands.
	C317.5	Declare and enforce integrity constraints on a database using a state-of-the-art RDBMS
	C317.6	Programming PL/SQL including stored procedures, stored functions, cursors, packages.
Professional Ethics & Human Values(C319)	C318.1	Understand about morals,values ,work ethics, learn to respect others and develop civic virtue
	C318.2	Discuss about Customs and Traditions and human rignts and value.
	C318.3	Demonstrate knowledge to become a social experimenter.
	C318.4	Understand about the ethical responsibilities of the engineers.
	C318.5	Demonstrate the duties of an Engineers
	C318.6	Develop knowledge about global issues.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

6. Course Outcomes of B. Tech. CSE Third Year – Second Semester

Course Name with Code	CO No.	Course Outcomes
Computer Networks (C321)	C321.1	Classify various types of network topologies, protocols & enumerate the layers of the OSI model and TCP/IP Model.
	C321.2	Explain about multiplexing.
	C321.3	Apply Error Detecting & Correcting methods.
	C321.4	Identify collision detection and apply avoidance methods. Describe about various IEEE Standards
	C321.5	Discuss various types of routing and congestion control algorithms
	C321.6	Discuss about the client server communication
Data Warehousing and Mining (C322)	C322.1	Identify the key processes of data mining, data warehousing and knowledge discovery process.
	C322.2	Understand the need and importance of preprocessing techniques
	C322.3	Analyse and deploy appropriate classification techniques
	C322.4	Analyze Advanced Classification algorithms
	C322.5	Analyze and evaluate performance of algorithms for Association Rules.
	C322.6	Cluster the high dimensional data for better organization of the data
Design and Analysis of Algorithms (C325)	C323.1	Describe asymptotic notation used for denoting performance of algorithms, analyze the performance of a given algorithm and denote its time complexity using the asymptotic notation for recursive and non-recursive algorithms and Apply graph search algorithms to real world problems
	C323.2	Discuss and Solve problems using Divide and Conquer approach
	C323.3	Discuss and Solve problems using Greedy Algorithmic approach
	C323.4	Discuss and Solve problems using the Dynamic Programming approach
	C323.5	Discuss and Solve problems using Backtracking approach
	C323.6	Discuss and Solve Problems using Branch and Bound approach
Software Testing Methodologies (C324)	C324.1	Summarize the necessity of testing, debugging using program control flow and distinguish between types of testing and examine theconcepts of Flowgraphs and Path Testing.
	C324.2	Apply transaction flow, data flow testing to unit and integration testing.
	C324.3	Interpret the concepts of transaction flow testing and experiment with the concepts of data flow testing in real-time situations
	C324.4	Compare state graph, transaction testing, and graph matrices for optimizing code.
	C324.5	Explain the designs of state graphs and graph matrices and apply them with an algorithmic view.
	C324.6	Analyze use of the software testing tools and apply them to resolve the problems in real time environment.
Cyber Security (C325)	C325.1	InterpretCyber Crime fundamental concepts
	C325.2	Identify different classes of attacks
	C325.3	Recognize threats and vulnerabilities of Mobile and wireless devices and their security issues
	C325.4	Apply Tools and techniques Used in Cybercrime
	C325.5	Analyze risk management processes and legal practices
	C325.6	Illustrate computer forensic concepts, challenges, tools and techniques
Network Programming Lab (C326)	C326.1	Understanding and using network related commands, configuration files and system calls in Linux.
	C326.2	Develop client-server programs using UDP and TCP.
	C326.3	Implement Select and getsockopt() and setsockopt() and getpeername() system calls
	C326.4	Apply Network layer routing algorithm Distance vector Routing algorithm in finding best the route within the network.
	C326.5	Make use of Application layer protocols such as Telnet, HTTP ,FTP, SMTP for data communication in a network
	C326.6	Apply the RSA algorithm to provide security for the data in network.
Software Testing Lab (C327)	C327.1	Develop programs using Adhoc testing and black-box testing on 'C' language constructs and matrix multiplication.
	C327.2	Construct test cases for known applications like ATM/Banking/Library management and report the various bugs.
	C327.3	Examine the deployment, usage and testing script language in the automated tool WinRunner.
	C327.4	Apply WinRunner on GUIs and summarize their behavior and performance.
	C327.5	Develop Data-Driven Tests and batch tests on GUIs and apply Win Runner on any real-time application.
Data Warehousing and Mining Lab (C328)	C328.1	To develop an understanding of the various concepts and tools behind data warehousing and mining data for business intelligence
	C328.2	To understand the need of need of preprocessing and convert raw data into preprocessed data
	C328.3	Extract knowledge using data mining techniques
	C328.4	Apply classification algorithms for prediction unknown classes
	C328.5	Extract association rules on frequent items in transaction data
	C328.6	Categorize major clustering methods.
IPR & Patents (C329)	C329.1	Identify different types of Intellectual Properties (IPs), the right of ownership, scope of protection as well as the ways to create and to extract value from IP.
	C329.2	Recognize the crucial role of IP in organizations of different industrial sectors for the purposes of product and technology development.
	C329.3	Identify activities and constitute IP infringements and the remedies available to the IP owner and describe the precautious steps to be taken to prevent infringement of proprietary rights in products and technology development.
	C329.4	Be familiar with the processes of Intellectual Property Management (IPM) and various approaches for IPM and conducting IP and IPM auditing and explain how IP can be managed as a strategic resource and suggest IPM strategy. e.
	C329.5	Be able to anticipate and subject to critical analysis arguments relating to the development and reform of intellectual property right institutions and their likely impact on creativity and innovation.
	C329.6	Be able to demonstrate a capacity to identify, apply and assess ownership rights and marketing protection under intellectual property law as applicable to information, ideas, new products and product marketing.

7. Course Outcomes of B. Tech. CSE Fourth Year – First Semester

Course Name with Code	CO No.	Course Outcomes
Cryptography and Network Security (C411)	C411.1	Tell about information security awareness and a clear understanding of its importance.
	C411.2	Review symmetric key cryptography by sharing key
	C411.3	Illustrate Asymmetric key cryptography by sharing information
	C411.4	Interpret digital signatures in documents and generate MAC using hashing functions
	C411.5	Review of network security designs using available secure solutions (such as PGP, SSL, IPSec, etc)
	C411.6	Relate security at network layer
Software Architecture & Design Patterns (C412)	C412.1	Compare Software Architecture types.
	C412.2	Analyze the Software Architectures.
	C412.3	Classify Design Patterns.
	C412.4	Apply various Structural Patterns.
	C412.5	Use various Behavioral Patterns.
	C412.6	Identify Architectural Structures for real world problems
Web Technologies (C413)	C413.1	Develop static webpages/ website using HTML tags and CSS styles
	C413.2	Create dynamic web page with validations by using JavaScript
	C413.3	Describe how to send data by using XML and Write client-side scripts using AJAX
	C413.4	Construct dynamicwebsites byusing PHP
	C413.5	Write and Execute Perl Programs
	C413.6	Recognize basics, arrays, hashes, methods & classes of Ruby to create programs
Managerial Economics and Financial Analysis (C414)	C414.1	Enumerate the concepts of Economics, Demand and its Forecasting methods
	C414.2	Understanding the relationship among inputs, output, nature of cost, cost combinations.
	C414.3	State the nature of Markets, its structure, Price- Output decisions under different market structures & pricing strategies
	C414.4	Identify various types of organizations and their characteristics based on ownership
	C414.5	Illustrate financial statements by using various accounting tools
	C414.6	Discuss various methods to select a financial proposal by using capital budgeting methods
Mobile Computing (C415)	C415.1	Illustrate the basic comcepts, techniques,protocols related to GSM & GPRS architecture to perform requirement analysis
	C415.2	Summarize different Medium access control mechanisms
	C415.3	Explain the major concepts of mobile IP to improve the service quality of network
	C415.4	Explain the TCP protocol & the data bases issues in mobile environment & data delivery models
	C415.5	Analyze classification of data delivery mechanisms, data dissemination & broadcast models
	C415.6	Survey of Mobile Ad-hoc network protocols for distinguishing them from infrastructure-based networks.
Cloud Computing (C416)	C416.1	Distinguish between different cloud offerings, cloud environments, and distributed and grid computing technologies.
	C416.2	Differentiate between various virtualization strategies.
	C416.3	Determine a cloud architecture that addresses resource management and security management for a real-world scenario.
	C416.4	Design, develop, and deploy a small application on a commercial cloud platform such as Amazon Web Services (AWS), Microsoft Azure, or others.
	C416.5	Examine resource management, performance, and scheduling policies and mechanisms.
	C416.6	Choose from a variety of cloud storage systems like as DFS, GFS, HDFS, S#, Big Table, and others.
Software Architecture& Design Patterns Lab (C417)	C417.1	Understand interrelationships, principles and guidelines governing architecture and evolution over time
	C417.2	Analyze the architecture and build the system from the components
	C417.3	Prepare creational patterns that deal with object creation mechanisms
	C417.4	Prepare structural patterns that ease the design by identifying a simple way to realize relationships among entities.
	C417.5	**L**earn behavioral patterns that identify common communication patterns between objects and realize these patterns.
	C417.6	Classify various case studies
Web Technologies Lab (C418)	C418.1	Develop static web pages by using HTML
	C418.2	Construct Web pages with different style sheets
	C418.3	Develop XML and XSLT for webapplications
	C418.4	Demonstrate the constructs of Ruby scripting Language
	C418.5	Demonstrate the use of Perl language elements
	C418.6	Build dynamic client server web applications with PHP

8. Course Outcomes of B. Tech. CSE Fourth Year – Second Semester

Course Name with Code	CO No.	Course Outcomes
Distributed Systems (C421)	C421.1	Demonstrate distributed systems concept and system models
	C421.2	Implement inter process communication to make a shared communication between client and server
	C421.3	Implement remote invocation methods for distributed object communication
	C421.4	Analyze operating system support with respect to processes and threads
	C421.5	List out the components of file service architecture
	C421.6	Discuss various types of replications
Management Science(C422)	C422.1	Able to understand and apply the concept of management and administration, functions of management
	C422.2	Discuss and analyze operations management and inventory management techniques.
	C422.3	Determine & analyze the importance of human resources and their functions and marketing strategies to promote the products
	C422.4	Illustrate to apply the knowledge of project management techniques to complete the project in optimum cost and time.
	C422.5	Formulate to analyze components of strategic management
	C422.6	to apply various contemporary management practices.
Machine Learning (C423)	C423.1	Recognize the characteristics of machine learning that make it useful to real-world Problems.
	C423.2	Demonstrate machine learning applications as supervised, semi-supervised, and Unsupervised.
	C423.3	Able to infer and apply tree based learning
	C423.4	Able to test Support Vector machine learning algorithms for dimensionality reduction
	C423.5	Sketch the outcome using probabilistic models
	C423.6	Show neural network model for non-linear functions
Artificial Neural Networks (C424)	C424.1	Get a view on ANN structure and activation Functions
	C424.2	compare different learning algorithms and state-space concepts
	C424.3	Develop different kinds of classification algorithms using perceptron as a classifier.
	C424.4	Develop Feed forward, multi-layer feed forward networks and Back propagation algorithms
	C424.5	Develop Radial Basis Function Networks
	C424.6	Design of classification technique by using SVM
Seminar (C425)	C425.1	Students can understand the existing and latest technologies in the computer science domain.
	C425.2	They can characterize, evaluate various technologies in computer science and decide their area of interest.
	C425.3	Students can able to improve their communication skills.
	C425.4	They can able prepare technical presentations.
	C425.5	Students can able to write technical reports.
	C425.6	Graduates will get an opportunity to improve their public speaking skills through knowledge sharing.
Project (C426)	C426.1	identify and define problems in the area of computer science
	C426.2	Skills regarding Analyse the problem and developing designs
	C426.3	Selections of platform for development suitable to problem
	C426.4	Testing, Deployment , maintenance and documentation
	C426.5	Handle multidisciplinary projects
	C426.6	Engineering and project management