REGENT EDUCATION AND RESEARCH FOUNDATION GROUP OF INSTITUTIONS				
Department of Computer Science & Engineering (2020-2021)				
Program code	**Program Name**	**Course code**	**Course Name**	**Course Outcome**
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	BS-PH101/ BS-CH101	Physics-I (Gr-A)/ Chemistry-I(Gr-B)	Recognise different concepts of mechanics and extend these concepts to identify real-world problems
				Illustrate optical phenomena like interference, diffraction, polarisation, and lasing action with physical and compact mathematical models.
				Classify different magnetic and dielectric materials and explain their properties.
				Demonstrate various quantum mechanical phenomena and solve numerical problems associated with them.
				Illustrate different types of statistical mechanics and use them to predict the behaviour of real-world particles
				Analyse different physical and numerical problems based on the knowledge of physics
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Mathematics – IA*/ Mathematics –IB	BS-M101/ BS-M102	Apply the concept and techniques of differential and integral calculus to determine curvature and evaluation of different types of improper integrals.
				Understand the domain of applications of mean value theorems to engineering problems
				Learn different types of matrices, concept of rank, methods of matrix inversion and their applications and apply the method of Gauss Jordan elimination to find the solution of systems of simultaneous linear equations

				Understand linear spaces, its basis and dimension with corresponding applications in the field of computer science
				Learn and apply the concept of eigen values, eigen vectors, diagonalization of matrices and orthogonalization in inner product spaces for understanding physical and engineering problems
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Basic Electrical Engineering	ES-EE101	To understand and analyze basic electric and magnetic circuits
				To study the working principles of electrical machines and power converters.
				To introduce the components of low voltage electrical installations
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Physics-I Laboratory (Gr-A)/ Chemistry-I Laboratory (Gr-B)	BS-PH191/ BS-CH191	Examinevarioussemiconductor and dielectricproperties(Hallcoefficient,Bandgap, Dielectric constant)andrelatethe sametothetheoreticallawstheyhavelearnt.
				Determine variousquantum mechanical constants (Stefan's-Boltzmann constant, Planck's constant, Lande-g factor, Rydberg constant)
				Apply the concept of electrical properties of matter to determine different characteristics of materials and electrical devices.
				Examinethecharacteristicsof electronic motion under the influence of thermal energy and magnetic field forthermometriccalibrationand calculation ofspecific charge.

				Computedifferentfundamentalelasticconstants&generalpropertiesof matter.
				Applythe conceptof refraction, interferenceanddiffractiontocalculate the wavelengthoflightsources andoptical properties of matter.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Basic Electrical Engineering Laboratory	ES-EE191	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Engineering Graphics & Design(Gr-B)/ Workshop/Manufacturing Practices (Gr-A)	ES-ME191/ ES-ME192	Introduction to engineering design and its place in society
				Exposure to the visual aspects of engineering design
				Exposure to engineering graphics standards
				Exposure to solid modelling
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	ENGLISH LANGUAGE & TECHNICAL COMMUNICATION	HU-101	Develop Listening Comprehension Skill through language lab devices, conversational practices sessions, seminars, mock interviews etc.
				Build Speaking Competence: manipulating paralinguistic features of speaking (voice modulation, pitch, tone stress, effective pauses)
				Improve Reading Comprehension Skill by non technical literary texts.
				Discuss Writing Competence through various technical

				writing skills.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Chemistry -1 (GR-B)/ Physics-1(GR-A)	CH-101/PH-101	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecularforces.
				Rationalise bulk properties and processes using thermodynamic considerations.
				Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energylevels in various spectroscopic techniques Rationalise periodic properties such as ionization potential, electronegativity, oxidationstatesandelectronegativity.
				List major chemical reactions that are used in the synthesis of molecules.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Mathematics-1	M-101	Apply the concept and techniques of differential and integral calculus to determine curvature and evaluation of different types of improper integrals. Understand the domain of applications of mean value theorems to engineering problems. Learn different types of matrices, concept of rank, methods of matrix inversion and their applications. Understand linear spaces, its basis and dimension with corresponding applications in the fieldofcomputer science. Learn and apply the concept of eigen values, eigen vectors, diagonalisation of matrices andorthogonalization in inner product spaces for understanding physical and engineering problem

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Basic Electrical & Electronic Engineering-1	ES-101	To understand and analyze basic electric and magnetic circuits
				To study the working principles of electrical machines and power converters.
				To introduce the components of low voltage electrical installations
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Engineering Mechanics	ME-101	Basic concepts of mechanics
				Bragg's Law and introduction to the principles of lasers, types of lasers and applications
				Various terms related to properties of materials such as, permeability, polarization,etc
				Some of the basic laws related to quantum mechanics as well as magnetic and dielectric propertiesofmaterials.
				Simple quantum mechanics calculations
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Chemistry-1 (GR-B)/ Physics-1(GR-A)	CH-191/PH-191	To understand the basic concepts of chemistry and use them for technological operation where appropriate.
				To exercise basic laboratory data analysis techniques, including graphical representation, error analysis etc.
				To correlate the theory with experimental method, result and conclusion.
				Students will learn how to effectively carry out a work done either in single or as a team member in the laboratory.

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Basic Electrical & Electronic Engineering-1	ES-191	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Engineering Drawing & Computer Graphics	ME-191	Introduction to engineering design and its place in society
				Exposure to the visual aspects of engineering design
				Exposure to engineering graphics standards
				Exposure to solid modelling
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Workshop Practice	ME-192	Upon completion of this laboratory course, students will be able to fabricate components withtheirown hands
				They will also get practical knowledge of the dimensional accuracies and dimensional tolerancespossible with different manufacturing processes
				By assembling different components, they will be able to produce small devices of theirinterest
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	English	HM-HU 201	Develop Listening Comprehension Skill through language lab devices, conversational practices sessions, seminars, mock interviews etc.
				Build Speaking Competence: manipulating paralinguistic features of speaking (voice modulation, pitch, tone stress, effective pauses)
				Improve Reading Comprehension Skill by non

				technical literary texts.
				Discuss Writing Competence through various technical writing skills.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Chemistry-I (Gr-A)	BS-CH 201	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
				Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
				Rationalise bulk properties and processes using thermodynamic considerations.
				Rationalise different periodic properties such as ionization potential, electronegativity, oxidation states, electronegativity etc among the elements.
				To find out the Structural representation of Molecules in three dimention and major chemical reactions involved to synthesize molecules as well as common drugs.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Programming for Problem Solving	ES-CS 201	To formulate simple algorithms for arithmetic and logical problems.
				To translate the algorithms to programs (in C language).
				To test and execute the programs and correct syntax and logical errors.
				To implement conditional branching, iteration and recursion.
				To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
				To use arrays, pointers and structures to formulate algorithms and programs.

				To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.
				To apply programming to solve simple numerical method problems, namely root finding of function, differentiation of function and simple integration.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Mathematics – IIA*	BS –M 201	Learn the ideas of probability and random variables, various discrete and continuous probabilitydistributions with their properties and their applications in physical and engineering environment.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Engineering Graphics & Design(Gr-A)	ES –ME 291	Introduction to engineering design and its place in society
				Exposure to the visual aspects of engineering design
				Exposure to engineering graphics standards
				· Exposure to solid modelling
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Language Laboratory	HM- HU 291	The student will acquire basic proficiency in English including reading and listening comprehension,writing and speaking skills.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Chemistry-I Laboratory (Gr-A)	BS-CH 291	To understand the basic concepts of chemistry and use them for technological operation where appropriate.
				To exercise basic laboratory data analysis techniques,

				including graphical representation, error analysis etc.
				To correlate the theory with experimental method, result and conclusion.
				Students will learn how to effectively carry out a work done either in single or as a team member in the laboratory.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Programming for Problem Solving	ES-CS 291	To formulate the algorithms for simple problems
				To translate given algorithms to a working
				To be able to correct syntax errors as reported by the compilers
				To be able to identify and correct logical errors encountered at run time
				To be able to write iterative as well as recursive programs
				To be able to represent data in arrays, strings and structures and manipulate themthroughaprogram
				To be able to declare pointers of different types and use them in defining self-referentialstructures.
				To be able to create, read and write to and from simple text files.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Basic Computation & Principles of Computer Programming	CS-201	Students will learn the concept of fundamentals of Computer, Arithmetic & logic gates, Assembly language, high level language, compiler and assembler and operating systems, Algorithm & flow chart.
				Students will learn the concept of C character set identifiers and keywords, data type & sizes, variable names, declaration, statements

				Students will learn the concept of Arithmetic operators, relational and logical operators, type, conversion, Standard input and output, formatted output and input
				Students will learn the concept of Flow of Control and program Structures
				Students will learn the concept of Arrays, Pointers, Structures Union and Files
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Basic Computation & Principles of Computer Programming	CS-291	Students will learn the concept of DOS System commands and Editors
				Students will learn the concept of UNIX system commands and vi editor
				Students will learn the concept of Simple Programs and demonstrate control structure
				Students will learn the concept of Programs involving functions and recursion
				Students will learn the concept of Programs involving the use of arrays with subscripts, pointers structures and files.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Analog and Digital Electronics	ESC 301	Construct simple electronics circuits to show given tasks of Amplifier and Multivibrator by combining electronic components.
				Explain concepts and expressions of digital electronics which apply logic to build electronics circuits using logic gates for solving problems using digital postulates and theorems.
				Develop and experiment with minimization technique like Karnaugh Map to reduce Boolean expressions and logic circuits to their simplest forms.

				Illustrate the combinational logic circuits using logic devices such as adder and subtractor circuits, encoder, decoder, comparator, multiplexer, de-multiplexer, parity generator.
				Extend and examine sequential logic circuits using logic devices such as clocked Flip-Flops, Flip-Flop, Registers and counter.
				Demonstrate of digital-to-analog conversion, analog-to-digital conversion and familiarization of logic families like TTL, ECL, MOS and CMOS.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Data Structure & algorithms	PCC-CS301	Student will get the knowledge of asymptotic notations to analyze the consumption of resources (time/space) of an algorithm.
				Effective implementation of stack, queue and list ADT to manage the memory using static and dynamic allocations.
				Student will get the knowledge of binary search tree to design applications like expression trees.
				Student will get the knowledge of graphs for solving real life problems like shortest path
				Student will get the knowledge of comparison-based search algorithms and sorting algorithms.
				Identify appropriate data structure and algorithm for a given contextual problem and develop in C.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING	Mathematics-III(Differential	BSC 301	Express a logic sentence in terms of predicates, quantifiers, and logical connectives.

		Calculus)		Apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.
				Use tree and graph algorithms to solve problems
				Evaluate Boolean functions and simplify expressions using the properties of Boolean algebra.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Economics for Engineering	HSMC 301	Make different economic decisions and estimate engineering costs by applying different cost estimation models.
				Create cash flow diagrams for different situations and use different interest formulae to solve associated problems.
				Take decisions regarding different engineering projects by using various criteria like rate of return analysis, present worth analysis, cost-benefit analysis etc.
				Incorporate the effect of uncertainty in economic analysis by using various concepts like expected value, estimates and simulation.
				Understand the concepts of depreciation and replacement analysis and solve associated problems.
				Understand the process of inflation and use different price indices to adjust for its effect
				Apply the various concepts of Accounting like balance sheet and ratio analysis.
				Understand the scope of Finance and the role of financial planning and

				management.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	IT Workshop Lab	PCC-CS393	To master an understanding of scripting & the contributions of scripting languages
				Design real life problems and think creatively about solutions
				Apply a solution in a program using R/Matlab/Python
				To be exposed to advanced applications of mathematics, engineering and natural sciences to program real life problems.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Analog & Digital Electronics Lab	ESC 301	Ability to design and implement both combinational and sequential circuits and to analyze their operations.
				Ability to solve engineering problems in digital system design.
				Ability to design simple analog circuits and observe their performance.
				Communicate effectively about laboratory work both orally and in writing journals/technical reports.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Data Structure lab	PCC-CS301	Differentiate how the choices of data structure & algorithm methods impact the performance of program.
				Solve problems based upon different data structure & also write programs.
				Identify appropriate data structure & algorithmic methods in solving problem.
				Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing
				Compare and contrast the benefits of dynamic and static data structures implementations.

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Organization Lab	PCC-CS302	Understand basic structure of digital computer, stored program concept and different arithmetic and control unit operations.
				Understand basic structure of different combinational circuitsmultiplexer, decoder, encoder etc.
				Perform different operations with sequential circuits.
				Understand memory and I/O operations.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Values & Ethics in Profession	HU301	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Physics-2	PH301	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Basic Environmental Engineering & Elementary Biology	CH301	Understand the importance of environment
				Identify the environmental problems and issues on local, regional and global scale
				Identify problems due to human interactions with the environment
				Get encouragement to contribute solutions for the existing environmental issues
				Understand the enforcement of environmental acts in our constitution
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Analog & Digital Electronics	CS301	Construct simple electronics circuits to show given tasks of Amplifier and Multivibrator by combining electronic components.

				Explain concepts and expressions of digital electronics which apply logic to build electronics circuits using logic gates for solving problems using digital postulates and theorems.
				Develop and experiment with minimization technique like Karnaugh Map to reduce Boolean expressions and logic circuits to their simplest forms.
				Illustrate the combinational logic circuits using logic devices such as adder and subtractor circuits, encoder, decoder, comparator, multiplexer, de-multiplexer, parity generator.
				Extend and examine sequential logic circuits using logic devices such as clocked Flip-Flops, Flip-Flop, Registers and counter.
				Demonstrate of digital-to-analog conversion, analog-to-digital conversion and familiarization of logic families like TTL, ECL, MOS and CMOS.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Data Structure & Algorithm	CS302	Implementation of array operations
				Implementation of stack, queue and list ADT to manage the memory using static and dynamic allocations
				Develop code for real life problems like shortest path and MST using graph theory.
				Implementation of binary search tree to design applications like expression trees
				Implementation of comparison-based search algorithms and sorting

				algorithms.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Organisation	CS303	Recall the history and compare with the advancement of modern computers through Von Neumann architecture and other applicable systems.
				Demonstrate and analyze the organization of the Control unit, Arithmetic and Logical unit, Memory unit and the I/Ounit.
				Infer and choose representations of numbers stored in digital computers. Select and utilize Data Path Design
				Outline the quantitative performance evaluation of computer systems.
				Choose and identify within the representation of data, preliminaries of addressing modes and instructions sets used for assembly language programming
				Interpret digital circuits to microprocessor systems and rephrase the cost performance tradeoff in designing memory hierarchy and other units like Control, ALU & I/O. Be able to pursue the trends in computer design and acknowledge the architectural ideology behind.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Physics-2	PH391	Able to analyse and verify theoretical knowledge of physics-II.
				Able to understand the reason of difference between theoretical and practical outcome of the experiment.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING	Analog & Digital Electronics	CS391	Ability to design and implement both combinational and sequential circuits and to analyze their operations.

				Ability to solve engineering problems in digital system design.
				Ability to design simple analog circuits and observe their performance.
				Communicate effectively about laboratory work both orally and in writing journals/technical reports.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Data Structure & Algorithm	CS392	Implementation of array operations
				Implementation of stack, queue and list ADT to manage the memory using static and dynamic allocations
				Develop code for real life problems like shortest path and MST using graph theory.
				Implementation of binary search tree to design applications like expression trees
				Implementation of comparison-based search algorithms and sorting algorithms.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Organisation	CS393	Familiarity with IC-chips, e.g Multiplexer ,Decoder, Encoder Comparator
				Demonstrate understanding of how to Design an Adder/Subtractor composite unit and BCD Adder
				Demonstrate understanding of how to Design of a 'Carry-Look-Ahead' Adder circuit.
				Demonstrate understanding of how to Use a multiplexer unit to design a composite ALU and multibit arithmetic operation.
				Demonstrate understanding of how to Implement read write operation using RAM IC.
CSE-UG	LAND EN	Discrete	PCC-CS401	Express a logic sentence in

		Mathematics		terms of predicates, quantifiers, and logical connectives
				Derive the solution for a given problem using deductive logic and provethe solution based on logical inference
				Classify its algebraic structure for a given a mathematical problem
				Evaluate Boolean functions and simplify expressions using the propertiesof Boolean algebra
				Develop the given problem as graph networks and solve with techniquesof graph theory.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Architecture	PCC-CS402	Learn pipelining concepts with a prior knowledge of stored programmethods
				Learn about memory hierarchy and mapping techniques
				Study of parallel architecture and interconnection network
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Formal language & Automata Theory	PCC-CS403	Be able to construct finite state machines and the equivalent regular expressions.
				Be able to prove the equivalence of languages described by finite state machines and regular expressions
				Be able to construct pushdown automata and the equivalent context free grammars. And Be able to prove the equivalence of languages described by pushdown And Be able to prove the equivalence of languages described by pushdown automata and context free grammars.
				Be able to construct Turing machines and Post machines. Be able to prove the equivalence of languages

				described by Turing machines and Post machines.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Design & analysis of algorithm	PCC-CS404	Implement Quick Sort using Divide and Conquer approach Find Maximum and Minimum element from a array of integer using Divide and Conquer approach
				Find the minimum number of scalar multiplication needed for chain of matrix
				3 Implement all pair of Shortest path for a graph (Floyed- Warshall Algorithm) Implement Traveling Salesman Problem and Minimum Cost Spanning Tree, BFS & DFS
				Implement Single Source shortest Path for a graph (Dijkstra , Bellman Ford Algorithm
				5 Implement Graph(Coloring Problem , Hamiltonian Problem, Knapsack, sequencing with deadlines, 15 Puzzle Problem, 8 Queen problem)
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Biology	BSC-401	Describe how biological observations of 18th Century that lead to major discoveries.
				Convey that classification per se is not what biology is all about but highlightthe underlying criteria, such as morphological, biochemical and ecological
				Highlight the concepts of recessiveness and dominance during the passageof genetic material
				Convey that all forms of life have the same building blocks and yet the manifestations are as diverse as one can imagine
				Classify enzymes and distinguish between different

				mechanisms of enzymeaction.
				Identify DNA as a genetic material in the molecular basis of informationtransfer.
				Analyse biological processes at the reductionistic level
				Apply thermodynamic principles to biological systems.
				Identify and classify microorganisms.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Environmental sciences	MC-401	To understand the natural environment and its relationships with humanactivities.
				To apply the fundamental knowledge of science and engineering to assess environmental and health risk.
				To develop guidelines and procedures for health and safety issues obeyingtheenvironmental laws and regulations
				Acquire skills for scientific problem-solving related to air, water, noise&landpollution.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Architecture Lab	PCC-CS492	Describe and simulate computer hardware using the VHDL/Verilog hardware description language.
				Rapidly develop combinational and sequential logic that works.
				Emulate high speed computer arithmetic circuits.
				Simulate Computer memory with all relevant properties.
				Emulate a single cycle or pipelined CPU by given specifications using Hardware Description Language (HDL).
				Write reports and make presentations of computer architecture projects.

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Design & analysis of algorithm Lab	PCC-CS494	Students will develop code for real life problems like shortest path and MST using graph theory.
				Student will get the practical knowledge of Divide and Conquer algorithms, Dynamic Programming, Backtracking Algorithms.
				Students will able to develop the develop code for real life problems like Lower Bound Theory and Disjoint set manipulation
				Student will get the practical knowledge of Greedy method and Graph Traversal Algorithms
				Students will able to implement the knowledge of Amortized Analysis, Network Flow, Notion of NP-completeness And Approximation Algorithms
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Numeric al Methods	M(CS)401	Develop numerical methods for approximately solving problems
				Examine the accuracy of these methods
				Examine the failure modes of these methods
				Demonstrate knowledge and understanding of numerical methods to solve systems of linear equations, to compute quadrature and to solve Ordinary and Partial Differential Equations
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Mathema tics-3	M401	Express a logic sentence in terms of predicates, quantifiers, and logical connectives
				2 Derive the solution for a given problem using deductive logic and provethe solution based on logical inference

				Classify its algebraic structure for a given a mathematical problem
				Evaluate Boolean functions and simplify expressions using the propertiesof Boolean algebra
				Develop the given problem as graph networks and solve with techniquesof graph theory.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Communication Engg & Coding Theory	CS401	Recall and interpret the presentation and processing of signals in communication systems.
				Explain the basic concepts of Analog Modulation such as AM, FM, and PM transmission and reception and infer the influence of noise on communications signals.
				Illustrate and identify different techniques in modern digital communications, in particular in source coding, modulation and detection, carrier modulation, and channel coding.
				Demonstrate ability to evaluate the information rate of various information sources; information capacity of different channels.
				Extend and design of appropriate data translation codes to compensate for the channel memory; linear channel & block error correcting codes and other error correcting codes.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Formal Language & Automata Theory	CS402	Write a formal notation for strings, languages and machines.
				Design finite automata to accept a set of strings of a language.
				For a given language

				determine whether the given language is regular or not
				4 Design context free grammars to generate strings of context free language
				Determine equivalence of languages accepted by Push Down Automataand languages generated by context free grammars
				Write the hierarchy of formal languages, grammars and machines
				Distinguish between computability and non-computabilityandDecidability and undecidability.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Architecture	CS403	Learn pipelining concepts with a prior knowledge of stored programmethods
				Learn about memory hierarchy and mapping techniques.
				Study of parallel architecture and interconnection network
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Technical Report Writing & Language Lab Practice	HU481	Ability to use the unique qualities of professional rhetoric and writing style, such as sentence conciseness, clarity, accuracy, honesty, avoiding wordiness or ambiguity, using direct order organization, readability, coherence and transitional devices; ability to revise and edit effectively in all assignments.
				Ability to recognize, explain, and use the rhetorical strategies and the formal elements of these specific genres of technical communication: technical abstracts, data based research reports, instructional manuals , technical descriptions, web pages, wikis,

				and correspondence.
				Develop professional work habits, including those necessary for effective collaboration and cooperation with other students, instructors and professionals
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Numerical Methods Lab	M(CS)491	An Ability to familiarize with implementation of numerical methods using C programming.
				Able to implement a mathematical problem and determine which numerical technique to use to solve it
				Logical thinking in coding a mathematical problem.
				Knowledge of Matlab to learn more easily any other programming language you will need to use in future.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Communication Engg & Coding Theory	CS491	Ability to design and implement modulator circuits and to analyse their operations.
				Ability to solve engineering problems in communication system design.
				Communicate effectively about laboratory work both orally and in writing journals/technical reports.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Software Tools	CS492	Models: Identify the concept of Window- Based application and ability to implement it using Visual Basic 6.0 (VB).
				Experiment: Ability to do basic VB programming
				Design: Design and build a window- based project to meet desired specifications and tests it using appropriate testing strategy and/or equipment.

				Teamwork: Work effectively in teams to accomplish the assigned responsibilities in an integral manner.
				Communication: Communicate effectively about laboratory work both orally and in writing journals/technical reports.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Architectur	CS493	Describe and simulate computer hardware using the VHDL/Verilog hardware description language.
				Rapidly develop combinational and sequential logic that works.
				Emulate high speed computer arithmetic circuits.
				Simulate Computer memory with all relevant properties.
				Emulate a single cycle or pipelined CPU by given specifications using Hardware Description Language (HDL).
				Write reports and make presentations of computer architecture projects.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Software Engineering	ESC501	Illustrate the wider engineering issues that form the background to developing complex and evolving software intensive systems.
				Plan and develop an effective software engineering process, based on knowledge of widely used development lifecycle models.
				Make use of group working skills including general organization, planning and time management and intergroup negotiation.
				Translate a requirements specification into an implementable design, following a structured and organized process.

				Make effective use of UML, along with design strategies such as defining software architecture, separation of concerns and design patterns.
				Examine a testing strategy for a software system, employing techniques such as quality of the requirements, analysis and design, unit and functional testing.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Compiler Design	PCCCS501	1. Understand given grammer specificationdevelop the lexical analyser.
				2. Design a given parser specification design top down and bottom up parser
				3. Develop syntax directed translation schemes
				4. Develop algorithms to generate code for a target machine
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Operating Systems	PCCCS502	Create processes and threads.
				Develop algorithms for process scheduling for a given specification of CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time.
				For a given specification of memory organization develop the techniques for optimally allocating memory to processes by increasing memory utilization and for improving the access time. Design and implement file management system.
				For a given I/O devices and OS (specify) develop the I/O management functions in OS as part of a uniform device abstraction by performing operations for synchronization between CPU and I/O controllers.

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Object Oriented Programming	PCCCS503	Specify simple abstract data types and design implementations, using abstraction functions to document them.
				Recognise features of object-oriented design such as encapsulation, polymorphism, inheritance, and composition of systems based on object identity.
				Name and apply some common object-oriented design patterns and give examples of their use.
				Design applications with an event-driven graphical user interface.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Introduction to Industrial Management (Humanities III)	HSMC-501	Interpret given organization structure, culture, climate and major provisions of factory acts and laws.
				Explain material requirement planning and store keeping procedure.
				Plot and analyze inventory control models and techniques.
				Prepare and analyze CPM and PERT for given activities.
				List and explain PPC functions.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Graphics	IT501B	Demonstrate the collective computer graphics architecture and possess thorough knowledge of display systems, image synthesis and shape modelling. Infer 2D and 3D geometrical transformations such as translation, rotation, scaling, reflection etc. and viewing of geometrical form. Outline the Hidden surfaces of graphical objects including different algorithms. Make use of contrasting curve

				in graphics applications. Apply computer graphics animation, Colour-shading models and Ray-tracing onto any conventional graphical objects. Model interactive graphics applications in C programming language using one or more graphics application programming interfaces.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Constitution of India/Essence of Indian Knowledge Tradition	MC- CS501	Students will get knowledge about what the Constitution is.
				What type of Government India have.
				What are the main features of Indian Constitution
				Who are the citizens and what types of rights they have.
				They will also get knowledge about the structure and functioning of union, state and self- government.
				They will understand the structure, jurisdiction and function of Indian Judiciary.
				They will also be known about local administration.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Software Engineering Lab	PCCCS591	To prepare requirement document for standard application problems in standard format.
				To prepare project schedules and accordingly generate Gnatt chart and PERT chart.
				To implement Use Case diagram, Class diagram, Sequence diagram and prepare Software Design Document using tools like Rational Rose.
				To estimate the project size and design Test script / Test plan.
				To compute Process and Product Metrics.

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Operating Systems Lab	PCCCS592	Ability to analyze a problem and identify and define the computing requirements appropriate to its solution.
				Ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
				Combine lengthy and repetitive sequences of commands into a single, simple command.
				Ability to handle the signal by defining callback functions to manage the signal.Develop the idea to close files and perform operations.
				Develop the idea of process synchronization and control over the critical section problem.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Object Oriented Programming Lab	PCCCS593	Implement object oriented concepts such as objects, class abstraction and message passing.
				Implement the friend function and function overloading.
				Implement Operator overloading, Inheritance and method overriding.
				Implement virtual function to achieve Run time polymorphism.
				Implement the various functions on String.
				Apply I/O operation to handle file system.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Economics for Engineers	HU501	
				Students would be able to understand standard accounting principles and procedures applicable to various accounting practices
				Students would be able to pick and choose the best methods for analysing financial and

				economic concepts for a given problem.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Design & Analysis of Algorithm	CS501	Students will get the knowledge of basic algorithm, Complexity Analysis
				Students will get the knowledge of Algortihm Design Techniques
				Students will get the knowledge of Lower Bound Theory and Disjoint set manipulation
				Students will get the knowledge of Graph traversal algorithm and String matching problem
				Students will get the knowledge of Amortized Analysis, Network Flow, Notion of NP-completeness And Approximation Algorithms
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Microprocessors & Microcontrollers	CS502	Demonstrate the architecture of Intel 8085, 8086 microprocessor and 8051 microcontroller.
				Define and list the different addressing modes of the 8085, 8086 microprocessor & 8051 microcontroller. and also infer the knowledge about their individual instruction set
				Illustrate and construct assembly language programs for the Intel 8085, 8086 microprocessors and 8051 microcontroller taking account of counter-Time delays, Stack and Subroutine, Interrupt handling.
				Interpret the basic idea about the data transfer schemes and its applications including Memory & I/O interface
				Summarize the working principle of the different

				peripheral devices
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Discrete Mathematics	CS503	Introduction to Propositional Calculus: Propositions, Logical Connectives, Conjunction, Disjunction, Negation and their truth table. Conditional Connectives, Implication, Converse, Contrapositive, Inverse, Biconditional statements with truth table, Logical Equivalence, Tautology, Normal forms- CNF, DNF; Predicates and Logical Quantifications of propositions and related examples.
				The students would understand the Theory of Numbers: Well Ordering Principle, Divisibility theory and properties of divisibility; Fundamental theorem of Arithmetic; Euclidean Algorithm for finding G.C.D and some basic properties of G.C.D with simple examples; Congruence, Residue classes of integer modulo and its examples. Order, Relation and Lattices: POSET, Hasse Diagram, Minimal , Maximal, Greatest and Least elements in a POSET, Lattices and its properties, Principle of Duality, Distributive and Complemented Lattices.
				Counting Techniques: Permutations, Combinations, Binomial coefficients, Pigeon-hole Principle, Principles of inclusion and exclusions; Recurrence relations: Formulation/Modelling of different counting problems in terms of recurrence relations, Solution of linear recurrence

				relations with constant coefficients (upto second order) by (i) The iterative method (ii) Characteristic roots method (iii) Generating functions method.
				The Graph Colouring: Chromatic Numbers and its bounds, Independence and Clique Numbers, Perfect Graphs- Definition and examples, Chromatic polynomial and its determination , Applications of Graph Colouring. Matching's: Definitions and Examples of Perfect Matching, Maximal and Maximum Matching, Hall's Marriage Theorem (Statement only) and related problems
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Object Oriented Programming (IT)	CS504D	Student will understand the concepts of OOP
				Student will understand the concepts of Java programming constructs and JVM and byte codes
				Able to write Simple java programs using Classes, Inheritance, Exception handling and applets
				Student will develop programs using thread concepts and Applet concepts
				Student will get the concept of UML
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Design & Analysis of Algorithm	CS591	
CSE-UG	TER SCIENCE AND ENGINEERING	Microprocessors &	CS592	Study of Prewritten programs on 8085 trainer kit using the basic instruction set,

		Microcontrollers Lab		Familiarization with 8085 simulator on PC.
				Programming knowledge using kit or Simulator
				Program using IN/OUT instructions and 8255 PPI on the trainer
				Programming knowledge of Serial communication between two trainer kits
				Study of Prewritten programs on 8051 Microcontroller Kit using the basic instruction
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Object Oriented Programming (IT)	CS594D	Student will understand to Implement Object Oriented Programming Concepts (class, constructor, overloading, inheritance, overriding) in java.
				Student will Use and create packages and interfaces in a Java program
				Student will Use graphical user interface in Java programs
				Student will develop programs using thread concepts and Applet concepts
				Students will implement exception handling in Java.
				Use of Input/output Streams in java.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Programming Practices using C++	CS593	Learn the basics of C++ environment, Data representation, Control structures, Functions, Arrays, Pointers, Strings, and Classes.
				Write clear, elementary C++ programs.
				Understand algorithmic thinking and apply it to problem-solving techniques.
				Code with C++ arithmetic, increment, decrement, assignment, relational, equality and

				Logical operators, control structures (if, if/else, switch, while, do/while, for) and use built-in data types.
				Use standard library functions and write user-defined function definitions.
				Use Exception Handling to write better programs using exception handling.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Database Management Systems	PCC- CS601	Explain the different issues involved in the design and implementation of a database System.
				Demonstrate the physical and logical database designs, database modelling, relational, hierarchical, and network models.
				Experiment with the data manipulation language to query, update, and manage a database DDL, DML, DCL.
				Model the different aspect of database dependency, normalization and Decomposition
				Different methods of database representation in disk single and different levels of Indexing.
				To develop an understanding of essential DBMS concepts such as: database security, integrity, Concurrency, recovery, distributed database, Client/Server (Database Server).
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Networks	PCC- CS602	Infer a good understanding of the OSI Reference Model and in particular have a good knowledge of Layers Architecture.
				Analyze the requirements for a given organizational structure and select the most appropriate

				networking architecture and technologies.
				Outline the basic knowledge using cryptography and network security.
				Experiment with datagram and internet socket programming.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Distributed Systems	PEC- IT601B	Design trends in distributed systems.
				Apply network virtualization
				Apply remote method invocation and objects.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Data Warehousing & Data Mining	PEC- IT602B	Study of different sequential pattern algorithms
				Study the technique to extract patterns from time series data and it application in real world.
				Can extend the Graph mining algorithms to Web mining
				Help in identifying the computing framework for Big Data
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Numerical Methods	OEC- IT601A	Develop numerical methods for approximately solving problems
				Examine the accuracy of these methods
				Examine the failure modes of these methods
				Demonstrate knowledge and understanding of numerical methods to solve systems of linear equations, to compute quadrature and to solve Ordinary and Partial Differential Equations

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Research Methodology	PROJ-CS601	`
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Database Management Systems Lab	PCC- CS691	Develop students' understanding through laboratory activities to solve problems related to key concepts taught in the classroom.
				Develop students' ability to solve open ended problems through the design and construction of new artefacts or processes.
				Develop debugging capability in order to propose and apply effective engineering solutions. Procedures/algorithms analyse and interpret the resulting data.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Networks Lab	PCC- CS692	Identify the hardware, software, components of a network and the interrelations.
				Demonstrate networking protocols and their hierarchical relationship hardware and software.
				Compare protocol models and select appropriate protocols for a particular design.
				Make use of multiple operating systems, systems software, network services and security.
				Illustrate and compare systems software and emerging technologies.
				Develop solutions for networking and security problems, balancing business

				concerns, technical issues and security
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Principles of Management	HU601	Students would be able to evaluate and analyse various instances and deal with them professionally
				Students would be able to understand and apply their knowledge to find problem solutions
				Students would be able to apply their best managerial attributes in decision making
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Data Base Management System	CS601	For a given query write relational algebra expressions for that query and optimize the developedexpressions
				For a given specification of the requirement design the databases using E R method andnormalization.
				For a given specification construct the SQL queries for Open source and Commercial DBMS -MYSQL, ORACLE, andDB2.
				For a given query optimize its execution using Query optimizationalgorithms
				For a given transaction-processing system, determine the transaction atomicity, consistency, isolation, anddurability
				Implement the isolation property, including locking, time stamping based on concurrency control and Serializability ofscheduling.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Computer Networks	CS602	Understand research problem formulation.
				Analyze research related information
				Follow research ethics

				Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.
				Understanding that when IPR would take such important place in growth of individuals & nation, it is needless to emphasis the need of information about Intellectual Property Right to be promoted among students in general & engineering in particular.
				Understand that IPR protection provides an incentive to inventors for further research work and investment in R & D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Operating System	CS603	Create processes and threads.
				Develop algorithms for process scheduling for a given specification of CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time.
				For a given specification of memory organization develop the techniques for optimally allocating memory to processes by increasing memory utilization and for improving the access time. Design and implement file management system.
				For a given I/O devices and OS (specify) develop the I/O management functions in OS as part of a uniform device abstraction by performing operations for synchronization between CPU and I/O

				controllers.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Compute r Graphics	CS604B	Demonstrate the collective computer graphics architecture and possess thorough knowledge of display systems, image synthesis and shape modelling.
				Infer 2D and 3D geometrical transformations such as translation, rotation, scaling, reflection etc. and viewing of geometrical form.
				Outline the Hidden surfaces of graphical objects including different algorithms.
				Make use of contrasting curve in graphics applications.
				Apply computer graphics animation, Colour-shading models and Ray-tracing onto any conventional graphical objects.
				Model interactive graphics applications in C programming language using one or more graphics application programming interfaces.
NUMERICAL	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	8. Data Base Manage ment System Lab	CS691	Develop students' understanding through laboratory activities to solve problems related to key concepts taught in the classroom.
				Develop students' ability to solve open ended problems through the design and construction of new artefacts or processes.
				Develop debugging capability in order to propose and apply effective engineering solutions. Procedures/algorithms analyse and interpret the resulting data.
CSE-UG	AND EN	9.	CS692	Identify the hardware,

		Network Lab		software, components of a network and the interrelations.
				Demonstrate networking protocols and their hierarchical relationship hardware and software.
				Compare protocol models and select appropriate protocols for a particular design.
				Make use of multiple operating systems, systems software, network services and security.
				Illustrate and compare systems software and emerging technologies.
				Develop solutions for networking and security problems, balancing business concerns, technical issues and security
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	10.Operating System Lab	CS693	Demonstrate understanding of Shell programming
				Demonstrate understanding of how to starting a new process, replacing a process image, duplicating a process image, waiting for a process, zombie process.
				Demonstrate understanding of how to send signals.
				Demonstrate understanding of how to synchronize processes
				Demonstrate understanding of Inter-process communication
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Cloud Computing	PECCS701B	Understanding the systems, protocols and mechanisms to support cloud computing
				Develop applications for cloud computing
				Understanding the hardware necessary for cloud computing
				Design and implement a novel cloud computing application

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Machine learning	PECCS701E	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Neural Networks and Deep Learning	PECCS702A	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Cyber Security	PECCS702E	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Multimedia Systems	OECCS701B	Demonstrate what multimedia means and implies, media type which are being involved, characteristic of multimedia presentation, major uses of application areas. Recall analog and digital signal
				Explain working principle and major component of visual display system like CRT and LCD, audio system ,video system, text creation, animation creation
				Recall the Computer external storage system like CD,DVD,Hard Disk. Explain the working principle CD,DVD,Hard disk

				Explain an idea about the major research advances in the field of multimedia which include image processing, audio processing, pattern recognition. Explain Multimedia database and demonstrate content based storage and retrieval, classification of data, clustering, indexing.
				Explain Multimedia document and document architecture.
				Experiment with Frequency domain analysis of analog signals, spatial and temporal frequency response of the human visual system. Explain compression and type compression and compression performance measurement.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Project Management and Entrepreneurship	HSMC701	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Project-II	PROJCS781	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Software Engg.	CS701	Illustrate the wider engineering issues that form the background to developing complex and evolving software intensive systems.

				Plan and develop an effective software engineering process, based on knowledge of widely used development lifecycle models.
				Make use of group working skills including general organization, planning and time management and intergroup negotiation.
				Translate a requirements specification into an implementable design, following a structured and organized process.
				Make effective use of UML, along with design strategies such as defining software architecture, separation of concerns and design patterns.
				Examine a testing strategy for a software system, employing techniques such as quality of the requirements, analysis and design, unit and functional testing.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Compiler Design	CS702	Make use of the theory and practice of compilation, in particular, the lexical analysis, syntax, and semantic analysis, code generation and optimization phases of compilation.
				Build lexical rules and grammars for a programming language.
				Apply lex or similar tools to create a lexical analyzer and Yacc/Bison tools to create a parser.
				Illustrate semantic rules into a parser that performs attribution while parsing.
CSE-UG	SCIENCE AND ENGINEERING	Artificial Intelligen	CS703C	Demonstrate different types of AI agents.

		ce		Show and analyze various AI search algorithms like uninformed, informed and heuristic, constraint satisfaction and genetic algorithms.
				Illustrate the fundamentals of knowledge representation such as logic-based, frame-based, Semantic nets inference and theorem proving and develop them. Time management and intergroup negotiation.
				Classify how to build simple knowledge-based systems and learning process.
				Demonstrate working knowledge of reasoning in the presence of incomplete and/or uncertain information.
				Apply knowledge representation, reasoning, and machine learning techniques to real-world problems and analyse them.
				Demonstrate working knowledge in Lisp in order to write simple Lisp programs and explore more sophisticated Lisp code.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	A. Distributed Operating System		Demonstrate and define the concept of Distributed Computing, major terms relate to DOS. Describe categories of distributed and parallel computer architectures.
				Identify and quantify the role of distributed operating systems and the essential services needed for the distributed systems through various algorithms.
				Understand the distributed file systems concepts though various distributed file management and scheduling

				algorithms.
				Summarize the causes of Failure, failure recovery and Fault tolerance by learning various check point and voting protocols
				Study the concepts of Synchronization and concurrency controlling algorithms for distributed and database operating systems
			CS704	Examine distributed file systems, distributed databases, security and protection, distributed services such as the world-wide web, and examples of research.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	B. Cloud Computing		
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	C. Data Warehousing and Data Mining		Study of different sequential pattern algorithms. Study the technique to extract patterns from time series data and its application in realworld. Can extend the Graph mining algorithms to Web mining. Help in identifying the computing framework for Big Data.

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	D. Sensor Networks		
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	E. Mobile Computing		
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	A. Internet Technology (IT)	CS705	Analyze a web page and identify its elements and attributes.
				Build dynamic web pages using JavaScript (client side programming).
				Construct and manipulate web databases.
				Build and consume web services.
				Create web pages using XHTML and Cascading Styles sheets.
				Demonstration of modern Internet tools and be able to create simple web sites including JavaScript scripting, forms and the use of Web-enabled Databases.

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	B. Microelectronics & VLSI Design (ECE)		
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	C. Control System (EE)		
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	D. Modelling & Simulation (M)		
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Cryptography & Network Security	PEC- CS801B	Students will able to understand the foundations and importance of E-commerce
				Students will able to demonstrate an understanding of retailing in E-commerce by: analysing branding and pricing strategies, using and determining the effectiveness of market research assessing the effects of disintermediation.
				Students will able to analyse the impact of E-commerce on business models and strategy
				Students will able to understand Internet trading relationships including

				Business to Consumer, Business-to- Business, Intra-organizational.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Cyber Law and Ethics	OEC- CS801B	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Commerce and ERP	OEC- CS802A-E	Describe and define the concept of ERP, key terms relate to ERP, basic ERP model. They will be able to Identify and understand the five different ERP maturity levels the transition from MRP to ERP. State the benefits of ERP and the pitfalls of ERP implementations.
				Identify and quantify benefits, need for change, initial acquisition and installation costs Recognize ongoing costs and calculate the return on investment (ROI) for an ERP system. Write a business case to justify an ERP implementation.
				Align strategic goals, people, knowledge processes, and internal systems. Define the concept of a process, process map and apply the result of process analysis to an ERP implementation.

				Define the basic elements that comprise a company's value chain, Supply Chain Management (SCM), Customer Relationship Management (CRM). List ways in which demand can be identified and created, the components of product and process design, the components of delivering products and services
				Find the technological infrastructure concerns in implementing ERP, the strategic use of technology in ERP.Demonstrate local and global considerations in implementing ERP. Explain the organizational issues faced in a local-to-global ERP implementation Compare and contrast the organizational issue involved in local and global ERP implementations.
				Define Enterprise Application Integration (EAI), Radio Frequency Identification (RFID), M-Commerce and E-Commerce. Explain E-Commerce features.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	Project-III	PROJ- CS881	

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	A. Organisational Behaviour	HU801A	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	B. Project Management	HU801B	Identification of real world problems Awareness of current trends in specific area of interest Technical report writing To understand some of the main theories of Organizational Behaviour To be able to analyse how these theories and empirical evidence can help to understand contemporary organizational issues To apply theories to practical problems in organizations in a critical manner
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	A. Advanced Computer Architecture	CS801	
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	B. Parallel Computing		

CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	C. Natural Language Processing		
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	D. Cryptography & Network Security		Students will able to understand the foundations and importance of E-commerce
				Students will able to demonstrate an understanding of retailing in E-commerce by: analysing branding and pricing strategies, using and determining the effectiveness of market research assessing the effects of disintermediation.
				Students will able to analyse the impact of E-commerce on business models and strategy
				Students will able to understand Internet trading relationships including Business to Consumer, Business-to- Business, Intra-organizational.
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	E. Business Analytics		
CSE-UG	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	A. Technology Management (HSS)	CS802	

CSE-UG	CSE-UG	CSE-UG	CSE-UG	CSE-UG
COMPUTER SCIENCE AND ENGINEERING (B.TECH)	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	COMPUTER SCIENCE AND ENGINEERING (B.TECH)	COMPUTER SCIENCE AND ENGINEERING (B.TECH)
F. Robotics(EE & ME)	E. E-Commerce (IT)	D. Low Power Circuits & Systems (ECE)	C. Optical Networking (ECE)	B. Cyber Law & Security Policy (HSS)