				SEM 1
				Theory
Sr.No.	**Subject Name**	**Subject code**	**Course Outcome No**	**Course outcome**
1	**Discrete Mathematics**	**210241**	CO1	**Formulate** problems precisely, solve the problems, apply formal proof techniques, and explain the reasoning clearly.
			CO2	**Apply** appropriate mathematical concepts and skills to solve problems in both familiar and unfamiliar situations including those in real-life contexts.
			CO3	**Design and analyze** real world engineering problems by applying set theory, propositional logic and to construct proofs using mathematical induction.
			CO4	**Specify, manipulate and apply** equivalence relations; construct and use functions and apply these concepts to solve new problems.
			CO5	**Calculate** numbers of possible outcomes using permutations and combinations; to model and analyze computational processes using combinatorics.
			CO6	**Model and solve** computing problem using tree and graph and solve problems using appropriate algorithms.
2	**Fundamental of Data Structure**	**210242**	CO1	**Design** the algorithms to solve the programming problems, **identify** appropriate algorithmic strategy for specific application, and **analyze** the time and space complexity.
			CO2	**Discriminate** the usage of various structures, **Design/Program/Implement** the appropriate data structures; use them in implementations of abstract data types and Identity the appropriate data structure in approaching the problem solution.
			CO3	**Demonstrate** use of sequential data structures- Array and Linked lists to store and process data.
			CO4	**Understand** the computational efficiency of the principal algorithms for searching and sorting and choose the most efficient one for the application.
			CO5	**Compare** and **contrast** different implementations of data structures (dynamic and static).
			CO6	**Understand, Implement and apply** principles of data structures-stack and queue to solve computational problems.
			CO1	**Apply** constructs- sequence, selection and iteration; classes and objects, inheritance, use of predefined classes from libraries while developing software.

3	**Object Oriented Programmin g**	**210243**	**CO2**	**Design** object-oriented solutions for small systems involving multiple objects.
			CO3	**Use** virtual and pure virtual function and complex programming situations.
			CO4	**Apply** object-oriented software principles in problem solving.
			CO5	**Analyze** the strengths of object-oriented programming.
			CO6	**Develop** the application using object oriented programming language(C++).
4	**Computer Graphics**	**210244**	**CO1**	**Identify** the basic terminologies of Computer Graphics and interpret the mathematical foundation of the concepts of computer graphics.
			CO2	**Apply** mathematics to develop Computer programs for elementary graphic operations.
			CO3	**Illustrate** the concepts of windowing and clipping and **apply** various algorithms to fill and clip polygons.
			CO4	**Understand** and **apply** the core concepts of computer graphics, including transformation in two and three dimensions, viewing and projection.
			CO5	**Understand** the concepts of color models, lighting, shading models and hidden surface elimination.
			CO6	**Create** effective programs using concepts of curves, fractals, animation and gaming.
5	**Digital Electonics and Logic Design**	**210245**	**CO1**	**Simplify** Boolean Expressions using K Map.
			CO2	**Design and implement combinational circuits.**
			CO3	**Design and implement sequential circuits.**
			CO4	**Develop** simple real-world application using ASM and PLD.
			CO5	**Differentiate and Choose** appropriate logic families IC packages as per the given design specifications.
			CO6	**Explain** organization and architecture of computer system

			Practical	
6	**Data Structure Laboratory**	**210246**	**CO1**	**Use** algorithms on various linear data structure using sequential organization to solve real life problems.
			CO2	**Analyze** problems to **apply** suitable searching and sorting algorithm to various applications.
			CO3	**Analyze** problems to **use variants of** linked list and solve various real life problems.
			CO4	Designing and implement data structures and algorithms for solving different kinds of problems.

7	**OOP and Computer Graphics Laboratory**	**210247**	**CO1**	U**nderstand** and **apply** the concepts like inheritance, polymorphism, exception handling and generic structures for implementing reusable programming codes.
			CO2	**Analyze** the concept of file and **apply** it while storing and retrieving the data from secondary storages.
			CO3	**Analyze** and **apply** computer graphics algorithms for line-circle drawing, scan conversion and filling with the help of object oriented programming concepts.
			CO4	**Understand** the concept of windowing and clipping and **apply** various algorithms to fill and clip polygons.
			CO5	**Apply** logic to implement, curves, fractals, animation and gaming programs.
8	**Digital Electronics Laboratory**	**210248**	**CO1**	**Understand** the working of digital electronic circuits.
			CO2	**Apply** the knowledge to appropriate IC as per the design specifications.
			CO3	**Design** and **implement** Sequential and Combinational digital circuits as per the specifications.
9	**Business communication Skills**	**210249**	**CO1**	**Express** effectively through verbal/oral communication and improve listening skills
			CO2	**Write** precise briefs or reports and technical documents.
			CO3	**Prepare** for group discussion / meetings / interviews and presentations.
			CO4	**Explore** goal/target setting, self-motivation and practicing creative thinking.
			CO5	**Operate** effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership qualities.
10	**Humanity and Social Science**	**210250**	**CO1**	**Aware of the various issues concerning humans and society.**
			CO2	**Aware** about their responsibilities towards society.
			CO3	Sensitized about broader issues regarding the social, cultural, economic and human aspects, involved in social changes.
			CO4	**Able** to understand the nature of the individual and the relationship between self and the community.
			CO1	**Aware of the various issues concerning humans and society.**
			CO2	**Aware** about their responsibilities towards society.

Sr.No.	Subject Name	Subject code	Course Outcome No	Course outcome
11	**Audit Course-3**	**210251**	**CO3**	Sensitized about broader issues regarding the social, cultural, economic and human aspects, involved in social changes.
			CO4	**Able** to understand the nature of the individual and the relationship between self and the community.
			CO5	**Able** to understand major ideas, values, beliefs, and experiences that have shaped human history and cultures.

SEM 2
Theory

Sr.No.	Subject Name	Subject code	Course Outcome No	**Course outcome**
1	**Mathematics III**	**207003**	**CO1**	CO1: Solve Linear differential equations, essential in modelling and design of computer-based systems.
			CO2	CO2: Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.
			CO3	CO3: Apply Statistical methods like correlation and regression analysis and probability theory for data analysis and predictions in machine learning.
			CO4	CO4: Solve Algebraic and Transcendental equations and System of linear equations using numerical techniques.
			CO5	CO5: Obtain Interpolating polynomials, numerical differentiation and integration, numerical solutions of ordinary differential equations used in modern scientific computing.
2	**Data Structure and Algorithm**	**210252**	**CO1**	CO1:**Identify and articulate** the complexity goals and benefits of a good hashing scheme for real- world applications.
			CO2	CO2:**Apply** non-linear data structures for solving problems of various domain.
			CO3	CO3:**Design and specify** the operations of a nonlinear-based abstract data type and implement them in a high-level programming language.
			CO4	CO4:**Analyze** the algorithmic solutions for resource requirements and optimization
			CO5	CO5:**Use** efficient indexing methods and multiway search techniques to store and maintain data.
			CO6	CO6:U**se** appropriate modern tools to understand and analyze the functionalities confined to the secondary storage.
3			**CO1**	**CO1: Analyze** software requirements and formulate design solution for a software.

	Software Engineering	**210253**	CO2	**CO2: Design** applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.
			CO3	**CO3: Apply** new software models, techniques and technologies to bring out innovative and
			CO4	novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.
			CO5	**CO4: Model** and design User interface and component-level.
			CO6	**CO5: Identify** and handle risk management and software configuration management.
				CO6: Utilize knowledge of software testing approaches, approaches to verification and validation.
4	**Microproces sor**	**210254**	CO1	**CO1: Exhibit** skill of assembly language programming for the application.
			CO2	**CO2: Classify** Processor architecture
			CO3	**CO3: Illustrate** advanced features of 80386 Microprocessor.
			CO4	**CO4: Compare** and **contrast** different processor modes.
			CO5	**CO5: Use** interrupts mechanism in applications
			CO6	**CO6: Differentiate** between Microprocessors and Microcontrollers.
			CO7	**CO7: Identify** and **analyze** the tools and techniques used to design, implement, and debug microprocessor-based systems.
5	**Principles of Programmin g language**	**210255**	CO1	CO1: **Make** use of basic principles of programming languages.
			CO2	CO2: **Develop** a program with Data representation and Computations.
			CO3	CO3: **Develop** programs using Object Oriented Programming language : Java.
			CO4	CO4: Develop application using inheritance, encapsulation, and polymorphism.
			CO5	**CO5: Demonstrate** Multithreading for robust application development.
			CO6	CO6: **Develop** a simple program using basic concepts of Functional and Logical programming paradigm.
Practical				
			CO1	**CO1: Understand** the ADT/libraries, hash tables and dictionary to design algorithms for a specific problem.

6	**Data Structure and Algorithm Laboratory**	**210256**	**CO2**	**CO2:** Choose most appropriate data structures and **apply** algorithms for graphical solutions of the problems.
			CO3	**CO3: Apply** and **analyze** non linear data structures to solve real world complex problems.
			CO4	**CO4: Apply** and **analyze** algorithm design techniques for indexing, sorting, multi-way searching, file organization and compression.
			CO5	**CO5: Analyze** the efficiency of most appropriate data structure for creating efficient solutions for engineering design situations.
7	**Microproces sor Laboratory**	**210257**	**CO1**	CO1. **Understand** and **apply** various addressing modes and instruction set to implement assembly language programs
			CO2	CO2. **Apply** logic to **implement** code conversion
			CO3	CO3. **Analyze** and **apply** logic to **demonstrate** processor mode of operation
8	**Project Based Learning 2**	**210258**	**CO1**	**CO1:** Identify the real life problem from societal need point of view
			CO2	**CO2:** Choose and compare alternative approaches to select most feasible one
			CO3	**CO3:** Analyze and synthesize the identified problem from technological perspective
			CO4	**CO4:** Design the reliable and scalable solution to meet challenges
			CO5	**CO5:** Evaluate the solution based on the criteria specified
			CO6	**CO6:** Inculcate long life learning attitude towards the societal problems
9	**Code of Conduct**	**210259**	**CO1**	**CO1: Understand** the basic perception of profession, professional ethics, various moral and social issues, industrial standards, code of ethics and role of professional ethics in engineering field.
			CO2	**CO2: Aware** of professional rights and responsibilities of an engineer, responsibilities of an engineer for safety and risk benefit analysis.
			CO3	**CO3: Understand** the impact of the professional Engineering solutions in societal and Environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
			CO4	**CO4: Acquire** knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives.

10	**Audit Course-4**	**210260**	**CO1**	**CO1: Understand** the global water cycle and its various processes
			CO2	**CO2: Understand** climate change and their effects on water systems
			CO3	**CO3: Understand** Drinking treatment and quality of groundwater and surface water
			CO4	**CO4: Understand** the Physical, chemical, and biological processes involved in water treatment and distribution

CO1: Understand the global water cycle and its various processes

CO2: Understand climate change and their effects on water systems