

Department of Civil Engineering

Program Learning Outcomes (PLOs)

PLO1: Engineering knowledge and Skill: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PLO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PLO3: Design and development of solutions: Design solutions for complex civil engineering problems and design system components to meet the public health and safety, and the cultural, societal, and environmental considerations.

PLO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PLO5: The engineer and society: Apply reasoning informed by the contextual knowledge to assess various issues while abiding professional civil engineering codes.

PLO6: Ethics: Apply principles and professional ethics and follow civil engineering practice norms laid by the various governing bodies.

PLO7: Effective Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PLO8: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PLO9: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and provide engineering solutions for sustainable development of construction materials and structures.

PLO10: Modern tool usage: Use modern engineering and IT tools for modeling, designing and analyzing civil structures.

PLO11: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

PSO1: Is proficient in civil engineering profession or higher education by acquiring thorough knowledge in mathematical, computing and engineering concepts.

PSO2: Apply their knowledge and skills to real life problems thereby not only rendering safe and economical structures against natural calamities but also environmentally sustainable and useful to the society.

PSO3: Train and prepare them to exhibit professional attitude, ethical behaviour, and ability to communicate effectively with everyone and adapt to the latest developments and trends by engaging themselves in life-long learning.

SEMESTER – I

		L	T	P	C
21AS101	ENGINEERING MATHEMATICS-I	3	1	0	4
	Prerequisite				
	Nil				

CLO1: Apply the knowledge of calculus, Gamma & Beta functions for analyzing engineering problems.

CLO2: Solve first order differential equation analytically using standard method.

CLO3: Demonstrate various physical models through higher order differential equation and solve such linear ordinary differential equation.

CLO4: Obtain series solution of differential equation and explain application of Bessel's function

CLO5: Understand differentiation and integration of vectors with knowledge of Green's, Gauss divergence and Stoke's theorems.

		L	T	P	C
21AS102/202	ENGINEERING PHYSICS	3	1	0	4
	Prerequisite				
	Nil				

CLO1: The student is expected to be familiar with broader areas of Physics such as mechanics of solids, optics, mechanical and electromagnetic waves oscillations and their relevance in Engineering.

CLO2: An understanding of Physics also helps engineers understand the working and limitations of existing devices and techniques, which eventually leads to new innovations and improvements.

CLO3: The student would be able to learn the fundamental concepts on Quantum behavior of matter in its micro state.

CLO4: The course also helps the students to be exposed to the phenomena of electromagnetism and also to have exposure on semiconductor devices such as solar cell.

		L	T	P	C
21AS103/203	ENGINEERING CHEMISTRY	3	1	0	4
	Prerequisite				
	Nil				

CLO1: Understand to identify the quality of water and how to improve the quality of water.

CLO2: Rationalize bulk properties and processes using thermodynamic considerations.

CLO3: Get preliminary understanding on introductory idea about nano materials.

CLO4: Analyze the quantitative aspects of fuel combustion, spectroscopy and the mechanism of corrosion.

		L	T	P	C
21EE101/201	BASIC ELECTRICAL ENGINEERING	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Learn about transient analysis of RLC circuits with DC excitation.

CLO2: Realize the requirement of transformers in transmission and distribution of electric power and other applications.

CLO3: Develop an idea on Magnetic circuits, Electromagnetism

CLO4: Learn about measuring instruments, single phase and polyphase AC circuits

		L	T	P	C
21EC101/201	BASIC ELECTRONICS ENGINEERING	3	0	0	3
	Prerequisite				
	Nil				

CLO1: To learn the fundamental concepts of semiconductor devices

CLO2: An ability to apply the concept of diode in clipper and clamper circuits

CLO3: Acquire the skills of constructing the different transistors configurations

CLO4: To learn the basic concepts of integrated circuits

CLO5: To Compile the different building blocks in digital electronics using logic gates andimplement simple logic function using basic universal gates

CLO6: To acquire the knowledge of microprocessors.

		L	T	P	C
21ME101/201	BASIC MECHANICAL ENGINEERING	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Understand the concepts of thermodynamics.

CLO2: Apply principles of thermodynamics to real engineering problems.

CLO3: Understand the basics of powertrain applications.

CLO4: Grasp the elements of robotics.

CLO5: Understand the working principles of various measuring tools and devices.

		L	T	P	C
21CS101/201	FUNDAMENTALS OF COMPUTER & C PROGRAMMING	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Understand the fundamental concepts of computers, both hardware and software.

CLO2: Learn and understand the major system software's that help in developing of an application.

CLO3: Apply and analyse the basic programming constructs in context of C programminglanguage.

CLO4: Analyse and evaluate the derived datatypes (array) and the operations that can be performed on them, along with the concept of modularity through functions

CLO5: Create and manipulate a database or data storage through files.

CLO6: Develop a methodological way of problem solving.

CLO7: Learn a programming approach to solve problems.

		L	T	P	C
21HS101/201	COMMUNICATIVE ENGLISH	2	0	0	2
	Prerequisite				
	Nil				

CLO1: Learners will be able to write effectively using correct grammatical structures.

CLO2: Learners will be able to read and speak fluently in English.

CLO3: Learners will know the nuances of effective presentations.

CLO4: Learners will be able to engage in group discussions, debate, deliver speeches and suchothers.

CLO5: Learners will be able to write project reports, research papers, prepare MoM and agendas,and such other documents required to be created in any work place.

		L	T	P	C
21HS102/202	INDIAN POLITY & CONSTITUTION	2	0	0	2
	Prerequisite				
	Nil				

CLO1: Identify and explore basic concepts in the Constitution and understand their applicability & scope and the importance of the role of judiciary in ensuring checks and balances.

CLO2: Differentiate different aspects of Indian Legal System and its related bodies

CLO3: To appreciate the critical Interface between fundamental Rights and directive principles of state policy and apply the rationale to emerging issues and challenges.

CLO4: Know about the enforcement remedies available under the Constitution of India

CLO5: To apply Intellectual Property Law principles to real problems and analyse the social impact of Intellectual Property Law and Policy

CLO6: To apply the very dynamics of IP Law to the individuals, MNC's and other possible stakeholders.

		L	T	P	C
21BM101	Biomedical Engineering and Environmental Sciences	2	0	0	2
	Prerequisite				
	Nil				

CLO1: Improve biological concepts using an engineering approach.

CLO2: Explain the importance of measuring characteristics.

CLO3: Learn to understand the different biophysical signal measurement.

CLO4: Able to understand the interdependence of living organisms and environment

		L	T	P	C
21CE101	BASICS OF CIVIL ENGINEERING AND EARTH SCIENCES	2	0	0	2
	Prerequisite				
	Nil				

CLO1: understand about importance and role of Civil engineering.

CLO2: Identify and explore basic areas in civil engineering

CLO3: Know about Earth interior, Rocks & its types, and Earthquakes.

CLO4: learn about various construction materials

		L	T	P	C
21AS152/252	ENGINEERING PHYSICS LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Use the different measuring devices and meters to record the data with precision

CLO2: Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results

CLO3: Apply the mathematical concepts/equations to obtain quantitative results

		L	T	P	C
21AS153/253	ENGINEERING CHEMISTRY LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Understand the basic concepts of measurement techniques.

CLO2: The synthesis, dynamics, chemical transformation and their applications.

		L	T	P	C
21EE151/251	BASIC ELECTRICAL ENGINEERING LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Verify fundamental laws like Ohm's Law, KCL, KVL, etc.

CLO2: Understand the calibration of energy meter.

CLO3: Understand open circuit and short circuit test of single-phase transformer.

CLO4: Analyse RLC series and parallel circuits

		L	T	P	C
21EC151/251	BASIC ELECTRONICS ENGINEERING LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Measure voltage, frequency and phase of any waveform using CRO.

CLO2: Generate sine, square and triangular waveforms with required frequency and amplitude using function generator.

CLO3: Analyze the characteristics of different electronic devices such as diodes, transistors and operational amplifiers

CLO4: To develop skill to build and verify digital circuits

		L	T	P	C
21ME151/251	BASIC MECHANICAL ENGINEERING LAB	0	0	2	1
	Prerequisite				
	Nil				

COURSE LEARNING OUTCOMES (CLO)

CLO1: The working of thermal power plants.

CLO2: The working of 2 and 4 stroke IC engines.

CLO3: Different automobile parts, gears and gear trains.

CLO4: The working of Refrigeration and Air Conditioning cycles.

CLO5: The working principles of flow meters and U-tube manometers.

		L	T	P	C
21CS151/251	C PROGRAMMING LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Understand the Typical C Program Development Environment, compiling, debugging, Linking and executing.

CLO2: Introduction to C Programming using Control Statements and Repetition Statement

CLO3: Apply and practice logical formulations to solve some simple problems leading to specific applications.

CLO4: Design effectively the required programming components that efficiently solve computing problems in real world.

CLO5: Employ good programming practices such as incremental development, data integrity checking and adherence to style guidelines.

		L	T	P	C
21HS151/251	COMMUNICATIVE ENGLISH LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Learners will be able to write effectively using correct grammatical structures.

CLO2: Learners will be able to read and speak fluently in English.

CLO3: Learners will know the nuances of effective presentations.

CLO4: Learners will be able to engage in group discussions, debate, deliver speeches and such others.

CLO5: Learners will be able to write project reports, research papers, prepare MoM and agendas, and such other documents required to be created in any work place.

		L	T	P	C
21SSE251	NSS/NCC/PHYSICAL EDUCATION & YOGA	0	0	2	1
	Prerequisite				
	Nil				

		L	T	P	C
21ME152/252	MECHANICAL WORKSHOP LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Use different manufacturing (Fitting, carpentry, sheet metal, welding, smithy working etc.) processes required to manufacture a product from the raw materials.

CLO2: Use different measuring, marking, cutting tools used in the workshop.

CLO3: Be aware of the safety precautions while working in the workshop.

		L	T	P	C
21ME153/253	ENGINEERING GRAPHICS & DESIGN LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Understand orthographic projections of points and lines in any position through AutoCAD.

CLO2: Imagine and convert isometric view into orthographic projections and vice versa.

CLO3: Should be able to understand the simple machine components and draw its projections

SEMESTER – II

		L	T	P	C
21AS201	ENGINEERING MATHEMATICS-II	3	1	0	4
	Prerequisite				
	Nil				

CLO1: Develop the essential tool of matrices to compute inverse, eigenvalues and eigenvectors required for matrix diagonalization process.

CLO2: Apply Laplace transforms to find the solution of differential equations.

CLO3: Solve different problems with help of Fourier series.

CLO4: Know, analytic functions and conformal mapping of complex variables.

CLO5: Evaluate complex integration and residues.

		L	T	P	C
21AS102/202	ENGINEERING PHYSICS	3	1	0	4
	Prerequisite				
	Nil				

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CLO4: The course also helps the students to be exposed to the phenomena of electromagnetism and also to have exposure on semiconductor devices such as solar cell.

		L	T	P	C
21AS103/203	ENGINEERING CHEMISTRY	3	1	0	4
	Prerequisite				
	Nil				

CLO1: Understand to identify the quality of water and how to improve the quality of water.

CLO2: Rationalize bulk properties and processes using thermodynamic considerations.

CLO3: Get preliminary understanding on introductory idea about nano materials.

CLO4: Analyze the quantitative aspects of fuel combustion, spectroscopy and the mechanism of corrosion.

		L	T	P	C
21EE101/201	BASIC ELECTRICAL ENGINEERING	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Learn about transient analysis of RLC circuits with DC excitation.

CLO2: Realize the requirement of transformers in transmission and distribution of electric power and other applications.

CLO3: Develop an idea on Magnetic circuits, Electromagnetism

CLO4: Learn about measuring instruments, single phase and polyphase AC circuits

		L	T	P	C
21EC101/201	BASIC ELECTRONICS ENGINEERING	3	0	0	3
	Prerequisite				
	Nil				

CLO1: To learn the fundamental concepts of semiconductor devices

CLO2: An ability to apply the concept of diode in clipper and clamper circuits

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CLO6: To acquire the knowledge of microprocessors.

		L	T	P	C
21ME101/201	BASIC MECHANICAL ENGINEERING	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Understand the concepts of thermodynamics.

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CLO5: Understand the working principles of various measuring tools and devices.

		L	T	P	C
21CS101/201	FUNDAMENTALS OF COMPUTER & C PROGRAMMING	3	0	0	3
	Prerequisite				
	Nil				

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CLO7: Learn a programming approach to solve problems.

		L	T	P	C
21HS101/201	COMMUNICATIVE ENGLISH	2	0	0	2
	Prerequisite				
	Nil				

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CLO4: Learners will be able to engage in group discussions, debate, deliver speeches and such others.

CLO5: Learners will be able to write project reports, research papers, prepare MoM and agendas, and such other documents required to be created in any work place.

		L	T	P	C
21HS102/202	INDIAN POLITY & CONSTITUTION	2	0	0	2
	Prerequisite				
	Nil				

CLO1: Identify and explore basic concepts in the Constitution and understand their applicability & scope and the importance of the role of judiciary in ensuring checks and balances.

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CLO6: To apply the very dynamics of IP Law to the individuals, MNC's and other possible stakeholders.

		L	T	P	C
21BM201	Biomedical Engineering and Environmental Sciences	2	0	0	2
	Prerequisite				
	Nil				

CLO1: Improve biological concepts using an engineering approach.

CLO1: Explain the importance of measuring characteristics.

CLO1: Learn to understand the different biophysical signal measurement.

CLO1: Able to understand the interdependence of living organisms and environment

		L	T	P	C
21CE201	BASICS OF CIVIL ENGINEERING AND EARTH SCIENCES	2	0	0	2
	Prerequisite				
	Nil				

CLO1: Use the different measuring devices and meters to record the data with precision

CLO2: Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results

CLO3: Apply the mathematical concepts/equations to obtain quantitative results

		L	T	P	C
21AS153/253	ENGINEERING CHEMISTRY LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Understand the basic concepts of measurement techniques.

CLO2: The synthesis, dynamics, chemical transformation and their applications

		L	T	P	C
21EE151/251	BASIC ELECTRICAL ENGINEERING LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Verify fundamental laws like Ohm's Law, KCL, KVL, etc.

CLO2: Understand the calibration of energy meter.

CLO3: Understand open circuit and short circuit test of single-phase transformer.

CLO4: Analyse RLC series and parallel circuits

		L	T	P	C
21EC151/251	BASIC ELECTRONICS ENGINEERING LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Measure voltage, frequency and phase of any waveform using CRO.

CLO2: Generate sine, square and triangular waveforms with required frequency and amplitude using function generator.

CLO3: Analyze the characteristics of different electronic devices such as diodes, transistors and operational amplifiers

CLO4: To develop skill to build and verify digital circuits

		L	T	P	C
21ME151/251	BASIC MECHANICAL ENGINEERING LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: The working of thermal power plants.

CLO2: The working of 2 and 4 stroke IC engines.

CLO3: Different automobile parts, gears and gear trains.

CLO4: The working of Refrigeration and Air Conditioning cycles.

CLO5: The working principles of flow meters and U-tube manometers.

		L	T	P	C
21CS151/251	C PROGRAMMING LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Understand the Typical C Program Development Environment, compiling, debugging, Linking and executing.

CLO2: Introduction to C Programming using Control Statements and Repetition Statement

CLO3: Apply and practice logical formulations to solve some simple problems leading to specific applications.

CLO4: Design effectively the required programming components that efficiently solve computing problems in real world.

CLO5: Employ good programming practices such as incremental development, data integrity checking and adherence to style guidelines.

		L	T	P	C
21HS151/251	COMMUNICATIVE ENGLISH LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Learners will be able to write effectively using correct grammatical structures.

CLO2: Learners will be able to read and speak fluently in English.

CLO3: Learners will know the nuances of effective presentations.

CLO4: Learners will be able to engage in group discussions, debate, deliver speeches and such others.

CLO5: Learners will be able to write project reports, research papers, prepare MoM and agendas, and such other documents required to be created in any work place.

		L	T	P	C
21SE251	YOGA & PHYSICAL EDUCATION	0	0	2	1
	Prerequisite				
	Nil				

		L	T	P	C
21ME152/251	MECHANICAL WORKSHOP LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Use different manufacturing (Fitting, carpentry, sheet metal, welding, smithy working etc.) processes required to manufacture a product from the raw materials.

CLO2: Use different measuring, marking, cutting tools used in the workshop.

CLO3: Be aware of the safety precautions while working in the workshop.

		L	T	P	C
21ME153/253	ENGINEERING GRAPHICS & DESIGN LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Understand orthographic projections of points and lines in any position through AutoCAD.

CLO2: Imagine and convert isometric view into orthographic projections and vice versa.

CLO3: Should be able to understand the simple machine components and draw its projections

SEMESTER - III

		L	T	P	C
22CE301	STRUCTURAL ANALYSIS - I	3	1	0	4
	Prerequisite				
	Nil				

CLO1: Students will learn to draw SFD and BMD.

CLO2: Students will analyze the beam

CLO3: Students will learn evaluation of stresses by various methods

CLO4: Students will learn behaviour of column by various load condition.

CLO5: Students will learn behaviour of column by various load condition

		L	T	P	C
22CE302	SURVEYING - I	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Students will explain importance and basics of surveying

CLO2: Students will learn measurements by various methods.

CLO3: Students will use leveling and Tacheometer.

CLO4: Students will learn about Plane table surveying and curve setting.

CLO5: Students will measure Coordinates by satellite-based method.

22EC301	INSTRUMENTATION & SENSORS	L	T	P	C
		3	0	0	3
<i>Co-requisite</i>	None				
<i>Pre-requisite</i>	21EC101 / 21EC201				
<i>Data Books / Codes / Standards</i>					
<i>Course Category</i>	PC PROFESSIONAL CORE				
<i>Course designed by</i>	Department of Civil Engineering				
<i>Approval</i>					

CLO1: Summarize various performance characteristics of instruments and the quality of measurement.

CLO2: Interpret the type of transducer based on the transduction principles.

CLO3: Identify the relevant transducer for measurement of physical quantities.

CLO4: Discover the additional attributes in advanced sensors and their role in Civil Engineering.

		L	T	P	C
21CE304	FLUID MECHANICS	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Students will learn behavior and performance of fluid at rest and motion

CLO2: Students will learn about behavior of flowing fluid through pipe

CLO3: Students will learn about various devices used to measure fluid pressure

CLO4: Students will learn about various devices used to measure fluid velocity and discharge

CLO5: Students will understand dimensional analysis utilization

		L	T	P	C
21CE305	ENVIRONMENTAL ENGINEERING - I	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Students will learn about water sources and demand of water analysis

CLO2: Students will study characteristics of water

CLO3: Students will understand various schemes of water supply

CLO4: Students will design water treatment plant

CLO5: Students will learn about water conveyance and distribution networks

		L	T	P	C
21FLGR301	GERMAN LANGUAGE PHASE I	2	0	0	2
	Prerequisite				
	Nil				

CLO1: After completion of this student will be able to read and write short, simple texts.

CLO2: After completion of this student will have Fluency in reading and writing.

CLO3: After completion of this student will be able understand a dialogue between two native speakers and to take part in short, simple conversations using the skills acquired.

CLO4: student will able to know the culture of the countries where the German language is spoken.

CLO5: Developing pronunciation so that they can read the text and e-mail during their employment, instructing them to write their own CV and developing a fundamental conversation with any German national.

		L	T	P	C
22FLFR-1	FRENCH LANGUAGE PHASE I	2	0	0	2
	Prerequisite				
	Nil				

CLO1: After completion of this student will be able to read and write short, simple texts.

CLO2: After completion of this student will have Fluency in reading and writing.

CLO3: After completion of this student will be able understand a dialogue between two native speakers and to take part in short, simple conversations using the skills acquired.

CLO4: student will able to know the culture of the countries where the French language is spoken.

		L	T	P	C
21CE351	STRUCTURAL ANALYSIS LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Students will learn reciprocal and moment area theorem

CLO2: Students will analyze truss and curved member

CLO3: Students will investigate hinged arches

CLO4: Students will determine elastic properties of beam and truss

		L	T	P	C
21CE352	SURVEYING-I LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Students will use all type of survey instruments.

CLO2: Students will learn about field book and instrument adjustment

CLO3: Student will prepare map of small area

		L	T	P	C
21CE354	FLUID MECHANICS LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Students will learn about working principle and function of hydraulic equipment's

CLO2: Students will get hands on training on all type of hydraulic equipment.

CLO3: Students will learn to take observations while in operation.

CLO4: Students will learn to interpret the results

		L	T	P	C
22CE355	ENVIRONMENTAL ENGINEERING LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Students will analyze physical and chemical characteristics of waste water

CLO2: Students will estimate the organic strength of waste water

CLO3: Students will learn growth of microorganisms

		L	T	P	C
21CS201	Technical Training-I (Essentials of Block Chain & IoT)	0	0	1	1
	Prerequisite				
	Nil				

CLO1: Familiarise the functional/operational aspects of cryptocurrency ECOSYSTEM.

CLO2: Understand emerging abstract models for Block chain Technology.

CLO3: Identify major research challenges and technical gaps existing between theory and practice in cryptocurrency domain.

CLO4: To analyze various protocols of IoT.

CLO5: To design portable IoT using appropriate boards.

		L	T	P	C
21SS351	EFFECTIVE COMMUNICATION SKILLS	0	0	2	1
	Prerequisite				
	Nil				

After the completion of the training, the student will have ability:

CLO1: To communicate effectively and interact with people with confidence.

CLO2: To demonstrate and differentiate between various forms of communication.

CLO3: To apply effective communication skills confidently which a student needs to get ahead in job and life.

SEMESTER - IV

		L	T	P	C
21AS401	NUMERICAL METHODS	3	1	0	4
	Prerequisite				
	Nil				

CLO1: Find solutions by various numerical methods to get approximation solutions of algebraic and transcendental, simultaneous linear equations.

CLO2: Get interpolating values by different numerical methods.

CLO3: Do differentiation and integrations of tabular data.

CLO4: To find numerical solutions of ordinary and partial differential equations.

CLO5: Understand curve fitting and find largest and smallest eigen values according to use in applications.

		L	T	P	C
21CE401	STRUCTURAL ANALYSIS - II	3	1	0	4
	Prerequisite				
	21CE301				

CLO1: Students will analyze the structure using different displacement method

CLO2: Student will understand the behavior of structure under bending

CLO3: Students will draw the influence diagram of determinate and indeterminate structures.

CLO4: Students will analyze the different types of arches

		L	T	P	C
22CE402	DESIGN OF STEEL STRUCTURES	4	0	0	4
	Prerequisite				
	Nil				

CLO1: Students will design various types of connections

CLO2: Students will design tension member

CLO3: Students will design compression members

CLO4: Students will design various types of girders

CLO5: Students will design roof truss and purlin with various bearing conditions.

		L	T	P	C
21CE403	ADVANCED SURVEYING	3	0	0	3
	Prerequisite				
	21CE302				

CLO1: Students will explain principle of surveying on very large scale

CLO2: Students will learn different types of errors and adjustment in measurement

CLO3: Students will determine absolute positions of a point

CLO4: Students will learn setting out works and photogrammetry

CLO5: Students will learn concepts of remote sensing and GIS

		L	T	P	C
21CE404	SOIL MECHANICS	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Students will understand the concept of three phase system in soil

CLO2: Student will learn the role of water in soil and seepage system

CLO3: Student will learn about soil stress distribution and stress influence

CLO4: Students will learn soil parameters in drainage conditions

CLO5: Students will understand the mechanism of compaction and its effect

CLO6: Students will estimate the settlement of soil due to consolidation

		L	T	P	C
22CE405	ENVIRONMENTAL ENGINEERING -II	3	0	0	3
	Prerequisite				
	21CE305				

CLO1: To get basic knowledge of sewage collection and design of sewers

CLO2: To get basic knowledge of sewage composition and its characteristics

CLO3: Assess the contamination in the soil and to select suitable remediation methods based on contamination.

CLO4: Prepare the suitable disposal system for particular waste.

		L	T	P	C
21FLGR401	GERMAN LANGUAGE PHASE II	2	0	0	2
	Prerequisite				
	Nil				

CLO1: After completion of this student will be able to read and write short, simple texts.

CLO2: After completion of this student will have Fluency in reading and writing.

CLO3: After completion of this student will able to use language creatively and spontaneously.

CLO4: Students will get awareness of cross-cultural and intercultural difference.

		L	T	P	C
22FLFR-II	FRENCH LANGUAGE PHASE II	2	0	0	2
	Prerequisite				
	Nil				

CLO1: After completion of this student will be able to read and write short, simple texts.

CLO2: After completion of this student will have Fluency in reading and writing.

CLO3: After completion of this student will able to use language creatively and spontaneously.

CLO4: After completion of this student will able to know the culture of the countries where the French language is spoken.

		L	T	P	C
21CE453	SURVEYING - II LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Students will get training on theodolite of basic measurements

CLO2: Students will get hand on training on total station of basic measurements

CLO3: Students will plot a map of small area by total station with software

		L	T	P	C
21CE454	SOIL MECHANICS LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Students will estimate index properties of soil

CLO2: Students will get hands on training on consistency calculation

CLO3: Students will estimate shear strength of soil by various test

CLO4: Students will get hands on training on density test and permeability test

21CE455	COMPUTER AIDED DRAWING - I		L	T	P	C
			0	0	2	1
Co-requisite	None					
Pre-requisite	None					
Data Books / Codes / Standards						
Course Category	P/W	Practical / Workshop				
Course- designed by	Department of Civil Engineering					
Approval						

CLO1: Acquire Knowledge about Preparation of plan, elevation and sections of various types of buildings manually and using AutoCAD.

CLO2:Acquire Knowledge about Improve imagination and creative skills in planning, Designing and detailing various types of structural Elements

CLO3:Acquire Knowledge about Basic Knowledge about Analysis and Design of various structures by using STAAD Pro V8i/ ETABS

CLO4:Acquire Knowledge about Application of different building codes in the design of concrete and steel structures by using STAAD Pro V8i/ ETABS

		L	T	P	C
21CE457	LIVE PROJECT-I (STEEL STRUCTURES) & INDUSTRIAL VISITS	0	0	1	1
	Prerequisite				
	Nil				

CLO1: Students will explain the basics of Steel Structures.

CLO2: Students will learn about the method of erecting a steel structure.

CLO3: Students will describe about the precautions to be taken at the site of steel structures.

		L	T	P	C
21CS202	Technical Training-II (Artificial Intelligence and Machine Learning)	0	0	1	1
	Prerequisite				
	Nil				

CLO1: Describe basic AI algorithms (e.g., standard search algorithms or resolution).

CLO2: Identify problems that are amenable to solution by AI methods, and which AI methods may be suited to solving a given problem

CLO3: To identify potential application domains of machine learning in practice.

		L	T	P	C
21SS452	TEAMWORK & INTERPERSONAL SKILLS	0	0	2	1
	Prerequisite				
	Nil				

CLO1: To be confident working in a team and leading it as well.

CLO2: To categorize the work and achieve expected performance within the time frame & will be able to adapt himself to work under various kinds of stress and re-energize himself to bounce back from such situations.

CLO3: To get benefitted from Emotional Quotient in building stronger professional relationships and achieving career and personal goals.

CLO4: To face complex problems and effectively deal with it in the job due to Critical Thinking & Problem-Solving Skills.

SEMESTER V

		L	T	P	C
22CE501	DESIGN OF CONCRETE STRUCTURES - I	4	0	0	4
	Prerequisite				
	Nil				

CLO1: Students will learn various design philosophies

CLO2: Students will design a beam structure

CLO3: Students will design a slab structure

CLO4: Students will design short column, long column and footing

CLO5: Students will design footing and pile foundation

		L	T	P	C
22CE502	FOUNDATION ENGINEERING	3	1	0	4
	Prerequisite				
	21CE404				

CLO1: Student will be able to understand basic knowledge of the concept of Sub-Surface Exploration.

CLO2: Students will learn about shallow Foundation and its concepts

CLO3: Students will learn about the pile Foundation and its concepts

CLO4: Students will learn about Cassion Foundation

		L	T	P	C
21CE503	HYDROLOGY	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Students will explain scope and application of hydrology to engineering problems

CLO2: Students will learn types and measurement of precipitation

CLO3: Students will describe about measurement of evaporation and transpiration.

CLO4: Students will learn about measurement of runoff

CLO5: Students will understand about hydrograph.

		L	T	P	C
22CE504	TRANSPORTATION ENGINEERING - I	3	1	0	4
	Prerequisite				
	Nil				

CLO1: Students will Understand the concepts and standards adopted in Planning, alignment and surveys

CLO2: Students will Understand the concepts and standards adopted Design and construction of Highways

CLO3: Students will Understand the traffic characteristics, traffic control devices and principles of signal /intersection design

CLO4: Students will know about that the characteristics, properties and testing procedures of aggregate and bituminous materials

CLO5: Students will knowledge about bituminous mixes and their designs

		L	T	P	C
22CE552	FOUNDATION ENGINEERING LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Student will Know about the estimate index properties of soils

CLO2: Student will know about the estimate consolidation parameters of clayey soil.

CLO3: Student will know about the estimate shear strength parameters of soil by triaxial shear test.

CLO4: Student will Know about the estimate the relative density and maximum dry density of soils.

CLO5: Student will get knowledge about plate load test.

		L	T	P	C
22CE555	TRANSPORTATION ENGINEERING - I LAB	0	0	2	1
	Prerequisite				
	Nil				

CLO1: Student will get knowledge about the characterization of highway materials

CLO2: Student will familiar with testing of aggregate and bituminous materials

CLO3: Student will familiar with standard specifications

		L	T	P	C
21CE557	LIVE PROJECTS - II (SURVEY CAMP) & INDUSTRIAL VISITS	0	0	1	1
	Prerequisite				
	21CE453				

CLO1: Students will be able to establish RL.

CLO2: Students will be able to fix stations for Surveying.

CLO3: Students will be able to draw contours on the drawing sheet

		L	T	P	C
21CS301	Technical Training-III (Design Thinking and Augmented Virtual Reality)	0	0	1	1
	Prerequisite				
	NIL				

CLO1: Recognize the importance of DT

CLO2: Explain the phases in the DT process

CLO3: List the steps required to complete each phase in DT process

CLO4: Apply each phase in the DT process

CLO5: Prepare the student for participating in the production of highly integrative immersive applications

CLO6: To establish and cultivate a broad and comprehensive understanding of this rapidly evolving and commercially viable field of Computer Science

		L	T	P	C
21SS553	PRESENTATION & SPEAKING SKILLS	0	0	2	1
	Prerequisite				
	NIL				

CLO1: To be confident in presenting himself in front of audience.

CLO2: To become professional in his approach towards work culture.

CLO3: To enhance the level of communication skills while interacting with others.

SEMESTER-VI

		L	T	P	C
21CE601	STRUCTURAL ANALYSIS-III	3	1	0	4
	Prerequisite				
	21CE401				

CLO1: To familiar with Analysis indeterminate beams and plane frames with and without sway

CLO2: To know about the flexibility method of analysis

CLO3: To know about the stiffness method of analysis

CLO4: To know about the software of structural analysis

		L	T	P	C
22CE602	CONSTRUCTION MANAGEMENT	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Supervise and execute all the construction jobs with the knowledge of the different construction techniques.

CLO2: Identify the building defects and apply suitable repair techniques to rectify them

CLO3: Evaluate the costs of equipment and make proper selection of the suitable construction equipment

CLO4: Ensure the proper completion of a construction task using particular construction equipment

		L	T	P	C
22CE603	TRANSPORTATION ENGINEERING – II	3	1	0	4
	Prerequisite				
	21CE603				

CLO1: To familiar with Design of Flexible and Rigid Pavement

CLO2: To get knowledge about Highway construction: Non-Bituminous and bituminous pavements

CLO3: To get knowledge about highway maintenance, drainage and hill roads

CLO4: To get knowledge about highway economics, finance and tunnels

		L	T	P	C
21CE604	IRRIGATION ENGINEERING	3	0	0	3
	Prerequisite				
	Nil				

CLO1: To get knowledge types of irrigation

CLO2: Get an exposure about canal irrigation and land reclamation

CLO3: To get knowledge about canal and rivers

CLO4: To get knowledge canal head works and regulation works

22CE605	DESIGN OF CONCRETE STRUCTURES – II	L	T	P	C
		4	0	0	4
<i>Co-requisite</i>	None				
<i>Pre-requisite</i>	21CE402				
<i>Data Books / Codes / Standards</i>	IS 1343,1980, IS Code of Practice for Prestressed Concrete. IS 3370,1976(Part I to IV), Indian Standard Code of Practice for Liquid Retaining structures IS 456 - 2000, Indian Standard of Practice for Plain and Reinforced Concrete. IS 1893 - 4326 & 13920 Indian Standard code of practice for earthquake Resistant design of structures.				

<i>Course Category</i>	PC	PROFESSIONAL CORE
<i>Course designed by</i>	Department of Civil Engineering	
<i>Approval</i>		

CLO1: Students will know the design of Retaining wall

CLO2: Students will have adequate knowledge on flat slab

CLO3: Students Know the Water tanks

CLO4: Students will know the design of various staircases

CLO5: Students will know the concept of RC walls and Shear wall

		L	T	P	C
21BS101	MANAGEMENT AND ORGANISATIONAL BEHAVIOUR	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Understand the concept of management

CLO2: Learn about different management skills requirements for the corporate world.

CLO3: Demonstrate application of previous knowledge testing of Principles of Management in solving business problems.

CLO4: Understand the human behaviour and its contribution at work place

CLO5: Understand the competitiveness in businesses.

		L	T	P	C
22CE653	TRANSPORTATION ENGINEERING – II LAB	0	0	2	1
	Prerequisite				
	21CE603				

CLO1: To get knowledge about the characterization of highway materials

CLO2: Have enough knowledge about mix designs

CLO3: Have enough knowledge about modern equipment for traffic studies & pavement evaluation

CLO4: Understand the standard specifications of IS/IRC/MoRTH

		L	T	P	C
21CE657	LIVE PROJECTS – III (RCC STRUCTURES) & INDUSTRIAL VISITS	0	0	1	1
	Prerequisite				
	21CE402, 21CE501				

CLO1: Students will learn about the basics of RCC Structures.

CLO2: Students will learn about the method of erecting a RCC structure.

CLO3: Students will learn about the precautions to be taken at the site of a RCC structures.

		L	T	P	C
21CS302	Technical Training-IV (Big Data Analytics, Tools and Techniques)	0	0	1	1
	Prerequisite				
	NIL				

CLO1: To provide an overview of an exciting field of big data analytics.

CLO2: To introduce the tools required to manage and analyze big data like Hadoop, NoSQL MapReduce.

CLO3: To learn the fundamental techniques and principles in achieving big data analytics with scalability and streaming capability.

		L	T	P	C
21SS655	PROFESSIONAL WRITING SKILLS	0	0	2	1
	Prerequisite				
	NIL				

CLO1: To understand the importance of professional writing required in workplace.

CLO2: To explore different formats in resume, cover letters & other business-related letters.

CLO3: To develop knowledge, skills and understanding people in-group and individually.

CLO4: To apply communication strategies either in-group or one on one basis and will be confident to lead the discussion among them.

SEMESTER – VII

		L	T	P	C
22CE701	ESTIMATING AND COSTING	3	0	0	3
	Prerequisite				
	NIL				

CLO1: Students will forecast the approximate cost of the projects through preliminary and detailed estimates..

CLO2: Students will acquire Knowledge about the preparation of rate analysis for various items.

CLO3: Students will Acquire Knowledge about the Specification of materials and also various of Woks and buildings

CLO4: Students will prepare tender and contract document for a construction project

		L	T	P	C
21CE702	TEMPORARY STRUCTURES	3	0	0	3
	Prerequisite				
	NIL				

CLO1: Students will be familiar with temporary structures installations for construction projects.

CLO2: Students will have thorough understanding of Temporary structures in residential and commercial buildings.

CLO3: Students will Be familiar with Temporary structures in Dams, bridges and Tunnelling

		L	T	P	C
21CE751	MATERIAL TESTING LAB	0	0	2	1
	Prerequisite				
	NIL				

CLO1: Students will understand the properties of cement, concrete and its testing procedure

CLO2: Students will understand and carry out design mix as per BIS and ACI.

CLO3: Students will study and understand properties of fresh concrete.

CLO4: Students will carry out testing on concrete cube and cylinder.

CLO5: Students will carry out testing on concrete beam.

CLO6: Students will understand and perform NDT of concrete.

22CE752	COMPUTER AIDED DRAWING - II		L	T	P	C
			0	0	2	1
Co-requisite	None					
Pre-requisite	22CE455,22CE501,22CE605					
Data Books / Codes / Standards						
Course Category	P/W	Practical / Workshop				
Course- designed by	Department of Civil Engineering					
Approval						

CLO1: Acquire knowledge about Preparation of plan, elevation and sections of various types of RCC Structural Elements by using AutoCAD.

CLO2: Acquire knlowdge about Improve imagination and creative skills in Designing and detailing various types of

CLO3: RCC structural Elements by using AutoCAD.

Acquire knlowdge about Bar Bending & Scheduling of RCC structures by using Auto cadd

		L	T	P	C
21CE757	LIVE PROJECTS – IV (HIGHWAYS) & INDUSTRIAL VISITS	0	0	1	1
	Prerequisite				
	NIL				

CLO1: Students will have basic knowledge of Highway Construction

CLO2: Students will learn about the various construction practices followed at Highway Construction.

CLO3: Students will have in-depth knowledge of the precautions to be taken at the site of Highway.

		L	T	P	C
21CE759	MINOR PROJECT	0	0	8	4
	Prerequisite				
	NIL				

CLO1: Have concluded a small-scale research work related to field of their interest

		L	T	P	C
21CS401	Technical Training – V (DATA STRUCTURES USING C++)	0	0	2	1
	Prerequisite				
	NIL				

CLO1: Understand object-oriented programming and advanced C++ concepts.

CLO2: Be able to explain the difference between object-oriented programming and procedural programming.

CLO3: Be able to program using more advanced C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling, etc.

CLO4: To understand the basic concepts of data structure and their implementation through C++

CLO5: To impart the basic concepts of data structures and algorithms.

CLO6: To understand concepts about searching and sorting techniques

CLO7: To understand basic concepts about stacks, queues, lists.

		L	T	P	C
21SS756	INTERPERSONAL SKILLS: STRATEGIES	0	0	2	1
	Prerequisite				
	NIL				

CLO1: To develop knowledge, skills and understanding people in-group and individually.

CLO2: To learn to apply communication strategies either in-group or one on one basis and will be confident to lead the discussion among them.

SEMESTER – VIII

		L	T	P	C
21CE859	INDUSTRIAL TRAINING*/ PROJECT WORK	0	0	24	12
	Prerequisite				
	21CE757				

CLO1: Students will explain about the various requirements at the site.

CLO2: Students will learn about the safety requirements at the site.

CLO3: Students will understand about management of both material and human resource.

CLO4: Students will be competent in execution of a civil engineering site.

CLO5: Students will describe the concepts of research.

CLO6: Students will have a more research-oriented mindset.

CLO7: Students will be competent to carry out research in field of civil engineering.

PROFESSIONAL ELECTIVES

		L	T	P	C
21CEP01	STRUCTURAL DYNAMICS	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Explain the meaning of earthquake and seismology

CLO2: Understand the various degree of freedom system

CLO3: Learn the design aspect related to earthquake

CLO4: Understand about the seismic performance and repair of structures

CLO5: Study about various codes related to earthquake

		L	T	P	C
21CEP02	INTRODUCTION TO FINITE ELEMENT METHOD	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Develop shape functions and stiffness matrices for spring and bar elements

CLO2: Develop global stiffness matrices and global load vectors

CLO3: Apply natural and arial coordinate systems to constant strain triangle and linear strain triangle elements

CLO4: Analyze planar structural systems using finite element modelling

		L	T	P	C
21CEP03	ROCK MECHANICS	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Explain the problems associated with underground excavations

CLO2: Understand rock mass classification

CLO3: Explain about the failure criteria of rock

CLO4: understand about in-situ stresses from field test data

		L	T	P	C
21CEP04	GEOSYNTHETICS AND ITS APPLICATION	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Identify the type of geosynthetics and their relevance in geotechnical field.

CLO2: Understand the mechanism of formation of different geosynthetics.

CLO3: Analyse and compute different properties of geosynthetics.

CLO4: Apply the knowledge for designing the structures using Geosynthetic materials.

		L	T	P	C
21CEP05	POLLUTION CONTROL AND WASTE MANAGEMENT	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Describe environment, impact of various activities on environment, sustainable development, ecology and biodiversity conservation

CLO2: Explain air pollution, its effects and control methods

CLO3: learn noise pollution, its effects and control measures

CLO4: understand the sources, types and composition of municipal solid waste and the methods of solid waste disposal

		L	T	P	C
21CEP06	GROUND WATER ENGINEERING	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Study about ground water flow

CLO2: Explain about aquifers

CLO3: Describe about tube wells

CLO4: Understand about recharging of ground water

CLO5: Understand about salty water

		L	T	P	C
21CEP07	HEALTH MONITORING OF STRUCTURES	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Explain about Evaluation of Structure

CLO2: Investigate the material damage

CLO3: Understand about data interpretation

CLO4: Understand about assessment

CLO5: Explain various case studies

		L	T	P	C
21CEP08	EARTHQUAKE ANALYSIS AND DESIGN	3	0	0	3
	Prerequisite				
	Nil				

CLO1: Explain earthquake and seismology

CLO2: Design earthquake resistant building

CLO3: Understand effect of lateral loading on building

CLO4: Understand provision by BIS for earthquake resistance of a building

21CEP09	DISASTER MANAGEMENT	L	T	P	C
		3	0	0	3
<i>Co-requisite</i>	None				
<i>Pre-requisite</i>	None				

<i>Data Books / Codes / Standards</i>		
<i>Course Category</i>	PE	PROFESSIONAL ELECTIVE
<i>Course designed by</i>	Department of Civil Engineering	
<i>Approval</i>		

CLO1: Knowledge of the significance of disaster management

CLO2: Analyze the occurrences, reasons and mechanism of various types of natural disaster

CLO3: Analyze the occurrences, reasons and mechanism of various types of man-made disaster

CLO4: Understand the preventive measures as Civil Engineer with latest codal provisions

21CEP10	ADVANCED CONCRETE TECHNOLOGY		L	T	P	C
			3	0	0	3
Co-requisite	None					
Pre-requisite	None					
Data Books / Codes / Standards						
Course Category	PE	PROFESSIONAL ELECTIVE				
Course designed by	Department of Civil Engineering					
Approval						

CLO1: Test of all the concrete materials as per IS code.

CLO2: Design the concrete mix using ACI and IS code methods.

CLO3: Determine of the properties of fresh and hardened of concrete.

CLO4: Design special concretes and their specific applications.

CLO5: Ensure quality control while testing/ sampling and acceptance criteria.

21CEP11	BRIDGE ENGINEERING		L	T	P	C
			3	0	0	3
Co-requisite	None					
Pre-requisite	None					
Data Books / Codes / Standards						
Course Category	PE	PROFESSIONAL ELECTIVE				
Course designed by	Department of Civil Engineering					
Approval						

CLO1: Design the slab culvert, Box culvert

CLO2: Design the T beam bridge and substructures

CLO3: Design the Bridge bearings

CLO4: Design the steel bridge for railways

21CEP12	OPEN CHANNEL HYDRAULICS		L	T	P	C
			3	0	0	3
Co-requisite	None					
Pre-requisite	None					
Data Books / Codes / Standards						
Course Category	PE	PROFESSIONAL ELECTIVE				
Course designed by	Department of Civil Engineering					
Approval						

CLO1: Explain the flow and its types.

CLO2: Understand the various channels and effect of depth

CLO3: Understand the flow in various kind of channels

CLO4: Understand about various elements of hydraulic structures

21CEP13	GEOTECHNICAL ENGINEERING		L	T	P	C
			3	0	0	3
Co-requisite	None					
Pre-requisite	21CE502					
Data Books / Codes / Standards						
Course Category	PE	PROFESSIONAL ELECTIVE				
Course designed by	Department of Civil Engineering					
Approval						

CLO1: Familiar with concept of earth dam design

CLO2: including stability analysis under seepage

CLO3: To get knowledge about stability of slopes under different drainage conditions using different methods

CLO4: To get knowledge about design principles of retaining structures and coffer dams

CLO5: To get knowledge about the concept of soil stabilization

CLO6: To get knowledge about dynamic load in machine foundation analysis

21CEP14	RAILWAY AND AIRPORT ENGINEERING		L	T	P	C
			3	0	0	3
Co-requisite	None					
Pre-requisite	None					
Data Books / Codes / Standards						
Course Category	PE	PROFESSIONAL ELECTIVE				
Course designed by	Department of Civil Engineering					
Approval						

CLO1: Gain Engineering knowledge of the subject and apply it for the solution of problems related to railway and airport engineering.

CLO2: Design points and crossings, design runway pavements, make investigations, use modern tools and develop solutions to problems related to railway / airport engg.

CLO3: Understand the engineering solutions in societal context for sustainable development that takes care of environment and optimal use of resources.

CLO4: Understand the norms of engineering practice and the need for life-long learning as per their exposure to relevant latest IS/RDSO/FAA/ICAO specifications.

		L	T	P	C
21CEP17	SOFTWARE ELECTIVE – III (ETABS)	1	0	4	3
	Prerequisite				
	Nil				

CLO1: Study about Introduction to the use of Etabs.

CLO2: Understand about graphical interface Basic modeling- element types – meshing- AutomaticLine Constraint

CLO3: Learn about Analysis for wind and earthquake analysis, including the response spectra analysis

CLO4: Understand about Concrete Design Steel design with optimization

CLO5: Understand about Construction sequence loading including time dependent material properties

		L	T	P	C
21CE457	LIVE PROJECTS – I (STEEL STRUCTURES) & INDUSTRIAL VISITS	0	0	1	1
	Prerequisite				
	21CE303				

CLO1: Students will basic knowledge of Steel Structures.

CLO2: Students will learn about the methodology of erecting a steel structure.

CLO3: Students will have in-depth knowledge about the precautions to be taken at the site of a steel structures.

		L	T	P	C
21CE557	LIVE PROJECTS – II (SURVEY CAMP) & INDUSTRIAL VISITS	0	0	1	1
	Prerequisite				
	21CE403				

CLO1: Students will be able to establish RL.

CLO2: Students will be able to fix stations for Surveying.

CLO3: Students will be able to draw contours on the drawing sheet

		L	T	P	C
21CE657	LIVE PROJECTS – III (RCC STRUCTURES) & INDUSTRIAL VISITS	0	0	1	1
	Prerequisite				
	21CE501				

CLO1: Students will have basic knowledge of RCC Structures.

CLO2: Students will learn about the method of erecting a RCC structure.

CLO3: Students will have in-depth knowledge about the precautions to be taken at the site of a RCC structures.

		L	T	P	C
21CE757	LIVE PROJECTS – IV (HIGHWAY) & INDUSTRIAL VISITS	0	0	1	1
	Prerequisite				
	21CE603				

CLO1: Students will have basic knowledge of Highway Construction.

CLO2: Students will learn about the various construction practices followed at Highway Construction.

CLO3: Students will have in-depth knowledge of the precautions to be taken at the site of Highway.