DEPARTMENT OF CIVIL ENGINEERING

COURSE OUTCOMES

2020-2024 BATCH

SEMESTER 1 AND SEMESTER 2

Course Name: MAT 101 LINEAR ALGEBRA AND CALCULUS

Sl.No	DESCRIPTION
MAT101.1	solve systems of linear equations, diagonalize matrices and characterise quadratic forms
MAT101.2	compute the partial and total derivatives and maxima and minima of multivariable functions
MAT101.3	compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminas
MAT101.4	perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent
MAT101.5	determine the Taylor and Fourier series expansion of functions and learn their applications

Course Name: PHT 100 ENGINEERING PHYSICS A

Sl.No	DESCRIPTION
PHT100.1	Compute the quantitative aspects of waves and oscillations in engineering systems
PHT100.2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments
PHT100.3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.

PHT100.4	Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems
PHT100.5	Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system

Course Name: CYT 100 ENGINEERING CHEMISTRY

Sl.No	DESCRIPTION
CYT100.1	Apply their knowledge for protection of different metals from corrosion. To prevent the monuments from getting corroded,recent trends in electrochemical energy storage devices.
CYT100.2	Learn how to use different spectroscopy techniques for analysis purpose of simple molecules.
CYT100.3	Design economically and new methods of synthesis nano materials.
CYT100.4	Substitute metals with conducting polymers and also produce cheaper biodegradable polymers to reduce environmental pollution.
CYT100.5	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.

Course Name: EST 100 ENGINEERING MECHANICS

Sl.No	DESCRIPTION
EST100.1	Recall principles and theorems related to rigid body mechanics
EST100.2	Identify and describe the components of system of forces acting on the rigid body
EST100.3	Apply the conditions of equilibrium to various practical problems involving different force system
EST100.4	Choose appropriate theorems, principles or formulae to solve problems of mechanics
EST100.5	Solve problems involving rigid bodies, applying the properties of distributed areas and masses

Course Name: EST 110 ENGINEERING GRAPHICS

Sl.No	DESCRIPTION
EST 110.1	Draw the projection of points and lines located in different quadrants
EST 110.2	Prepare multi-view orthographic projections of objects by visualizing them in different positions
EST 110.3	Draw sectional views and develop surfaces of a given object
EST 110.4	Prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions.
EST 110.5	Convert 3D views to orthographic views, Obtain multiview projections and solid models of objects using CAD tools

Course Name: EST 120 BASIC CIVIL AND MECHANICAL ENGINEERING

Sl.No	DESCRIPTION
EST120.1	Recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering.
EST120.2	Explain different types of buildings, building components, building materials and building construction
EST120.3	Describe the importance, objectives and principles of surveying.
EST120.4	Summarise the basic infrastructure services MEP,HVAC, elevators, escalators and ramps
EST120.5	Discuss the Materials, energy systems, water management and environment for green buildings.

Course Name: EST 130 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

Sl.No	DESCRIPTION
EST 130.1	The students will be able to apply fundamental concepts and circuit laws to solve simple DC electric circuits
EST 130.2	The students will be able to develop and solve models of magnetic circuits
EST 130.3	The students will be able to apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state
EST 130.4	The students will be able to describe working of a voltage amplifier

EST 130.5	The students will be able to outline the principle of an electronic instrumentation system. The students will be able to explain the principle of radio and cellular communication

Course Name: HUN 101 LIFESKILLS

Sl.No	DESCRIPTION
HUN101.1	Define and Identify different life skills required in personal and professional life
HUN101.2	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.
HUN101.3	Explain the basic mechanics of effective communication and demonstrate these through presentations.
HUN101.4	Explain the basic mechanics of effective communication and demonstrate these through presentations.
HUN101.5	Understand the basics of teamwork and leadership

Course Name: PHL 120 ENGINEERING PHYSICS LAB

Sl.No	DESCRIPTION
PHL120.1	Compute the quantitative aspects of waves and oscillations in engineering systems
PHL120.2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments
PHL120.3	Apply the concept of polarization to understand the wave nature of light and the metod of analyzing the light whether it is polarized or not.Explain types of superconductivity and their applications
PHL120.4	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices
PHL120.5	Compute the quantitative aspects of waves and oscillations in engineering systems

Course Name: CYL 120 ENGINEERING CHEMISTRY LAB

Sl.No	DESCRIPTION

CYL 120.1	Understand the practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analysis.
CYL 120.2	Develop skills relevant to synthesis organic polymers and acquire the practical skills to use TLC for the identification of drugs.
CYL 120.3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysiing and interpreting the IR spectra of somer organic compounds
CYL 120.4	Aquire the ability to understand, explain and use instrumental techniques for chemical analysis.
CYL 120.5	Learn to design and carry out scientific experiments as well as accurately record and analyse the result of such experiment. Also understand how chemistry addresses ,economical and experimental problems and why it is an integral part of curriculum.

Course Name: ESL120 CIVIL & MECHANICAL WORKSHOP

Sl.No	DESCRIPTION
ESL120.1	Name different devices and tools used for civil engineering measurements
ESL120.2	Explain the use of various tools and devices for various field measurements
ESL120.3	Demonstrate the steps involved in civil engineering activities like plot measurement, seting out operation, evaluating the natural profile of land, plumbing and undertasking simple construction work
ESL120.4	Choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing.
ESL120.5	Compare different techniques and devices used in civil engineering measurements

Course Name: ESL 130 BASIC ELECTRICAL AND ELECTRONICS WORKSHOP

Sl.No	DESCRIPTION
ESL130.1	Demonstrate safety measures against electric shocks
ESL130.2	identify the tools used for electrical wiring ,electrical accessories, wires, cables, batteries and standard symbols
ESL130.3	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings.

ESL130.4	Identify and test various electronic components. Assemble and test electronic circuits on boards
ESL130.5	Draw circuit schematics with EDA tools a team with good interpersonal skills

Course Name: MAT 102 VECTOR CALCULUS DIFFERENTIAL EQUATIONS TRANSFORMS

Sl.No	DESCRIPTION
MAT 102.1	Compute the derivatives and line integrals of vector functions and learn their applications
MAT 102.2	Evaluate surface and volume integrals and learn their inter-relations and applications
MAT 102.3	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients
MAT 102.4	Compute Laplace transform and apply them to solve ODEs arising in engineering
MAT 102.5	Determine the Fourier transforms of functions and apply them to solve problems arising in engineering

Course Name: HUN 102 PROFESSIONAL COMMUNICATION

Sl.No	DESCRIPTION
HUN 102.1	Understand the role of communication in personal & professional success
HUN 102.2	Understand the role of communication in personal & professional success
HUN 102.3	Prepare and present messages with a specific intent.
HUN 102.4	Analyze a variety of communication acts.
HUN 102.5	Ethically use, document and integrate sources

Course Name: EST 102 PROGRAMMING IN C

Sl.No	DESCRIPTION
E102.1	Analyze a computational problem and develop an algorithm/flowchart to find its solution.
E102.2	Develop readable C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.

E102.3	Write readable C programs with arrays, structure or union for storing the data to be processed
E102.4	Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required,to find the solution to the computational problem
E102.5	Write readable C programs which use pointers for array processing and parameter passing, develop readable C programs with files for reading input and storing output.

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SEMESTER 3

CET203 FLUIDMECHANICS AND HYDRAULICS

C203.1	Recall the relevant principles of hydrostatics and hydraulics of pipes and open channels
C203.2	Identify or describe the type, characteristics or properties of fluid flow
C203.3	Estimate the fluid pressure, perform the stability check of bodies under hydrostatic condition
C203.4	Compute discharge through pipes or estimate the forces on pipe bends by applying hydraulic principles of continuity, energy and/or momentum
C203.5	Analyze or compute the flow through open channels, perform the design of prismatic channels

COURSE CODE: **CET205**	**COURSE NAME:** **SURVEYING & GEOMATICS**	**SEMESTER: 3**

CET205.1	To apply surveying techniques and principles of levelling for the preparation of contour maps
CET205.2	To apply principles of levelling with its various types of levelling to calculate the level difference between two points
CET205.3	To calculate the area and volume, illustrate theodolite, its components and sketching mass diagram and to explain the triangulation principles to analyze the inter-visibility of sttaions
CET205.4	To identify the possible errors in surveying and apply different methods of traverse surveying and traverse balancing
CET205.5	Apply the basic knowledge of setting out different types of curves and to understand modern methods and equipments of surveying
CET205.6	Employ surveying techniques using advanced surveying equipments and understand the concepts of GPS, GIS and Remote Sensing

COURSE CODE: HUT 200	COURSE NAME: PROFESSIONAL ETHICS	SEMESTER: 3

HUT200.1	Understand the core values that shape the ethical behaviour of a professional.
HUT200.2	Adopt a good character and follow an ethical life
HUT200.3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics
HUT200.4	Solve moral and ethical problems through exploration and assessment by established experiments.
HUT200.5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.

COURSE CODE: MCN201	COURSE NAME: SUSTAINABLE ENGINEERING	SEMESTER: 3

MCN201.1	Understand the relevance and the concept of sustainability and the global initiatives in this direction
MCN201.2	Explain the different types of environmental pollution problems and their sustainable solutions
MCN201.3	Discuss the environmental regulations and standards
MCN201.4	Outline the concepts related to conventional and non-conventional energy
MCN201.5	Demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles

COURSE CODE: CEL203	COURSE NAME: SURVEY LAB	SEMESTER: 3

CEL203.1	Use conventional surveying tools such as chain/tape and compass for plotting and area determination.
CEL203.2	Apply levelling principles in field
CEL203.3	Solve triangulation problems using theodolite
CEL203.4	Employ total station for field surveying
CE2L03.5	Demonstrate the use of distomat and handheld GPS

CEL 201 CIVIL ENGINEERING PLANNING AND DRAFTING LAB

CEL201.1	Illustrate ability to organize civil engineering drawings systematically and professionally
CEL201.2	Prepare building drawings as per the specified guidelines
CEL201.3	Assess a complete building drawing to include all necessary information
CEL201.4	Create a digital form of the building plan using any drafting software

MAT201 : PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS

CO 1	Understand the concept and the solution of partial differential equation
CO 2	Analyze and solve one dimensional wave equation and heat equation.
CO 3	Understand complex functions, its continuity differentiability with the use of Cauchy Riemann equations.
CO 4	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula, and understand the series expansion of analytic function.

CO 5	Understand the series expansion of complex functions about a singularity and Apply residue theorem to compute several kinds of real integrals.

CET 201 MECHANICS OF SOLIDS

CET201.1	Understand the fundamental terms and theorems associated with mechanics of linear elastic deformable bodies.
CET201.2	calculate internal stresses/strains, stress resultants in structural elements subjected to axial load
CET201.3	Calculate stresses due to temperature, instantaneous loads in axially loaded bar and stresses in thin shells.
CET201.4	Calculate the internal forces in members subjected to transverse loads and plot their distributions.
CET201.5	Compute the stresses of members subjected to transverse loads.
CET201.6	Perform stress transformations, compute buckling load of columns and calculate the internal stresses of a circular shaft subjected to torsion.

SEMESTER 4

EST 200 DESIGN AND ENGINEERING

EST200.1	Explain the different concepts and principles involved in design engineering.
EST200.2	Apply design thinking while learning and practicing engineering.
EST200.3	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.

CET202 ENGINEERING GEOLOGY

CET 202.1	Recall the fundamental concepts of surface processes, subsurface process, minerals, rocks, groundwater and geological factors in civil engineering constructions
CET 202.2	Identify and describe the surface processes, subsurface process, earth materials, groundwater and geological factors in civil engineering constructions
CET 202.3	Apply the basic concepts of surface and subsurface processes, minerals, rocks, groundwater and geological characteristics in civil engineering constructions
CET 202.4	Analyze and classify geological processes, earth materials and groundwater
CET 202.5	Evaluation of geological factors in civil engineering constructions

CEL202.1	Understand the behaviour of Engineering Materials under various forms and stages of loading

CEL202.2	Characterize the elastic properties of various materials
CEL202.3	Evaluate the strength and stiffness properties of engineering materials under various loading conditions.

CET204 GEOTECHNICAL ENGINEERING I

CET204.1	Explain the fundamental concepts of basic and engineering properties of soil
CET204.2	Describe the laboratory testing methods for determining soil parameters
CET204.3	Solve the basic properties of soil by applying functional relationships
CET204.4	Calculate the engineering properties of soil by applying the laboratory test results and the fundamental concepts of soil mechanics
CET204.5	Analyze the soil properties to identify and classify the soil

CEL 204 FLUIDMECHANICS LAB

CO 1	Apply fundamental knowledge of Fluid Mechanics to corresponding experiments
CO 2	Apply theoretical concepts in Fluid Mechanics to respective experiments
CO 3	Analyse experimental data and interpret the results
CO 4	Document the experimentation in prescribed manner

CET 206 TRANSPORTATION ENGINEERING

CET206.1	Apply the basic principles of Highway planning and design highway geometric elements
CET206.2	Apply standard code specifications in judging the quality of highway materials, designing mixes and pavements
CET206.3	Explain phenomena in road traffic by collection, analysis and interpretation of traffic data through surveys, creative design of traffic control facilities
CET206.4	Understand about railway systems, tunnels, harbor and docks
CET206.5	Express basics of airport engineering and design airport elements

MCN 202 CONSTITUTION OF INDIA

MCN202.1	Explain the background of the Constitution of India and features
MCN202.2	Understand the fundamental rights and duties
MCN202.3	Understand the working of the Union executive, legislature and judiciary
MCN202.4	Understand the working of the state executive, legislature and judiciary
MCN202.5	Understand the special provisions and statutory institutions
MCN202.6	Show national and patriotic spirit as responsible citizen of the country.

SEMESTER 5

CET301 STRUCTURAL ANALYSIS I

CET301.1	Apply the principles of solid mechanics to analyse trusses.
CET301.2	Apply various methods to determine deflections in statically determinate structures.
CET301.3	Identify the problemswith static indeterminacy and tackling such problems by means of the method of consistent deformations and energy principles.
CET301.4	Apply specific methods such as slope deflection and moment distribution methods of structural analysis for typical structures with different characteristics.
CET301.5	Apply suitable methods of analysis for various types of structures including cables, suspension bridges and arches.
CET301.6	Analyse the effects of moving loads on structures using influence lines.

CEL331 MATERIAL TESTING LAB II

CEL331.1	To describe the basic properties of various construction materials
CEL331.2	Characterize the physical and mechanical properties of various construction materials.
CEL331.3	Interpret the quality of various construction materials as per IS Codal provisions.

CEL333 GEOTECHNICAL ENGINEERING LAB

CEL333.1	Identify and classify soil based on standard geotechnical experimental methods.
CEL333.2	Perform and analyze permeability tests.
CEL333.3	Interpret engineering behavior of soils based on test results
CEL333.4	Perform laboratory compaction, CBR and in-place density test for fill quality control in the field.
CEL333.5	Evaluate the strength of soil by performing various tests viz. direct shear test, unconfined compressive strength test and triaxial shear test.
CEL333.6	Evaluate settlement characteristics of soils.

CET305 GEOTECHNICAL ENGINEERING II

CET305.1	Understand soil exploration methods
CET305.2	Explain the basic concepts, theories and methods of analysis in foundation engineering
CET305.3	Calculate bearing capacity, pile capacity, foundation settlement and earth pressure
CET305.4	Analyze shallow and deep foundations
CET305.5	Solve the field problems related to geotechnical engineering

CET 303 DESIGN OF CONCRETE STRUCTURES

CET303.1	Recall the fundamental concepts of limit state design and code provisions for design of concrete members under bending, shear, compression and torsion.
CET303.2	Analyse reinforced concrete sections to determine the ultimate capacity in bending, shear and compression.
CET303.3	Design and detail beams, slab, stairs and footings using IS code provisions.
CET303.4	Design and detail columns using IS code and SP 16 design charts
CET303.5	Explain the criteria for earthquake resistant design of structures and ductile detailing of concrete structures subjected to seismic forces.

CET307 HYDROLOGY AND WATER RESOURSE ENGINEERING

CET307.1	Describe and estimate the different components of hydrologic cycle by processing hydro-meteorological data.
CET307.2	Determine the crop water requirements for the design of irrigation canals by recollecting the principles of irrigation engineering.
CET307.3	Perform the estimation of streamflow and/or describe the river behavior and control structures.
CET307.4	Describe and apply the principles of reservoir engineering to estimate the capacity of reservoirs and their useful life.
CET307.5	Demonstrate the principles of groundwater engineering and apply them for computing the yield of aquifers and wells.

MCN 301 DISSTERMANAGEMENT

MCN301.1	Define and use various terminologies in use in disaster management parlance and organize each of these terms in relation to the disaster management cycle
MCN301.2	Distinguish between different hazard types and vulnerability types and do vulnerability assessment
MCN301.3	Identify the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk.
MCN301.4	Explain the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sector and community.
MCN301.5	Identify factors that determine the nature of disaster response and discuss the various disaster response actions
MCN301.6	Explain the various legislations and best practices for disaster management and risk reduction at national and international level.

CET 309 CONSTRUCTION TECHNOLOGY AND MANAGEMENT

CET 309.1	Describe the properties of materials used in construction
CET 309.2	Explain the properties of concrete and its determination
CET 309.3	Describe the various elements of building construction

CET 309.4	Explain the technologies for construction
CET 309.5	Describe the procedure for planning and executing public works
CET 309.6	Apply scheduling techniques in project planning and control

SEMESTER 6

HUT300 **:** INDUSTRIAL ECONOMICS AND FOREIGN TRADE

CO 1	Explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare.
CO 2	Take appropriate decisions regarding volume of output and to evaluate the social cost of production
CO 3	Determine the functional requirement of a firm under various competitive conditions
CO 4	Examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society
CO 5	Determine the impact of changes in global economic policies on the business opportunities of a firm

CET306 DESIGN OF HYDRAULIC STRUTURES

CET306.1	Elucidate the causes of failure, principles of design of different components of hydraulic structures
CET306.2	Describe the features of canal structures and perform the design of alluvial canals
CET306.3	Perform the hydraulic design of minor irrigation structures such as cross drainage works, canal falls, cross regulator
CET306.4	Prepare the scaled drawings of different minor irrigation structures
CET306.5	Describe the design principles and features of dams and perform the stability analysis of gravity dams

CET 308 COMPRHENSIVE COURE WORK

CET308.1	Learn to prepare for a competitive examination
CET308.2	Comprehend the questions in Civil Engineering field and answer them with confidence.
CET308.3	Communicate effectively with faculty in scholarly environments.
CET308.4	Analyze the comprehensive knowledge gained in basic courses in the field of Civil Engineering

CEL 332 TRANSPORTATION ENGINEERING LAB

CEL332.1	Analyse the suitability of soil as a pavement subgrade material
CEL332.1	Assess the suitability of aggregates as a pavement construction material
CEL332.1	Characterize bitumen based on it's properties so as to recommend it as a pavement construction material
CEL332.1	Design Bituminous mixes for pavement layers
CEL332.1	Assess functional adequacy of pavements based on roughness of pavement surface.

CET362 ENVIORONMENTAL IMPACT ASSESMENT

CET362.1	To appreciate the need for minimizing the environmental impacts of developmental activities
CET362.2	To understand environmental legislation & clearance procedure in the country
CET362.3	To apply various methodologies for assessing the environmental impacts of any developmental activity

CET362.4	To prepare an environmental impact assessment report
CET362.5	To conduct an environmental audit

CET304 ENVIRONMENTAL ENGINEERING

CET304.1	To appreciate the role of environmental engineering in improving the quality of environment
CET304.2	To plan for collection and conveyance of water and waste water
CET304.3	To enhance natural water purification processes in an engineered environment
CET304.4	To decide on appropriate technology for water and waste water treatment

CET302 STRUCTURAL ANALYSIS II

CET302.1	Understand the principles of plastic theory and its applications in structural analysis.
CET302.2	Examine the type of structure and decide on the method of analysis.
CET302.3	Apply approximate methods of analysis for framed structures to ascertain stress resultants approximately but quickly.
CET302.4	Apply the force method to analyse framed structures.
CET302.5	Apply the displacement methods to analyse framed structures
CET302.6	Remember basic dynamics, understand the basic principles of structural dynamics and apply the same to simple structures

CEL 334 CIVIL ENGINEERING SOFTWARE LAB

CEL334.1	To undertake analysis and design of multi-storeyed framed structure, schedule a given set of project activities using a software.

CEL334.2	To prepare design details of different structural components, implementation plan for a project.
CEL334.3	To prepare a technical document on engineering activities like surveying , structural design and project planning.

SEMESTER 7

CET 401 DESIGN OF STEEL STRUCTURES

CET401.1	Explain the behavior and properties of structural steel members to resist various structural forces and actions and apply the relevant codes of practice
CET401.2	Analyses the behavior of structural steel members and undertake design at both serviceability and ultimate limit states
CET401.3	Explain the theoretical and practical aspects of Design of composite Steel Structure along with the planning and design aspects
CET401.4	Apply a diverse knowledge of Design of Steel engineering practices applied to real life problems
CET401.5	Demonstrate experience in the implementation of design of structures on engineering concepts which are applied in field Structural Engineering

CEL411 ENVIRONMENTAL ENGINEERING LAB

CEL411.1	Analyse various physico- chemical and biological parametres of water
CEL411.2	Compare the quality of water with drinking water standards and recommend its suitability for drinking purposes.

CET 432 GROUND IMPROVEMENT TECHNIQUE

CET423.1	Classify different ground improvement methods based on the soil suitability
CET423.2	Outline the basic concept/ design aspects of various ground improvement methods
CET423.3	Identify the construction procedure of different ground improvement methods
CET423.4	Choose different application of geosynthetics and soil stabilisation in ground improvement

CEQ413 SEMINAR

CO1	Identify academic documents from the literature which are related to her/his areas of interest (Cognitive knowledge level: Apply).
CO2	Read and apprehend an academic document from the literature which is related to her/ his areas of interest (Cognitive knowledge level: Analyze).
CO3	Prepare a presentation about an academic document (Cognitive knowledge level: Create).
CO4	Give a presentation about an academic document (Cognitive knowledge level: Apply).
CO5	Prepare a technical report (Cognitive knowledge level: Create).

MCN401 INDUSTRY SAFETY ENGINEERING

CO 1	Describe the theories of accident causation and preventive measures of industrial accidents. (Cognitive Knowledge level: Understand)
CO 2	Explain about personal protective equipment, its selection, safety performance & indicators and importance of housekeeping. (Cognitive Knowledge level: Understand)
CO 3	Explain different issues in construction industries. (Cognitive Knowledge level: Understand)
CO 4	Describe various hazards associated with different machines and mechanical material handling. (Cognitive Knowledge level: Understand)

CO 5	Utilise different hazard identification tools in different industries with the knowledge of different types of chemical hazards. (Cognitive Knowledge level: Apply)

CED415 PROJECT PHASE I

CO1	Model and solve real world problems by applying knowledge across domains (Cognitive knowledge level: **Apply**).
CO2	Develop products, processes or technologies for sustainable and socially relevant applications (Cognitive knowledge level: **Apply**).
CO3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks (Cognitive knowledge level: **Apply**).
CO4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms (Cognitive knowledge level: **Apply**).
CO5	Identify technology/research gaps and propose innovative/creative solutions (Cognitive knowledge level: **Analyze**).
CO6	Organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: **Apply**).

SEMESTER8

CET404 COMPREHENSIVE COURSE VIVA

CET404 .1	The student will acquire basic knowledge in the core courses in the curriculum and be confident in placement tests and other competitive examinations

CED 416 PROJECT PHASE II

CO1	Model and solve real world problems by applying knowledge across domains (Cognitive knowledge level: **Apply**).
CO2	Develop products, processes or technologies for sustainable and socially relevant applications (Cognitive knowledge level: **Apply**).
CO3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks (Cognitive knowledge level: **Apply**).
CO4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms (Cognitive knowledge level: **Apply**).
CO5	Identify technology/research gaps and propose innovative/creative solutions (Cognitive knowledge level: **Analyze**).
CO6	Organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: **Apply**).

CET402 QUANTITY SURVEYING AND VALUATION

CET402.1	Define basic terms related to estimation, quantity surveying and contract document
CET402.2	Interpret the item of work from drawings and explain its general specification and unit of measurement.

CET402.3	Make use of given data from CPWD DAR/DSR for calculating the unit rate of different items of work associated with building construction
CET402.4	Develop detailed measurement (including BBS) and BoQ of a various work like buildings, earthwork for road, sanitary and water supply work
CET402.5	Explain various basic terms related to valuation of land and building
CET402.6	Develop valuation of buildings using different methods of valuation.

CET454 CONSTRUCTION METHODS AND EQUIPEMENTS

CO1	Explain the various construction procedures for sub structures and super structures
CO2	Describe the various construction activities involved in underground and under water construction.
CO3	Demonstrate basic knowledge about construction equipment and machineries
CO4	Explain the equipment used for production of aggregates and concreting
CO5	elect construction equipment appropriate to tasks

CET476 BUIDING SERVICES

CO1	Recommend appropriate water management services
CO2	Develop a system for the management of waste.
CO3	Identify suitable electrical and mechanical building services
CO4	4Recall the various firefighting services
CO5	Choose relevant materials and practices for good acoustics
CO6	Propose sustainable construction materials, methods, and practices

CET468 CLIMATE CHANGE & SUSTAINABILITY

1	Explain the fundamental concepts of climate and its influencing factors
2	Explain the factors affecting climate change and the harmful impacts due to climate change.
3	Discuss the problems due to urbanizationand the need for sustainable development
4	Demonstrate the various adaptation and mitigation techniques for combating climate change
5	Discuss multilateral agreements on climate change, Case studies on Climate change