



Program : Civil Engineering	
Third Year : Semester - V	
Course Code: CEC501 Course Name: Theory of Reinforced Concrete Structures	
CEC501.1	Understand the fundamentals of WSM and LSM.
CEC501.2	Apply various clauses specified in IS: 456-2000 for designing structural members with safety and economy.
CEC501.3	Understand the use of readymade design charts and curves from Special Publications of Bureau of Indian Standards.
CEC501.4	Analyze and design various reinforced concrete elements such as beam, slab, column, footings using the concept of Limit State Method.
Course Code: CEC502 Course Name: Applied Hydraulics	
CEC502.1	Describe impact of jet on stationary, moving, hinged and series of plates also solve the numerical based on forces acting on it..
CEC502.2	Distinguish various types of turbines, Characteristic curves and its components.
CEC502.3	Analyze Centrifugal pumps by incorporating velocity triangle diagrams.
CEC502.4	Know the working mechanism of various Hydraulic machines.
CEC502.5	Identify the hydraulic behavior of open channel flow and design the most economical section of channels.
CEC502.6	Explain mathematical relationships for hydraulic jumps, surges, and critical, uniform, and gradually-varying flows.
Course Code: CEC503 Course Name: Geotechnical Engineering-I	
CEC503.1	Understand the basic concepts of the physical and engineering properties of soil and derive the relationships among various unit weights & other parameters.
CEC503.2	Comprehend clay mineralogy and plasticity behavior of clay.
CEC503.3	Analyze grain size distribution of soil and classify the soil as per IS code.
CEC503.4	Evaluate the coefficient of permeability of different types of soils and draw the flow net diagram to estimate seepage discharge.
CEC503.5	Compute the effective stress and pore water pressure inside the soil mass under different geotechnical conditions.
CEC503.6	Evaluate the compaction parameters in laboratory and field as well as understand the necessity and methods of soil exploration.



Program : Civil Engineering	
Third Year : Semester - V	
Course Code: CEC504	
Course Name: Transportation Engineering	
CEC504.1	Compare various modes of transportation and understand basic technical aspects of railways, airways and waterways.
CEC504.2	Understand different road plans, requirements of alignments and Design horizontal and vertical geometrical elements of highways.
CEC504.3	Carry out different traffic studies and analyze basic parameters of traffic engineering for efficient planning and control of traffic.
CEC504.4	Design the flexible and rigid pavement as per relevant IRC codes.
CEC504.5	Construct different types of pavements, use of soil stabilization and planning of highway drainage.
CEC504.6	Carry out structural and functional evaluation of pavement, identify the failures and design the overlay.
Course Code: CEDLO5012	
Course Name: Building Services and Repairs	
CEDLO5012.1	Apply the knowledge of working & installation of mechanical utility services in buildings.
CEDLO5012.2	Understand the electrical supply lines, materials, safety devices and illumination systems used in buildings.
CEDLO5012.3	Investigate and learn operations and adopt appropriate materials in plumbing systems & integrate the same into the building projects.
CEDLO5012.4	Assess the structural health of the buildings & adopt repair strategy to the damaged structures.
CEDLO5012.5	Implement the right methods and materials for repairing the concrete structures and also decide the sequence of operations.
CEDLO5012.6	Create and understand proper documentation process and adopt practices for safety for protection of men and materials on the repair site.
Course Code: CEDLO5013	
Course Name: Sustainable Building Materials	
CEDLO5013.1	To explain sustainable practices by utilizing engineering practices.
CEDLO5013.2	To able to understand different types of environmental problems and their sustainable solution.
CEDLO5013.3	To suggest appropriate type of masonry unit and mortar for civil engineering constructions.
CEDLO5013.4	To analyze different alternative building materials for construction.
CEDLO5013.5	To suggest suitable alternative building technologies for sustainable development.
CEDLO5013.6	To propose different roofing systems and use of waste materials construction industry.



Program : Civil Engineering	
Third Year : Semester - V	
Course Code: CEDLO5017 Course Name: Advanced Concrete Technology	
CEDLO5017.1	To understand the various properties and tests of materials used in concrete along with the rheology of fresh concrete.
CEDLO5017.2	To study the different procedures for testing hardened concrete, its compositions and quality of in place concrete.
CEDLO5017.3	To understand the concept of durability and cracking in concrete. To also understand the significance and parameters of concreting under extreme environments and conditions.
CEDLO5017.4	To understand the concept and optimization of the mix design of concrete by various codes.
CEDLO5017.5	To study the various constituents, properties, significance and applications of special concrete.
CEDLO5017.6	To study the quality of concrete and check the acceptance criteria.
Course Code: CEL501 Course Name: Theory of Reinforced Concrete Structures	
CEL501.1	Understand the fundamentals of WSM and LSM.
CEL501.2	Apply various clauses specified in IS: 456-2000 for designing structural members with safety and economy.
CEL501.3	Understand the use of readymade design charts and curves from Special Publications of Bureau of Indian Standards.
CEL501.4	Analyze and design various reinforced concrete elements such as beam, slab, column, footings using the concept of Limit State Method.
Course Code: CEL502 Course Name: Applied Hydraulics	
CEL502.1	Evaluate the efficiencies and discuss the working of various pumps and turbines.
CEL502.2	Apply impulse momentum principle to hydraulic machines.
CEL502.3	Determine the rate of flow through open channel.
CEL502.4	Generate and evaluate Gradually varied flow (GVF) and Rapid varied Flow (RVF) in open channel flow.
CEL502.5	Compute the Chezy's Constant through tilting flume.



Program : Civil Engineering	
Third Year : Semester - V	
Course Code: CEL503	
Course Name: Geotechnical Engineering – I	
CEL503.1	Determine the physical and engineering properties of soil.
CEL503.2	Determine the plasticity characteristics of soil.
CEL503.3	Carry out sieve analysis of soil, plot grain size distribution curve and determine the IS classification of soil.
CEL503.4	Determine coefficient of permeability of soils.
CEL503.5	Determine the compaction characteristics of soils.
CEL503.6	Compute the field SPT ‘N’ value and prepare the bore log.
Course Code: CEL504	
Course Name: Transportation Engineering	
CEL504.1	Classify Bitumen on basis of Penetration and Viscosity grade.
CEL504.2	Select Bitumen as per suitability on basis of Softening point and Ductility value.
CEL504.3	Determine suitability of aggregate on basis of Impact value, Abrasion value and Crushing value.
CEL504.4	Differentiate Elongated and Flaky aggregates on basis of Shape test.
CEL504.5	Carry out Classified volume study at mid-block section of road.
CEL504.6	Plot speed profile curve (S-Curve) at mid-block section.
Course Code: CEL505	
Course Name: Professional Communication and Ethics	
CEL505.1	Plan and prepare effective business/ technical documents which will in turn provide solid foundation for their future managerial roles.
CEL505.2	Strategize their personal and professional skills to build a professional image and meet the demands of the industry.
CEL505.3	Emerge successful in group discussions, meetings and result-oriented agreeable solutions in group communication situations.
CEL505.4	Deliver persuasive and professional presentations.
CEL505.5	Develop creative thinking and interpersonal skills required for effective professional communication.
CEL505.6	Apply codes of ethical conduct, personal integrity and norms of organizational behaviour.



Program : Civil Engineering	
Third Year : Semester - V	
Course Code: CEM501	Course Name: Mini Project - 2A
CEM501.1	Identify problems based on societal /research needs and formulate a solution strategy.
CEM501.2	Apply fundamentals to develop solutions to solve societal problems in a group.
CEM501.3	Analyze the specific need, formulate the problem and deduce the interdisciplinary approaches, software-based solutions and computer applications.
CEM501.4	Develop systematic flow chart, evaluate inter disciplinary practices, devices, available software, estimate and recommend possible solutions.
CEM501.5	Draw the proper inferences from available results through theoretical/ experimental/ simulations and assemble physical systems.
CEM501.6	Create devises or design a computer program or develop computer application.



Program : Civil Engineering	
Third Year : Semester - VI	
Course Code: CEC601 Course Name: Design and Drawing of Steel Structures	
CEC601.1	Explain the importance of dimensionless numbers, dimensional analysis and similarity behavior of model and prototype.
CEC601.2	Design bolted and welded connections.
CEC601.3	Design members subjected to axial tension.
CEC601.4	Design compression members, Built-up columns and column bases.
CEC601.5	Design members subjected to bending moment, shear force etc.
CEC601.6	Estimate design loads as per IS 875 for roof truss and design the Steel roof truss.
Course Code: CEC602 Course Name: Water Resources Engineering	
CEC602.1	Describe National water Policy, Calculate Crop water requirement and classify various types and methods of irrigation.
CEC602.2	Estimate flood discharge and Runoff by traditional and modern usage tools for planning and management of water resources projects.
CEC602.3	Apply knowledge on ground water, well hydraulics to estimate the safe yield and ground water potential.
CEC602.4	Analyze and design gravity dams and earthen dams with spillways for sustainable development.
CEC602.5	Compare different silt theories related to irrigation channel and design the same.
CEC602.6	Classify and explain various canal structures and suggest remedial measures for water logging to save fertile irrigation.
Course Code: CEC603 Course Name: Geotechnical Engineering-II	
CEC603.1	Evaluate the consolidation parameters for the soil.
CEC603.2	Calculate the shear strength parameters for the soil.
CEC603.3	Calculate the factors of safety of different types of slopes under various soil condition, analyze the stability of slopes.
CEC603.4	Calculate lateral earth pressure under various soil condition.
CEC603.5	Calculate bearing capacity of shallow foundations using theoretical and field methods.
CEC603.6	Calculate load carrying capacity of individual as well as group of pile foundation using theoretical and field methods and pile settlement.



Program : Civil Engineering	
Third Year : Semester - VI	
Course Code: CEC604	
Course Name: Environmental Engineering	
CEC604.1	Analyse the quality of water and make outline of water Supply scheme.
CEC604.2	Design the various units of water treatment plant and apply the advanced, miscellaneous treatments whenever necessary.
CEC604.3	Build service connection of water supply from main and building drainage system at construction site along with rain water harvesting layout.
CEC604.4	Analyse and plan sewerage system along with test for sewer line.
CEC604.5	Design the units of sewage treatment plant. Also, able to apply the knowledge of low-cost treatment and stream sanitation.
CEC604.6	Understand air pollution, noise pollution and functional elements of solid waste management.
Course Code: CEDLO6012	
Course Name: Biological Process and Contamination Removal	
CEDLO6012.1	Determine and analyze the characteristics of wastewater and decide the treatment for wastewater.
CEDLO6012.2	Understand biological treatment process and necessity of contamination removal.
CEDLO6012.3	Understand and apply the concepts of advancements/emerging techniques of Microbial Growth Kinetics, Utilization of soluble substrate and biotechnological remedies.
CEDLO6012.4	Summarize the concept of aerobic decomposition and its application in Aerobic Suspended Growth Biological Treatment Systems.
CEDLO6012.5	Summarize the concept of the anaerobic decomposition and its application in wastewater treatment.
CEDLO6012.6	To derive the knowledge and develop rational approaches towards natural and biotechnological Methods for contamination removal.
Course Code: CEDLO6013	
Course Name: Construction Equipment & Techniques	
CEDLO6013.1	Understand the use/applications of various conventional construction equipments and select the best out of them for a particular site requirement.
CEDLO6013.2	Know modern methods/equipments used for underground as well as underwater tunnelling.
CEDLO6013.3	Compare conventional and modern methods of formwork and get acquainted with techniques used on sites with restricted space.
CEDLO6013.4	Understand the techniques involved and the equipments required thereof for laying of utility lines, bridge construction and installation of structural steel members.
CEDLO6013.5	Gain knowledge about the setting up of different kinds of the power generating structures.
CEDLO6013.6	Get acquainted with the equipments/ techniques for construction of transporting facilities.



Program : Civil Engineering	
Third Year : Semester - VI	
Course Code: CEDLO6014	
Course Name: Urban Infrastructure Planning	
CEDLO6014.1	Explain the concepts related to planning of modern cities, GDP contribution, RERA, affordable housing.
CEDLO6014.2	Elaborate the economics involved in urban infrastructure planning.
CEDLO6014.3	Envisage the various elements required for infrastructure development of a city and describe the concepts, significance and importance of each.
CEDLO6014.4	Evaluate technical, social and economic feasibility of transportation projects within cities.
CEDLO6014.5	Demonstrate modern tool usage for urban management and governance.
CEDLO6014.6	Design environmentally safe and disaster resilient infrastructure.
Course Code: CEDLO6015	
Course Name: Open Channel Flow	
CEDLO6015.1	Describe the basic nature of flow in open channels, analyze the behaviour of flow and apply basic theories to design the optimum channel sections.
CEDLO6015.2	Demonstrate the energy concepts in open channel and its practical applications.
CEDLO6015.3	Apply dynamic equation for Gradually varied flow (GVF) and evaluate water profiles at different conditions in prismatic channels.
CEDLO6015.4	Differentiate between GVF and Rapidly Varied Flow (RVF), analyze hydraulic jump in open channel and its importance.
CEDLO6015.5	Explain the spatially varied flow and classify water profiles.
CEDLO6015.6	Discuss the temporal variations of flow in GVF and RVF in open channel.
Course Code: CEL601	
Course Name: Design and Drawing of Steel Structures	
CEL601.1	Calculate dead, live and wind loads on the structure.
CEL601.2	Analyze the structure by analytical/graphical method.
CEL601.3	Use steel table for selecting appropriate section.
CEL601.4	Design the members for various load combinations.
CEL601.5	Design the bolted and welded connection.
CEL601.6	Read and prepare the detailed fabrication drawing and design report.



Program : Civil Engineering	
Third Year : Semester - VI	
Course Code: CEL602	
Course Name: Water Resources Engineering	
CEL602.1	Classify various techniques of water distribution and compute water requirement of crops.
CEL602.2	Discuss in detail about hydrological process and interpret plotting of hydrographs.
CEL602.3	Apply their knowledge on well hydraulics and compute discharge from an aquifer.
CEL602.4	Classify and describe various hydraulic structures such as dams and carry out its analysis for structural stability.
CEL602.5	Compare different silt theories related to irrigation channel and design the same.
CEL602.6	Identify and classify different canal head works - its distribution system and canal structures.
Course Code: CEL603	
Course Name: Geotechnical Engineering-II Lab	
CEL603.1	Determine consolidation parameters such as coefficient of compressibility, coefficient of volume change, coefficient of consolidation.
CEL603.2	Determine cohesion and angle of shearing resistance for various soil types.
CEL603.3	Determine the CBR value of soil for pavement design.
CEL603.4	Determine swelling pressure of soil.
CEL603.5	Understand the concept of stress distribution in soils due to vertically applied load.
CEL603.6	Solve design problems using geotechnical software.
Course Code: CEL604	
Course Name: Environmental Engineering	
CEL604.1	Impart the knowledge on quality or characteristic of water and wastewater sample.
CEL604.2	Interpret the required treatment for water and wastewater based on standards and norms.
CEL604.3	Impart the knowledge on quality of solid waste.
CEL604.4	Measure the concentration of particulate matters, dust and dispersed pollutants in air.
CEL604.5	Inspect the levels of noise and interpret the results.



Program : Civil Engineering	
Third Year : Semester - VI	
Course Code: CEL605	
Course Name: Skill Based Lab Course-III	
CEL605.1	To understand the functions involved various softwares related to civil engineering field.
CEL605.2	To perform different functions of the software related to analysing modelling and designing the structure, creation of database and its analysis.
CEL605.3	To describe and represent the data obtained from site, experimental work in various formats as per industrial requirements.
CEL605.4	To import road geometric design into the software as well as relate with the design standards applied into the software.
CEL605.5	To design the effective distribution network system for the distribution of water resources.
CEL605.6	To apply the knowledge to create the programme in excel and various computer languages for solving problems pertaining to civil engineering field.
Course Code: CEM601	
Course Name: Mini Project - 2B	
CEM601.1	Identify problems based on societal /research needs and formulate a solution strategy.
CEM601.2	Apply fundamentals to develop solutions to solve societal problems in a group.
CEM601.3	Analyze the specific need, formulate the problem and deduce the interdisciplinary approaches, software-based solutions and computer applications.
CEM601.4	Develop systematic flow chart, evaluate inter disciplinary practices, devices, available software, estimate and recommend possible solutions.
CEM601.5	Draw the proper inferences from available results through theoretical/experimental/simulations and assemble physical systems.
CEM601.6	Create devises or design a computer program or develop computer application.