

DEPARTMENT OF CIVIL ENGINEERING

SEM III

Course Code		CEC 301	APPLIED MATHEMATICS-III			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
1		1.1	1.1.2	5	1	Apply the concept of Laplace transforms and use to solve real integrals in engineering problems
3		3.1	3.1.6	3	2	Determine and develop Fourier series for real life problems and applications.
2		2.1	2.1.2	3,4	3	Identify the concept of inverse linear transform and compare to various functions and its applications
3		3.2	3.2.1	3	4	Apply properties of complex analysis and mapping and bilinear transformation
12		12.1	12.1.3	3	5	Solve partial differential equation such as vibration of string heat flow etc.
2		2.2	2.2.3	3	6	To identify theorem of complex integration and study of correlation and curve fitting

Course Code		CEC 302	SURVEYING-I			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
3	1	1.3	1.3.1	2	1	Measure Linear measurements, chaining, ranging and offsetting and apply corrections
1	1	4.3	4.3.3	2	2	Traversing by observing bearings, compute included angles and do corrections for Local Attraction
3	1	2.2	2.2.3	4	3	Measure vertical distances, determine RL and check. Identify & choose suitable types of levelling
4	2	2.4	2.4.1	3	4	Computation of areas and volumes- Plane Table Survey
1	2	4.3	4.3.3	3	5	Calculation of consecutive and independent co-ordinates. Draw the traverse. Prepare Gale's Table. Reproduce the omitted measurements
4	2	4.2	4.2.1	3	6	Preparation of Topographical map.

Course Code		CEC 303	STRENGTH OF MATERIALS			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2	1	2.1	2.1.2	2	1	Study the engineering properties of the materials and solids and analyze the concept of simple stress-strain and to evaluate the stress-strain behavior.
2	1	2.2	2.2.2	2	2	Evaluate the internal forces for the statistically determinate and compound beams having internal hinges with different types of loading
2	1	3.2	3.2.2	3	3	Understand the concept and behavior of flexural members (beams) in flexure and strain energy due to axial force and impact load.
3	2	3.3	3.3.1	3	4	Identify the behavior of structural members under the action of shear forces and effects of torsion on circular shaft and evaluate its effects.
3	2	3.2	3.2.2	3	5	Determine the effect of direct and bending stresses on various engineering structures and study of effect of axial load on column.
4	2	3.3	3.3.2	4	6	Apply the concepts of principal planes and principal stresses on beams, thin cylindrical and spherical shells and apply to solve the problems.

Course Code		CEC 304	ENGINEERING GEOLOGY			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2	1	2.4	2.4.4	2	1	Understand and explain the significance of geological studies of seismic waves, agents modifying earth's surface and rocks
3	1	3.3	3.3.2	2	2	Demonstrate the knowledge of geology to explain major geological processes
2	1	2.2	2.2.2	4	3	Distinguish minerals and rocks in terms of mineralogy and petrology.
2	1	2.1	2.1.1	3	4	Identify various geological structures, their origin and distribution.
3	2	3.1	3.1.4	3,5	5	suitability of geological condition for construction of dam and tunnel .
6	2	6.2	6.2.2	5,6	6	Create effective reports for geological condition and evaluate any site for engineering project and study of geological disasters.

Course Code		CEC 305	FLUID MECHANICS-I			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
1	1	1.3	1.3.1	1	1	Define various properties of fluids, state and explain different types of laws and principles of fluid mechanics.
1	1	1.3	1.3.1	2	2	Interpret different forms of pressure measurement and Calculate Hydrostatic Force and its Location and Compute force of buoyancy on a partially or fully submerged body and analyse the stability of a floating body.
2	2	2.1	2.1.2	4	3	Distinguish velocity potential function and stream function and solve for velocity and acceleration of a fluid at a given location in a fluid flow.
1	1	1.2	1.2.1	2	4	Explain the concept of fluid kinematics & ideal fluid
2	1	2.2	2.2.3	3	5	equation.
3	1	3.1	3.1.6	5	6	Measure velocity and rate of flow using various devices

SEM IV						
Course Code		CEC 401	APPLIED MATHEMATICS-IV			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2		2.1	2.1.3	3	1	Extend the concept of matrices to eigen value & eigen vector & use it to solve various engineering problem.
4		4.2	4.2.1	3	2	Apply principles of vector calculus to the analysis of engineering problems.
3		3.1	3.1.2	3,4	3	Translate business problem to mathematical form & can find optimal solution by graphical or simplex method & dual simplex method
1		1.1	1.1.2	3,4	4	Ability to use probability distribution to analyze & solve real time problem
12		12.1	12.1.1	2	5	Explain the test of hypothesis for small & large samples by using various test like t- test, z- test & chi- square test.
4		4.3	4.3.1	3	6	Develop the concept of ANOVA to measure the effect of extraneous variables.

Course Code		CEC 402	SURVEYING-II			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
3	2	3.3.1	3.1.3	2	1	Understand to set out different types of horizontal curves with linear and angular methods
3	2	3.3	3.3.1	2	2	Illustrate tangent correction and chord gradient methods for setting out vertical curves.
4	2	4.1	4.1.2	2	3	Preparation and & setting out of foundation plan for different types of construction.
5	2	5.1	5.1.1	2	4	Discuss about special survey instruments like electronic theodolite total station for desired accuracy in surveying.
1	2	1.4	1.4.1	3	5	Explain the application of GPS, remote sensing, GIS, field astronomy, aerial photography then hydrographic survey.
1	2	1.4	1.4.1	3	6	Explain the role of different government authority maintaining cadastral surveying.

Course Code		CEC 403	STRUCTURAL ANALYSIS-I			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2	1	1.3	1.3.1	3	1	Understand the behavior of various statically determinate structures including compound structures having an internal hinges for various loadings.
2	1	1.3	1.3.1	3	2	Analyze these structures to find out the internal forces such as axial force, shear force, bending moment, twisting moments, etc.
2	1	2.2	2.2.3	4	3	Evaluate the displacements/ deflections in beams and frames under the action of loads. They will be able to obtain the response of the beams under the action of moving loads.
3	2	2.2	2.2.3	4	4	Analyze the structures such as arches and suspension bridges and study the behavior of eccentrically loaded columns.
3	2	2.3	2.3.1	4	5	Analyze the section with respect to unsymmetrical bending and shear center.
3	2	2.3	2.3.3	4	6	Demonstrate the ability to extend the knowledge gained in this subject.

Course Code		CEC 404	BUILDING DESIGN & DRAWING			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
1	2	4.2	4.2.1	1,2,3	1	Define and apply the principles and code of practices for planning and designing of residential buildings and interpret the various building components and building services.
2	2	3.3	3.3.1	3	2	Plan and develop dog legged as well as open newel staircase.
2	2	3.2	3.2.1	1	3	Define and draw one point and two-point perspective.
5	2	5.2	5.2.2	3	4	Make use of the concept of town planning, architectural planning and built environment.
7	2	7.2	7.2.1	3	5	Utilize the concept of Green buildings.
5	2	5.2	5.2.1	1,2,3	6	Define and apply the principles and code of practices for planning and designing of various public buildings and study the various components and building services as well as apply the knowledge of overall planning and designing by using CAAD software.

Course Code		CEC 405	BUILDING MATERIALS & CONCRETE TECHNOLOGY			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2	2	2.2	2.2.2	3,4	1	Identify and list the various building materials, their properties and symbols
2	2	2.2	2.2.3	2,3	2	Illustrate and select manufacturing process of basic construction materials
4	2	4.3	4.3.1, 4.3.4	3	3	Apply the properties of ingredients of concrete and types of admixture.
2	2	2.2	2.3.4	2	4	Classify the types and uses of glasses and defects in timber.
7	2	7.2	7.2.2	5,6	5	Design and interpret concrete mix for various grades.
5	2	5.3	5.3.2	4	6	Distinguish various masonry construction, finishes and formworks.

Course Code		CEC 406	FLUID MECHANICS-II			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
1	1	1.3	1.3.1	2	1	Interpret different pipe fittings and evaluate the fluid velocity considering major and minor losses.
3	2	3.3	3.3.1	3	2	Determine the power transmitted through nozzle
2	1	2.1	2.1.2	4	3	Distinguish the types of compressible flow and compute the stagnation properties.
2	1	2.1	2.1.2	5	4	Compute drag and lift coefficients and terminal velocity of the body.
2	1	2.4	2.4.1	5	5	Evaluate pressure drop for laminar flow in a pipe.
2	1	2.4	2.4.1	3	6	Establish Prandtl's mixing theory and solve turbulent flow problems

SEM V						
Course Code		CEC 501	STRUCTURAL ANALYSIS-II			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
1	2	1.3	1.3.1	3	1	Apply the civil engineering concepts to solve problems related to stability of civil engineering structures.
1	1	1.3	1.3.1	3	2	Compute the deflection of statically determinate structures due to loading/temperature variations/support settlements.
2	1	2.2	2.2.3	4	3	Identify existing solution methods for solving the problems related to flexibility of indeterminate structures with justified assumptions.
2	1	2.2	2.2.3	4	4	Identify existing solution methods for solving the problems related to stiffness of indeterminate structures with justified assumptions and approximations.
2	2	2.3	2.3.1	4	5	Combine the basic principles and engineering concepts related to plastic analysis of structures for accurately ascertaining structural collapse conditions
2	1	2.3	2.3.3	4	6	Identify the analytical methods for solving the problems on multi-storeyed building frames using justified approximations and assumptions.

Course Code		CEC 502	GEOTECHNICAL ENGINEERING-I			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2	1	2.1	2.1.3	2	CO1	Explain the basic concepts of the physical and engineering properties of soil and use the relationship among various unit weights & other parameters to solve the problems
4	1	4.3 4.1	4.3.1 4.1.4	1,3	CO2	Evaluate the index properties of soil and describe clay mineralogy.
2	1	2.2	2.2.4	1,4	CO3	Classify the soil as per IS code.
2	1	2.2 4.1	2.2.3	3	CO4	Calculate the coefficient of permeability of different types of soils and summarize flow net.
2	1	2.1	2.1.3	2	CO5	Determine the total stress, neutral stress and effective stress in a soil mass subjected to different geotechnical condition.
2	1	2.2	2.2.3 2.2.4	1,3	CO6	Calculate the optimum moisture content of a soil and explain the necessity and methods of soil exploration.

Course Code		CEC 503	APPLIED HYDRAULICS			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2	1	2.1	2.1.3	3	1	Apply the concepts of fluid dynamics to solve pipe bend and sprinkler problems.
2	1	2.3	2.3.1	3	2	Determine the flow phenomenon using the dimensional analysis or model analysis.
2	1	2.1	2.1.3	3	3	To apply the concept of fluid dynamics to determine the impact of jet on various bodies.
3	2	3.1	3.1.6	3	4	Demonstrate the working and Determine the design parameters for different types of turbines.
3	2	3.1	3.1.6	3	5	Examining the working of centrifugal pump along with the governing properties of pump
3	2	3.2	3.2.6	3	6	Explain the basic concepts of open channel hydraulics. Calculate the flow parameters for uniform and non uniform flow in open channel.

Course Code		CEC 504	ENVIRONMENTAL ENGINEERING-I			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2	1	2.2	2.2.2	2, 3	1	Identify, assemble and evaluate information and resources, related to water supply system, its components, and water demand by various consumers.
1	1	1.2	1.2.1	2	2	Apply laws of natural science to study the quality of drinking water for civil engineering problem.
2	1	2.2	2.2.3	2, 3 & 6	3	To identify existing solution methods for solving the problems related to design of water treatment plant with justified assumptions.
2	1	2.3	2.3.1	2	4	Combine scientific principles and engineering concepts to understand various components of building water supply system and storage of water in terms of applicability and required accuracy.
2	2	2.1	2.1.2	2	5	Identify engineering systems, variables, and parameters for rain water harvesting.
2	1	2.2	2.2.4	2	6	Compare and contrast alternative solution processes for air and noise pollution problems and select the best process.

Course Code		CEDLO 5062	ADVANCED CONCRETE TECHNOLOGY			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
1	1	1.3	1.3.1	1	1	To recall the various materials used for concrete making and also learn different properties in Concrete
2	1	2.2	2.2.2	4	2	To categorize the various properties of concrete and identify, assemble, evaluate information and resource
4	1	3.1,3.2	3.1.4,3.2.3	4	3	To analyse the different methods of mix design and select optimal mix design as per requirement of a structure
2	1	2.4	2.4.4	3	4	To evaluate knowledge of Fibre Reinforced Concrete and extract desired understanding and conclusion
2	1	2.3	2.3.1	3	5	To apply the different procedures to demonstrate the tests on concrete for determining conclusions by combining scientific principle & engineering concepts.
3	1	3.2	3.2.1	5	6	To summarize the concept of durability of concrete to develop multiple civil engineering design solutions.

SEM VI						
Course Code		CEC 601	GEOTECHNICAL ENGINEERING-II			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
4	1	4.1	4.1.4	5	1	Appraise the consolidation parameters for the soil
4	1	4.3	4.3.3	5	2	Interpret the shear strength parameters for the soil
4	1	4.3	4.3.3	6, 2	3	Estimate the factors of safety of different types of slopes under various soil conditions and infer the stability of slopes, retaining walls & lateral earth pressures.
2	1	2.2	2.2.3	3, 5	4	Calculate the lateral earth pressure using Rankine , coulombs and graphical method also evaluate the stability analysis of gravity and cantilever retaining walls
5	2	5.3	5.3.1	2	5	Evaluate the bearing capacity of shallow foundation using theoretical, field methods, Vesic methods and IS code method.
3	1	3.1	3.1.6	5	6	Determine the load bearing capacity of individual as well as group of pile foundations and their settlement using theoretical and field Method.

Course Code		CEC 602	DESIGN & DRAWING OF STEEL STRUCTURES			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2	1	2.1	2.1.1	2	1	Understand usefulness of steel sections and able to use suitable philosophy for the design of steel structures.
2	1	2.2	2.2.3	2	2	Design and sketch the structural details of tension members for an industrial roof truss.
2	1	3.2	3.2.2 & 3.2.3	3	3	Design and sketch the structural details of compression member including the design of columns and column bases
3	2	3.3	3.3.1	3	4	Design laterally supported and unsupported beams and apply the concept in the design of welded plate girders
3	2	3.2	3.2.2	3	5	Categorize and design steel structural connections (bolted and welded)
4	2	3.3	3.3.2	4	6	Estimation of loadings, analysis, load combinations, design forces and design of all components of an industrial building. Confirming, manually done design using appropriate software tool

Course Code		CEC 603	TRANSPORTATION ENGINEERING-II			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
6	1	7.1 7.2	7.1.2 7.2.2	1, 2	CO-1	Identify and explain the various elements pertaining to air transportation, water transportation, and railway transportation. Classify the various components and functions of railway track.
3 2	1	1.3 2.2	1.3.1 2.2.3	1, 2, 4	CO-2	Analyze the geometric features along with functions of points and crossings.
3	1	3.1 3.2	3.1.6 3.2.1	1, 5, 6	CO-3	Define and explain the various geometric features of airport runway, airport layout, marking- lighting and design the exit taxiway along with the different correction applied in calculation of runway length.
5	1	4.2 5.1	4.2.2 5.1.1	2	CO-4	Illustrate the air traffic control aids, airport drainage and explain runway gate capacity and taxiway capacity.
6	1	7.2	7.2.2	2	CO-5	Illustrate the various modes of water transportation like harbours and port facilities , jetties , wharves , piers, dolphins etc.
1 2	1	1.3 2.1	1.3.1 2.1.2	2, 5	CO-6	Classify the different components of bridge, and determine the concept of economic span and scour depth in bridge engineering

Course Code		CEC 604	ENVIRONMENTAL ENGINEERING-II			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2,1	1	2.2 1.3	2.2.2 1.3.1	2, 3, 4 & 5	1	<ul style="list-style-type: none"> Identify, assemble and evaluate information and resources of wastewater collection systems in buildings and municipal areas. Apply fundamental engineering concepts to gain the knowledge of the construction of new sewer line and importance of sewer appurtenances.
1,3	1	1.3 3.2	1.3.1 3.2.1	2, 3 & 4	2	<ul style="list-style-type: none"> Apply fundamental engineering concepts to explain and analyze the characteristics of wastewater. Apply formal idea generation tools to design the primary treatment units for wastewater.
3	1	3.2	3.2.1	2, 3 & 4	3	Apply formal idea generation tools to learn on-site treatment methods and to design wastewater treatment systems such as ASP, Aerated lagoon and Oxidation ponds.
5	1	5.1	5.1.1	2 & 3	4	Identify and apply modern engineering tools for proper treatment for reclamation and reuse of wastewater and disposal and analysis; techniques and resources for engineering activities.
1	2	1.3	1.3.1	2	5	Apply fundamental engineering concepts to learn and explain sludge characteristics and processing methods.
2	1	2.2	2.2.2	2 & 3	6	Identify, assemble and evaluate information and resources of solid waste collection system, characteristics of solid waste and to identify hazardous waste also study related to plastic waste management.

Course Code		CEC 605	WATER RESOURCE ENGINEERING-I			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2		2.1 3.1	2.1.1 3.1.1	2	1	Able to understand the basics of Irrigation engineering and types of irrigation projects along with National Water policy
3,5		3.1 5.1	3.1.4 5.2.1	3,4	2	Able to choose and compare different techniques and methods of irrigation for a particular crop grown over an area in view of pros and cons of each technique.
2,7		2.3 7.1	2.3.1 7.1.2	4,6	3	Able to understand the relation between duty & delta, calculation of water requirement of the crop, design discharge of canal, the storage requirements for optimum irrigation.
2,7		2.4 7.1	2.4.2 7.1.2	4,5	4	Analyze and interpret runoff resulting from a rainfall over a catchment area with the knowledge of various type of hydrograph
1,2		1.1 2.2	1.1.1 2.2.3	5,6	5	Identify the existing methods to design a well for required discharge and Estimate yield from a well.
3,7		3.2 7.1	3.2.3 7.1.1	3,5	6	Identify suitable nonfunctional requirement for evaluation of alternate techniques to know the investigations for reservoir planning and

Course Code		CEDLO 6061	ADVANCED CONSTRUCTION EQUIPMENTS			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
3	1	3.2,	3.2.2	1	1	Recall the use and application of various conventional construction equipment's in different construction projects.
5	1	5.1,5.2	5.1.2, 5.2.1	2	2	Understand advance methods and special equipment used for underground as well as under water tunnelling.
10	1	10.2	10.2.1	6	3	Compare the conventional and modern methods of form work on the basis of productivity, reuse value, ease of erection and dismantling, flexibility offered and overall cost
11	1	11.3	11.3.2	4	4	Identify different methods/equipment of construction for road/flyovers/bridge projects and systems for locating under-ground utilities
1	1	1.3	1.3.1	5	5	Perceive knowledge about the setting up of different kinds of the power generating structures.
5	1	5.1, 5.2	5.1.2, 5.2.1	6	6	Understand the techniques involved and the equipment required thereof for construction of various transporting facilities. Choose proper equipment for construction of transporting facilities based on function.

Course Code		CEC 607	SOFTWARE APPLICATIONS IN CIVIL ENGINEERING			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
5	2	5.2 5.3	5.2.1 5.3.2	2	CO1	Explain the importance, needs, advantages and limitations of software.
5	2	5.1	5.1.1	2	CO2	Classify different types of software available in Civil Engineering.
5	2	5.1	5.1.2	3	CO3	Identify the applications of different types of software.
5	2	5.2	5.2.1 5.2.2	3	CO4	Make use of software results and validate them by analysing results obtained from conventional methods.
11	2	11.3	11.3.1 11.3.2	3	CO5	Organize an executive summary of the report based on whole work.
9	2	9.2 9.3	9.2.1 9.2.2 9.2.3	3	CO6	Build their communication skill as well as teamwork qualities.

SEM VII						
Course Code		CEC 701	QUANTITY SURVEY ESTIMATION & VALUATION			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
1	1	1.3	1.3.1	3	CO-1	Read, understand and interpret plans sections and detailed drawings. Prepare estimates for different construction projects.
2	1	2.4	2.4.2	3,4	CO-2	Perform Quantity survey of materials, labours and equipments.
5	1	5.1	5.1.2	5	CO-3	Draft specifications for various items of work
3	2	3.3	3.3.3	6	CO-4	Perform the rate analysis for various items of work
4	2	4.3	4.3.1	3,5	CO-5	Draft tender, prepare valid contract documents
10	2	10.3	10.3.1	5	CO-6	Understand the role of a valuer and asses the value of a property

Course Code		CEC 702	THEORY OF REINFORCED CONCRETE STRUCTURES			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
1	1	1.3	1.3.1	3	1	Apply fundamental concepts/method in Civil Engineering to solve engineering problems
1	1	1.4	1.4.1	2	2	Use of LSM concepts to solve Civil Engineering problems.
2	1	2.2	2.2.3	3	3	Identify existing solution method for solving the problem, including forming justified approximations and assumptions
3	2	3.1	3.1.4	4	4	Extract engineering requirements from IS-456:2000 for analyzing and design Slabs.
2	2	2.1	2.1.3	3	5	Identify the mathematical, engineering and other relevant knowledge that applies to a given problem
3	2	3.1	3.1.6	4	6	Determine design objectives, functional requirements and arrive at design specifications

Course Code		CEC 703	WATER RESOURCE ENGINEERING-II			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
3	2	3.3	3.3.1	4	CO-1	Able to analyze dam sections and check the modes of failure of gravity dam
3	2	3.1	3.1.1	4	CO-2	Able to identify seepage line in earth dam in different condition.
4	1	4.3	4.3.4	3	CO-3	Able to choose different types of spillways and design energy dissipaters.
3	2	3.3	3.3.1	3	CO-4	Able to calculate channel dimensions using Kennedy's & Lacey's theory of channel design.
2	1	2.2	2.2.3	2	CO-5	Able to understand canal classification, canal losses and canal lining.
1	1	2.2	2.2.4	3	CO-6	Able to suggest the canal structures on field.

Course Code		CEDLO 7042	SOLID WASTE MANAGEMENT			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
6	1	6.1	6.1.1	2	1	Identify and evaluate information and resources related to solid waste management-generation, storage, collection, transfer and transport, processing, recovery and disposal.
3	1	3.1	3.1.5	2,3	2	Understand the characteristics of different types of solid waste and solving problem related to waste characteristics
3	1	3.1	3.1.5	2	3	Identify method of waste collection, storage, transport and optimization of transportation routes.
3	1	3.1	3.1.5	2	4	Explore engineering requirement for the study of methods or techniques for waste processing.
4,7	1	4.1 7.2	4.1.1 7.2.2	2,3	5	Define and understand problem of waste disposal and importance of planning of waste minimisation Apply principles of preventive engineering by planning waste minimization and methods of waste disposal
6	1	6.1	6.1.1	2	6	Discuss treatment, disposal and management of industrial, hazardous, biomedical and E- waste.

Course Code		CEILO 701	DISASTER MANAGEMENT & MITIGATION MEASURES			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
6	1	6.1	6.1.1	4	1	Understand and distinguish the various types of disasters occurring around the world.
11	1	11.3	11.3.1	4	2	Identify and analyse natural and manmade disasters and their extent and possible effects on the economy
7	1	6.2	6.2.1	5	3	Determine and get acquainted with government policies, acts and various organizational structure associated with an emergency.
5	1	5.1	5.1.1	3	4	To explain the institutional framework and GIS application in disaster management
7	1	7.1	7.1.2	4	5	Categorize the various ways to raise the funds for relief operations
12	1	12.1	12.1.2	3	6	Make use of simple preventive and mitigation measures before and after disasters.

Course Code		CEP 706	PROJECT-PART A			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
6		6.2	6.2.1	3	1	Apply formal idea generation tools to develop multiple engineering design solutions through project research work.
10		10.3	10.3.1	6	2	Create engineering-standard figures, reports and drawings to complement research writing and its presentations.
7		7.3	7.3.1	3	3	Apply developed product to formal decision-making tools to select optimal engineering design solutions for further development.
9		9.3	9.3.1	2	4	Present results of the project as a team, with smooth integration of contributions from all individual efforts.
6		6.2	6.2.1	3	5	Identify engineering systems, variables, and parameters to formulate the project design and solve various problems.
8		8.1	8.1.1	2	6	Describe the requirement of knowledge, skills and attitudes for continuing professional development.

SEM VIII

Course Code		CEC 801	DESIGN & DRAWING OF REINFORCED STRUCTURES			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2	2	3.1 3.4	2.1.3	3	1	Refine a conceptual design into a detailed design by applying the provisions of relevant engineering codes and standards
3	2	3.1	3.1.6	3	2	Determine design objectives, functional requirements and arrive at design specifications for staircases
2	2	2.1	2.1.3	3	3	Identify the mathematical, engineering, and other relevant knowledge that applies to the design of retaining walls.
2	2	2.2	2.2.3	2	4	Discuss the structural behaviour and apply the concepts of WSM in the design of RCC water tanks
7	2	7.2	7.2.2	3	5	Demonstrate the response of a structure during earthquake and determine design seismic forces
3	1	3.2	3.2.3	3	6	Explain principles of prestressing and analyse the stresses in prestressed beams

Course Code		CEC 802	CONSTRUCTION MANAGEMENT			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
9	2	9.2	9.2.1	2,3	1	Understand & apply the knowledge of management functions like planning, scheduling, executing & controlling the construction projects
3	2	3.4	3.4.1	4,5	2	Discover the importance of construction Industry. Classify the construction Projects. Decide how to select the lay -out of a site
5	2	5.1	5.1.2	3,6	3	Construct feasible project schedule by using scheduling techniques like CPM and PERT and evaluate the critical path in the network .
5	2	5.3	5.3.1	5	4	Evaluate the daily resource requirement and interpret the best possible schedule from different combinations
11	2	11.2	11.2.1	4	5	Analyze the given network and determine an optimum time cost optimization curve
7	2	7.1	7.1.1	4	6	Inspect the quality & safety measures on construction sites during execution of civil engineering projects and adopt the laws pertaining to construction industry

Course Code		CEDLO 8032	INDUSTRIAL WASTE TREATMENT			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2,6	1	2.2 6.2	2.2.2 6.2.2	2	1	<ul style="list-style-type: none"> Understand different types and characteristics of industrial wastes. Interpret standards relevant to effluent standards and stream standard.
2	1	2.2	2.2.3	2,3	2	<ul style="list-style-type: none"> Identify sampling methods and analyze industrial wastewater.
2	1	2.2	2.2.2	2,3	3	<ul style="list-style-type: none"> Determine the effects of industrial wastewater on self-purification of streams, reclamation of industrial wastewater.
2	1	2.2	2.2.3	2	4	<ul style="list-style-type: none"> Explain general treatment of industrial wastes, dewatering and disposal of sludge and advanced treatment methods.
2	1	2.2	2.2.3	2	5	<ul style="list-style-type: none"> Describe manufacturing processes and treatment of wastewater.
6,7	1	6.2 7.2	6.2.1 7.2.2	2	6	<ul style="list-style-type: none"> Study of location, design, need of CETP. Discuss about provision of various acts pertaining to industrial wastes, EIA, Environmental Audit.

Course Code		CEP 806	PROJECT PART-B			
PO	PSO	Competancy	PI	Bloom's Level	CO	Description
6	1	6.2	6.2.1	3	1	Apply formal idea generation tools to develop multiple engineering design solutions through project research work.
10	1	10.3	10.3.1	6	2	Create engineering-standard figures, reports and drawings to complement research writing and its presentations.
7	1	7.3	7.3.1	3	3	Apply developed product to formal decision-making tools to select optimal engineering design solutions for further development.
9	2	9.3	9.3.1	2	4	Present results of the project as a team, with smooth integration of contributions from all individual efforts.
2	2	2.1	2.1.2	3	5	Identify engineering systems, variables, and parameters to formulate the project design and solve various problems.
8	2	8.1	8.1.1	2	6	Describe the requirement of knowledge, skills and attitudes for continuing professional development.