SREE NARAYANA GURU COLLEGE OF ENGINEERING AND TECHNOLOGY, PAYYANUR

DEPARTMENT OF CIVIL ENGINEERING **COURSE OUTCOME**

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO	
S1 & S2				
	EST100	ENGINEERING MECHANICS	CO I	Construct free body diagram and calculate the reactions necessary to ensure static equilibrium.
			CO II	Study the effect of friction in static and dynamic conditions.
			COIII	Understand the different properties of surfaces in relation to moment of inertia
			CO IV	Analyse and solve different problems of kinematics and kinetics.
			CO V	Analyse and solve with and without damping of SODF.
	EST130	BASICS OF ELECTRICAL AND ELECTRONICS	CO I	Apply fundamental concepts and circuit laws to solve simple DC electric circuits
			CO II	Develop and solve models of magnetic circuits
			COIII	Apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state
			CO IV	Describe working of a voltage amplifier
			CO V	Outline the principle of an electronic instrumentation system
			CO VI	Explain the principle of radio and cellular communication
	ESL 120	CIVIL AND MECHANICAL WORKSHOP	CO I	Name different devices and tools used for civil engineering measurements
			CO II	Explain the use of various tools and devices for various field measurements
			COIII	Demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work.
			CO IV	Choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing.
			CO V	Compare different techniques and devices used in civil engineering measurements
			CO VI	Identify Basic Mechanical workshop operations in accordance with the material and objects
			CO VII	Apply appropriate Tools and Instruments with respect to the mechanical workshop trades
			CO VIII	Apply appropriate safety measures with respect to the mechanical workshop trades
	ESL130	ELECTRICAL AND ELECTRONICS WORKSHOP	CO I	Demonstrate safety measures against electric shocks.
			CO II	Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols.
			COIII	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings.
			CO IV	Identify and test various electronic components
			CO V	Draw circuit schematics with EDA tools
			CO VI	Assemble and test electronic circuits on boards
			CO VII	Work in a team with good interpersonal skills
S3				
	CET 201	MECHANICS OF SOLIDS	CO I	Recall the fundamental terms and theorems associated with mechanics of linear elastic deformable bodies
			CO II	Explain the behavior and response of various structural elements under various loading conditions
			CO III	Apply the principles of solid mechanics to calculate internal stresses/strains, stress resultants and strain energies in structural
			CO IV	Choose appropriate principles or formula to find the elastic constants of materials making use of the information available.
			CO V	Perform stress transformations, identify principal planes/ stresses and maximum shear stress at a point in a structural member
			CO VI	Analyse the given structural member to calculate the safe load or proportion the cross section to carry the load safely.
	CET 203	Fluid Mechanics and Hydraulics	CO I	Recall the relevant principles of hydrostatics and hydraulics of pipes and open channels
			CO II	Identify or describe the type, characteristics or properties of fluid flow
			CO III	Estimate the fluid pressure, perform the stability check of bodies under hydrostatic condition
			CO IV	Compute discharge through pipes or estimate the forces on pipe bends by applying hydraulic principles of continuity, energy and/or
			CO V	Analyze or compute the flow through open channels, perform the design of prismatic
	CEL203	SURVEY LAB	CO I	Use conventional surveying tools such as chain/tape and compass for plotting and area determination.
			CO II	Apply levelling principles in field
			COIII	Solve triangulation problems using theodolite
			CO IV	Employ total station for field surveying
			CO V	Demonstrate the use of distomat and handheld GPS
	CET205	SURVEYING AND GEOMATIICS	CO I	Apply surveying techniques and principles of leveling for the preparation of contour maps, computation of area-volume and
			CO II	Apply the principles of surveying for triangulation
			CO III	Apply different methods of traverse surveying and traverse balancing
			CO IV	Identify the possible errors in surveying and apply the corrections in field measurements
			CO V	Apply the basic knowledge of setting out of different types of curves
			CO VI	Employ surveying techniques using advanced surveying equipments
	CEL201	CIVIL ENGINEERING PLANNING AND DRAFTING LAB	CO I	Illustrate ability to organise civil engineering drawings systematically and professionally
			CO II	Prepare building drawings as per the specified guidelines.
			CO III	Assess a complete building drawing to include all necessary information
			CO IV	Create a digital formof the building plan using any drafting software

S4				
	CET 202	ENGINEERING GEOLOGY	CO I	Recall the fundamental concepts of surface processes, subsurface process, minerals, rocks, groundwater and geological factors in civil engineering constructions.
			CO II	Identify and describe the surface processes, subsurface process, earth materials,groundwater and geological factors in civil engineering constructions.
			CO III	Apply the basic concepts of surface and subsurface processes, minerals, rocks, groundwater and geological characteristics in civil engineering constructions.
			CO IV	Analyze and classify geological processes, earth materials and groundwater.
			CO V	Evaluation of geological factors in civil engineering constructions.
	CET204	GEOTECHNICAL ENGINEERING I	CO I	Explain the fundamental concepts of basic and engineering properties of soil
			CO II	Describe the laboratory testing methods for determining soil parameters
			CO III	Solve the basic properties of soil by applying functional relationships
			CO IV	Calculate the engineering properties of soil by applying the laboratory test results and the fundamental concepts of soil mechanics
			CO V	Analyze the soil properties to identify and classify the soil
	CET 206	TRANSPORTATION ENGINEERING	CO I	Apply the basic principles of Highway planning and design highway geometric elements
			CO II	Apply standard code specifications in judging the quality of highway materials; designing of flexible pavements
			CO III	Explain phenomena in road traffic by collection, analysis and interpretation of traffic data through surveys; creative design of traffic control facilities
			CO IV	Understand about railway systems, tunnel, harbour and docks
			CO V	Express basics of airport engineering and design airport elements
	CEL202	MATERIAL TESTING LAB - I	CO I	The understand the behaviour of engineering materials under various forms and stages of loading.
			CO II	Characterize the elastic properties of various materials.
			CO III	Evaluate the strength and stiffness properties of engineering materials under various loading conditions.
	CEL 204	FLUID MECHANICS LAB	CO I	Apply fundamental knowledge of Fluid Mechanics to corresponding experiments
			CO II	Apply theoretical concepts in Fluid Mechanics to respective experiments
			CO III	Analyse experimental data and interpret the results
			CO IV	Document the experimentation in prescribed manner
S5				
	MCN301	DISASTER MANAGEMENT	CO I	Define and use various terminologies in use in disaster management parlance and organise each of these terms in relation to the disaster management cycle (Cognitive knowledge level: Understand).
			CO II	Distinguish between different hazard types and vulnerability types and do vulnerability assessment (Cognitive knowledge level: Understand).
			COIII	Identify the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk (Cognitive knowledge level: Understand).
			CO IV	Explain the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sector and community (Cognitive knowledge level: Apply)
			CO V	Identify factors that determine the nature of disaster response and discuss the various disaster response actions (Cognitive knowledge level: Understand).
			CO VI	Explain the various legislations and best practices for disaster management and risk reduction at national and international level (Cognitive knowledge level: Understand).
	CET305	GEOTECHNICAL ENGINEERING II	CO I	Analyze shallow and deep foundations, Calculate earth pressure
			CO II	Calculate bearing capacity
			COIII	Calculate foundation settlement pile capacity, Explain the basic concepts,theories and methods of analysis in foundation
			CO IV	Calculate pile capacity
			CO V	Solve the field problems related to geotechnical engineering Understand soil exploration methods
	CET 307	HYDROLOGY & WATER RESOURCES ENGINEERING	CO I	Describe and estimate the different components of hydrologic cycle by processing hydrometeorological data
			CO II	Determine the crop water requirements for the design of irrigation canals by recollecting the principles of irrigation engineering
			COIII	Perform the estimation of streamflow and/or describe the river behavior and control structures
			CO IV	Describe and apply the principles of reservoir engineering to estimate the capacity of reservoirs and their useful life
			CO V	
		CONSTRUCTION	CO I	Describe the properties of materials used in construction

	CET 309	CONSTRUCTION TECHNOLOGY AND MANAGEMENT	CO II	Explain the properties of concrete and its determination
			CO III	Describe the various elements of building construction
			CO IV	Explain the technologies for construction
			CO V	Describe the procedure for planning and executing public works
			CO VI	Apply scheduling techniques in project planning and control
	CEL331	MATERIAL TESTING LAB – II	CO I	To describe the basic properties of various construction materials
			CO II	Characterize the physical and mechanical properties of various construction materials.
			CO III	Interpret the quality of various construction materials as per IS Codal provisions.
	CEL 333	GEOTECHNICAL ENGINEERING LAB	CO I	Identify and classify soil based on standard geotechnical experimental methods.
			CO II	Perform and analyze permeability tests
			CO III	Interpret engineering behavior of soils based on test results.
			CO IV	Perform laboratory compaction, CBR and in-place density test for fill quality control in the field.
			CO V	Evaluate the strength of soil by performing various tests viz. direct shear test, unconfined compressive strength test and triaxial shear test.
			CO VI	Evaluate settlement characteristics of soils.
	CET 303	Design of Concrete Structures	CO I	Recall the fundamental concepts of limit state design and code provisions for design of concrete members under bending
			CO II	Recall the fundamental concepts of limit state design and code provisions for design of concrete members under bending
			COIII	Design and detail slab and stairs using IS code provisions
			CO IV	Design and detail columns using IS code and SP 16 design charts.
			CO V	Design and detail foundation, Estimate Deflection and Cracking and Explain the criteria for earthquake resistant design of structures and ductile detailing of concrete structures subjected to seismic forces
	CET 301	STRUCTURAL ANALYSIS - I	CO I	Apply the principles of solid mechanics to analyse trusses
			CO II	Apply energy principles to analyse statically determinate structures.
			COIII	Identify the problemswith static indeterminacy and understand the basic concepts of tackling such problems by means of the method of consistent deformations.
			CO IV	Apply suitable methods of analysis for various types of structures including cables, suspension bridges and arches.
			CO V	Analyse the effects of moving loads on structures using influence lines.
			CO VI	Apply specific methods such as slope deflection and moment distribution methods of structural analysis for typical structures with different characteristics.
S6				
	CET 304	ENVIRONMENTAL ENGINEERING	CO I	To appreciate the role of environmental engineering in improving the quality of water and estimating the quantity to plan for collection and conveyance of water and waste water
			CO II	To understand the layout of treatment plant and the sedimentation process
			CO III	To enhance water quality through filtration, disinfection and to plan the distribution of water
			CO IV	To understand the various waste water treatment processes
			CO V	To decide on appropriate technology for low cost treatment for high strength waste water
	CET308	COMPREHENSIVE COURSE WORK	CO I	Learn to prepare for a competitive examination
			CO II	Comprehend the questions in Civil Engineering field and answer them with confidence
			COIII	Communicate effectively with faculty in scholarly environments
			CO IV	Analyze the comprehensive knowledge gained in basic courses in the field of Civil Engineering
	CET 352	ADVANCED CONCRETE TECHNOLOGY	CO I	To recall the properties and testing procedure of concrete materials as per IS code
			CO II	To describe the procedure of determining the properties of fresh and hardened concrete
			CO III	To design concrete mix using IS Code Methods.
			CO IV	To explain nondestructive testing of concrete
			CO V	To describe the various special types of concretes
	CEL 332	TRANSPORTATION ENGINEERING LAB	CO I	Analyse the suitability of soil as a pavement subgrade material
			CO II	Assess the suitability of aggregates as a pavement construction material
			CO III	Characterize bitumen based on its properties so as to recommend it as a pavement construction material.

			CO IV	Design bituminous mixes for pavement layers
			CO V	Assess functional adequacy of pavements based on roughness of pavement surface.
	CEL334	CIVIL ENGINEERING SOFTWARE LAB	CO I	To undertake analysis and design of multi-storeyed framed structure, schedule a given set of project activities using a software.
			CO II	To prepare design details of different structural components, implementation plan for a project.
			COIII	To prepare a technical document on engineering activities like surveying , structural design and project planning.
	CET302	STRUCTURAL ANALYSIS - II	CO I	Understand the principles of plastic theory and its applications in structural analysis.
			CO II	Examine the type of structure and decide on the method of analysis.
			CO III	Apply approximate methods of analysis for framed structures to ascertain stress resultants approximately but quickly.
			CO IV	Apply the force method to analyse framed structures.
			CO V	Apply the displacement methods to analyse framed structures.
			CO VI	Remember basic dynamics, understand the basic principles of structural dynamics and apply the same to simple structures.
S7				
	CET401	DESIGN OF STEEL STRUCTURES	CO I	Explain the behaviour and properties of structural steel members to resist various structural forces and actions and apply the relevant codes of practice for the design of connections.
			CO II	Design and learn behaviour of tension members as per the relevant codes of practice
			COIII	Explain the theoretical and design aspects of compression members
			CO IV	Design beams and apply a diverse knowledge of Design of Steel engineering practices applied to real life problems.
			CO V	Demonstrate experience in the implementation of design of structures on engineering concepts which are applied in field Structural Engineering
	CET453	CONSTRUCTION PLANNING & MANAGEMENT	CO I	Apply knowledge of Planning and Management for planning and execution of Construction Projects
			CO II	Explain techniques for Project Planning, Scheduling, Construction Administration and Management
			COIII	Identify the criteria for selecting the appropriate method and tools as per the requirement of each project or site.
			CO IV	Discuss the latest industry standards and technologies used in construction projects for planning and management.
			CO V	Explain the financial and legal aspects involved in a construction project.
	CEL411	ENVIRONMENTAL ENGINEERING LAB	CO I	Analyse various physico-chemical and biological parameters of water
			CO II	Compare the quality of water with drinking water standards and recommend its suitability for drinking purposes
S8				
	CET402	QUANTITY SURVEYING & VALUATION	CO I	Define basic terms related to estimation, quantity surveying and contract document
			CO II	Interpret the item of work from drawings and explain its general specification and unit of measurement.
			COIII	Make use of given data from CPWD DAR/DSR for calculating the unit rate of different items of work associated with building construction
			CO IV	Develop detailed measurement (including BBS) and BoQ of a various work like buildings, earthwork for road, sanitary and water supply work
			CO V	Explain various basic terms related to valuation of land and building
			CO VI	Develop valuation of buildings using different methods of valuation.
	CET456	REPAIR AND REHABILITATION OF BUILDINGS	CO I	Recall the basics ideas and theories associated with Concrete technology and Masonry structures.
			CO II	Understand the need and methodology of repair and rehabilitation of structures, the various mechanisms used, and tools for diagnosis of structures
			COIII	Identifying the criterions for repairing / maintenance and the types and properties of repair materials used in site. Learn various techniques for repairing dam- aged and corroded structures
			CO IV	Proposing wholesum solutions for maintenance/rehabilitation and applying methodologies for repair- ing structures or demolishing structures.
			CO V	Analyse and asses the damage to structures using various tests
	CET424	GEOENVIRONMENTAL ENGINEERING	CO I	Outline the geo-environmental considerations of waste containment
			CO II	Explain the contaminant transport mechanism, Choose the suitable system for waste containment and its various components
			COIII	Choose the suitable system for landfill and its various components
			CO IV	Outline various waste collection system
			CO V	Plan suitable remediation method for contaminated site