ESWAR COLLEGE OF ENGINEERING

(Approved by AICTE, & Affiliated to JNTUK, A.P.)
KESANUPALLI (V), NARASARAOPETA-522549, AP
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DEPARTMENT OF CIVIL ENGINEERING

Course Outcomes

Year/Sem: II B.Tech I SEM **A.Y:2021-2022**

Course Name: Mathematics –III(Vector Calculus, Transforms and PDE)	
Course Code: CE2101	
CE2101.1	Determine the physical meaning of different operators such as gradient, curl and divergence
CE2101.2	Estimate the work done against a field, circulation and flux using vector calculus
CE2101.3	Apply the Laplace transform for solving differential equations
CE2101.4	Compute the Fourier series of periodic signals
CE2101.5	know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
CE2101.6	Identify solution methods for partial differential equations that model physical processes

Course Name: Strength of materials-I	
Course Code: CE2102	
CE2102.1	Understand the basic materials behaviour under the influence of different external loading conditions and the support conditions
CE2102.2	Able to draw the diagrams indicating the variation of the key performance features like bending moment and shear forces
CE2102.3	Knowledge of bending concepts and calculation of section modulus
CE2102.4	Determination of stresses developed in the beams and deflections due to various loading conditions
CE2102.5	To classify cylinders based on their thickness and to derive equations for measurement of stresses across the cross section when subjected to external pressure
CE2102.6	Analysis stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure using Lame's equation

Course Name: Fluid Mechanics	
Course Code: CE2103	
CE2103.1	Understand the various properties of fluids and their influence on fluid motion and analyse a variety of problems in fluid statics and dynamics
CE2103.2	Calculate the forces that act on submerged planes and curves
CE2103.3	Ability to analyse various types of fluid flows
CE2103.4	Apply the integral forms of the three fundamental laws of fluid mechanics to turbulent and laminar flow through pipes and ducts
CE2103.5	Determination of order to predict relevant pressures, velocities and forces

CE2103.6	Able Measure the quantities of fluid flowing in pipes, tanks and channels

Course Name: Surveying and Geometrics	
Course Code: CE2104	
CE2104.1	To Apply the knowledge to calculate angles, distances and levels
CE2104.2	Identify data collection methods and prepare field notes
CE2104.3	Understand the working principles of survey instruments, measurement errors and corrective measures
CE2104.4	Determination of survey data and compute areas and volumes, levels by different type of equipment
CE2104.5	Apply the surveying principles to determine areas and volumes and setting out curves
CE2104.6	Able to Identification of source of errors and rectification methods

Course Name: Highway Engineering	
Course Code: CE2105	
CE2105.1	Able to draw a Plan highway network for a given area
CE2105.2	To Determine Highway alignment
CE2105.3	Design Intersections and prepare traffic management plans
CE2105.4	Judge suitability of pavement materials and design flexible and rigid pavements
CE2105.5	To classify the different concepts in the field of Highway Engineering
CE2105.6	Able to know the types and classification of roads and intersections

Course Name: Concrete Technology Lab	
Course Code: CE2106	
CE2106.1	Able to Determine the consistency and fineness of cement
CE2106.2	To understand the initial and final setting time of cement
CE2106.3	To know the knowledge about the specific gravity and soundness of cement
CE2106.4	To Determine the workability of cement concrete by compaction factor
CE2106.5	Applying the rebound hammer to know the non-destructive test of concrete
CE2106.6	Analyse flakiness and elongation index of aggregates

Course Name: Highway Engineering lab	
Course Code: CE2107	
CE2107.1	Able to Test aggregates and judge the suitability of materials for the road construction
CE2107.2	Analyse the optimum bitumen content for Bituminous Concrete
CE2107.3	To Determine the traffic volume, speed and parking characteristics
CE2107.4	Able to Draw the highway cross sections and intersections
CE2107.5	To differentiate the carry out surveys for traffic volume, speed and parking
CE2107.6	Understand to the stability for the given bituminous mix

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Course Name: Surveying field work –I Lab	
Course Code: CE2108	
CE2108.1	To understand the various types of surveying methods
CE2108.2	Determination of the areas by applying the chain surveying
CE2108.3	Analyse the area calculations by triangulations methods
CE2108.4	Finding the area boundaries by plane table survey
CE2108.5	Determination of distance between two inaccessible points by using compass
CE2108.6	To understand the Height of the instrument method

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Year/Sem: II B.Tech II SEM

Course Name: Complex Variables and Statistical Methods	
Course Code: CE2201	
CE2201.1	To apply Cauchy-Riemann equations to complex functions in order to determine whether a given continuous function is analytic
CE2201.2	Able to know the differentiation and integration of complex functions used in engineering problems
CE2201.3	Understand the Cauchy residue theorem to evaluate certain integrals
CE2201.4	Apply discrete and continuous probability distributions
CE2201.5	Knowledge to design the components of a classical hypothesis test
CE2201.6	Differentiate the infer the statistical inferential methods based on small and large sampling tests

Course Name: Strength of materials -II	
Course Code: CE2202	
CE2202.1	Determination of Principal stresses and strains developed in cross section of the beams
CE2202.2	Understand the concepts of torsion and governing torsion equation, and there by calculate the power transmitted by shafts and springs
CE2202.3	To classify columns and calculation of load carrying capacity and to assess stresses due to axial and lateral loads
CE2202.4	Analyse the unsymmetrical bending in beams Location of neutral axis Deflection of beams under unsymmetrical bending
CE2202.5	Knowledge about different engineering applications like shafts, springs, columns and struts subjected to different loading conditions
CE2202.6	Classify the concepts of failures in the material by theories of failures

Course Name: Hydraulics and Hydraulic Machinery	
Course Code: CE2203	
CE2203.1	Differentiate uniform and non-uniform open channel flow problems
CE2203.2	Apply the principals of dimensional analysis and similitude in hydraulic model testing
CE2203.3	Understand the working principles of various hydraulic machineries and pumps
CE2203.4	Analyse the characteristics of hydraulic jump
CE2203.5	Determination of dimensional analysis for fluid flow problems
CE2203.6	Classify the various types of various types of hydraulic machines and Pumps

Course Name: Environmental Engineering	
Course Code: CE2204	
CE2204.1	Analyse source based on quality and quantity and Estimate design population and water demand
CE2204.2	Design a water treatment plant for a village/city
CE2204.3	Estimation of the Sewage Treatment Plant for a town/city
CE2204.4	Classify the sewers and plumbing systems for building
CE2204.5	Apply the various methods to treatment the water
CE2204.6	Able to know the distribution systems of the water

Course Name: Managerial Economics & Financial Analysis	
Course Code: CE2205	
CE2205.1	Able to know the knowledge of estimating the Demand and demand elasticity's for a product
CE2205.2	The knowledge of understanding of the Input-Output-Cost relationships
CE2205.3	Estimation of the least cost combination of inputs
CE2205.4	Prepare Financial Statements and the usage of various Accounting tools for Analysis
CE2205.5	evaluate various investment project proposals with the help of capital budgeting techniques for decision making
CE2205.6	Understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals

Course Name: Environmental Engineering lab	
Course Code: CE2206	
CE2206.1	Estimate some important characteristics of water, wastewater and soil
CE2206.2	Draw some conclusion and decide whether the water is suitable for Drinking/Construction /Agriculture/ Industry
CE2206.3	Determination of Chloride, EC and Salinity of Soil and suggest their suitability for Construction/Agriculture
CE2206.4	Understand the strength of the sewage in terms of BOD and COD
CE2206.5	Able to classify the various properties water
CE2206.6	Demonstration of WHO guidelines, Effluent standards and standards for Construction/ Agriculture/Industry

Course Name: Strength of materials Lab	
Course Code: CE2207	
CE2207.1	Determination of Tension test on Mild steel bar by UTM
CE2207.2	Understand the Bending test on cantilever beam of steel / wood
CE2207.3	Analyse the torsion test on specimen sample
CE2207.4	Able to know the Compression test on wood or concrete
CE2207.5	Apply the Brinnell's / Rock well's hardness testing machine for hardness of specimen
CE2207.6	Define the Verification of Maxwell's Reciprocal theorem on beams

Course Name: Fluid Mechanics & Hydraulics Machinery Lab	
Course Code: CE2208	
CE2208.1	Understand the Calibration of Venturi meter & Orifice meter
CE2208.2	Determination of Coefficient of discharge for a small orifice and mouth piece by a constant head and variable head method
CE2208.3	Able to know the Verification of Bernoulli's equation
CE2208.4	Define the Performance test on Pelton wheel turbine
CE2208.5	Analyse the Calibration of contracted Rectangular Notch and /or Triangular Notch
CE2208.6	Apply the Hydraulic jump test setup to study of Study of Hydraulic jump

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Year/Sem: III B.Tech I SEM

Course Name: Structural Analysis	
Course Code: CE3101	
CE3101.1	Differentiate the between the determinate and indeterminate structures
CE3101.2	Analyse behaviour of structures due to the expected loads, including the moving loads, acting on the structure
CE3101.3	Classify the bending moment and shear forces in beams for different fixity conditions
CE3101.4	Understand the continuous beams using various methods
CE3101.5	Determination of three moment method, slope deflection method, energy theorems
CE3101.6	Able to know the influence line diagrams for various types of moving loads on beams/bridges

Course Name: Concrete Technology	
Course Code: CE3102	
CE3102.1	Understand basic concepts of concrete
CE3102.2	Analyse the basic ingredients of concrete and their role in concrete and their behaviour in the field
CE3102.3	Classify the fresh concrete properties and hardened concrete properties
CE3102.4	Understand the behaviour of concrete in various environments
CE3102.5	Evaluate ingredients of concrete through lab tests. design concrete mix by IS method
CE3102.6	To understand durability properties of concrete

Course Name: Water Resources Engineering - I	
Course Code: CE3103	
CE3103.1	Able to quantify major hydrologic components and apply key concepts
CE3103.2	Classify several practical areas of engineering hydrology and related design aspects
CE3103.3	Develop Intensity-Duration-Frequency and Depth-Area Duration curves to design
CE3103.4	Ability to develop design storms and carry out frequency analysis
CE3103.5	Determine storage capacity and life of reservoirs and develop unit hydrograph and synthetic hydrograph
CE3103.6	Estimate flood magnitude and carry out flood routing
Course Name: Environmental Engineering -II	
Course Code: CE3104	
CE3104.1	Understand Plan and design the sewerage systems by estimating the flow
CE3104.2	Able to Design of Plumbing for an apartment, Gated community or Hotels or Individual houses
CE3104.3	Classify to Select the appropriate appurtenances in the sewerage systems
CE3104.4	Estimation of BOD and COD and Suggest a suitable disposal method with respect to effluent standard
CE3104.5	Define to Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river
CE3104.6	Analyse sewage and design suitable treatment system for sewage treatment for a village/City

Course Name: Construction Technology & Management	
Course Code: CE3105	
CE3105.1	Analyse the importance of construction planning
CE3105.2	Define the functioning of various earth moving equipment
CE3105.3	Able to know the methods of production of aggregate products and concreting
CE3105.4	Apply the gained knowledge to project management and construction techniques
CE3105.5	Classify the importance of safety in construction projects
CE3105.6	Understand the concept of project management including network drawing and monitoring

Course Name: Environmental Pollution &Control	
Course Code: CE3106	
CE3106.1	Able to Identify the air pollutant control devices
CE3106.2	knowledge on the NAAQ standards and air emission standards
CE3106.3	Differentiate the treatment techniques used for sewage and industrial wastewater t
CE3106.4	Understand the fundamentals of solid waste management, practices adopted areas
CE3106.5	Classify methods of environmental sanitation and the management of community
CE3106.6	Define importance of sustainable development while planning a project

Course Name: Concrete Technology Lab	
Course Code: CE3107	
CE3107.1	Determination of normal Consistency and fineness of cement
CE3107.2	Able to know the initial setting time and final setting time of cement
CE3107.3	Determination of specific gravity and soundness of cement
CE3107.4	Understand the properties of concrete
CE3107.5	Define the bulking of sand
CE3107.6	Classify workability of concrete by compaction factor method

Course Name: Surveying Field Work-II Lab	
Course Code: CE3108	
CE3108.1	Determination Horizontal and Vertical Angles by the method of repetition method by theodolite
CE3108.2	Define the distance between two inaccessible points
CE3108.3	Able to know the curve setting method
CE3108.4	Apply the total station method to know the distance between two inaccessible points
CE3108.5	Analyse the Contouring maps
CE3108.6	Understand the Heights and distance problems using tachometric principles

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Year/Sem: III B.Tech II SEM

Course Name: Design and Drawing of Reinforced Concrete Structures	
Course Code: CE3101	
CE3201.1	Able to understand the various design methods in RCC
CE3201.2	Differentiate the over and under reinforced structures with loading
CE3201.3	Analysis and design of flexural members and detailing
CE3201.4	Classification of various types slabs in RCC
CE3201.5	Design different type of compression members and footings
CE3201.6	Understand different types of footings and design

Course Name: Water Resource Engineering-II	
Course Code: CE3202	
CE3202.1	Able to understanding of the theories and principles governing the hydrologic processes
CE3202.2	Analyse the quantify hydrological components
CE3202.3	Apply concepts in hydrologic design of water resources projects
CE3202.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE3202.5	Differentiate flow mass curve and flow duration curve
CE3202.6	Develop unit hydrograph and synthetic hydrograph

Course Name: Geotechnical engineering -I	
Course Code: CE3103	
CE3203.1	Able to know the definition of the various quantities related to soil mechanics and Establish their inter-relationships.
CE3203.2	Determination of the various index properties of the soils and classify the soils
CE3203.3	Understand the importance of the different engineering properties of the soil
CE3203.4	Classify the properties of compaction, permeability, consolidation and shear strength and determine them in the laboratory
CE3203.5	understand the concept of shear strength of soils
CE3203.6	Differentiate the shear parameters of sands and clays and the areas of their application

Course Name: Managerial Economics & Financial Analysis	
Course Code: CE2205	
CE3204.1	Able to know the knowledge of estimating the Demand and demand elasticity's for a product
CE3204.2	The knowledge of understanding of the Input-Output-Cost relationships
CE3204.3	Estimation of the least cost combination of inputs
CE3204.4	Prepare Financial Statements and the usage of various Accounting tools for Analysis
CE3204.5	evaluate various investment project proposals with the help of capital budgeting techniques for decision making
CE3204.6	Understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals

Course Name: Pre stressed Concrete	
Course Code: CE3205	
CE3205.1	Able to know the concepts of pre stressing
CE3205.2	Understand different pre stressing systems and devices
CE3205.3	Analyse the losses of pre stress including short and long term losses
CE3205.4	Analysis and design of pre stressed concrete members under flexure, shear and torsion
CE3205.5	Analyse and design pre stressed concrete beams under flexure and shear
CE3205.6	Understand the relevant IS Code provisions for pre stressed concrete

Course Name: Waste Water Treatment	
Course Code: CE3206	
CE3206.1	Know the quality and quantity of water for various industries and Advanced water treatment methods
CE3206.2	Learn the common methods of treatment of wastewaters and Biological treatment methods
CE3206.3	Analyse methods to reduce impacts of disposal of wasters into environment and CETPs
CE3206.4	Classify the treatment of wastewaters from specific industries like steel plants
CE3206.5	Able to know methods of treatment of wastewaters from industries like Aqua, dairy, sugar plants, and distilleries that imply biological treatment methods
CE3206.6	Applying the neutralization methods for water treatment

Course Name: CAD Lab	
Course Code: CE3207	
CE3207.1	Understand Model the geometry of real-world structure Represent the physical model of structural element/structure
CE3207.2	Analyse the Perform analysis of the frame
CE3207.3	Able to Design and detailing of built up steel beam
CE3207.4	Developing a design programme for foundation
CE3207.5	Differentiate the Interpret from the Post processing results
CE3207.6	Analysis & Design of Roof Trusses

Course Name: Environmental Engineering Lab	
Course Code: CE3208	
CE3208.1	Estimate some important characteristics of water, wastewater and soil
CE3208.2	Classify the conclusion and decide whether the water is suitable for Drinking/Construction /Agriculture/ Industry
CE3208.3	Estimate Chloride, EC and Salinity of Soil and suggest their suitability
CE3208.4	Able to know the COD & BOD Values in water
CE3208.5	Classifying the various methods to treatment of water
CE3208.6	Demonstration of various instruments used in testing of water and soil and study of Drinking water standard

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Year/Sem: IV B.Tech I SEM

Course Name: Environmental Engineering - II	
Course Code: CE4101	
CE4101.1	Plan and design the sewerage systems
CE4101.2	Able to Select the appropriate appurtenances in the sewerage systems
CE4101.3	Analyze sewage and suggest and design suitable treatment system for sewage treatment
CE4101.4	Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river
CE4101.5	Able to know suitable disposal method with respect to effluent standards
CE4101.6	Differentiate the one pipe & two pipe metods

Course Name: Water Resource Engineering-II	
Course Code: CE4102	
CE4102.1	Able to understanding of the theories and principles governing the hydrologic processes
CE4102.2	Analyse the quantify hydrological components
CE4102.3	Apply concepts in hydrologic design of water resources projects
CE4102.4	Define Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures
CE4102.5	Differentiate flow mass curve and flow duration curve
CE4102.6	Develop unit hydrograph and synthetic hydrograph

Course Name: Geotechnical Engineering-II	
Course Code: CE4103	
CE4103.1	Able to understand the various types of shallow foundations
CE4103.2	Analyse and compute the magnitude of foundation settlement and decide on the size of the foundation accordingly
CE4103.3	Define the field test data and arrive at the bearing capacity
CE4103.4	Design the principles of bearing capacity of piles
CE4103.5	Differentiate the principles of important field tests such as SPT and Plate bearing test
CE4103.6	Able to know the concepts of pile foundations and determine their load carrying capacity

Course Name: Remote Sensing & GIS Applications	
Course Code: CE4104	
CE4104.1	Understand the basic principles of Remote Sensing and GIS techniques
CE4104.2	Able to learn various types of sensors and platforms
CE4104.3	Differentiate the aerial photographs and satellite imageries
CE4104.4	Create and input spatial data for GIS application
CE4104.5	Apply RS and GIS concepts for application in Civil Engineering
CE4104.6	Classify the spatial data structures, raster and vector data formats

Course Name: Ground Improvement Techniques	
Course Code: CE4105	
CE4105.1	Able to possess the knowledge of various methods of ground improvement and their suitability
CE4105.2	Differentiate to learn the concepts, purpose and effects of grouting
CE4105.3	Understand the position to design a reinforced earth embankment and check its stability
CE4105.4	Classify the various functions of Geosynthetics and their applications in Civil Engineering practice
CE4105.5	Able to know reinforced earth technology and soil nailing can obviate the problems posed by the conventional retaining walls
CE4105.6	Defining the improvement of engineering performance of soils

Course Name: Environmental impact assessment and management	
Course Code: CE4106	
CE4106.1	To impart knowledge on different concepts of Environmental Impact Assessment
CE4106.2	Able to Prepare EMP, EIS, and EIA report
CE4106.3	Analyse and Identify the risks and impacts of a project
CE4106.4	Define and Evaluation the EIA report
CE4106.5	Estimate the cost benefit ratio of a project
CE4106.6	Know the role of stakeholder and public hearing in the preparation of EIA

Course Name: GIS & CAD Lab	
Course Code: CE4107	
CE4107.1	Able to understand the Work comfortably on GIS software
CE4107.2	Define Digitize and create thematic map and extract important features
CE4107.3	Classifying the Develop digital elevation model
CE4107.4	Use structural analysis software to analyse and design 2D and 3D frames
CE4107.5	Design and analyse retaining wall and simple towers using CADD software
CE4107.6	learn to apply GIS software to simple problems in water resources and transportation engineering

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Course Name: Irrigation Design and Drawing Lab	
Course Code: CE4108	
CE4108.1	To understand design principle of various irrigation structures
CE4108.2	Design and analyse the surplus weir
CE4108.3	Able to know design and working of Tank sluice with a tower head
CE4108.4	Draw a plan of Canal drop-Notch type and working principles
CE4108.5	Understand the efficiency of Canal regulator
CE4108.6	Classify the design of Syphon aqueduct type III

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Year/Sem: IV B.Tech II SEM

Course Name: Estimation Specifications and Contract	
Course Code: CE4201	
CE4201.1	Able to determine the quantities of different components of buildings
CE4201.2	Analyse position to find the cost of various building components
CE4201.3	Understand the capable of finalizing the value of structures
CE4201.4	Differentiate various specifications and components of the buildings
CE4201.5	Understand the quantity calculations of different components of the buildings
CE4201.6	Classifying the types of contracts & documents

Course Name: Construction Technology & Management	
Course Code: CE4202	
CE4202.1	Analyse the importance of construction planning
CE4202.2	Define the functioning of various earth moving equipment
CE4202.3	Able to know the methods of production of aggregate products and concreting
CE4202.4	Apply the gained knowledge to project management and construction techniques
CE4202.5	Classify the importance of safety in construction projects
CE4202.6	Understand the concept of project management including network drawing and monitoring

Course Name: Pre stressed Concrete	
Course Code: CE4203	
CE4203.1	Able to know the concepts of pre stressing
CE4203.2	Understand different pre stressing systems and devices
CE4203.3	Analyse the losses of pre stress including short and long term losses
CE4203.4	Analysis and design of pre stressed concrete members under flexure, shear and torsion
CE4203.5	Analyse and design pre stressed concrete beams under flexure and shear
CE4203.6	Understand the relevant IS Code provisions for pre stressed concrete

Course Name: Solid and Hazardous Waste Management	
Course Code: CE4204	
CE4204.1	Able to Design the collection systems of solid waste of a town
CE4204.2	Understand the Design treatment of municipal solid waste and landfill
CE4204.3	Analyse to Know the criteria for selection of landfill
CE4204.4	Define the Characterise the solid waste and design a composting facility
CE4204.5	Differentiate the Method of treatment and disposal of Hazardous wastes
CE4204.6	Classifying the methods of solid disposal methods