DEPARTMENT OF CIVIL ENGINEERING

COURSE OUTCOMES

SEM III

MA6351 - TRANSFORM AND PARTIAL DIFFERENTIAL EQUATIONS

Course Code	Course Outcomes
C201.1 (CO1)	Evaluating the various model of homogeneous and non homogeneous partial differential equations which helps to solve engineering problems.
C201.2 (CO2)	Determine the Fourier coefficients in the Fourier series expansion of a given function and which play a vital role in analyzing various complex problems in engineering.
C201.3 (CO3)	Analyzing the one dimensional, two dimensional heat equation and one dimensional wave equation by using the concept of Fourier series, which describes the distribution in a given region over time
C201.4 (CO4)	Determine Fourier transform for a given function and use them to evaluate the definite integrals which helps in analyzing the differential equation and also applied in quantum mechanics
C201.5 (CO5)	Determine Z transforms and standard function and use them to solve the difference equation, which helps to investigate the discrete time signals.

CE 6301- ENGINEERING GEOLOGY

Course Code	Course Outcomes
C204.1 CO1	Able to understand the importance of geological knowledge such as earth action of various geological agencies
C204.2 CO2	Able to choose the types of minerals and other related aspects.
C204.3 CO3	Able to identify geological structures and processes for rock mass quality
C204.4 CO4	Able to identify subsurface information and groundwater potential sites through geophysical investigations
C204.5 CO5	Able to utilize the knowledge in projects such as dams, tunnels, bridges, roads, airport and harbor

DEPARTMENT OF CIVIL ENGINEERING

CE6302-MECHANICS OF SOLIDS

Course Code	Course Outcomes
C204.1 CO1	Able to learn fundamental concepts of stress, strain and deformation of solids with applications to bars, beams and thin cylinders.
C204.2 CO2	Able to analyse determinate beams and trusses to determine shear forces, bending moments and axial forces.
C204.3 CO3	Able to know the mechanism of load transfer in beams, the induced stress resultants and deformations
C204.4 CO4	Able to understand the effect of torsion on shafts and springs.
C204.5	Able to analyse a complex two dimensional state of stress and plane trusses

CE6303-MECHANICS OF FLUIDS

Course Code	Course Outcomes
C205.1 CO1	Able to understand the significance of basic principles of fluid statics and application of Hydrostatic law.
C205.2 CO2	Able to get a basic knowledge of fluids in kinematic and dynamic equilibrium and also measurement of discharge in pipes.
C205.3 CO3	Able to compute the friction loss in laminar and turbulent flows.
C205.4 CO4	Able to understand the concept of hydrodynamic properties
C205.5 CO5	Able to understand the fundaments of dimensional analysis and application of buckingam theorem in fluid flow problem

DEPARTMENT OF CIVIL ENGINEERING

CE6304 SURVEYING I

Course Code	Course Outcomes
C206.1 CO1	Able to understand the principles of various surveying methods and applications to Civil Engineering projects
C206.2 CO2	Able to Calculate angles, distances and levels
C206.3 CO3	Estimate measurement errors and apply corrections
C206.4 CO4	Able to prepare LS & CS, contour maps and carryout surveying works related to land and civil engineering projects.
C206.5 CO5	Able to measure the horizontal distances, difference in elevation

CE6311 Survey Practical I

Course Code	Course Outcomes
C207.1 CO1	Able to apply the principles of surveying in field.
C207.2 CO2	Able to Identify data collection methods and prepare field notes
C207.3 CO3	Able to handling basic survey instruments including leveling
C207.4 CO4	Able to development of contour map of given area
C207.5 CO5	Able to posses knowledge about theodolite

DEPARTMENT OF CIVIL ENGINEERING

CE6312 Computer Aided Building Drawing

Course Code	Course Outcomes
C208.1 CO1	Able to Understanding the basic commands, principles and features behind autocad.
C208.2 CO2	Able to Utilize CAD software for scaled drawing.
C208.3 CO3	Able to draft the plan, elevation and sectional views of buildings
C208.4 CO4	Able to develop and control rules satisfying orientation
C208.5 CO5	Able to understand the functional requirements as per National Building Code.

SEM IV

CE6401 Construction Materials

Course Code CO1	Course Outcomes
C210.1	Able to compare the properties of most common and advanced building materials
C210.2 CO2	Able to understand the typical and potential applications of these materials
C210.3 CO3	Able to understand the relationship between material properties and structural form
C210.4 CO4	Able to understand the importance of experimental verification of material properties
C210.5 CO5	Able to Gain knowledge in modern materials to be used

DEPARTMENT OF CIVIL ENGINEERING

CE6402 Strength of Materials

Course Code	Course Outcomes
C211.1 CO1	Able to calculate slope and deflection of beams and trusses using energy theorems
C211.2 CO2	Able to know the concept of analysing indeterminate beam
C211.3 CO3	Able to assess the behaviour of columns, beams and failure of materials.
C211.4 CO4	Able to Understand, combined stresses using the fundamental concepts of stress, Strain and elastic behavior of materials.
C211.5 CO5	Able to determine the stresses due to unsymmetrical bending and various theories for failure of material.

CE6403 Applied Hydraulic Engineering

Course Code	Course Outcomes
C212.1 CO1	Able to apply their knowledge of fluid mechanics in addressing problems in open channels.
C212.2 CO2	Able to Derive the governing equations for open channel flow
C212.3 CO3	Able to Understand the flow profiles in channel transitions and analyze hydraulic transients
C212.4 CO4	Able to solve problems in uniform, gradually and rapidly varied flows in steady state conditions.
C212.5 CO5	Able to Evaluate the working proportions of hydraulic machines

DEPARTMENT OF CIVIL ENGINEERING

CE6404 Surveying II

Course Code	Course Outcomes
C213.1 CO1	Able to Understand the geodetic measurements and Control Survey methodology
C213.2 CO2	Able to Estimate measurement errors and apply corrections
C213.3 CO3	Understand the advantages of electronic surveying over conventional surveying methods
C213.4 CO4	Understand the working principle of GPS, its components, signal structure, and error sources
C213.5 CO5	Able to understand the concept of sounding and Remote Sensing

CE6405 Soil Mechanics

Course Code	Course Outcomes
C214.1 CO1	Able to Characterize and classify soils and also determine Index properties
C214.2 CO2	Able to understands the concepts of stress and permeability in soils
C214.3 CO3	Able to Compute and analyze the consolidation settlements
C214.4 CO4	Able to Identify shear strength parameters for field conditions
C214.5 CO5	Able to understands the concepts of stability analysis of slope

DEPARTMENT OF CIVIL ENGINEERING

CE6411 Strength of Materials Laboratory

Course Code	Course Outcomes
C215.1 CO1	Able to Understand the knowledge about properties of surfaces and solids.
C215.2 CO2	Able to calculate the impact tests on steel bar
C215.3 CO3	Able to perform flexural and torsion test to determine elastic constants
C215.4 CO4	Able to Conduct compression tests on spring, wood and concrete
C215.5 CO5	Able to calculate the deflection of springs

CE6412 Hydraulic Engineering Laboratory

Course Code	Course Outcomes
C216.1 CO1	Able to Calibrate flow measuring devices used in pipes, channels and tanks
C216.2 CO2	Able to determine frictional losses in pipes
C216.3 CO3	Able to have an idea about regulating the water supply system
C216.4 CO4	Able to develop characteristics of pumps and turbines
C216.5 CO5	Able to study about parameters in floating bodies

CE6413 Survey Practical II

Course Code	Course Outcomes
C217.1 CO1	Able to apply advanced surveying techniques in different fields.
C217.2 CO2	Able to mark the control points in field
C217.3 CO3	Able to locate the curve points in road and Railways
C217.4 CO4	Able to find the latitude and longitude of the traverse stations.
C217.5 CO5	Able to apply total station and EDM in distance measurement and traversing

DEPARTMENT OF CIVIL ENGINEERING

SEM V

CE6501 Structural Analysis I

Course Code	Course Outcomes
C301.1 CO1	Able to analysis of indeterminate structures
C301.2 CO2	Able to analyse structures for moving loads with the concept of ILD
C301.3 CO3	Able to develop a preliminary guide for the analysis and design of symmetrical arches
C301.4 CO4	Able to conversant with classical methods of analysis.
C301.5 CO5	Able to understand the concept of carryover factor & distribution factor.

CE6502 Foundation Engineering

Course Code	Course Outcomes
C302.1 CO1	Able To impart knowledge on common method of sub soil investigation
C302.2 CO2	Able to understand the concept to design the shallow foundation
C302.3 CO3	Able to select type of foundation required for the soil at a place
C302.4 CO4	Able to get design concept of deep foundation
C302.5 CO5	Able to get knowledge in earth pressure theory

DEPARTMENT OF CIVIL ENGINEERING

CE6503 Environmental Engineering I

Course Code	Course Outcomes
C303.1 CO1	Able to introduce the water supply system and population forecasting.
C303.2 CO2	Able to understand the conversant with different intake structures and conveyance system
C303.3 CO3	able to impart the knowledge on design of treatment process
C303.4 CO4	able to understand various advanced water treatment process
C303.5 CO5	able to impart knowledge on water distribution, network design.

CE6504 Highway Engineering

Course Code	Course Outcomes
C304.1 CO1	Able to acquire knowledge on highway planning as per IRC
C304.2 CO2	Able to Understand concept of Geometric design of roads
C304.3 CO3	Able to Understand concept of Design flexible and rigid pavements.
C304.4 CO4	Able to Understand various Highway materials and their suitability under different conditions
C304.5 CO5	Able to evaluate and maintain highways as per IRC standards

DEPARTMENT OF CIVIL ENGINEERING

CE6505 Design of Reinforced Concrete Elements

Course Code	Course Outcomes
C305.1 CO1	Able to understand the basics of concrete design
C305.2 CO2	Able to emphasize the design of structural elements by limit state design method
C305.3 CO3	Able to understand the concrete of shear, bond and torsion
C305.4 CO4	Able to design the vertical compression member
C305.5 CO5	Able to understand the phenomenon about footing design.

CE6506 Construction Techniques, Equipment and Practice

Course Code	Course Outcomes
C306.1 CO1	Able to have basic knowledge about properties of concrete
C306.2 CO2	Able to know the various construction practices needed for different types of construction activities
C306.3 CO3	Able to get knowledge about the various construction procedures for sub structure
C306.4 CO4	Able to get knowledge about the various construction procedures for super structure
C306.5 CO5	Identify the equipment used in construction

DEPARTMENT OF CIVIL ENGINEERING

CE6511 Soil Mechanics Laboratory

Course Code	Course Outcomes
C308.1 CO1	Able to find index properties of soils
C308.2 CO2	Able to learn and acquire knowledge to classify soils.
C308.3 CO3	Able to determine insitu test for soil density
C308.4 CO4	Able to determine the moisture density relationship
C308.5 CO5	Able to determine the permeability and shear strength of soil

CE6512 Survey Camp

Course Code	Course Outcomes
C309.1 CO1	Able to select the advanced surveying technique which is best suited for a work
C309.2 CO2	Able to create the contour map of various field
C309.3 CO3	Able to find the RL of inaccessible points
C309.4 CO4	Able to understand the concept of astronomical surveying
C309.5 CO5	Able to do the total station and EDM in distance measurement and traversing

DEPARTMENT OF CIVIL ENGINEERING

SEM VI

CE6601 Design of Reinforced Concrete & Brick Masonry Structures

Course Code	Course Outcomes
C310.1 CO1	Able to impart the types of design retaining wall
C310.2 CO2	Able to understand the pressure concepts in various types of water tanks
C310.3 CO3	Able to enhance the design of staircase for various structures
C310.4 CO4	Able to know the crack pattern I the slabs using yield line theory
C310.5 CO5	Able to emphasize the construction of wall using brick masonry

CE6602Structural Analysis II

Course Code	Course Outcomes
C311.1 CO1	Able to understand the advance method of analysis
C311.2 CO2	Ability to use matrix for solving analysis of structures
C311.3 CO3	Able to get knowledge on basic elements used in finite element method
C311.4 CO4	Able to estimate the collapse load and plastic moment for continuous beam
C311.5 CO5	Able to estimate the force inn space truss and tension in suspension cables

DEPARTMENT OF CIVIL ENGINEERING

CE6603 Design of Steel Structures

Course Code	Course Outcomes
C312.1 CO1	Able to get the knowledge about design of joints
C312.2 CO2	Able to design the structural steel members subjected to tensile and compressive force
C312.3 CO3	Able to understand the design concept of column and its functional requirements.
C312.4 CO4	Able to design the beams under various loading and supporting conditions.
C312.5 CO5	Able to know the design of structural systems such as roof trusses and gantry girder

CE6604 Railways, Airports and Harbour Engineering

Course Code	Course Outcomes
C313.1 CO1	Able to Plan and Design various civil Engineering aspects of Railways
C313.2 CO2	Able to have an idea about construction and maintenance systems in railway
C313.3 CO3	Ability to create the layouts and components of airport
C313.4 CO4	Able to evaluate the geometric design of airports.
C313.5 CO5	Understand the various terms in harbor engineering and its classification.

CE6605 Environmental Engineering II

Course Code	Course Outcomes
C314.1 CO1	Able to impart knowledge on sewage generation and system
C314.2 CO2	Able to understand conveyance of sewage
C314.3 CO3	Able to impart knowledge on designing primary treatment of sewage
C314.4 CO4	Able to impart knowledge on designing secondary treatment of sewage
C314.5 CO5	Able to understand the disposal of sewage and sludge

DEPARTMENT OF CIVIL ENGINEERING

CE6611 Environmental Engineering laboratory

Course Code	Course Outcomes
C321.1 CO1	Able To understand the sampling and preservation methods
C321.2 CO2	Able to characterize wastewater and conduct treatability studies
C321.3 CO3	To understand the coagulation and precipitation process in wastewater treatment
C321.4 CO4	To impart the knowledge on extensive use of gas chromatography in characterization
C321.5 CO5	Able to detect the heavy metals.

CE6612 Concrete and Highway Engineering Laboratory

Course Code	Course Outcomes
C322.1 CO1	To impart the knowledge of material testing for use in concrete
C322.2 CO2	To understand the mix design for concrete
C322.3 CO3	Able to determine the properties of fresh concrete
C322.4 CO4	Able to determine the properties of hardened concrete
C322.5 CO5	Able to know the techniques to characterize various pavement materials through relevant tests

SEM VII

DEPARTMENT OF CIVIL ENGINEERING

CE6701 Structural Dynamics and Earthquake Engineering

Course Code	Course Outcomes
C401.1 CO1	Able to understand structural dynamics principles to e used in structure
C401.2 CO2	Able to interpret the displacement in terms of mode shape
C401.3 CO3	Able to get knowledge on basics of earthquake
C401.4 CO4	Ability to design earthquake resistant structures
C401.5 CO5	Able to understand the importance of ductility in structures

CE6702 Prestressed Concrete Structures

Course Code	Course Outcomes
C402.1 CO1	Able to understand the concept of prestressing in concrete structure
C402.2 CO2	Able to get knowledge of analyzing a prestressed concrete section
C402.3 CO3	Able to estimate losses of prestressing and deflections
C402.4 CO4	Able to design pretension and post tension for flexure and shear members
C402.5 CO5	able to know the design concept of prestressing pipes, poles and water tank

DEPARTMENT OF CIVIL ENGINEERING

CE6703 Water Resources and Irrigation Engineering

Course Code	Course Outcomes
C403.1 CO1	Able to have skills on planning and estimation of water requirement.
C403.2 CO2	Able to differentiate the phases in Water Resources Management and National Water Policy.
C403.3 CO3	able to get the knowledge about various modes of irrigation
C403.4 CO4	able to understand the various functions of irrigation structures
C403.5 CO5	Able to do economic analysis including Irrigation and Irrigation management practices.

CE6704 Estimation and Quantity Surveying

Course Code	Course Outcomes
C404.1 CO1	Able to estimate the quantities of item of works involved in buildings
C404.2 CO2	Able to estimate the water supply and sanitary works, road works and irrigation works
C404.3 CO3	Able to prepare a bill of quantities, make specifications and prepare tender documents
C404.4 CO4	Able to get the knowledge for valuation of properties
C404.5 CO5	Able to prepare the reports for estimation of various items.

CE6008 Groundwater Engineering

Course Code	Course Outcomes
C407.1 CO1	Able to know the aquifer properties and its dynamics
C407.2 CO2	Able to understand the principles of groundwater governing equations
C407.3 CO3	Able to understand the techniques of development and management of groundwater
C407.4 CO4	Able to understand concepts of groundwater quality.
C407.5 CO5	Able to understand the importance of artificial recharge

EN6501 Municipal Solid Waste Management

Course Code	Course Outcomes
C413.1 CO1	Able to know the sources and characteristics of solid waste
C413.2 CO2	Able to understand the merits of 3R's
C413.3 CO3	Able to gain knowledge on collection, segregation and transfer of MSW
C413.4 CO4	Able to understand the different processing methodology for MSW
C413.5 CO5	Able to gain knowledge on effective disposal of MSW

CE6711 Computer Aided Design and Drafting Laboratory

Course Code	Course Outcomes
C416.1 CO1	Able to understand the design and detailing of retaining wall
C416.2 CO2	Able to know about the importance of detailing
C416.3 CO3	Able to learn different types of concrete structures design
C416.4 CO4	Able to learn the design and detailing of water tank structures
C416.5 CO5	Able to learn the design and detailing of girder

CE6712 Design Project

Course Code	Course Outcomes
C417.1 CO1	Will get experience in designing various design problems related to civil Engineering
C417.2 CO2	Able to understand the meaning of team work
C417.3 CO3	To impart and improve the design capability of the student
C417.4 CO4	Analysis and design of structure to meet desired needs within realistic constraints
C417.5 CO5	Able to improve the design of an RC structure

SEM VIII

CE6016 Prefabricated Structures

Course Code	Course Outcomes
C422.1 CO1	Able to understand the principles and concept of prefabricated structure
C422.2 CO2	Able to understand all components and its procedure of construction
C422.3 CO3	Able to follow the techniques for all types of units
C422.4 CO4	Able to understand connections for all joints in structural members
C422.5 CO5	Able to relate the concept to abnormal loads relating progressive collapse

CE6021 Repair and Rehabilitation of Structures

Course Code	Course Outcomes
C429.1 CO1	To gain the knowledge on quality of concrete, durability aspects, causes of deterioration
C429.2 CO2	To gain the knowledge on assessment of distressed structure
C429.3 CO3	To gain the knowledge on repairing methodology of structure
C429.4 CO4	To get to know about special concrete
C429.5 CO5	To obtain more knowledge about retrofitting

DEPARTMENT OF CIVIL ENGINEERING

CE6811 Project Work

Course Code	Course Outcomes
C431.1 CO1	Able to understand work methodology adopted in industry
C431.2 CO2	Able to find solution for the difficulty during construction
C431.3 CO3	Able to understand the meaning of teamwork
C431.4 CO4	Able to give practical knowledge regarding projects
C431.5 CO5	Able to give the idea to finish work on time

REGULATION 2017

SEM III

MA8353 Transforms and Partial Differential Equations

Course Code	Course Outcomes
C201.1 CO1	To introduce the basic concepts of PDE for solving standard partial differential equations.
C201.2 CO2	To introduce Fourier series analysis which is central to many applications in engineering apart from its use in solving boundary value problems
C201.3 CO3	To acquaint the student with Fourier series techniques in solving heat flow problems used in various situations.
C201.4 CO4	To acquaint the student with Fourier transform techniques used in wide variety of situations.
C201.5 CO5	To introduce the effective mathematical tools for the solutions of partial differential equations that model several physical processes and to develop Z transform techniques for discrete time systems.

DEPARTMENT OF CIVIL ENGINEERING

CE8301 STRENGTH OF MATERIALS I

Course Code	Course Outcomes
C202.1 CO1	Understand the concepts of stress and strain, principal stresses and principal planes.
C202.2 CO2	Determine Shear force and bending moment in beams and understand concept of theory of simple bending.
C202.3 CO3	Calculate the deflection of beams by different methods and selection of method for determining slope or deflection.
C202.4 CO4	Apply basic equation of torsion in design of circular shafts and helical springs, .
C202.5 CO5	Analyze the pin jointed plane and space trusses

CE8302 FLUID MECHANICS

Course Code	Course Outcomes
C203.1 CO1	Get a basic knowledge of fluids in static, kinematic and dynamic equilibrium.
C203.2 CO2	Understand and solve the problems related to equation of motion.
C203.3 CO3	Gain knowledge about dimensional and model analysis.
C203.4 CO4	Learn types of flow and losses of flow in pipes.
C203.5 CO5	Understand and solve the boundary layer problems.

DEPARTMENT OF CIVIL ENGINEERING

CE8351 SURVEYING

Course Code	Course Outcomes
C204.1 **CO1**	The use of various surveying instruments and mapping
C204.2 CO2	Measuring Horizontal angle and vertical angle using different instruments
C204.3 CO3	Methods of Leveling and setting Levels with different instruments
C204.4 CO4	Concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth
C204.5 CO5	Concept and principle of modern surveying.

DEPARTMENT OF CIVIL ENGINEERING

CE8391 CONSTRUCTION MATERIALS

Course Code	Course Outcomes
C205.1 CO1	Compare the properties of most common and advanced building materials.
C205.2 CO2	Understand the typical and potential applications of lime, cement and aggregates
C205.3 CO3	Know the production of concrete and also the method of placing and making of concrete elements.
C205.4 CO4	Understand the applications of timbers and other materials
C205.5 CO5	Understand the importance of modern material for construction.

CE8392 ENGINEERING GEOLOGY

Course Code	Course Outcomes
C206.1 CO1	Will be able to understand the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies.
C206.2 CO2	Will get basics knowledge on properties of minerals.
C206.3 CO3	Gain knowledge about types of rocks, their distribution and uses.
C206.4 CO4	Will understand the methods of study on geological structure.
C206.5 CO5	Will understand the application of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbor

DEPARTMENT OF CIVIL ENGINEERING

CE8311 CONSTRUCTION MATERIALS LABORATORY

Course Code	Course Outcomes
C207.1 CO1	Conduct Quality Control tests on Fine Aggregates
C207.2 CO2	Conduct Quality Control tests on Coarse Aggregates
C207.3 CO3	Conduct Quality Control tests on fresh concrete
C207.4 CO4	Determine the strength properties of hardened concrete
C207.5 CO5	Perform Quality Control tests on Bricks, blocks and tiles

DEPARTMENT OF CIVIL ENGINEERING

CE8361 SURVEYING LABORATORY

Course Code	Course Outcomes
C208.1 CO1	Gain practical knowledge on handling basic survey instruments
C208.2 CO2	Gain practical knowledge on handling Theodolite, Tacheometry
C208.3 CO3	Gain practical knowledge on handling Total Station and GPS
C208.4 CO4	Gain adequate knowledge to carryout Triangulation and Astronomical surveying
C208.5 CO5	Gain adequate knowledge on general field marking for various engineering projects and Location of site

CE8401 CONSTRUCTION TECHNIQUES AND PRACTICES

Course Code	Course Outcomes
C211.1 CO1	Know the different construction techniques and structural systems
C211.2 CO2	Understand various techniques and practices on masonry construction, flooring, and roofing.
C211.3 CO3	Plan the requirements for substructure construction.
C211.4 CO4	Know the methods and techniques involved in the construction of various types of super structures
C211.5 CO5	Select, maintain and operate hand and power tools and equipment used in the building construction sites.

CE8402 STRENGTH OF MATERIALS II

Course Code	Course Outcomes
C212.1 CO1	Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.
C212.2 CO2	Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.
C212.3 CO3	Find the load carrying capacity of columns and stresses induced in columns and cylinders
C212.4 CO4	Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure
C212.5 CO5	Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams.

CE 8403 APPLIED HYDRAULIC ENGINEERING

Course Code	Course Outcomes
C213.1 CO1	Apply their knowledge of fluid mechanics in addressing problems in open channels.
C213.2 CO2	Able to identify a effective section for flow in different cross sections.
C213.3 CO3	To solve problems in uniform, gradually and rapidly varied flows in steady state conditions.
C213.4 CO4	Understand the principles, working and application of turbines.
C213.5 CO5	Understand the principles, working and application of pumps.

CE8404 CONCRETE TECHNOLOGY

Course Code	Course Outcomes
C214.1 CO1	The various requirements of cement, aggregates and water for making concrete
C214.2 CO2	The effect of admixtures on properties of concrete
C214.3 CO3	The concept and procedure of mix design as per IS method
C214.4 CO4	The properties of concrete at fresh and hardened state
C214.5 CO5	The importance and application of special concretes.

CE8491 SOIL MECHANICS

Course Code	Course Outcomes
C215.1 CO1	Classify the soil and assess the engineering properties, based on index properties.
C215.2 CO2	Understand the stress concepts in soils
C215.3 CO3	Understand and identify the settlement in soils.
C215.4 CO4	Determine the shear strength of soil
C215.5 CO5	Analyze both finite and infinite slopes.

DEPARTMENT OF CIVIL ENGINEERING

CE8481 STRENGTH OF MATERIALS LABORATORY

Course Code	Course Outcomes
C216.1 CO1	Acquire required knowledge in the area of testing steel rod
C216.2 CO2	Acquire required knowledge in the area of testing wood
C216.3 CO3	Acquire required knowledge in the area of testing metal
C216.4 CO4	Acquire required knowledge in the area of testing components of structural elements
C216.5 CO5	Learn deflection and compression test

CE8461 HYDRAULIC ENGINEERING LABORATORY

Course Code	Course Outcomes
C217.1 CO1	The students will be able to study the Characteristics of pumps
C217.2 CO2	The students will be able to study the Characteristics of turbine
C217.3 CO3	The students will be able to measure flow in pipes and determine frictional losses.
C217.4 CO4	The students will be able to develop characteristics of pumps and turbines
C217.5 CO5	The students will be able to verify the principles studied in theory by performing the experiments in lab.

DEPARTMENT OF CIVIL ENGINEERING

CE8501DESIGN OF REINFORCED CEMENT CONCRETE ELEMENTS

Course Code	Course Outcomes
C301.1 CO1	Understand the various design methodologies for the design of RC elements.
C301.2 CO2**.**	Know the analysis and design of flanged beams by limit state method and sign of beams for shear, bond and torsion.
C301.3 CO3	Design the various types of slabs and staircase by limit state method.
C301.4 CO4	Design columns for axial, uniaxial and biaxial eccentric loadings.
C301.5 CO5	Design of footing by limit state method.

DEPARTMENT OF CIVIL ENGINEERING

CE8502 STRUCTURAL ANALYSIS I

Course Code	Course Outcomes
C302.1 CO1	Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method
C302.2 CO2	Analyse the continuous beams and rigid frames by slope defection method.
C302.3 CO3	Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.
C302.4 CO4	Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.
C302.5 CO5	Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames.

EN8491 WATER SUPPLY ENGINEERING

Course Code	Course Outcomes
C303.1 CO1	An insight into the structure of drinking water supply systems, including water transport, treatment and distribution
C303.2 CO2	The knowledge in various unit operations and processes in water treatment
C303.3 CO3	An ability to design the various functional units in water treatment
C303.4 CO4	An understanding of water quality criteria and standards, and their relation to public health
C303.5 CO5	The ability to design and evaluate water supply project alternatives on basis of chosen

DEPARTMENT OF CIVIL ENGINEERING

CE8591 FOUNDATION ENGINEERING

Course Code	Course Outcomes
C304.1 CO1	Understand the site investigation, methods and sampling.
C304.2 CO2	Get knowledge on bearing capacity and testing methods.
C304.3 CO3	Design shallow footings.
C304.4 CO4	Determine the load carrying capacity, settlement of pile foundation.
C304.5 CO5	Determine the earth pressure on retaining walls and analysis for stability.

CE8511 SOIL MECHANICS LABORATORY

Course Code	Course Outcomes
C320.1 CO1	Classifying soil based on index properties of soils (coarse and fine).
C320.2 CO2	Classifying soil based on consistency limit of fine grained soils
C320.3 CO3	Interpreting the shear strength of all types of soils by conducting lab tests
C320.4 CO4	Interpreting the shear strength of all types of soils by conducting lab tests
C320.5 CO5	Understanding the engineering properties of soils by conducting field tests

CE8512 WATER AND WASTE WATER ANALYSIS LABORATORY

Course Code	Course Outcomes
C321.1 CO1	Quantify the pollutant concentration in water and wastewater
C321.2 CO2	Suggest the type of treatment required and amount of dosage required for the treatment
C321.3 CO3	Examine the conditions for the growth of micro-organisms
C321.4 CO4	Suggest the type of treatment required to reduce e-coli in water
C321.5 CO5	Compare the analysis of treated water among different treatments

CE8513 SURVEY CAMP

Course Code	Course Outcomes
C322.1 CO1	To use all surveying equipment, prepare LS &CS
C322.2 CO2	To prepare contour maps by triangulation method
C322.3 CO3	To prepare maps and grids by Trilateration method
C322.4 CO4	To prepare contour maps by Rectangulation method
C322.5 CO5	To carryout surveying works related to land and civil engineering projects

DEPARTMENT OF CIVIL ENGINEERING

GI8013 ADVANCED SURVEYING

Course Code	Course Outcomes
C306.1 CO1	Know the astronomical surveying
C306.2 CO2	Do the photogrammetric surveying and interpretation
C306.3 CO3	Solve the field problems with Total station
C306.4 CO4	Know the GPS surveying and the data processing
C306.5 CO5	Understand the route surveys and tunnel alignments

ORO551 RENEWABLE ENERGY SOURCES

Course Code	Course Outcomes
C316.1 CO1	Understanding the physics of solar radiation.
C316.2 CO2	Ability to classify the solar energy collectors and methodologies of storing solar energy.
C316.3 CO3	Knowledge in applying solar energy in a useful way.
C316.4 CO4	Knowledge in wind energy and biomass with its economic aspects.
C316.5 CO5	Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.