COURSE OUTCOMES

2nd Year (3rd Semester)

S. No	Sub Code	Subject Name	Course Outcomes (CO)
1	3CE2A	Strength of Materials-I	CO-1 : Students will able to understand the ability, behavior of metal under the action of external forces. And detailed study of forces and their effects, along with some suitable protective measures for safe working condition. CO-2 : Understanding the stability of columns under the action of compressive forces. CO-3 : Students will able to understand the failure of thin cylindrical and spherical shells (boilers, tanks and compressed air receivers) due to an internal pressure. CO-4 : Understanding the analyze and design of beam on the basis of shear force diagram and bending moment diagram
2	3CE2A	Civil Engineering Materials	CO-1: Understanding the basic properties classification & uses of stone. CO-2: Understanding the basic properties manufacturing & uses of clay product, cement & lime. CO-3: Understanding the function, various test & application of mortar and plaster timber & steel. CO-4: Study & analyzing the concept of environmental friendly building material and miscellaneous materials such as glass, aluminum, asbestos, G.I., plastics in construction.
3	3CE3A	Engineering Geology	CO-1: Understands the concepts of general geology & knows about internal structure of earth & minerals. CO-2: Understanding the concepts of petrology & know about rocks. CO-3: Understanding the concept of structural geology & basics of fold & faults & also to know about dip & strike problems. CO-4: Study & analyzing the concept of environmental friendly building material and miscellaneous materials such as glass, aluminum, asbestos, G.I., plastics in construction.
4.	3CE4A	Construction Technology	CO-1: To Understand The Basic Building Requirement And Construction Techniques. CO-2: To Understand About DPC Joints Arches Lintels Etc. CO-3: To Understand the Fabrication And Erection Work, Roof And Roof Covering. CO-4: To Understand Advanced Construction Techniques and About Equipment Management.
5	3CE5A	Fluid Mechanics	CO-1: To understand important basic terms used in fluid mechanics with practices of solvig problem. CO-2: To understand hydrostatics and buoyancy with practice of solving problem.

			CO-3: To understand euler equation, bernoulli equation in hydro kinematics, rotational flow practice of applications and solving problems. CO-4: To understand momentum equation and flow throw pipes practice of solving problems.
6	3CE6A	Advanced Engineering Mathematics	CO-1: Calculate the Fourier series for standard periodic waveforms and demonstrate their understanding of the Dirichlet's conditions by using them to evaluate infinite series. solve z transform and its difference equations. CO-2: Calculate the Laplace transform of standard functions and use the techniques to solve second-order ordinary differential equations and partial differential equations. CO-3:Calculate the Fourier transform of standard functions and use the techniques to solve second-order ordinary differential equations and partial differential equations. CO-4: Use numerical methods to interpolate, differentiate and integrate the functions and solve first order differential equations

2nd Year (4th Semester)

S. No	Sub Code	Subject Name	Course Outcomes (CO)
1	4CE1A	Strength of Materials-II	CO 1: Study the deflection of Beams using following methods: double integration method, Macaulay's method, area moment method and conjugate beam method. CO2: Analysis of prop cantilever structures, determinate Structure using Area moment method, Conjugate beam method and Fixed Beams & Continuous Beams by three moments Theorem and Area moment method. Study of combined direct and bending stress, middle third rule, core of a section, gravity retaining wall. CO3: Study of Torsion, shear stress in solid and hollow circular shafts, angle of twist, power transmitted by a shaft, combined bending and torsion; Study of following points about Springs: Stiffness of springs, springs in series and parallel, laminated plate springs, leaf spring, close coiled helical springs, open coiled springs. Vibrations. CO4: Study of Simple Harmonic Motion and Introduction to damped and forced vibration. Acquire knowledge about Undamped free vibration of SDOF system: Newton's law of motion, D'Almbert's principle. .
2	4CE2A	CONCRETE TECHNOLOGY	CO1- to understand ingredient of concrete and its properties. Co2- to understand different types of concrete and non destructive tests. Co3-to understand the concrete handling in fields and concrete mix design. Co4-to understand admixtures, formworks and type of concrete.

3	4CE3A	HYDRAULICS & HYDRAULIC MACHINE	Co1- to understand dimension analysis & models. Co2- to understand laminar flow & turbulent flow. Co3-to understand open channel flow. Co4-to understand impact of jets , pumps and turbines.
4	4CE4A	Surveying-I	CO 1: Study the Introduction to surveying and its Importance to engineers, Plane and geodetic surveying, Basic principle of surveying from whole to part and conventional signs. Study how to measure Distances. CO2: To know about the Measurement of Angles & Direction, Bearing and azimuths, magnetic declination and its variation. To know how to use the following instruments: surveyors and prismatic compass. Vernier and micro-optic theodolite, CO3: Study of different methods of traversing: chain traverse & Compass traverse, transit-tape traverse. Methods of computations and adjustment of traverse; transit rule, Bowditch rule , graphical method, axis method. Gales traverse table.. CO4: To provide basic knowledge about Leveling and Plane Table Surveying:
5	4CE5A	BUILDING PLANNING	Co1- to understand types of buildings & appropriate selection of site with sun consideration. Co2- to study about bye-laws and nbc regulation along with orientation, climatic & comfort consideration. Co3- to understand principles of planning and vastu shastra. Co4- to understand functional design and services in buildings.
6	4CE6A	QUANTITY SUVEYING & VALUATION	CO .1 To understand about the Estimate. Their type, method, and preparing cost of civil works. CO 2. To understand about the analysis of rates of various items of civil engineering works and how to prepare CO 3 TO understand about over head charges contingencies and w.c. Establishment estimate of different works.

			CO. 4 To understand about the depreciation, sinking fund, valuation of civil works, rent calculation of govt building etc..

3rd Year (5th Semester)

S. No	Sub Code	Subject Name	Course Outcomes (CO)
1	5CE1A	Theory of Structures-1	CO-1: Understand the indeterminacy of structures & can apply the concepts of Maxwell & BETTE theorem & Slope deflection theorem. CO-2: Understanding the concepts of Moment distribution method. CO-3: Understanding the concept of Strain energy & application of Castiglione theorems & Unit load method to find the deformations of structures. CO-4: Basic knowledge of Column analogy method & KANI method & analyze the multistory frames using portal method, factor method, cantilever method & analysis of determinate trusses by Tension coefficient method.
2	5CE2A	Environment Engineering	CO-1: To understand the basics of environmental science and engineering and importance of water. CO-2: To understand the role of civil engineer in environment protection. CO-3: To learn various terms of WSS. CO-4: To understand various sources, quality and standards of water. CO-5: To understand methods, components and designing of water distribution system.
3	5CE3A	Geotechnical Engineering	CO-1: To Understand basic properties of soil and their identifications. CO-2: To Understand behavior of clay mineralogy. CO-3: TO understand the Stresses in soil mass and Seepage and Seepage Pressure. CO-4: Basic knowledge of Mohr's circle of stress and Principles of soil compaction.
4	5CE4A	Surveying-II	CO-1: Basic understanding of survey trigonometric leveling for various cases, various correction including effect of earth curvature and refraction. CO-2: Understanding the basic implementation of horizontal curve on ground for all cases whether centre and radius are accessible or not. CO-3: Understand how adjustment of figure for surveying of any country and all routine work to draw a triangulation system and various types of errors.

			CO-4: Study of astronomical observation based on earth and celestial sphere, and co-ordinate system of earth
5	5CE5A	Building Design	CO-1: This subject will provide the understanding of different types of loads considered and taken into account when designing the buildings especially DL/LL/IL/EL. CO-2: Students will be able to understand the different types of construction and various provisions specified by bureau of Indian standards CO-3: Students will be able to understand the design criteria of the buildings/ roof (general &special)/ building components and the modern techniques involved in construction.
6	5CE6A.3A	Solid Waste Management	CO-1: To Understand General Concept & Problems Associated With Waste Management. CO-2: To Understand Onsite Handling, Storage & Processing Of Solid Waste. CO-3: To Understand Collection, Transfer & Transport Of Solid Waste. CO-4: To Understand Disposal Methods & Recovery Methods.

3rd Year (6th Semester)

S. No	Sub Code	Subject Name	Course Outcomes (CO)
1	6CE1A	Theory of Structures-II	CO. 1 to understand the concept of moving or rolling load and analysis the beam or girder (draw SFD & BMD dia.) with ILD diagram. CO.2 To Understand the concept of arches and analysis of three hinged, two hinged and fixed type parabolic arches. CO. 3 to understand the effect of cable in the structure & analysis of cable with concentrated & continuous loading. CO.4 To understand the Unsymmetrical bending, theories of failure and calculate the location of neutral axis, Shear stress deflection. CO.5 To understand the theories of matrix method with flexibility method and stiffness method
2	6CE2A	Geotechnical Engineering-II	CO1-To understanding the concept of consolidation of soil CO2- To understanding the vertical stress due applied load. CO3- To analysis of earth pressure and stability of slopes. O4-To understand the concept of bearing capacity and site investigation of soil.
3	6CE3A	ENVIRONMENTAL ENGINEERING- II	CO1- TO UNDERSTAND THE BASICS OF SEWAGE AND WASTEWATER ENGINEERING. CO2- TO UNDERSTAND TYPES AND COMPONENTS OF SEWERAGE SYSTEMS AND ITS MAINTENANCE. CO3- TO UNDERSTAND VARIOUS SEWAGE TREATMENT METHODS CO4- TO UNDERSTAND THE EFFECT OF AIR AND NOISE POLLUTION

4	6CE4A	DESIGN OF CONCRETE STRUCTURES- I	CO1- To understand objective and fundamental concept and various design philosophies related to design of rc members. Co2- to know the provision of is codes and analysis (design) of different types of beams- singly reinforced, flanged beam, and doubly reinforced using limit state method. Co3- TO understand the codal provisions and analysis of various slabs – one way slab, two way slab and flat slab using limit state method. Co4- To analyze the design of columns and column footings- long and short and reinforcement details.
5	6CE5A	Transportation Engineering-I	CO1: to understand the basic knowledge of transportation system, development and planning of transportation CO2: The basic concept of highway materials and construction of highway with geometric design CO3: The basic knowledge of traffic engineering CO4: Understand basic knowledge The structural design of highway pavement and hill roads
6	6CE6.3A	Repair & Rehabilitation of Structures	CO1: Understanding the causes of deterioration of concrete in structures & details about cracks. CO2: Study the different types of non destructive testing & details about corrosion. CO3: Study the materials & techniques of repair of buildings. CO4: Understanding how to do investigation for structures & different case studies of bridge piers, canals, dam, heritage structures and corrosion damaged structures.

4th Year (7th Semester)

S. No	Sub Code	Subject Name	Course Outcomes (CO)
1	7CE1A	Water Resources Engineering	CO-1: Understand basic concepts and terminology of Water Resources Engineering. CO-2: To design Canal Irrigation System and understand Water Distribution System CO-3: To understand Distribution of Canal Water and Hydraulics of Alluvial Rivers. CO-4: To understand Water Logging, Well Irrigation and Hydrology.
2	7CE2A	Design of Steel Structures-1	CO-1: Students would be able to understand the use of steel section and plastic analysis. CO-2: Students are able to understand use of connections and tension members. CO-3: Students would be able to analyze compression member. CO-4: Students would be able to use different sections for beam.
3	7CE3A	Design of Concrete Structures-2	CO-1: Students will be able to understand the concept and design of pre-stress concrete. CO-2: Students will be able to understand the concept and design of torsion for beams, curved beam and methodology of redistribution of moment. CO-3: Understands the design concept of domes and tanks CO-4: Student will be able to understand the concept of yield line theory and retaining walls. CO-5: Student will be able to understand the design procedure of deck slab and culvert.
4	7CE4A	TRANSPORTATION 2	CO-1: Outcome of the unit is to understand basic terminology of railway and designing of railway tracks. CO-2: Outcome of unit is to understand geometric design : such that

			speed , gradients, curves and alignments of tracks. CO-3: Outcome of the unit is to understand basic terminology of airpot. CO-4: Outcome of the unit is to design the pavements of airport.
5	7CE5A	Application of Numerical Methods in Civil Engineering	CO-1: Analyze the error incumbent in any numerical approximation. CO-2: Solve nonlinear equations by certain numerical methods. CO-3: Solve a system of linear algebraic equations by certain numerical methods with the use of matrices CO-4: Fit a curve of a vicariate data and interpolate the desire values with specific interpolation process.
6	7CE6.1A	Advance Transportation Engineering	CO-1: Unit is based on traffic studies like spot speed, traffic volume and its method, accidental studies, o-d studies. CO-2: Unit is based on how to collect data from roadways and get probable values of these data for further calculation. CO-3: Unit is based on human and vehicular characteristics decided by IRC, rotary design and requirement of it based on IRC recommendation as well as signals designing. CO-4: Unit is based on how to manage the traffic to avoid accidents and road safety by laws and ordinances for drivers. CO-5: Unit is based on what is the adverse effect of vehicles on environment and how to reduce such effects.

4th Year (8th Semester)

S. No	Sub Code	Subject Name	Course Outcomes (CO)
1	8CE1A	WATER RESOURCE ENGINEERING- II	CO1- TO UNDERSTAND THE REGULATION OF WORKS & CROSS DRAINAGE STRUCTURE CO2- TO UNDERSTAND DIVERSION HEAD WORKS CO3- TO UNDERSTAND EMBANKMENT DAMS & GRAVITY DAMS CO4-TO UNDERSTAND SPILLWAYS, HYDRO POWER PLANT, RESERVOIRS & OPTIMIZATION TECHNIQUES.
2	8CE2A	DESIGN OF STEEL STRUCTURE-	C.O. 1 To Understand The Concept And Design Of Gantry Girder And Roof Trusses. C.O. 2 To Understand The Concept And Design Criteria For Plate Girder. C.O. 3 To Understand Different Type Of Bridges And The Provision Of Loading As Per IS Recommendation. C.O. 4 To Analyze Water Tank And Different Geometrical Tanks.
3	8CE3A	Project Planning &Construction Management	CO1 - To have knowledge over capital investment and judge the inflow and outflow of scare resources in capital budgeting. CO2 - Student will learn about a better method of presenting technical data thru scheduling technique ie pert, cpm and time-cost trade off to achieve target. CO3 - Student will come to know about creation of contract on common intention of two or more parties that is enforceable by law and different type of contract is adopted to accomplish any project. CO4 - Student will be aware of health, safety and environment being adopted at project site when people at work.
4	8CE4.6A	Advance Foundation Engineering	CO1. Detailed study about Shallow Foundation & IS codes recommendation for the same. CO2. To understand the methods of estimation of settlement of footings. CO3. To understand the different types of foundations like Pile, Raft and well foundations with the technical requirements associated with these foundation.

			CO4. To study the identification of nature, behavior and types of foundation design for Soil.

Thank You