

**DEPARTMENT OF
CIVIL ENGINEERING**

2017 REGULATION

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PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1	To prepare students for successful careers in Civil Engineering field that meets the needs of Indian and multinational companies.
PEO 2	To develop the confidence and ability among students to synthesize data and technical concepts and thereby apply it in real world problems.
PEO 3	To develop students to use modern techniques, skill and mathematical engineering tools for solving problems in Civil Engineering.
PEO 4	To provide students with a sound foundation in mathematical, scientific and engineering fundamentals necessary to formulate, solve and analyse engineering problems and to prepare them for graduate studies.
PEO 5	To promote students to work collaboratively on multi-disciplinary projects and make them engage in life-long learning process throughout their professional life.

PROGRAM OUTCOMES (POs)

PO1	Graduates will demonstrate knowledge of mathematics, science and engineering.
PO2	Graduates will demonstrate an ability to identify, formulate and solve engineering problems
PO3	Graduate will demonstrate an ability to design and conduct experiments, analyze and interpret data.
PO4	Graduates will demonstrate an ability to design a system, component or process as per needs and specifications.
PO5	Graduates will demonstrate an ability to visualize and work on laboratory and multidisciplinary tasks
PO6	Graduate will demonstrate skills to use modern engineering tools, software and equipment to analyze problems.
PO7	Graduates will demonstrate knowledge of professional and ethical responsibilities
PO8	Graduate will be able to communicate effectively in both verbal and written form.
PO9	Graduate will show the understanding of impact of engineering solutions on the society and also will be aware of contemporary issues.
PO10	Graduate will develop confidence for self education and ability for life-long learning.

LIST OF COURSES

REGULATION 2017

CIVIL ENGINEERING		
SEMESTER I		
S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	HS8151	Communicative English
2	MA8151	Engineering Mathematics –I
3	PH8151	Engineering Physics
4	CY8151	Engineering Chemistry
5	GE8151	Problem Solving and Python Programming
6	GE8152	Engineering Graphics
PRACTICALS		
7	GE8161	Problem Solving and Python Programming Laboratory
8	BS8161	Physics and Chemistry Laboratory
SEMESTER II		
S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	HS8251	Technical English
2	MA8251	Engineering Mathematics – II
3	PH8201	Physics For Civil Engineering
4	BE8251	Basic Electrical and Electronics Engineering
5	GE8291	Environmental Science and Engineering
6	GE8292	Engineering Mechanics
PRACTICALS		
7	GE8261	Engineering Practices Laboratory
8	CE8211	Computer Aided Building Drawing
SEMESTER III		
S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	MA8353	Transforms and Partial Differential Equations
2	CE8301	Strength of Materials I
3	CE8302	Fluid Mechanics
4	CE8351	Surveying
5	CE8391	Construction Materials
6	CE8392	Engineering Geology
PRACTICALS		
7	CE8311	Construction Materials Laboratory

8	CE8361	Surveying Laboratory
9	HS8381	Interpersonal Skills / Listening and Speaking
SEMESTER IV		
S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	MA8491	Numerical Methods
2	CE8401	Construction Techniques and Practices
3	CE8402	Strength of Materials I
4	CE8403	Applied Hydraulic Engineering
5	CE8404	Concrete Technology
6	CE8491	Soil Mechanics
PRACTICALS		
7	CE8481	Strength of Materials Laboratory
8	CE8461	Hydraulic Engineering Laboratory
9	HS8461	Advanced Reading and Writing
SEMESTER V		
S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	CE8501	Design of Reinforced Cement Concrete Elements
2	CE8502	Structural Analysis I
3	EN8491	Water Supply Engineering
4	CE8591	Foundation Engineering
5	GI8014	Geographical Information System
6	OAI551	Environment and Agriculture
PRACTICALS		
7	CE8511	Soil Mechanics Laboratory
8	CE8512	Water and Waste Water Analysis Laboratory
9	CE8513	Survey Camp
SEMESTER VI		
S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	CE8601	Design of Steel Structural Elements
2	CE8602	Structural Analysis II
3	CE8603	Irrigation Engineering
4	CE8604	Highway Engineering
5	EN8592	Wastewater Engineering
6	CE8001	Ground Improvement Techniques
PRACTICALS		
7	CE8611	Highway Engineering Laboratory
8	CE8612	Irrigation and Environmental Engineering Drawing

9	HS8581	Professional Communication
SEMESTER VII		
S. NO.	COURSE CODE	COURSE TITLE
THEORY		
1	CE8701	Estimation, Costing and Valuation Engineering
2	CE8702	Railways, Airports, Docks and Harbour Engineering
3	CE8703	Structural Design and Drawing
4	EN8591	Municipal Solid Waste Management
5	OEN751	Green Building Design
PRACTICALS		
6	CE8711	Creative and Innovative Project
7	CE8712	Industrial Training
SEMESTER VIII		
S. NO.	COURSE CODE	COURSE TITLE
1	CE8020	Maintenance Repair and Rehabilitation of Structures
2	CE8018	Geo Environmental Engineering
PRACTICALS		
3	CE8811	Project Work

COURSE OUTCOME FOR CIVIL ENGINEERING

DEGREE		U.G
PROGRAMME		B.E - CIVIL ENGINEERING
ACADEMIC YEAR		2022-23
REGULATION		2017
SEMESTER 01		
1.Course Code and Name : HS8151 - COMMUNICATIVE ENGLISH		
	CO Statements	Knowledge Level
At the end of the course, learners will be able to:		
1	Read articles of a general kind in magazines and newspapers.	K2
2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.	K2
3	Comprehend conversations and short talks delivered in English	K2
4	Write short essays of a general kind in English	K3
2.Course Code and Name : MA8151 ENGINEERING MATHEMATICS – I		
	CO Statements	Knowledge Level
After completing this course, students should demonstrate competency in the following skills:		
1	Use both the limit definition and rules of differentiation to differentiate functions.	K2
2	Apply differentiation to solve maxima and minima problems.	K3
3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.	K5
4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.	K3
5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.	K5
6	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.	K2
7	Apply various techniques in solving differential equations.	K3
3.Course Code and Name : PH8151 ENGINEERING PHYSICS		
	CO Statements	Knowledge Level
Upon completion of this course,		
1	The students will gain knowledge on the basics of properties of matter and its applications,	K3
2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,	K3
3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,	K3
4	The students will get knowledge on advanced physics concepts of quantumtheory and its applications in tunneling microscopes, and	K3

5	The students will understand the basics of crystals, their structures and different crystal growth techniques.	K4
4.Course Code and Name : CY8151 ENGINEERING CHEMISTRY		
	CO Statements	Knowledge Level
The students should be able to		
1	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.	K3
5.Course Code and Name : GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING		
	CO Statements	Knowledge Level
Upon completion of the course, students will be able to		
1	Develop algorithmic solutions to simple computational problems	K3
2	Read, write, execute by hand simple Python programs.	K3
3	Structure simple Python programs for solving problems.	K4
4	Decompose a Python program into functions.	K4
5	Represent compound data using Python lists, tuples, dictionaries	K4
6	Read and write data from/to files in Python Programs	K4
6.Course Code and Name : GE8152 ENGINEERING GRAPHICS		
	CO Statements	Knowledge Level
On successful completion of this course, the student will be able to:		
1	Familiarize with the fundamentals and standards of Engineering graphics	K2
2	Perform freehand sketching of basic geometrical constructions and multiple views of objects	K3
3	Project orthographic projections of lines and plane surfaces.	K2
4	Draw projections and solids and development of surfaces.	K3
5	Visualize and to project isometric and perspective sections of simple solids.	K2
7.Course Code and Name : GE8161 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY		
	CO Statements	Knowledge Level
Upon completion of the course, students will be able to:		
1	Write, test, and debug simple Python programs.	K6
2	Implement Python programs with conditionals and loops.	K6
3	Develop Python programs step-wise by defining functions and calling them.	K6
4	Use Python lists, tuples, dictionaries for representing compound data.	K3
5	Read and write data from/to files in Python.	K2
8.Course Code and Name : BS8161 PHYSICS AND CHEMISTRY LABORATORY		
	CO Statements	Knowledge Level

Upon completion of the course, the students will be able to		
1	Apply principles of elasticity, optics and thermal properties for engineering applications	K3
2	The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.	K2
SEMESTER 02		
1.Course Code and Name : HS8251 TECHNICAL ENGLISH		
	CO Statements	Knowledge Level
At the end of the course learners will be able to:		
1	Read technical texts and write area- specific texts effortlessly.	K2
2	Listen and comprehend lectures and talks in their area of specialisation successfully.	K2
3	Speak appropriately and effectively in varied formal and informal contexts.	K2
4	Write reports Winning job applications.	K3
2.Course Code and Name : MA8251 ENGINEERING MATHEMATICS – II		
	CO Statements	Knowledge Level
1	Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.	K3
2	Gradient, divergence and curl of a vector point function and related identities	K3
3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.	K3
4	Analytic functions, conformal mapping and complex integration.	K3
5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.	K3
3.Course Code and Name : PH8201 PHYSICS FOR CIVIL ENGINEERING		
	CO Statements	Knowledge Level
Upon completion of this course,		
1	The students will have knowledge on the thermal performance of buildings	K2
2	The students will acquire knowledge on the acoustic properties of buildings	K3
3	The students will get knowledge on various lighting designs for buildings	K3
4	The students will gain knowledge on the properties and performance of engineering materials,	K2
5	The students will understand the hazards of buildings	K2
4.Course Code and Name : BE8251 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING		
	CO Statements	Knowledge Level
1	Ability to identify the electrical components and explain the characteristics of electrical machines.	K2

2	Ability to identify electronics components and understand the characteristics	K2
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5.Course Code and Name : GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING

	CO Statements	Knowledge Level
1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.	K2
2	Public awareness of environmental is at infant stage.	K2
3	Ignorance and incomplete knowledge has lead to misconceptions	K2
4	Development and improvement in std. of living has lead to serious environmental disasters	K2

6.Course Code and Name : GE8292 ENGINEERING MECHANICS

	CO Statements	Knowledge Level
On successful completion of this course, the student will be able to		
1	Illustrate the vectorial and scalar representation of forces and moments	K3
2	Analyse the rigid body in equilibrium	K3
3	Evaluate the properties of surfaces and solids	K3
4	Calculate dynamic forces exerted in rigid body	K3
5	Determine the friction and the effects by the laws of friction	K3

7.Course Code and Name : GE8261 ENGINEERING PRACTICES LABORATORY

	CO Statements	Knowledge Level
On successful completion of this course, the student will be able to		
1	Fabricate carpentry components and pipe connections including plumbing works.	K2
2	Use welding equipments to join the structures.	K2
3	Carry out the basic machining operations	K2
4	Make the models using sheet metal works	K6
5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings	K2
6	Carry out basic electrical works and appliances	K2
7	Measure the electrical quantities	K2
8	Elaborate on the components, gates, soldering practices.	K2

8.Course Code and Name : CE8211 COMPUTER AIDED BUILDING DRAWING

	CO Statements	Knowledge Level
1	Able to draft the plan, elevation and sectional views of the buildings, industrial structures, frame buildings using computer softwares.	K3

SEMESTER 03

1.Course Code and Name : MA8353 TRANSFORMS AND PARTIAL DIFFERENTIAL

EQUATIONS		
	CO Statements	Knowledge Level
Upon successful completion of the course, students should be able to:		
1	Understand how to solve the given standard partial differential equations	K2
2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.	K2
3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations	K2
4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.	K2
5	Use the effective mathematical tools for the solutions of partial differentialequations by using Z transform techniques for discrete time systems	K2
2.Course Code and Name : CE8301 STRENGTH OF MATERIALS I		
	CO Statements	Knowledge Level
Students will be able to		
1	Understand the concepts of stress and strain, principal stresses and principal planes	K3
2	Determine Shear force and bending moment in beams and understand concept of theory of simple bending	K6
3	Calculate the deflection of beams by different methods and selection of method for determining slope or deflection	K3
4	Apply basic equation of torsion in design of circular shafts and helical springs	K2
5	Analyze the pin jointed plane and space trusses	K2
3.Course Code and Name : CE8302 FLUID MECHANICS		
	CO Statements	Knowledge Level
At the end of the course students will be able to		
1	Get a basic knowledge of fluids in static, kinematic and dynamic equilibrium	K3
2	Understand and solve the problems related to equation of motion	K3
3	Gain knowledge about dimensional and model analysis	K4
4	Learn types of flow and losses of flow in pipes	K2
5	Understand and solve the boundary layer problems	K2
		K2
4.Course Code and Name : CE8351 SURVEYING		
	CO Statements	Knowledge Level
At the end of the course the student will be able to understand		
1	The use of various surveying instruments and mapping	K6
2	Measuring Horizontal angle and vertical angle using different instruments	K6
3	Methods of Leveling and setting Levels with different instruments	K3
4	Concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth	K3
5	Concept and principle of modern surveying	K6

5.Course Code and Name : CE8391 CONSTRUCTION MATERIALS		
	CO Statements	Knowledge Level
On completion of this course the students will be able to		
1	Compare the properties of most common and advanced building materials.	K2
2	Understand the typical and potential applications of lime, cement and aggregates	K3
3	Know the production of concrete and also the method of placing and making of concrete elements.	K2
4	Understand the applications of timbers and other materials	K4
5	Understand the importance of modern material for construction	K2
6.Course Code and Name : CE8392 ENGINEERING GEOLOGY		
	CO Statements	Knowledge Level
The students completing this course		
1	Will be able to understand the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies	K2
2	Will get basics knowledge on properties of minerals	K2
3	Gain knowledge about types of rocks, their distribution and uses	K2
4	Will understand the methods of study on geological structure	K3
5	Will understand the application of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbor	K3
7.Course Code and Name : CE8311 CONSTRUCTION MATERIALS LABORATORY		
	CO Statements	Knowledge Level
1	The students will have the required knowledge in the area of testing of construction materials and components of construction elements experimentally.	K3
8.Course Code and Name :CE8361 SURVEYING LABORATORY		
	CO Statements	Knowledge Level
1	Students completing this course would have acquired practical knowledge on handling basic survey instruments including Theodolite, Tacheometry, Total Station and GPS and have adequate knowledge to carryout Triangulation and Astronomical surveying including general field marking for various engineering projects and Location of site etc.	K3
9.Course Code and Name : HS8381 INTERPERSONAL SKILLS/LISTENING&SPEAKING		
	CO Statements	Knowledge Level
At the end of the course Learners will be able to:		
1	Listen and respond appropriately.	K1
2	Participate in group discussions	K6
3	Make effective presentations	K6

4	Participate confidently and appropriately in conversations both formal and informal	K6
SEMESTER 04		
1.Course Code and Name : MA8491 NUMERICAL METHODS		
	CO Statements	Knowledge Level
Upon successful completion of the course, students should be able to:		
1	Understand the basic concepts and techniques of solving algebraic and transcendental equations.	K2
2	Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.	K2
3	Apply the numerical techniques of differentiation and integration for engineering problems.	K3
4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.	K2
5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.	K2
2.Course Code and Name : CE8401 CONSTRUCTION TECHNIQUES AND PRACTICES		
	CO Statements	Knowledge Level
On successful completion of this course, students will be able to:		
1	know the different construction techniques and structural systems	K2
2	Understand various techniques and practices on masonry construction, flooring, and roofing	K3
3	Plan the requirements for substructure construction	K2
4	Know the methods and techniques involved in the construction of various types of super structures	K2
5	Select, maintain and operate hand and power tools and equipment used in the building construction sites.	K2
3.Course Code and Name : CE8402 STRENGTH OF MATERIALS II		
	CO Statements	Knowledge Level
Students will be able to		
1	Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.	K2
2	Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements	K2
3	find the load carrying capacity of columns and stresses induced in columns and cylinders	K2
4	Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure	K4
5	Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams	K2
4.Course Code and Name : CE8403 APPLIED HYDRAULIC ENGINEERING		

	CO Statements	Knowledge Level
On completion of this course the students will be able to		
1	Apply their knowledge of fluid mechanics in addressing problems in open channels	K3
2	Able to identify a effective section for flow in different cross sections.	K4
3	To solve problems in uniform, gradually and rapidly varied flows in steady state conditions	K4
4	Understand the principles, working and application of turbines	K2
5	Understand the principles, working and application of pumps.	K2
5.Course Code and Name : CE8404 CONCRETE TECHNOLOGY		
	CO Statements	Knowledge Level
Students will be able to understand		
1	The various requirements of cement, aggregates and water for making concrete	K4
2	The effect of admixtures on properties of concrete	K2
3	The concept and procedure of mix design as per IS method	K2
4	The properties of concrete at fresh and hardened state	K2
5	The importance and application of special concretes	K2
6.Course Code and Name :CE8491 SOIL MECHANICS		
	CO Statements	Knowledge Level
Students will be able to		
1	Classify the soil and assess the engineering properties, based on index properties.	K2
2	Understand the stress concepts in soils	K2
3	Understand and identify the settlement in soils	K4
4	Determine the shear strength of soil	K3
5	Analyze both finite and infinite slopes	K2
7.Course Code and Name : CE8481 STRENGTH OF MATERIALS LABORATORY		
	CO Statements	Knowledge Level
1	The students will have the required knowledge in the area of testing of materials and components of structural elements experimentally.	K2
8.Course Code and Name : CE8461 HYDRAULIC ENGINEERING LABORATORY		
	CO Statements	Knowledge Level
1	The students will be able to measure flow in pipes and determine frictional losses.	K2
2	The students will be able to develop characteristics of pumps and turbines.	K3
9.Course Code and Name :HS8461 ADVANCED READING AND WRITING		
	CO Statements	Knowledge Level
At the end of the course Learners will be able to:		
1	Write different types of essays.	K2

2	Write winning job applications.	K2
3	Read and evaluate texts critically.	K2
4	Display critical thinking in various professional contexts.	K2

SEMESTER 05

1.Course Code and Name : CE8501 DESIGN OF REINFORCED CEMENT CONCRETE ELEMENTS

	CO Statements	Knowledge Level
Upon successful completion of the course, students should be able to:		
1	Understand the various design methodologies for the design of RC elements	K3
2	Know the analysis and design of flanged beams by limit state method and sign of beams for shear, bond and torsion	K2
3	Design the various types of slabs and staircase by limit state method	K3
4	Design columns for axial, uniaxial and biaxial eccentric loadings.	K3
5	Design of footing by limit state method	K3

2.Course Code and Name : CE8502 STRUCTURAL ANALYSIS I

	CO Statements	Knowledge Level
1	Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method	K2
2	Analyse the continuous beams and rigid frames by slope deflection method.	K5
3	Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.	K2
4	Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method	K4
5	Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames	K3

3.Course Code and Name : EN8491 WATER SUPPLY ENGINEERING

	CO Statements	Knowledge Level
1	An insight into the structure of drinking water supply systems, including water transport, treatment and distribution	K2
2	The knowledge in various unit operations and processes in water treatment	K3
3	An ability to design the various functional units in water treatment	K3
4	An understanding of water quality criteria and standards, and their relation to public health	K3
5	The ability to design and evaluate water supply project alternatives on basis of chosen criteria	K2

4.Course Code and Name : CE8591 FOUNDATION ENGINEERING

	CO Statements	Knowledge Level
1	Understand the site investigation, methods and sampling.	K2
2	Get knowledge on bearing capacity and testing methods.	K2
3	Design shallow footings.	K3

4	Determine the load carrying capacity, settlement of pile foundation.	K2
5	Determine the earth pressure on retaining walls and analysis for stability.	K5

5.Course Code and Name : GI8014 GEOGRAPHIC INFORMATION SYSTEM

	CO Statements	Knowledge Level
1	Have basic idea about the fundamentals of GIS.	K2
2	Understand the types of data models.	K2
3	Get knowledge about data input and topology.	K2
4	Gain knowledge on data quality and standards	K2
5	Understand data management functions and data output	K2

6.Course Code and Name : OAI551 ENVIRONMENT AND AGRICULTURE

	CO Statements	Knowledge Level
1	Students will appreciate the role of environment in the current practice of agriculture and concerns of sustainability, especially in the context of climate change and emerging global issues.	K2
2	Ecological context of agriculture and its concerns will be understood	K2

7.Course Code and Name : CE8511 SOIL MECHANICS LABORATORY

	CO Statements	Knowledge Level
1	Students are able to conduct tests to determine both the index and engineering properties of soils and to characterize the soil based on their properties	K2

8.Course Code and Name : CE8512 WATER AND WASTE WATER ANALYSIS LABORATORY

	CO Statements	Knowledge Level
1	Quantify the pollutant concentration in water and wastewater	K2
2	Suggest the type of treatment required and amount of dosage required for the treatment	K2
3	Examine the conditions for the growth of micro-organisms	K3

9.Course Code and Name : CE8513 SURVEY CAMP

	CO Statements	Knowledge Level
1	Understand the importance of Contouring	K4
2	Measuring the Offset of Buildings and Plotting the Location Analyze the Sun observation to determine azimuth	K2
3	Use of GPS to determine latitude and longitude	K3
4	Use to locate the survey camp location	K4

SEMESTER 06

1.Course Code and Name : CE8601 DESIGN OF STEEL STRUCTURAL ELEMENTS

	CO Statements	Knowledge Level
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At the end of the course, the students should be able to:		
1	Understand the concepts of various design philosophies	K3
2	Design common bolted and welded connections for steel structures	K3
3	Design tension members and understand the effect of shear lag.	K3
4	Understand the design concept of axially loaded columns and column base connections	K3
5	Understand specific problems related to the design of laterally restrained and unrestrained steel beams	K3
2.Course Code and Name : CE8602 STRUCTURAL ANALYSIS II		
	CO Statements	Knowledge Level
1	Draw influence lines for statically determinate structures and calculate critical stress resultants.	K2
2	Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.	K2
3	Analyse of three hinged, two hinged and fixed arches	K2
4	Analyse the suspension bridges with stiffening girders	K3
5	Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames.	K3
3.Course Code and Name : CE8603 IRRIGATION ENGINEERING		
	CO Statements	Knowledge Level
1	Have knowledge and skills on crop water requirements	K2
2	Understand the methods and management of irrigation	K2
3	Gain knowledge on types of Impounding structures	K2
4	Understand methods of irrigation including canal irrigation.	K2
5	Get knowledge on water management on optimization of water use.	K3
4.Course Code and Name : CE8604 HIGHWAY ENGINEERING		
	CO Statements	Knowledge Level
1	Get knowledge on planning and aligning of highway	K2
2	Geometric design of highways	K3
3	Design flexible and rigid pavements.	K3
4	Gain knowledge on Highway construction materials, properties, testing methods	K2
5	Understand the concept of pavement management system, evaluation of distress and maintenance of pavements	K2
5.Course Code and Name :EN8592 WASTEWATER ENGINEERING		
	CO Statements	Knowledge Level
1	An ability to estimate sewage generation and design sewer system including sewage pumping stations	K5
2	The required understanding on the characteristics and composition of sewage, Self-purification of streams	K2
3	An ability to perform basic design of the unit operations and processes that are used in sewage treatment	K2

4	Understand the standard methods for disposal of sewage	K2
5	Gain knowledge on sludge treatment and disposal	K2

6.Course Code and Name : CE8001 GROUND IMPROVEMENT TECHNIQUES

	CO Statements	Knowledge Level
1	Gain knowledge on methods and selection of ground improvement techniques.	K2
2	Understand dewatering techniques and design for simple cases.	K2
3	Get knowledge on insitu treatment of cohesion less and cohesive soils.	K2
4	Understand the concept of earth reinforcement and design of reinforced earth.	K2
5	Get to know types of grouts and grouting technique.	K2

7.Course Code and Name : CE8611 HIGHWAY ENGINEERING LABORATORY

	CO Statements	Knowledge Level
1	Student knows the techniques to characterize various pavement materials through relevant tests	K2

8.Course Code and Name : CE8612 IRRIGATION AND ENVIRONMENTAL ENGINEERING DRAWING

	CO Statements	Knowledge Level
1	The students after completing this course will be able to design and draw various units of Municipal water treatment plants and sewage treatment plants.	K3

9.Course Code and Name : HS8581 PROFESSIONAL COMMUNICATION

	CO Statements	Knowledge Level
1	Make effective presentations	K6
2	Participate confidently in Group Discussions.	K6
3	Attend job interviews and be successful in them.	K6
4	Develop adequate Soft Skills required for the workplace	K6

SEMESTER 07

1.Course Code and Name : CE8701 ESTIMATION, COSTING AND VALUATION ENGINEERING

	CO Statements	Knowledge Level
The students should be able to		
1	Estimate the quantities for buildings	K2
2	Rate Analysis for all Building works, canals, and Roads and Cost Estimate	K2
3	Understand types of specifications, principles for report preparation, tender notices types	K2
4	Gain knowledge on types of contracts	K2
5	Evaluate valuation for building and land.	K2

2.Course Code and Name : CE8702 RAILWAYS, AIRPORTS, DOCKS AND HARBOUR ENGINEERING		
	CO Statements	Knowledge Level
1	Understand the methods of route alignment and design elements in Railway Planning and Constructions.	K2
2	Understand the Construction techniques and Maintenance of Track laying and Railway stations.	K3
3	Gain an insight on the planning and site selection of Airport Planning and design	K3
4	Analyze and design the elements for orientation of runways and passenger facility systems	K3
5	Understand the various features in Harbours and Ports, their construction, coastal protection works and coastal Regulations to be adopted.	K2
3.Course Code and Name : CE8703 STRUCTURAL DESIGN AND DRAWING		
	CO Statements	Knowledge Level
1	Design and draw reinforced concrete Cantilever and Counterfort Retaining Walls	K2
2	Design and draw flat slab as per code provisions	K1
3	Design and draw reinforced concrete and steel bridges	K3
4	Design and draw reinforced concrete and steel water tanks	K2
5	Design and detail the various steel trusses and cantry girders	K3
4.Course Code and Name : EN8591 MUNICIPAL SOLID WASTE MANAGEMENT		
	CO Statements	Knowledge Level
1	Understanding of the nature and characteristics of municipal solid wastes and the regulatory requirements regarding municipal solid waste management.	K2
2	Reduction, reuse and recycling of waste.	K2
3	Ability to plan and design systems for storage, collection, transport, processing and disposal of municipal solid waste.	K2
4	Knowledge on the issues on solid waste management from an integrated and holistic perspective, as well as in the local and international context.	K2
5	Design and operation of sanitary	K6
6.Course Code and Name : CE8711 CREATIVE AND INNOVATIVE PROJECT		
	CO Statements	Knowledge Level
1	State the objectives	K2
2	Develop a methodology to achieve the objectives	K2
3	Carryout the design	K2
4	Develop computer code.	K2
5	Demonstrate the novelty of the project through the results and outputs.	K2
7.Course Code and Name : CE8712 INDUSTRIAL TRAINING		

	CO Statements	Knowledge Level
1	The intricacies of implementation textbook knowledge into practice	K3
2	The concepts of developments and implementation of new techniques	K3

SEMESTER 08

1.Course Code and Name : CE8018 GEO-ENVIRONMENTAL ENGINEERING

	CO Statements	Knowledge Level
1	Assess the contamination in the soil	K2
2	Understand the current practice of waste disposal	K2
3	To prepare the suitable disposal system for particular waste.	K2
4	Stabilize the waste and utilization of solid waste for soil improvement.	K2
5	Select suitable remediation methods based on contamination.	K2

3.Course Code and Name : CE8020 MAINTENANCE, REPAIR AND REHABILITATION OF STRUCTURES

	CO Statements	Knowledge Level
1	The importance of maintenance and assessment method of distressed structures.	K2
2	The strength and durability properties, their effects due to climate and temperature.	K2
3	recent development in concrete	K2
4	the techniques for repair and protection methods	K2
5	Repair, rehabilitation and retrofitting of structures and demolition methods.	K2

3.Course Code and Name : CE8811 PROJECT WORK

	CO Statements	Knowledge Level
1	Design, analyze, and realize a physical system by using the technology they learnt during the program.	K4
2	Able to take up any challenging practical problems	K4
3	Integrate various methods into one problem.	K2
4	Work in a team with confined time duration.	K2
5	Find solution by formulating proper methodology.	K2

