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DEPARTMENT OF CIVIL ENGINEERING

COURSE OUTCOME

REGULATION 2017

Batch:2017-2020

Department of Civil Engineering

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Department Civil Engineering

Vision

To inculcate students with ingenious technical knowledge and ethical skills to develop qualified civil engineers.

Mission

- To provide quality education with field training to create competent civil engineer.
- To develop innovative applications in the design and construction of structural works.

Program Educational Objectives

Students who graduate from this program will be able

- To become successful in the field of Civil Engineering that meets the needs of Indian and multi-national companies.
- To develop the confidence and ability among students to synthesize data and technical concepts and thereby apply it in real-world problems.
- To utilize modern techniques, skill and mathematical engineering tools for solving problems in Civil Engineering.
- To provide students with a sound foundation in mathematical, scientific and engineering fundamentals necessary to formulate, solve and analyze engineering problems and to prepare them for graduate studies.
- 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

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design / development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to ones own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

Program Specific Outcomes

At the end of the program students will be able to

- Identify, examine and solve problems in the domains of Civil Engineering that needs analytical and design requirements.
- Plan, analyze, design and prepare estimate for Civil Engineering projects with professional ethics.

Department of Civil Engineering

Course Code & Title:

As per Anna University Regulation 2017, the list of courses are given in the Table.

S/N	COURSE CODE	COURSE CODE (UNIVERSITY)	TITLE OF THE COURSE
Semester 01			
1.	C101	HS8151	Communicative English
2.	C102	MA8151	Engineering Mathematics – I
3.	C103	PH8151	Engineering Physics
4.	C104	CY8151	Engineering Chemistry
5.	C105	GE8151	Problem Solving and Python Programming
6.	C106	GE8152	Engineering Graphics
7.	C107	GE8161	Problem Solving and Python Programming Laboratory
8.	C108	BS8161	Physics and Chemistry Laboratory
Semester 02			
9.	C109	HS8251	Technical English
10.	C110	MA8251	Engineering Mathematics – I
11.	C111	PH8201	Physics for Civil Engineering
12.	C112	BE8251	Basic Electrical and Electronics Engineering
13.	C113	GE8291	Environmental Science and Engineering
14.	C114	GE8292	Engineering Mechanics
15.	C115	GE8261	Engineering Practices Laboratory
16.	C116	CE8211	Computer Aided Building Drawing
Semester 03			
17.	C201	MA8353	Transforms and Partial Differential Equations
18.	C202	CE8301	Strength of Materials I
19.	C203	CE8302	Fluid Mechanics
20.	C204	CE8351	Surveying

21.	C205	CE8391	Construction Materials
22.	C206	CE8392	Engineering Geology
23.	C207	CE8311	Construction Materials Laboratory
24.	C208	CE8361	Surveying Laboratory
25.	C209	HS8381	Interpersonal Skills/Listening and Speaking
Semester 04			
26.	C210	MA8491	Numerical methods
27.	C211	CE8401	Construction Techniques and Practices
28.	C212	CE8402	Strength of Materials-II
29.	C213	CE8403	Applied Hydraulic Engineering
30.	C214	CE8404	Concrete Technology
31.	C215	CE8491	Soil Mechanics
32.	C216	CE8481	Strength of Materials Laboratory
33.	C217	CE8461	Hydraulic Engineering Laboratory
34.	C218	HS8461	Advanced Reading and Writing
Semester 05			
35.	C301	CE8501	Design of Reinforced Cement Concrete Elements
36.	C302	CE8502	Structural Analysis I
37.	C303	EN8491	Water Supply Engineering
38.	C304	CE8591	Foundation Engineering
39.	C305	OAI551	Environment and agriculture
40.	C306	GI8013	Advanced surveying
41.	C307	CE8511	Soil Mechanics Laboratory
42.	C308	CE8512	Water And Waste Water Analysis Laboratory
43.	C309	CE8513	Survey Camp
Semester 06			
44.	C308	CE8601	Design of Steel Structural Elements
45.	C309	CE8602	Structural Analysis – II

46.	C310	CE8603	Irrigation Engineering
47.	C311	CE8604	Highway Engineering
48.	C312	EN8592	Waste Water Engineering
49.	C313	CE8001	Ground Improvement Techniques
50.	C314	CE8611	Highway Engineering Laboratory
51.	C315	CE8612	Irrigation and Environmental Engineering Drawing
52.	C316	HS8581	Professional Communication
Semester 07			
53.	C401	CE8701	Estimation, Costing and Valuation Engineering
54.	C402	CE8702	Railways, Airports, Docks and Harbour Engineering
55.	C403	CE8703	Structural Design and Drawing
56.	C404	EN8591	Municipal Solid Waste Management
57.	C405	OML751	Testing of Material
58.	C406	CE8711	Creative and Innovative project
59.	C407	CE8712	Industrial Training
Semester 08			
60.	C801	CE8018	Geo-Environmental Engineering
61.	C802	CE8020	Maintenance, Repair and Rehabilitation of Structures
62.	C803	CE8811	Project Work

Department of Civil Engineering

Course Outcome

Regulation 2017

SEMESTER 01		
1. Course Code and Name: HS8151 - COMMUNICATIVE ENGLISH		
CO Statements		Knowledge Level
Students will be able to		
C101.1	Communicate clearly both in the written form and orally using appropriate vocabulary and comprehend written texts to make inferences.	K2
C101.2	Speak persuasively in different social contexts and write biographical details and technical documents cohesively, coherently and flawlessly using appropriate words.	K2
C101.3	Speak, read and write effectively for a variety of professional and social settings.	K2
C101.4	Read descriptive, narrative, expository and interpretive texts and write using creative, critical, analytical and evaluative methods.	K6
C101.5	Listen, comprehend and respond to different spoken and written discourses/excerpts in different accents and write different genres of texts adopting various writing strategies.	K6
2. Course Code and Name: MA8151 - ENGINEERING MATHEMATICS - I		
CO Statements		Knowledge Level
Students will be able to		
C102.1	Use both the limit definition and rules of differentiation to differentiate functions.	K3
C102.2	Apply differentiation to solve maxima and minima problems	K3
C102.3	Evaluate integrals both by using Reimann sums and by using the fundamental theorem of convergent improper integrals. Evaluate integrals using techniques of integration, such as substitution, partial Fractions, integration by parts and improper integrals.	K5
C102.4	Apply integration to compute multiple integrals, area, volume, integrals in polar Coordinates, in addition to change of order and change of variables.	K3
C102.5	Apply various techniques in solving differential equations.	K3



3. Course Code and Name: PH8151 - ENGINEERING PHYSICS

CO Statements		Knowledge Level
Students will be able to		
C103.1	Discuss the Young's modulus and Rigidity modulus of elasticity of materials and its determination through experimental methods .	K2
C103.2	Describe the characteristics of laser light and their application in semiconductor laser .	K2
C103.3	Discuss the principle behind the propagation of light through an optical fibre and its application in sensors.	K2
C103.4	Summarize the different modes of heat transfer.	K2
C103.5	Describe the unit cell characteristics and the growth of crystals	K2

4. Course Code and Name: CY8151 - ENGINEERING CHEMISTRY

CO Statements		Knowledge Level
Students will be able to		
C104.1	Summarize the water related problems in boilers and their treatment techniques.	K2
C104.2	Discuss the applications of adsorption in the field of water and air pollution abatement.	K1
C104.3	Discuss the types of catalysis and the mechanism of enzyme catalysis.	K2
C104.4	Associate phase rule in the alloying and the behaviour of one component and two component systems using phase diagram.	K2
C104.5	Summarize the principles and generation of energy in batteries ,nuclear reactors, solar cells, wind mills and fuel cells.	K2

5. Course Code and Name: GE8151- PROBLEM SOLVING AND PYTHON

CO Statements		Knowledge Level
Students will be able to		
C105.1	Discuss the logical solutions through Flowcharts, Algorithms and Pseudo code	K2
C105.2	Explain the syntax for python programming constructs.	K2
C105.3	Compute the flow of the program to obtain the programmatic solution.	K2

C105.4	Examine the programs with sub problems using 'Python' language	K3
C105.5	Compute the compound data using Python lists, tuples, and dictionaries	K2
6. Course Code and Name: GE8152- ENGINEERING GRAPHICS		
CO Statements		Knowledge Level
Students will be able to		
C106.1	Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models.	K4
C106.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.	K3
C106.3	Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.	K4
C106.4	Practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
C106.5	Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.	K4
7. Course Code and Name: GE8161- PROBLEM SOLVING AND PYTHON LABORATORY		
CO Statements		Knowledge Level
Students will be able to		
C107.1	Write, test, and debug simple Python programs	K1
C107.2	Apply the concept of conditionals and loops in Python programs.	K3
C107.3	Develop the Python programs step-wise by defining functions and calling them.	K4
C107.4	Use Python lists, tuples, dictionaries for representing compound data.	K3
C107.5	Read and write data from/to files in Python.	K2
8. Course Code and Name: BS8161 - PHYSICS AND CHEMISTRY LABORATORY		
CO Statements		Knowledge Level
Students will be able to		
C108.1	Apply physics principles of optics and thermal physics to evaluate engineering properties of materials.	K3

C108.2	Ability to test materials by using their knowledge of applied physics principles in optics and properties of matter.	K5
C108.3	Perform the quantitative chemical analysis of chloride and dissolved oxygen.	K5
C108.4	Determine the amount of acids by using the instruments of conductivity meter and pH meter.	K5
C108.5	Determine the hardness, alkalinity and metal ion content in the water samples by volumetric titration.	K5

SEMESTER 02

1. Course Code and Name: HS8251 – TECHNICAL ENGLISH

CO Statements		Knowledge Level
Students will be able to		
C109.1	Read technical texts and write area specific texts effortlessly.	K2
C109.2	Listen and comprehend lectures and talks in their areas of specialization and write effectively for a variety of professional and social settings	K2
C109.3	Speak and write appropriately and effectively in varied formal and informal contexts.	K6
C109.4	Write effectively and persuasively and produce different types of writing such as letters, minutes, reports and winning job applications.	K6
C109.5	Communicate clearly using technical vocabulary in their professional correspondences	K2

2. Course Code and Name: MA8251 - ENGINEERING MATHEMATICS - II

CO Statements		Knowledge Level
Students will be able to		
C110.1	Calculate the eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices	K3
C110.2	Evaluate the line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification	K5
C110.3	Determine Analytic functions, Conformal mapping and Bilinear transformation	K3
C110.4	Evaluate the Cauchy's integrals, Taylor's and Laurent's and residue theorem for evaluation for real integrals using circular and semicircular, contour	K5
C110.5	Evaluate Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.	K5

3. Course Code and Name: PH8201 - PHYSICS FOR CIVIL ENGINEERING		
CO Statements		Knowledge Level
Students will be able to		
C111.1	Analyze the thermal performance of buildings.	K2
C111.2	Acquire knowledge on the acoustic properties of buildings.	K1
C111.3	Understand the various lighting design of buildings.	K2
C111.4	Knowledge on the properties and performance of engineering materials	K3
C111.5	Understand the Hazards of buildings.	K2
4. Course Code and Name: BE8251 - BASIC ELECTRICAL AND ELECTRONICS ENGINEERING		
CO Statements		Knowledge Level
Students will be able to		
C112.1	Understand the electrical circuit and their working principles	K2
C112.2	Identify the electrical components of a machines and their applications	K2
C112.3	Explain the characteristics of the electrical machines	K2
C112.4	Identify the digital electronics circuits and their components	K2
C112.5	Explain the fundamentals of communication systems	K2
5. Course Code and Name: GE8291- ENVIRONMENTAL SCIENCE AND ENGINEERING		
CO Statements		Knowledge Level
Students will be able to		
C113.1	Summarize the values, threats, conservation of biodiversity and ecosystems.	K2
C113.2	Discuss the sources, effects, control measures of different types of pollution, and solid waste management.	K1
C113.3	Associate the effects of exploitation of Natural resources on environment.	K3

C113.4	Summarize the water conservation methods and various environmental acts for environmental sustainability	K2
C113.5	Discuss scientific, technological, economic and social solutions to environmental problems.	K1
6. Course Code and Name: GE8292 - ENGINEERING MECHANICS		
CO Statements		Knowledge Level
Students will be able to		
C114.1	Illustrate the vectorial and scalar representation of forces and moments	K2
C114.2	Analyse the rigid body in equilibrium	K3
C114.3	Evaluate the properties of surfaces and solids	K4
C114.4	Calculate dynamic forces exerted in rigid body	K3
C114.5	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
Students will be able to		
C115.1	Fabricate carpentry components and pipe connections including plumbing works.	K2
C115.2	Use welding equipments to join the structures.	K2
C115.3	Carry out the basic machining operations	K2
C115.4	Make the models using sheet metal works	K4
C115.5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings	K4
C115.6	Carry out basic home electrical works and appliances	K2



8. Course Code and Name: CE8211 - COMPUTER AIDED BUILDING DRAWING LABORATORY		
CO Statements		Knowledge Level
Students will be able to		
C116.1	Draft the plan, elevation and sectional views of the buildings, using computer softwares	K3
C116.2	Draft the plan, elevation and sectional views of the industrial structures using computer softwares	K3
C116.3	Draft the plan, elevation and sectional views of the framed buildings using computer softwares.	K3
SEMESTER 03		
1. Course Code and Name: MA8353 -TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS		
CO Statements		Knowledge Level
Students will be able to		
C201.1	Solve First, Second order homogeneous and non homogeneous partial differential equations	K3
C201.2	Find the Fourier series of a given function satisfying Dirchlet's condition.	K2
C201.3	Apply Fourier series to solve one dimensional wave, one and two dimensional heat equations.	K3
C201.4	Determine Fourier transform for a given function and use them to evaluate certain definite Integrals	K2
C201.5	Determine z transforms of standard functions and use them to solve difference equations	K3
2. Course Code and Name: CE8301 - STRENGTH OF MATERIALS I		
CO Statements		Knowledge Level
Students will be able to		
C202.1	Understand the concepts of stress and strain, principal stresses and principal planes.	K2
C202.2	Determine Shear force and bending moment in beams and understand concept of theory of simple bending.	K4
C202.3	Calculate the deflection of beams by different methods and selection of method for determining slope or deflection.	K4
C202.4	Apply basic equation of torsion in design of circular shafts and helical springs.	K3

C202.5	Analyze the pin jointed plane and space trusses	K4
3. Course Code and Name: CE8302 - FLUID MECHANICS		
CO Statements		Knowledge Level
Students will be able to		
C203.1	Get a basic knowledge of fluids in static, kinematic and dynamic equilibrium.	K2
C203.2	Understand and solve the problems related to equation of motion.	K3
C203.3	Gain knowledge about dimensional and model analysis.	K3
C203.4	Learn types of flow and losses of flow in pipes.	K2
C203.5	Understand and solve the boundary layer problems.	K3
4. Course Code and Name: CE8351 - SURVEYING		
CO Statements		Knowledge Level
Students will be able to		
C204.1	The use of various surveying instruments and mapping	K2
C204.2	Measuring Horizontal angle and vertical angle using different instruments	K3
C204.3	Methods of Leveling and setting Levels with different instruments	K2
C204.4	Understand the Concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth.	K3
C204.5	Understand the Concept and principle of modern surveying.	K2
5. Course Code and Name: CE8391 CONSTRUCTION MATERIALS		
CO Statements		Knowledge Level
Students will be able to		
C205.1	Compare the properties of most common and advanced building materials.	K2
C205.2	Understand the typical and potential applications of lime, cement and aggregates	K2

C205.3	Know the production of concrete and also the method of placing and making of concrete elements.	K2
C205.4	Understand the applications of timbers and other materials	K2
C205.5	Understand the importance of modern material for construction.	K2
6. Course Code and Name: GE8392- ENGINEERING GEOLOGY		
CO Statements		Knowledge Level
Students will be able to		
C206.1	Explain the importance of geology and compare the geological features with engineering importance.	K2
C206.2	Explain about the types of various minerals.	K2
C206.3	Apply knowledge regarding the underline rock formation to get complete idea about igneous, sedimentary and metamorphic rock	K2
C206.4	Explain about fault, folds, unconformity and joints which are present in the strata of the earth crest,by which they can able to compare the particular area with their construction site or engineering projects.	K2
C206.5	Apply knowledge related with the dams, tunnels, bridges and reservoir with the help of these they can be able to apply their knowledge for making of their engineering projects	K2
7. Course Code and Name: CE8311- CONSTRUCTION MATERIALS LABORATORY		
CO Statements		Knowledge Level
Students will be able to		
C207.1	The students will have the required knowledge in the area of testing of construction materials	K4
C207.2	The students will have the required knowledge in components of construction elements experimentally.	K4
C207.3	The students will have the required knowledge in the area of testing of concrete	K4
8. Course Code and Name: CE8361 - SURVEYING LABORATORY		
CO Statements		Knowledge Level
Students will be able to		
C208.1	Acquired practical knowledge on handling basic survey instruments including Theodolite, Tacheometry.	K4

C208.2	Acquired practical knowledge on handling basic survey instruments including Total Station and GPS	K4
C208.3	Knowledge to carryout Triangulation and Astronomical surveying including general field marking for various engineering projects and Location of site etc.	K4
9. Course Code and Name: HS8381 - INTERPERSONAL SKILLS/LISTENING & SPEAKING		
CO Statements		Knowledge Level
Students will be able to		
C209.1	Speak effectively on various academic topics and respond to questions.	K2
C209.2	Converse effectively with the use of conversation starters and discourse markers.	K6
C209.3	Listen and respond to various academic dialogues and discussions	K2
C209.4	Participate confidently and appropriately in informal and formal conversations and group discussions.	K6
C209.5	Use a range of presentation tools like PPT, Videos, and Charts etc. to make an engaging presentation.	K6
SEMESTER 04		
1. Course Code and Name: MA8491-NUMERICAL METHODS		
CO Statements		Knowledge Level
Students will be able to		
C210.1	Determine the solution of algebraic and transcendental system of linear equations	K3
C210.2	To interpolate the values of unknown functions using Newton's Formula	K3
C210.3	Estimate the numerical values of the derivatives and integrals of unknown function.	K3
C210.4	Solve first and second order initial value problem	K3
C210.5	Solve Numerically boundary value problem	K3

2. Course Code and Name: CE8401- CONSTRUCTION TECHNIQUES, EQUIPMENTS & PRACTICES		
CO Statements		Knowledge Level
Students will be able to		
C211.1	Explain the different construction techniques and structural systems	K2
C211.2	Understand various techniques and practices on masonry construction, flooring, and roofing.	K2
C211.3	Plan the requirements for substructure construction.	K3
C211.4	Choose the methods and techniques required for the construction of various types of super structures	K3
C211.5	Select, maintain and operate hand and power tools and equipment used in the building construction sites	K3
3. Course Code and Name: CE8402 STRENGTH OF MATERIALS II		
CO Statements		Knowledge Level
Students will be able to		
C212.1	Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.	K4
C212.2	Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.	K4
C212.3	Examine the load carrying capacity of columns and stresses induced in columns and cylinders.	K4
C212.4	Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure	K4
C212.5	Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams	K3
4. Course Code and Name: CE8403 APPLIED HYDRAULIC ENGINEERING		
CO Statements		Knowledge Level
Students will be able to		
C213.1	Apply their knowledge of fluid mechanics in addressing problems in open channels.	K3
C213.2	Solve problems in uniform, gradually varied flows in steady state conditions.	K3
C213.3	Solve problems in uniform, rapidly varied flows in steady state conditions.	K3

C213.4	Understand the principles, working and application of turbines.	K3
C213.5	Understand the principles, working and application of pumps.	K3
5. Course Code and Name: CE8404 CONCRETE TECHNOLOGY		
CO Statements		Knowledge Level
Students will be able to		
C214.1	Summarize the various requirements of cement, aggregates and water for making concrete	K2
C214.2	Illustrate the effect of admixtures on properties of concrete	K2
C214.3	Understand The concept and procedure of mix design as per IS method	K2
C214.4	Outline the properties of concrete at fresh and hardened state	K2
C214.5	Explain 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		
C215.1	Classify the soil and assess the engineering properties, based on index properties.	K2
C215.2	Understand the stress concepts in soils	K2
C215.3	Understand and identify the settlement in soils.	K2
C215.4	Determine the shear strength of soil	K3
C215.5	Analyze both finite and infinite slopes	K4
7. Course Code and Name: CE8481 STRENGTH OF MATERIALS LABORATORY		
CO Statements		Knowledge Level
Students will be able to		
C216.1	Analyze the various stresses on mild steel rod by conducting tension and torsion tests	K4

C216.2	Identify deflection test of metals and carriage springs	K3
C216.3	Test for compression strength of wood and helical springs	K4
C216.4	Compare hardness and impact strength of different metals	K4
8. Course Code and Name: CE8461 HYDRAULIC ENGINEERING LABORATORY		
CO Statements		Knowledge Level
Students will be able to		
C217.1	Identify the flow in pipes	K3
C217.2	Examine the frictional losses in pipes	K4
C217.3	Develop characteristics of pumps	K3
C217.4	Develop characteristics of turbines	K3
9. Course Code and Name: HS8461 ADVANCED READING AND WRITING LAB		
CO Statements		Knowledge Level
Students will be able to		
C218.1	Strengthen the reading skills	K2
C218.2	Enhance the technical writing skills	K3
C218.3	Develop proposal writing skills	K6
C218.4	Write winning job applications.	K2
SEMESTER 05		
1. Course Code and Name: CE8501 DESIGN OF REINFORCED CEMENT CONCRTE ELEMENTS		
CO Statements		Knowledge Level
Students will be able to		
C301.1	Understand the various design methodologies for the design of RC elements.	K3

C301.2	Analyse and design of flanged beams by limit state method and sign of beams for shear, bond and torsion.	K4
C301.3	Analyse and design the various types of slabs and staircase by limit state method.	K4
C301.4	Analyse and design columns for axial, uniaxial and biaxial eccentric loadings.	K4
C301.5	Analyse and design of footing by limit state method.	K4

2. Course Code and Name: CE8502 STRUCTURAL ANALYSIS I

CO Statements		Knowledge Level
Students will be able to		
C302.1	Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method	K3
C302.2	Analyse the continuous beams and rigid frames by slope deflection method.	K3
C302.3	Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.	K3
C302.4	Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.	K3
C302.5	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
Students will be able to		
C303.1	Understand an insight into the structure of drinking water supply systems, including water transport, treatment and distribution	K2
C303.2	Learn about intake structure, pipe materials ,pumps	K2
C303.3	Gain knowledge in various unit operations and processes in water treatment,	K3
C303.4	Design the various functional units in water treatment(primary treatment)	K2
C303.5	Gain knowledge in various unit operations and processes in water treatment,	K3

4. Course Code and Name: CE8591 FOUNDATION ENGINEERING

CO Statements		Knowledge Level
Students will be able to		
C304.1	Design the various functional units in water treatment(secondary treatment)	K2
C304.2	Understand about the water distribution system and analyse the pipe network	K3
C304.3	Design shallow footings.	K3
C304.4	Determine the load carrying capacity, settlement of pile foundation.	K3
C304.5	Determine the earth pressure on retaining walls and analysis for stability.	K3

5. Course Code and Name: GI8013 ADVANCED SURVEYING

CO Statements		Knowledge Level
Students will be able to		
C305.1	Know the astronomical surveying concepts & Various Problems.	K3
C305.2	Understand the concept of photogrammetric surveying and interpretation	K2
C305.3	Solve the field problems with Total station	K2
C305.4	Know the GPS surveying and the data processing	K2
C305.5	Design the route surveys and tunnel alignments	K3

6. Course Code and Name: OAI551 ENVIRONMENT AND AGRICULTURE

CO Statements		Knowledge Level
Students will be able to		
C306.1	Understand the environmental concerns in agriculture	K2
C306.2	Understand the environmental impacts in modernized agriculture	K2
C306.3	Understand the climate change and water scarcity problems in our environment	K2

C306.4	Understand the Genetically modified crops, Ecological diversity in our environment	K2
C306.5	Understand the emerging issues in global environmental concerns and alternate culture system	K2
7. Course Code and Name: CE511 SOIL MECHANICS LABORATORY		
CO Statements		Knowledge Level
Students will be able to		
C307.1	Conduct tests to determine both the index and engineering properties of soils	K4
C307.2	Interpreting the shear strength of all types of soils by conducting lab tests	K4
C307.3	Conduct tests to determine and characterize the soil based on their properties.	K4
8. Course Code and Name: CE512 WATER AND WASTE WATER ANALYSIS LABORATORY		
CO Statements		Knowledge Level
Students will be able to		
C308.1	Quantify the pollutant concentration in water and wastewater	K3
C308.2	Suggest the type of treatment required and amount of dosage required for the treatment	K3
C308.3	Examine the conditions for the growth of micro-organisms	K4
9. Course Code and Name: CE513 SURVEY CAMP		
CO Statements		Knowledge Level
Students will be able to		
C309.1	Applying the concepts of surveying	K3
C309.2	Applying the practical experience of the realities in the field of Surveying	K3
C309.3	Applying the concepts complexities involved in the field of Surveying	K3

SEMESTER 06		
1. Course Code and Name: CE8601 DESIGN OF STEEL STRUCTURAL ELEMENTS		
CO Statements		Knowledge Level
Students will be able to		
C310.1	Understand the concepts of various design philosophies	K2
C310.2	Design common bolted and welded connections for steel structures	K3
C310.3	Design tension members and understand the effect of shear lag.	K3
C310.4	Understand the design concept of axially loaded columns and column base connections.	K3
C310.5	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
Students will be able to		
C311.1	Draw influence lines for statically determinate structures and calculate critical stress resultants.	K3
C311.2	Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.	K3
C311.3	Analyse of three hinged, two hinged and fixed arches.	K4
C311.4	Analyse the suspension bridges with stiffening girders	K4
C311.5	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
Students will be able to		
C312.1	Understand the knowledge and skills on crop water requirements.	K2
C312.2	Understand the methods and management of irrigation.	K2

C312.3	Gain knowledge on types of Impounding structures	K2
C312.4	Understand methods of irrigation including canal irrigation.	K2
C312.5	Get knowledge on water management on optimization of water use.	K2
4. Course Code and Name: CE8604 HIGHWAY ENGINEERING		
CO Statements		Knowledge Level
Students will be able to		
C313.1	Understand the planning and aligning of highway.	K2
C313.2	Understand the Geometric design of highways	K3
C313.3	Understand the Design flexible and rigid pavements.	K3
C313.4	Gain the knowledge on Highway construction materials, properties, testing methods	K2
C313.5	Understand the concept of pavement management system, evaluation of distress and maintenance of pavements.	K2
5. Course Code and Name: EN8592 WASTE WATER ENGINEERING		
CO Statements		Knowledge Level
Students will be able to		
C314.1	Estimate sewage generation and design sewer system including sewage pumping stations , the characteristics and composition of sewage, self-purification of streams	K3
C314.2	Perform basic design of the unit operations and processes - primary treatment of sewage that are used in sewage treatment	K3
C314.3	Perform basic design of the unit operations and processes- secondary treatment of sewage that are used in sewage treatment	K3
C314.4	Understand the standard methods for disposal of sewage	K2
C314.5	Gain knowledge on sludge treatment and disposal.	K2

6. Course Code and Name: CE8001 GROUND IMPROVEMENT TECHNIQUES		
CO Statements		Knowledge Level
Students will be able to		
C315.1	Gain knowledge on methods and selection of ground improvement techniques	K2
C315.2	Understand dewatering techniques and design for simple cases.	K2
C315.3	Get knowledge on in-situ treatment of cohesionless and cohesive soils	K3
C315.4	Understand the concept of earth reinforcement and the design of reinforced earth	K3
C315.5	Get to know types of grouts and grouting techniques.	K3
7. Course Code and Name: CE8611 HIGHWAY ENGINEERING LABORATORY		
CO Statements		Knowledge Level
Students will be able to		
C316.1	Identification of the techniques to characterize various pavement materials through relevant tests.	K4
C316.2	Testing techniques and characteristics of aggregate and bituminous materials	K4
8. Course Code and Name: CE8612 IRRIGATION AND ENVIRONMENTAL DRAWING		
CO Statements		Knowledge Level
Students will be able to		
C317.1	Design and draw various units of Municipal water treatment plants	K4
C317.2	Design and draw various types of a dam structures.	K4
C317.3	Design and draw various units of sewage treatment plants.	K4

9. Course Code and Name: HS8581 PROFESSIONAL COMMUNICATION

CO Statements		Knowledge Level
Students will be able to		
C318.1	Summarize various skills such as Soft Skills, Hard skills, employability and career Skills and demonstrate values such as Time Management and general awareness of current affairs.	K2
C318.2	Demonstrate oneself before the audience by making effective presentations on introducing oneself, answering questions and visual presenting.	K3
C318.3	Demonstrate one-self by participating in group discussions, brainstorming sessions and question sessions. Develop activities to improve GD Skills	K6
C318.4	Develop interview skills so as to be successful in them.	K6
C318.5	Develop adequate Soft Skills required for the workplace and long-term career.	K6

SEMESTER 07

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

CO Statements		Knowledge Level
Students will be able to		
C401.1	Estimate the quantities for buildings,	K3
C401.2	Rate Analysis for all Building works, canals, and Roads and Cost Estimate.	K3
C401.3	Understand types of specifications, principles for report preparation, tender notices types.	K2
C401.4	Gain knowledge on types of contracts	K2
C401.5	Evaluate valuation for building and land.	K3

2. Course Code and Name: CE8702 RAILWAY AIRPORT, DOCKS AND HARBOUR ENGINEERING

CO Statements		Knowledge Level
Students will be able to		
C402.1	Understand the methods of route alignment and design elements in Railway Planning and Constructions.	K2

C402.2	Understand the Construction techniques and Maintenance of Track laying and Railway stations.	K2
C402.3	Gain an insight on the planning and site selection of Airport Planning and design.	K3
C402.4	Analyze and design the elements for orientation of runways and passenger facility systems.	K3
C402.5	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
Students will be able to		
C403.1	Design and draw reinforced concrete Cantilever and Counterfort Retaining Walls	K3
C403.2	Design and draw flat slab as per code provisions	K3
C403.3	Design and draw reinforced concrete and steel bridges	K3
C403.4	Design and draw reinforced concrete and steel water tanks	K3
C403.5	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
Students will be able to		
C404.1	Understanding of the nature and characteristics of municipal solid wastes and the regulatory requirements regarding municipal solid waste management.	K2
C404.2	Reduction, reuse and recycling of waste.	K2
C404.3	Plan and design systems for storage, collection, transport, processing and disposal of municipal solid waste.	K2
C404.4	Gain knowledge on the issues on solid waste management from an integrated and holistic perspective, as well as in the local and international context.	K2
C404.5	Design and operation of sanitary landfill.	K2

5. Course Code and Nam OML751 TESTING OF MATERIAL

CO Statements		Knowledge Level
Students will be able to		
C405.1	Understand the standards and advantages of testing.	K2
C405.2	Understand the mechanical testing and the techniques.	K2
C405.3	Understand and perform the non destructive testing methods.	K2
C405.4	Understand the macro and micropic testing of materials.	K2
C405.5	Understand the chemical testing of materials.	K2

6. Course Code and Name: CE8711 CREATIVE AND INNOVATIVE PROJECT

CO Statements		Knowledge Level
Students will be able to		
C406.1	Solve various design problems related to Civil Engineering while designing the structures.	K3
C406.2	Solve various design problems related to industrial and residential structures	K3
C406.3	Solve various design problems related to commercial structures.	K3

7. Course Code and Name: CE8712 INDUSTRIAL TRAINING

CO Statements		Knowledge Level
Students will be able to		
C407.1	Identify and prevent from fire, mechanical and electrical hazards by applying proper safety techniques	K3
C407.2	Identify and prevent from chemical hazards by applying proper safety techniques	K3
C407.3	Understand how to control noise and to use personal protective equipments.	K2
C407.4	Demonstrate hazard analysis and risk assessment.	K4
C407.5	Understand the safety regulations to be followed in factories.	K4

SEMESTER 08		
1. Course Code and Name: CE8018 GEO-ENVIRONMENTAL ENGINEERING		
CO Statements		Knowledge Level
Students will be able to		
C408.1	Assess the contamination in the soil	K3
C408.2	Understand the current practice of waste disposal	K2
C408.3	Prepare the suitable disposal system for particular waste.	K2
C408.4	Stabilize the waste and utilization of solid waste for soil improvement.	K2
C408.5	Select suitable remediation methods based on contamination	K3
2. Course Code and Name: CE8020 MAINTENANCE, REPAIR AND REHABILITATION OF STRUCTURES		
CO Statements		Knowledge Level
Students will be able to		
C409.1	Understand the importance of maintenance and assessment method of distressed structures.	K2
C409.2	Understand the strength and durability properties, their effects due to climate and temperature.	K2
C409.3	Understand recent development in concrete	K2
C409.4	Understand the techniques for repair and protection methods	K2
C409.5	Understand repair, rehabilitation and retrofitting of structures and demolition methods	K2
3. Course Code and Name: CE8811 PROJECT WORK		
CO Statements		Knowledge Level
Students will be able to		
C410.1	Analyse any challenging practical problems related to civil engineering	K4
C410.2	Solve the problem from its identification and through literature reviews	K4

C410.3	Prepare project reports, presentations and to face interviews.	K3
C410.4	Develop different solution by formulating proper methodology	K5