



MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act, 1956

DEPARTMENT OF CIVIL ENGINEERING
COURSE OUTCOMES
R19 - REGULATIONS
I YEAR I SEM

Course Name	CO code	Course outcome
Mathematics-I 1910001	CE111.1	Understand the concept of matrix, linear system, partial differentiation, first and higher order equations
	CE111.2	Perform initial value problems, newtons law of cooling
	CE111.3	Evaluate the types of real and complex matrices
	CE111.4	Evaluate the eigen value and eigen vector and their properties
	CE111.5	Application of maxima and minima of functions of variables using partial differentiation
	CE111.6	Formation of partial differential equation using non linear equation
Engineering Physics 1910007	CE112.1	Understand the interaction of light with interference, diffraction and polarization
	CE112.2	Perform the Newtons ring experiment
	CE112.3	Understand the characteristics of laser and polarization
	CE112.4	Understand the principle, and application of optical fibre
	CE112.5	Evaluate the various crystal systems and the defects in crystals
	CE112.6	Understand and perform the X ray diffraction analysis
Programming For Problem Solving 1910501	CE113.1	Understand the fundamentals of computers
	CE113.2	Apply the basic knowledge of computer hardware and software
	CE113.3	Understand the pointers, string and able to write programme
	CE113.4	Apply the code to logic programming in C

	CE113.5	Perform the complex structures
	CE113.6	Understand the searching and sorting , operationa Queues
Engineering Graphics 1910371	CE114.1	Understand the basic concepts of engineering drawing
	CE114.2	Perform the different sectional details
	CE114.3	Perform the orthographic projection
	CE114.4	Perform the projection of regular solids in auxillary planes
	CE114.5	Perform the sectional views for prism, cylinder, pyramid, cone, sphere
Engineering Physics Lab 1910072	CE115.1	Evaluate the wavelength of white source
	CE115.2	Perform the curvature of plano convex lens on Newton's ring
	CE115.3	Evaluate the resonance and Q factor using LCR circuit
	CE115.4	Understand the characteristics of LED and Laser diode
	CE115.5	Evaluate the rigidity modulus using torsion pendulum
	CE115.6	Perform the diffractiongrating using laser
Programming For Problem Solving Lab 1910571	CE116.1	Perform the C programme positive integer, quadratic equation, prime number or not.
	CE116.2	Perform the C programme to construct a pyramid of numbers
	CE116.3	Perform the C programme positive integer, quadratic equation, prime number or not.
	CE116.4	Perform the C programme to reads the two integer
	CE116.5	Perform the C programme to count the number of character
	CE116.6	Perform the C programme to merge two files
Environmenta I Science *1910021	CE117.1	Understand the structure and function of an ecosystem
	CE117.2	Identify the values and conservation of bio-diversity.
	CE117.3	Understand the concepts of environmental sustainable development

	CE117.4	Understand the causes, effects and control measures of various types of pollutions.
	CE117.5	Remember social issues and legal provision.



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R19 - REGULATIONS
I YEAR II SEM

Course Name	CO code	Course outcome
Mathematics - II 1920002	CE121.1	Solve first order differential equation and apply the concept of differential equation to real world problems
	CE121.2	Solve higher differential equation and apply the concept of differential equation to real world problems
	CE121.3	Evaluate the multiple integrals and apply the concept to find areas, volumes, centre of mass and Gravity for cubes, sphere and rectangular
	CE121.4	The basic properties of vector valued functions and their applications to line, surface and volume integrals
	CE121.5	Evaluate the line, surface and volume integrals and converting them from one to another
Chemistry 1920008	CE122.1	Understand the concepts of electro chemical procedure to corrosion and its control
	CE122.2	Perform to calculate the hardness of water and their causes
	CE122.3	Understand the concepts and usages of electro chemistry
	CE122.4	Evaluate the different material properties such as polymers, plastics, fibres, rubbers, elastomer etc
	CE122.5	Understand how the fuels and its combustion has occurred in earth mass
	CE122.6	Basic knowledge on cements, special cements, composites and their material composition
Engineering Mechanics 1920301	CE123.1	Understand the basic concepts about force, moment, couple, etc
	CE123.2	Perform the free body diagram for forces
	CE123.3	Understand the concepts of static and dynamic bodies in motion
	CE123.4	Analyse the centroid of the given body
	CE123.5	Perform the theory of virtual work and find the mass moment of inertia by integral

	CE123.6	Analyse the body in motion using energy principle
Engineering Workshop 1920372	CE124.1	Understand to perform the civil and mechanical works
	CE124.2	Perform the carpentry and plumbing fittings
	CE124.3	Perform the job using smithy
	CE124.4	Perform the wiring for house
	CE124.5	Perform the different types of joints using welding
	CE124.6	Perform the metal cutting for different shapes and sizes of element
English 1920009	CE125.1	Use English Language effectively in spoken and written forms
	CE125.2	Perform the comprehend for the given texts and respond appropriately.
	CE125.3	Perform the communication confidently in formal contexts.
	CE125.4	Perform the appropriate respond to the given comprehend
	CE125.5	Improve the language proficiency
	CE125.6	Ability to guess meanings of words from the context and grasp
Engineering Chemistry Lab 1920073	CE126.1	Understand the concepts to perform volumetric and instrument method of analysis
	CE126.2	Perform the volumetric analysis for finding ferrous ion and hardness
	CE126.3	Analyse the percentage of purity MnO ₂ , chloride ion in bleaching powder
	CE126.4	Evaluate the ferrous ion and Hcl using various method of instrumental method of analysis
	CE126.5	Analyse the viscosity of an oil by viscometer
	CE126.6	Perform the bakelite and urea formaldehyde resin
English Language And Communicati on Skills Lab 1920074	CE127.1	Understand the importance of good communication
	CE127.2	Understanding of nuances of English language through audio- visual experience and group activities
	CE127.3	Neutralization of accent for intelligibility

	CE127.4	Improvement in Speaking skills with clarity and confidence
	CE127.5	Perform them for employability
	CE127.6	Perform the appropriate speaking, group discussions, interviews



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Course Name	CO code	Course outcome
Surveying And Geomatics 1930111	CE211.1	Understand the basic principles of surveying and its role in civil engineering
	CE211.2	Understanding the levelling operations
	CE211.3	Understand the working principles of survey instruments
	CE211.4	Apply the corrections to estimated quantities of survey
	CE211.5	Understand the principles and operation of the latest technologies in surveying
	CE211.6	understand basic concepts of image geometry and measurement of aerial photograph
Engineering Geology 1930112	CE212.1	Understand the role of Geological concepts in Civil Engineering.
	CE212.2	Understand weathering process and mass movement rocks
	CE212.3	Evaluate different types of minerals and rock compositions.
	CE212.4	Understand different geological structures and its suitability for groundwater and building construction
	CE212.5	Evaluate subsurface information through geophysical investigations
	CE212.6	Apply geological principles in selecting sites for tunnels,dams and reservoirs
Strength Of Materials – I 1930113	CE213.1	Understand the principles of prestressing
	CE213.2	Know the method and system of prestressing and evaluate losses of prestressing
	CE213.3	Analysis of section for flexure
	CE213.4	Analysis of section for shear

	CE213.5	Acquire the knowledge of evolution of process of prestressing.
	CE213.6	Analysis of composite beam and deflection
Probability And Statistics 1930004	CE214.1	Understand various types of distributions and inference the means, variances and proportions
	CE214.2	Apply knowledge of probability, statistics and modeling in the presence of uncertainties
	CE214.3	Apply random phenomena of sample to develop an intuition.
	CE214.4	Evaluate hypothesis and Inferences concerning mean, variance and proportions
	CE214.5	Analyze Quality improvement, control charts and reliability to improve statistical skills
	CE214.6	Evaluate the process of problem solving with different methods
Fluid Mechanics 1930114	CE215.1	Understand various properties of fluid
	CE215.2	Analyse the Hydro static forces on any surface or body
	CE215.3	Apply continuity equation, velocity potential and stream function for fluid flow
	CE215.4	Apply Bernoulli's equation to various flow measuring devices.
	CE215.5	Estimate various major and minor losses in pipes
	CE215.6	Use drag and lift coefficients in the boundary layer flows.
Surveying Lab 1930171	CE216.1	operate simple survey instruments in the field.
	CE216.2	Performs area determination for accessible and inaccessible points
	CE216.3	Apply the solution for two point and three point problems in the field.
	CE216.4	Develop L.S and C.S for road works.
	CE216.5	Perform trigonometric levelling to calculate the distance and height
	CE216.6	Create contour maps using total station
Strength Of Material s Lab 1930172	CE217.1	Understand the stresses and strains and relations between them.
	CE217.2	Evaluate bending moment on supports and beams.

	CE217.3	Apply the concept of springs in different conditions.
	CE217.4	Determine hardness of standard metals.
	CE217.5	Understand the concept of resistance in materials
	CE217.6	Determine impact strength of materials.
Engineering Geology Lab 1930173	CE218.1	Apply different methods to identify important minerals
	CE218.2	Evaluate the megascopic properties of rocks & minerals
	CE218.3	Evaluate the microscopic properties of rocks & minerals
	CE218.4	Analyze different structural geology models
	CE218.5	Evaluate a geological map to identify the strata nature
Constitution Of India *1930023	CE219.1	understand the basic concepts of Indian constitution.
	CE219.2	understand the functioning of three wings of the government i.e., executive, legislative and judiciary
	CE219.3	understand the value of the fundamental rights and duties for becoming good citizen of India.
	CE219.4	understand the functioning of Union, State and Local Governments in Indian federal system
	CE219.5	Analyse the decentralisation of power between central, state and local selfgovernment.



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Course Name	CO code	Course outcome
Basic Electrical & Electronics Engineering 1940202	CE 221.1	analyze and solve electrical circuits using network laws and theorems.
	CE 221.2	understand and analyze basic Electric and Magnetic circuits
	CE 221.3	understand the working principles of Electrical Machines
	CE 221.4	Analyse the components of Low Voltage Electrical Installations
	CE 221.5	identify and characterize diodes and various types of transistors.
Basic Mechanical Engineering For Civil Engineers 1940330	CE222.1	understand the mechanical equipment for the usage at civil engineering systems
	CE222.2	understand the Power Transmission Elements and Material Handling equipmen
	CE222.3	Understand the concepts of Power Generation
	CE222.4	Understand the Manufacturing Processes
	CE222.5	Understand the operating of Machine tools
Building Materials, Construction And Planning 1940115	CE223.1	understand the basic principles of surveying and its role in civil engineering
	CE223.2	understanding the levelling operations
	CE223.3	Analyse the field data and compute the areas and volumes.
	CE223.4	Understand the working principles of survey instruments
	CE223.5	Apply the corrections to estimated quantities of survey
	CE223.6	Understand the principles and operation of the latest technologies in surveying

Strength Of Materials – II 1940116	CE 224.1	Apply the torsion theory for analysis of circular shafts and springs
	CE 224.2	Analyze columns and struts
	CE 224.3	Understand the concept of direct and bending stresses
	CE 224.4	Understand the concept of unsymmetrical bending
	CE 224.5	Analyze the stress in Thin and thick cylinders
	CE 224.6	Understand the concept of shear centre for symmetrical and unsymmetrical sections
Hydraulics And Hydraulic Machinery 1940117	CE 225.1	Understand the concepts of open channel flows
	CE 225.2	Design of efficient channel sections and apply specific energy concepts
	CE 225.3	Apply principles of dimensional analysis in model testing
	CE 225.4	Apply the momentum principles to calculate the forces expected by a liquid jet.
	CE 225.5	Understand the performance characteristics of turbines.
	CE 225.6	Understand the performance of centrifugal pumps.
Structural Analysis – I 1940118	CE 226.1	Analysis of determinate pin jointed frames using different methods
	CE 226.2	Evaluate the deflection of beams, truss and frames using energy theorems
	CE 226.3	Evaluate the stress resultants in arches
	CE 226.4	Analyse the indeterminate beams for various loading conditions
	CE 226.5	Analyse the different types o beams using slope deflection and moment distribution method
	CE 226.6	Apply the concepts of ILD and moving loads on determinate structures
Computer Aided Civil Engineering Drawing 1940174	CE 227.1	Understand CAD software and basic functions
	CE 227.2	Evaluate plans of Single storied building & multistoried buildings
	CE 227.3	Develop different sections at different elevations
	CE 227.4	Detailing of building components like doors, windows roof trusses

	CE 227.5	Develop section and elevation for single and multistoried buildings using CAD software.
	CE 227.6	Understand development concepts in detailing
Basic Electrical And Electronics Engineering Lab 1940272	CE 228.1	analyze and solve electrical circuits using network laws and theorems.
	CE 228.2	understand and analyze basic Electric and Magnetic circuits
	CE 228.3	study the working principles of Electrical Machines
	CE 228.4	introduce components of Low Voltage Electrical Installations
	CE 228.5	identify and characterize diodes and various types of transistors.
Hydraulics & Hydraulic Machinery Lab 1940175	CE 229.1	Understand calibration of flow measuring devices.
	CE 229.2	Apply the practical aspects of Bernoulli's principle
	CE 229.3	Understand calibration of flow measuring devices.
	CE 229.4	analyse the Manning's and Chezy's constants for Open channel flow
	CE 229.5	Analyse the characteristics of turbine
	CE 229.6	Analyse the characteristics of pumps
Gender Sensitization Lab *1940022	CE2210.1	Develop students sensibility with regard to issues of gender in contemporary India
	CE2210.2	Provide a critical perspective on the socialization of men and women
	CE2210.3	Introduce students to information about some key biological aspects of genders
	CE2210.4	Expose the students to debates on the politics and economics of work
	CE2210.5	Help students reflect critically on gender violence
	CE2210.6	Expose students to more egalitarian interactions between men and women



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III YEAR I SEM

Course Name	CO code	Course outcome
Structural Analysis – II 1950119	CE 311.1	Analyze the two hinged arches
	CE 311.2	Analyse statically indeterminate beams and portal frames using classical methods
	CE 311.3	analyse the shear force and bending moment diagrams for indeterminate structures
	CE 311.4	Analyse the flexibility and stiffness matrix and analyze the beams by matrix methods
	CE 311.5	Utilize the concept of influence lines for deciding the critical forces and sections while designing.
Geotechnical Engineering 1950120	CE312.1	Understand the Characteristics and classification soils
	CE312.2	Evaluate the permeability for different soils
	CE312.3	Analyse various stresses and their distribution in soil
	CE312.4	Understand the principles of compaction and its control
	CE312.5	Analyze and compute principles of consolidation settlements of soil.
	CE312.6	Analyse the shear strength of soils.
Structural Engineering – I (RCC) 1950121	CE313.1	Understand the concepts of Reinforced Concrete design as per IS Code
	CE313.2	Analyze and design of different types of reinforced concrete beams using limit state method
	CE313.3	Analysis and design of beams with shear, bond and torsion.

	CE313.4	Design of different types of slabs
	CE313.5	Design of RCC columns with deferent loadings
	CE313.6	Design of different types footings
Transportation Engineering 1950122	CE 314.1	To study Importance, classification of highway.
	CE 314.2	To study the geometric design of highways and traffic engineering.
	CE 314.3	To study highway materials and pavement design and its construction process.
	CE 314.4	Characterize the response characteristics of soil, aggregate, asphalt, and asphalt mixes
	CE 314.5	Understand the pavement components, functions and design stresses in flexible pavements
Concrete Technology 1950141	CE315.1	Understand the properties of cement, aggregates and admixtures.
	CE315.2	Apply concepts and carry out tests relevant to the use of fresh concrete
	CE315.3	Apply concepts and carry out tests relevant to the use of hardened concrete
	CE315.4	Analyze the properties of hardened concrete
	CE315.5	Design concrete mixes as per IS code
Engineering Economics And Accountancy 19MBA29	CE 316.1	Recognize financial statements, their importance and usages.
	CE 316.2	Understand major principles of financial accounting, cost accounting and financial management.
	CE 316.3	Utilize the tools and techniques for economic analysis of alternative opportunities, considering time value of money and risk associated
	CE 316.4	Appraise investment opportunities considering forthcoming changes in economy, including inflation and their effect.
	CE 316.5	Make optimal engineering investment decisions.
Highway Engineering & Concrete Technology Lab 1950176	CE317.1	Evaluate the strength of cement
	CE317.2	Analyze the characteristics of aggregates
	CE317.3	Perform the tests on fresh concrete

	CE317.4	Evaluate the strength of the hardened concrete
	CE317.5	perform the Tests on Bitumen and Bituminous concrete
Geotechnical Engineering Lab 1950177	CE318.1	Evaluate different properties of soil.
	CE318.2	Evaluate different field methods in lab.
	CE318.3	Analyze the water-soil interaction and properties associated with it
	CE318.4	Analyze the porosity of soil and its impact on soil properties
	CE318.5	Analyze the behaviour of soil subjected to direct and shear stresses.
Advanced Communication Skills Lab 1950075	CE 319.1	Self-instructional, learnerfriendly modes of language learning
	CE 319.2	Learn better pronunciation through stress on word accent, intonation, and rhythm.
	CE 319.3	Train them to use language effectively to face interviews, group discussions, public speaking.
	CE 319.4	Initiate them into greater use of the computer in resume preparation, report writing, formatmaking etc
	CE 319.5	Team building
	CE 319.6	Leadership qualities through their communicative competence
Intellectual Property Rights 1950024	CE 3110.1	Understanding, defining and differentiating different types of intellectual properties (IPs) and their roles in contributing to
	CE 3110.2	Understanding the Framework of Strategic Management of Intellectual Property (IP).
	CE 3110.3	Analyse ethical and professional issues which arise in the intellectual property law context
	CE 3110.4	Explaining how to derive value from IP and leverage its value in new product and service development
	CE 3110.5	Exposing to the Legal management of IP and understanding of real life practice of IPM.



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III YEAR II SEM

Course Name	CO code	Course outcome
Hydrology And Water Resources Engineering 1960123	CE 321.1	Understand Various components of hydrologic cycle
	CE 321.2	quantify evaporation, Evapotranspiration and infiltration processes
	CE 321.3	Analyse Rainfall and runoff relations through Hydrograph techniques
	CE 321.4	Analyse the aquifer parameters and yield of wells.
	CE 321.5	Evaluate the irrigation water requirements
	CE 321.6	Design components of Lined and Unlined irrigation canals.
Environmental Engineering 1960124	CE 322.1	Understand water demand and quality standards
	CE 322.2	Design solutions for economically and environmentally viable water treatment methods
	CE 322.3	Apply the subject to improve sewage water collection and processing.
	CE 322.4	Understand different process of waste water treatment
	CE 322.5	Understand sewage farming and disposal of waste water
	CE 322.6	Understand the effect of different types of air pollution
Foundation Engineering 1960125	CE 323.1	Understand the different methods involved in the soil exploration and its importance
	CE 323.2	Analyse the stability of soil by Swedish arc, Bishop's simplified and Taylor's methods
	CE 323.3	Build the necessary theoretical background for design and construction of foundation systems
	CE 323.4	Discuss and evaluate the feasibility of foundation solutions to different types of soil conditions considering the time effect on soil behaviour

	CE 323.5	Understand the importance of well foundation, components and its types
	CE 323.6	Understand the different methods involved in the soil exploration and its importance
Structural Engineering – II (Steel) 1960126	CE 324.1	Understand the Design specifications of steel structures as per IS code.
	CE 324.2	Apply the knowledge on design of connections
	CE 324.3	Analyze and design of tension and compression members
	CE 324.4	Design beam-columns, connections with bolts and welds
	CE 324.5	Design of plate girders and stiffeners .
	CE 324.6	Design of different types of roof truss, purlins, joints and end bearings
Prestressed Concrete 1960144	CE 325.1	Understand the principles, advantages and limitations of prestressed concrete
	CE 325.2	Evaluate different prestressing systems
	CE 325.3	Apply the concepts of minor losses and relaxation to design
	CE 325.4	Design the section for flexural and shear conditions
	CE 325.5	Analyze the prestressed and pre-tensioned members
	CE 325.6	Design composite structures
Environmental Engineering Lab 1960179	CE 326.1	Analyse the physical parameters of water for drinking
	CE 326.2	Analyse the major elements of water for drinking
	CE 326.3	Analyse the minor elements of water for drinking
	CE 326.4	Analyse the waste water for different purposes of recycle
	CE 326.5	Analyse the biological parameters of water for drinking
	CE326.6	evaluate the Noise pollution

Computer Aided Design Lab 1960180	CE329.1	Understand CAD software and basic functions
	CE329.2	Evaluate plans of Single storied building & multistoried buildings
	CE329.3	Develop different sections at different elevations
	CE329.4	Detailing of building components like doors, windows roof trusses
	CE329.5	Develop section and elevation for single and multistoried buildings using CAD software.
	CE329.6	Understand development concepts in detailing
Environmental Science *1960021	CE 328.1	Understand the importance of natural resources and its conservation techniques
	CE 328.2	Understand the structure and function of an ecosystem
	CE 328.3	Identify the values and conservation of bio-diversity.
	CE 328.4	Understand the concepts of environmental sustainable development
	CE 328.5	Understand the causes, effects and control measures of various types of pollutions.
	CE 328.6	Remember social issues and legal provision.



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Course Name	CO code	Course outcome
Estimation, Costing And Project Management 1970127	CE 411.1	Prepare quantity estimates for Buildings, roads & rails and canal structures as per specifications.
	CE 411.2	Ascertain the quantity of materials required for Civil engineering works as per specifications.
	CE 411.3	Draft detailed specifications and work out Rate Analysis for all works related to civil engineering projects.
	CE 411.4	Understanding contract and types of contract and documentation required
	CE 411.5	Prepare tenders & contract documents. Evaluate contracts and tenders in construction practice.
	CE 411.6	Understand the conceptual clarity about project organization and feasibility analyses
Advanced Structural Design 1970149	CE 412.1	Enhance the capabilities to design the special structural elements as per Indian standard code of practice.
	CE 412.2	Design and Detailing of cantilever type of Retaining walls
	CE 412.3	Analysis and Design of Flat slabs and Ribbed slabs
	CE 412.4	Design of RCC Circular water tank
	CE 412.5	Design of Reinforced Concrete Slab Bridge decks
	CE 412.6	Design of steel gantry girder
Irrigation And Hydraulic Structures 1970150	CE 413.1	Understand different types of dams design taking into account the suitability of the site and the different type loads that are likely to be
	CE 413.2	illustrate the major forces acting on gravity dams and Analyse the stability concrete gravity dams at reservoir empty and full conditions
	CE 413.3	Analyse the stability of earth dams through flow net and know about measures for slopes protection
	CE 413.4	Design and analyse the various types spillways and stilling basins followed by IS recommendations.

	CE 413.5	Evaluate the essential requirements of the different components of diversion head works and weirs.
	CE 413.6	Design the cross drainage works used in irrigation channels which include canal falls, regulator works, and canal outlets.
Utilization Of Electrical Energy 1970231	CE 414.1	Understanding the heating methods for industrial applications
	CE 414.2	Understanding the welding methods for industrial applications
	CE 414.3	Understanding of the basic principles of illumination and its measurement
	CE 414.4	understand the method of calculation of various traction system and drives.
	CE 414.5	Understand the basic principles of systems of train lighting
	CE 414.1	Understanding the heating methods for industrial applications
Professional Practice Law & Ethics 1970013	CE 415.1	Understanding basic purpose of profession, professional ethics and various moral and social issues
	CE 415.2	apply the basic concepts and terminology of the law of contract
	CE 415.3	Understand the processes of arbitration
	CE 415.4	identify all aspects of Labour Law practiced in India
	CE 415.5	Understand the legalities of intellectual property to avoid plagiarism and other IPR related crimes like copyright infringements, etc.
Industrial Oriented Mini Project/ Summer Internship 1970191	CE 416.1	Understand real world problem
	CE 416.2	Develop a design solution for a set of requirements
	CE 416.3	Enhance effective communication and interpersonal skills
	CE 416.4	Build multidisciplinary and leadership approach towards all life tasks
	CE 416.5	Hone analytical and logical skills for problem-solving
	CE 416.6	Report and present the findings of the study /research work
Seminar 1970192	CE 417.1	Establish motivation for any topic of interest and develop a thought process for technical presentation.
	CE 417.2	Organize a detailed literature survey and build a document with respect to technical publications
	CE 417.3	Analysis and comprehension of proof-of-concept and related data.

	CE 417.4	Effective presentation and improve soft skills.
	CE 417.5	Make use of new and recent technology for creating technical reports
Project Stage - I 1970193	CE 418.1	Undertake problem identification, formulation and solution.
	CE 418.2	Design engineering solutions to complex problems utilising a systems approach.
	CE 418.3	Design engineering solutions to complex problems utilising a systems approach.
	CE 418.4	Integrate information from multiple sources.
	CE 418.5	Communicate with engineers and the community at large in written and oral forms.
	CE 418.6	Demonstrate the knowledge, skills and attitudes of a professional engineer.



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Environmental Impact Assessment 1960103	CE 421.1	Understand the concept, historical context and wider importance of EIA
	CE 421.2	Understand the key steps in the EIA process
	CE 421.3	Understand strengths & limitations of environmental management
	CE 421.4	Understand basic environmental assessment policies and requirements
	CE 421.5	Evaluate applications of environmental assessment case studies
Finite Element Methods For Civil Engineering 1980158	CE 422.1	Understand the concepts, advantage and disadvantage of FEM
	CE 422.2	Evaluate the shapes, nodes and strain displacement of structure
	CE 422.3	Analyze the bar, beam element using FEA
	CE 422.4	Evaluate the shape function for CST and LST element
	CE 422.5	Analyze the 4, 8 noded isoparametric quadrilateral elements
	CE 422.6	Understand the concepts of numerical integration and evaluate for static loads
Non-Conventional Sources Of Energy	CE423.1	Understand the need of energy conversion and the various methods of energy storage
	CE423.2	Explain the field applications of solar energy
	CE423.3	Identify Winds energy as alternate form of energy and to know how it can be tapped
	CE423.4	Explain bio gas generation and its impact on environment
	CE423.5	Understand the Geothermal & Tidal energy, its mechanism of production and its applications

	CE423.6	Illustrate the concepts of Direct Energy Conversion systems & their applications.
Project Stage-II 1980194	CE 424.1	Undertake problem identification, formulation and solution.
	CE 424.2	Design engineering solutions to complex problems utilising a systems approach.
	CE 424.3	Design engineering solutions to complex problems utilising a systems approach.
	CE 424.4	Integrate information from multiple sources.
	CE 424.5	Communicate with engineers and the community at large in written and oral forms.
	CE 424.6	Demonstrate the knowledge, skills and attitudes of a professional engineer.