



ADITYA ENGINEERING COLLEGE

An Autonomous Institution

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Recognised by UGC under sections 2(f) and 12(B) of UGC Act, 1956

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Department of Civil Engineering

B.Tech - AR17 - Course Articulation Matrix

Note: Correlation Levels are 1 or 2 or 3. Where 1- Slight(Low), 2 - Moderate(Medium), 3 - Substantial (High).

-	CO Statements	POs												PSOs		
I SEM																
Course Code	171HS1T01 ENGLISH – I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Summarize how Gandhi grew in introspection and the conditions to achieve a higher quality of life, strength and sovereignty of a developed nation.	-	-	-	-	-	-	-	-	-	3	-	-	-		-
CO2	Identify that all men can come together and avert the peril.	-	-	-	-	-	-	-	-	-	3	-	-	-		-
CO3	Comprehend texts from a literary perspective and familiarise the students with Figures of Speech.	-	-	-	-	-	-	-	-	-	3	-	-	-		-
CO4	Explain the characteristic traits of renowned scientists who contributed enormously to the scientific advancement of India.	-	-	-	-	-	-	-	-	-	3	-	-	-		-
CO5	Demonstrate Writing and basic concepts of Grammar skills.	-	-	-	-	-	-	-	-	-	3	-	-	-		-
Course Code	171BS1T01 MATHEMATICS-I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Associate linear differential equations of first order to solve various physical problems involving differential equations of first order	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Solve linear differential equations of higher order.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Solve linear systems of equations using the concept of rank, Gauss elimination, Gauss Seidal method.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Find the eigen values and eigen vectors of matrices.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Associate the concepts of Partial Differentiation to maxima and minima of functions of several variables and to solve Partial differential equations.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	171HS1T02 ENVIRONMENTAL STUDIES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Identify the need for protecting the producers and consumers in various ecosystems and their role in the food web.	-	-	-	-	-	1	3	-	-	-	-	-	-	-	

-	CO Statements	POs												PSOs		
CO2	Outline the natural resources and their importance for the sustenance of the life.	-	-	-	-	-	2	3	-	-	-	-	-	-	-	-
CO3	List out the biodiversity of India, threats and its conservation methods.	-	-	-	-	-	1	3	-	-	-	-	-	-	-	-
CO4	Explain the different types of pollutions and their control technologies, Waste water treatment, Bio medical waste management etc.	-	-	2	-	-	2	3	-	-	-	-	-	-	-	-
CO5	Explain EIA- Environmental Impact Assessment, Sustainable developmental activities, environmental policies and regulations.	-	-	2	-	-	2	3	-	-	-	-	-	-	-	-
Course Code	17IBS1T03 ENGINEERING CHEMISTRY	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Illustrate the fundamental concepts of computers and basics of computer programming	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Make use of control structures and arrays in solving complex problems.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Develop modular program aspects and strings fundamentals.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Demonstrate the ideas of pointers usage.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Solve real world problems using the concept of structures, unions and File operations.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	17IES1T02 ENGINEERING MECHANICS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Determine the resultant force and moment for a given force system.	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Explain the concept of friction.	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Calculate the forces in planar and spatial systems.	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Locate centroid of composite areas and center of gravity of composite bodies.	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Calculate the moment of inertia of composite areas and rigid bodies.	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-
CO6	Apply the concepts of kinematics, kinetics, work - energy and impulse -	3	2	1	-	-	-	-	-	-	-	-	-			
Course Code	17IES1T01 COMPUTER PROGRAMMING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Apply fundamental of C for mathematical and scientific problems.	1	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	Use Control Structures, Arrays and strings in solving complex problems.	1	2	2	3	-	-	-	-	-	-	-	-	2	-	-
CO3	Develop modular programs to solve problems using functions.	1	3	2	2	-	-	-	-	-	-	-	-	2	-	-
CO4	Demonstrate the pointers concept for allocating and deallocating memory dynamically.	1	2	2	3	-	-	-	-	-	-	-	-	2	-	-
CO5	Solve real world problems using the concept of files, structures and unions.	1	2	2	2	-	-	-	-	-	-	-	-	2	-	-

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-	CO Statements	POs												PSOs		
CO6	Convert isometric view in to orthographic views.	3	2	1	-	3	-	-	-	-	-	-	-	-	-	-
Course Code	171HS2L02 BASIC ENGLISH COMMUNICATION SKILLS LAB II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Make effective use of Body language in all situations and contexts to enhance effective communication in all aspects.	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-
CO2	Identify communicative competency to respond to others in different situations.	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-
CO3	Make use of effective delivery strategies to select, compile and synthesize information for oral presentation.	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-
CO4	Demonstrate in mock interviews, group discussion and public speaking.	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-
CO5	Illustrate interpersonal skills using English language confidently and effectively for personal and professional growth.	-	-	-	-	-	-	-	-	-	3	-	2	-	-	-
Course Code	171BS2L02 ENGINEERING PHYSICS LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Use spectrometer, polarimeter, travelling microscope for making measurements.	3	2	-	-	-	-	-	-	3	-	-	1	-	-	-
CO2	Determine energy gap of a semiconductor, draw characteristic curves to estimate thermal coefficient of a thermistor, Zener diode.	2	2	-	-	-	-	-	-	3	-	-	1	-	-	-
CO3	Determine the rigidity and determine frequency of an unknown electric vibrator.	3	1	-	-	-	-	-	-	3	-	-	1	-	-	-
CO4	Determine wavelength of unknown source, the width of narrow slits, spacing Between close rulings using lasers and appreciate the accuracy in measurements.	3	2	-	-	-	-	-	-	3	-	-	1	-	-	-
CO5	Verify magnetic field along the axis of a circular coil.	3	2	-	-	-	-	-	-	3	-	-	1	-	-	-
Course Code	171ES2L02 ENGINEERING WORKSHOP AND IT WORKSHOP	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Prepare carpentry, fitting joints as per the given requirement using Carpentry and Fitting tools	2	1	-	-	-	-	-	-	1	-	-	-	-	-	-
CO2	Convert the metal rods and sheets into final shape using black smithy and tin smithy tools	2	1	-	-	-	-	-	-	1	-	-	-	-	-	-
CO3	Prepare the circuit for house wiring applications	2	1	-	-	-	-	-	-	1	-	-	-	-	-	-
CO4	Install the operating system software, networking and troubleshoot the problems	2	1	-	-	-	-	-	-	1	-	-	1	-	-	-
CO5	Develop documents using MS-Office and LaTeX tools	2	1	-	-	-	-	-	-	1	-	-	1	-	-	-

-	CO Statements	POs												PSOs		
III SEM																
Course Code	171BS3T10 PROBABILITY AND STATISTICS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Apply various Probability distributions for both discrete and continuous random variables.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Compute mean and variance of sample means with replacement and without replacement	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Apply various tests to test the hypothesis concerning mean, Proportion, variance and perform ANOVA test.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Apply the concepts of correlation and regression to the given statistical data.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Examine quality of the product using control charts.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	171ES3T05 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Analyze the various electrical networks.	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-
CO2	Explain the operation of DC Machines.	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-
CO3	Examine the performance of single-phase transformers.	3	-	-	-	1	-	-	-	-	-	-	-	-	-	-
CO4	Compare the operation of 3-phase alternators and 3-phase induction motors.	3	2	-	1	1	-	-	-	-	-	-	-	-	-	-
CO5	Distinguish the operation of half wave and full wave bridge rectifiers.	3	1	-	1	1	-	-	-	-	-	-	-	-	-	-
Course Code	171ES3T09 STRENGTH OF MATERIALS-I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the behavior of basic materials under the influence of different external loading conditions and the support conditions.	2	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Develop the diagrams indicating the variation of the key performance features like bending moment and shear forces.	3	2	1	-	-	-	-	-	-	-	-	-	2	-	-
CO3	Determine the bending stresses in beams when subjected to bending using flexural equation.	3	2	1	-	-	-	-	-	-	-	-	-	1	-	-
CO4	Calculate the shear stress occurring in members due to various loading conditions.	2	2	1	-	-	-	-	-	-	-	-	-	2	-	-
CO5	Analyze the deflections in beams under various loading and support conditions	2	3	2	-	-	-	-	-	-	-	-	-	3	-	-
Course Code	171CE3T01 BUILDING MATERIALS AND CONSTRUCTION	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the sources, properties and applications of common building materials	2	-	-	-	-	2	1	-	-	-	-	-	1	-	-

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-	CO Statements	POs												PSOs		
CO3	Analyze continuous beams under different loading and support conditions by	3	2	2	-	-	-	-	-	-	-	-	-	3	-	-
CO4	theorem of three moments.	3	2	2	-	-	-	-	-	-	-	-	-	3	-	-
CO5	Analyze continuous beams under different loading and support conditions by	3	2	1	-	-	-	-	-	-	-	-	-	2	-	-
Course Code	17ICE4L02 FLUID MECHANICS & HYDRAULIC MACHINERY LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Examine the calibration of different flowmeters.	3	-	-	2	-	-	-	-	-	-	-	-	3	-	-
CO2	Illustrate flow measuring devices used in pipes, channels, and tanks	2	-	-	3	-	-	-	-	-	-	-	-	1	-	-
CO3	Determine major and minor losses in pipes	3	-	-	2	-	-	-	-	-	-	-	-	3	-	-
CO4	Analyze energy equation for problems on flow through pipes	3	-	-	2	-	-	-	-	-	-	-	-	3	-	-
CO5	Identify the flow behavior in open channels.	3	-	-	1	-	-	-	-	-	-	-	-	2	-	-
CO6	Examine the performance characteristics of turbines and pumps	3	-	-	2	-	-	-	-	-	-	-	-	3	-	-
Course Code	17ICE4L03 CONCRETE TECHNOLOGY LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the importance of testing of cement and its properties.	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	Examine different properties of aggregates.	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	Determine the workability of concrete.	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	Experiment with the properties of hardened concrete.	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO5	Demonstrate the non-destructive testing procedures on concrete.	2	1	-	-	-	-	-	-	-	-	-	-	1	-	-
Course Code	17IHS4A08 INTELLECTUAL PROPERTY RIGHTS AND PATENTS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Compare various Intellectual Property rights.	-	-	-	-	-	-	-	3	-	-	-	2	-	-	-
CO2	Discuss on Intellectual Property infer rights on such Intellectual Property owners.	-	-	-	-	-	-	-	3	-	-	-	2	-	-	-
CO3	Relate with Intellectual Property Law.	-	-	-	-	-	-	-	3	-	-	-	2	-	-	-
CO4	Interpret the legal issues on Intellectual Property Rights and cyber laws.	-	-	-	-	-	-	-	3	-	-	-	2	-	-	-
CO5	Apply for trade mark, copyrights, patents.	-	-	-	-	-	-	-	3	-	-	-	2	-	-	-
CO6	Summarize the ways to protect trade secrets.	-	-	-	-	-	-	-	3	-	-	-	2			
Course Code	17IHS4A11 EMPLOYABILITY SKILLS-II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Identify the symbols, notations and Venn -diagrams.	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO2	Demonstrate the basic grammatical skills.	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO3	Relate different types of blood relations.	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
CO4	Apply the logics in the puzzles and arrangements.	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-

-	CO Statements	POs												PSOs		
CO4	Design different type of compression members and footings.	-	3	2	-	-	2	-	-	-	-	-	-	-	3	-
CO5	Design one-way slabs and two-way slabs	-	3	2	-	-	2	-	-	-	-	-	-	-	1	-
Course Code	17ICE5T11 TRANSPORTATION ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Develop geometric design of transport systems.	3	2	-	-	-	-	-	-	-	-	-	-	-	2	-
CO2	Design the traffic signaling system.	2	3	2	2	2	2	-	2	-	-	2	-	-	3	-
CO3	Design highway Intersections.	2	3	2	2	2	2	-	2	-	-	-	-	-	3	-
CO4	Design of rigid and flexible pavements.	3	2	-	-	3	3	2	3	2	2	2	-	-	3	-
CO5	Explain the basic concepts of railway and airport engineer.	3	2	-	-	-	-	-	-	-	-	-	-	-	2	-
Course Code	17ICE5T12 STRUCTURAL ANALYSIS -II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Analyze the two-hinged and three-hinged arches	3	1	1	-	-	2	-	-	-	-	-	3	-	1	-
CO2	Analyze the application of lateral loads in building frames.	3	2	2	-	-	2	-	-	-	-	-	3	-	3	-
CO3	Examine the various characteristics in analyzing the cables and suspension bridges.	3	1	2	-	-	2	-	-	-	-	-	3	-	1	-
CO4	Analyze the structures using Moment distribution method.	3	2	2	-	-	2	-	-	-	-	-	3	-	2	-
CO5	Analyze the structures using Kani's method.	3	2	2	-	-	2	-	-	-	-	-	3	-	3	-
Course Code	17ICE5T13 WATER RESOURCE ENGINEERING-I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the major hydrological components - Intensity-Duration-Frequency curves and Depth-Area-Duration curves.	2	1	-	-	-	-	3	-	-	-	-	-	1	-	-
CO2	Identify the various abstractions of precipitation and factors affecting it.	2	1	-	-	-	-	3	-	-	-	-	-	1	-	-
CO3	Analyze the different types of unit hydrographs in rainfall-runoff modelling.	1	2	-	-	-	-	3	-	-	-	-	-	3	-	-
CO4	Illustrate the various methods in flood frequency analysis and flood routing techniques	1	2	-	-	-	3	-	-	-	-	-	-	2	-	-
CO5	Analyze various ground water potential aquifer parameters and yield from wells.	3	1	-	-	-	2	-	-	-	-	-	-	3	-	-
Course Code	17ICE5E01 CONSTRUCTION TECHNOLOGY AND MANAGEMENT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Plan and schedule on various construction projects.	3	2	2	2	2	2	-	-	2	-	2	2	-	3	-
CO2	Solve PERT and CPM networks & have a better idea upon utilization of resources in Construction.	3	2	1	1	2	2	2	-	2	-	2	2	-	2	-
CO3	Compare the functioning of various earth moving equipment	-	-	-	-	-	2	-	-	-	-	-	3	-	2	-
CO4	Explain the methods of production of aggregate and concreting.	-	-	-	-	-	2	-	-	-	-	-	3	-	2	-
CO5	Classify different types of pile driving equipment.	-	-	-	-	-	2	-	-	-	-	-	3	-	2	-

-	CO Statements	POs												PSOs		
Course Code	171CE5E02 URBAN HYDROLOGY	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Illustrate the importance of urban hydrological cycle.	3	1	-	-	-	-	-	-	-	-	2	-	2	-	-
CO2	Apply the rational method and NRCS curve number approach for estimating runoff quality and quantity in urban drainage systems.	3	2	1	-	-	-	-	-	-	-	-	-	2	-	-
CO3	Describe the various elements of drainage systems.	2	1	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	Differentiate the different storm water drainage structures and best practices in storm water management.	3	1	2	-	-	-	-	-	-	-	-	-	2	-	-
CO5	Summarize the various concepts required in the preparation of master drainage plans.	3	2	-	-	-	-	-	-	-	-	1	-	2	-	-
Course Code	171CE5E03 TRAFFIC ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Identify traffic stream characteristics and studies.	3	2	-	-	2	-	-	-	-	-	-	-	-	1	-
CO2	Explain traffic capacity and level of service.	3	1	-	-	-	-	-	-	-	-	-	-	-	3	-
CO3	Solve various parking problems and manage traffic regulations.	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO4	Illustrate measures for Road safety.	2	1	-	-	-	2	-	-	-	-	-	-	-	-	-
CO5	Design traffic signal cycle and Rotary Island capacity.	3	2	-	-	2	2	-	-	-	-	-	-	-	2	-
CO6	Classify various traffic-environment problems	3	2	-	-	2	2	-	-	-	-	-	-	-	-	-
Course Code	171HS5T06 EMPLOYABILITY SKILLS-III	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Calculate the L.C.M and H.C.F of numbers by simple methods.	3	-	-	-	-	2	2	1	-	-	-	-	-	2	-
CO2	Discuss about different numbers and its applications.	2	-	-	-	-	2	3	2	-	-	-	-	-	1	-
CO3	Breakdown the typical write-up skills.	3	-	-	-	-	2	2	-	-	-	-	-	-	2	-
CO4	Apply different types of models on ratio & proportion, average, ages and percentages.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Demonstrate the tools of the soft skills.	3	-	-	-	-	-	-	3	-	-	-	-	-	2	-
Course Code	171CE5L04 ENGINEERING GEOLOGY LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Apply the knowledge of geology in the field of civil engineering.	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO2	Explain physical properties of various minerals and rocks.	2	1	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	Interpret geological maps, topographical maps and satellite imagery.	2	1	-	-	-	-	-	-	-	-	-	3	2	-	-
CO4	Identify various geological formations.	3	2	-	1	-	-	-	-	-	-	-	-	3	-	-
CO5	Distinguish various landforms and rock formations in constructional areas through field examinations	3	2	-	2	-	-	-	-	-	-	-	-	3	-	-
Course Code	171CE5L05 TRANSPORTATION ENGINEERING LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Characterise the highway aggregates	2	1	-	-	-	2	-	-	-	-	-	-	2	-	-
CO2	Conduct tests on suitability of bitumen.	2	1	-	-	-	2	-	-	-	-	-	-	3	-	-
CO3	Identify the parking capacity and use of parking facilities.	3	1	-	-	-	-	-	-	-	3	-	-	3	-	-

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-	CO Statements	POs												PSOs		
Course Code	171CE6T17 PRESTRESSED CONCRETE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain methods of prestressed concrete.	2	1	-	-	-	-	-	2	-	-	-	-	-	2	-
CO2	Calculate various losses in prestressed concrete sections.	3	2	-	-	-	-	-	2	-	-	-	-	-	3	-
CO3	Analyse the members for flexure, shear and torsion.	3	2	-	-	-	-	-	2	-	-	-	-	-	3	-
CO4	Design prestressed concrete members for deflection and crack control	3	2	2	-	-	-	-	2	-	-	-	-	-	3	-
CO5	Design of end blocks for post tensioned members	3	2	2	-	-	-	-	2	-	-	-	-	-	2	-
Course Code	171CE6E04 GROUND WATER DEVELOPMENT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Interpret aquifer parameters and yield of wells.	2	1	-	-	-	-	-	-	3	-	-	-	1	-	-
CO2	Explain water well designs and the construction practices.	2	1	-	-	-	-	-	-	3	-	-	-	3	-	-
CO3	Illustrate geophysical exploration data as a scientific source in finding of aquifers	3	2	-	1	-	-	-	-	-	-	-	-	2	-	-
CO4	Experiment with the process of artificial recharge for increasing groundwater potential for different topographic areas.	3	2	-	1	-	-	-	-	-	-	-	-	2	-	-
CO5	Analyze effective measures for controlling saline water intrusion.	3	-	-	2	-	-	-	-	-	-	-	-	3	-	-
Course Code	171CE6E05 PAVEMENT ANALYSIS AND DESIGN	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Describe the principles and concepts in pavement design	3	2	-	-	-	-	-	-	-	-	-	-	-	2	-
CO2	Determine the stresses in pavements.	2	3	-	-	2	2	-	-	-	-	2	-	-	3	-
CO3	Calculate the bituminous mixes	2	3	-	-	2	2	-	-	-	-	-	-	-	3	-
CO4	Design the flexible and rigid pavements using various methods	3	2	-	-	2	2	-	-	-	-	2	-	-	3	-
CO5	Explain the shoulders, overlays and drainage thickness and width considerations.	3	2	-	-	-	-	-	-	-	-	-	-	-	2	-
Course Code	171CE6E06 REPAIR AND REHABILITATION OF STRUCTURES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Recognize the mechanisms of degradation of concrete structures and to design durable concrete structures.	2	2	-	-	-	-	1	1	-	-	-	-	-	2	-
CO2	Conduct field monitoring and non-destructive evaluation of concrete structures.	2	2	-	-	-	-	1	1	-	-	-	-	-	2	-
CO3	Design and suggest repair strategies for deteriorated concrete structures including repairing with composites.	1	1	-	-	-	-	2	2	-	-	-	-	-	1	-
CO4	Understand the methods of strengthening methods for concrete structures	2	2	-	-	-	-	2	2	-	-	-	-	-	2	-

-	CO Statements	POs												PSOs		
CO5	Assessment of the serviceability and residual life span of concrete structures by Visual inspection and in situ tests	1	1	-	-	-	-	1	1	-	-	-	-	-	1	-
CO6	Evaluation of causes and mechanism of damage and actual capacity of the concrete structure Maintenance strategies	-	-	-	-	-	-	1	-	-	-	-	-		1	
Course Code	17ICE6E07 GROUND IMPROVEMENT TECHNIQUES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Interpret the concepts behind a range of ground improvement and soil remediation techniques.	2	1	-	-	2	-	3	2	-	-	-	-	-	1	-
CO2	Illustrate the appropriate techniques for a range of ground and site conditions.	2	1	-	-	2	-	3	2	-	-	-	-	-	1	-
CO3	Identify the techniques for stabilization of soils with different materials.	3	2	-	-	2	-	2	2	-	-	-	-	-	2	-
CO4	Classify different types of grouts, their properties and application	3	2	-	-	2	-	2	2	-	-	-	-	-	3	-
CO5	Make use of different geo synthetics in field applications.	3	2	-	-	2	-	-	2	-	-	-	-	-	2	-
Course Code	19ICE6E13 FINITE ELEMENT METHODS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Summarize the direct and formal methods for deriving finite element equations.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	1
CO2	Solve engineering problems in truss elements using FEM	3	2	-	1	3	-	-	-	-	-	-	-	-	-	2
CO3	Apply FEM for analysis of beam and frame elements	3	2	1	1	2	-	-	-	-	-	-	-	-	-	2
CO4	Explain the principles of stress-strain behavior of continuum	2	3	-	-	-	-	-	-	-	-	-	-	-	-	3
CO5	Discuss the role and significance of shape functions in finite element formulations.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Course Code	17ICE6E09 EARTHQUAKE RESISTANT DESIGN	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain earthquake causes and its effects	2	-	-	-	-	-	-	-	-	3	-	-	-	-	1
CO2	Demonstrate the basic concepts of structural dynamics	2	-	-	-	-	-	-	-	-	3	-	-	-	-	1
CO3	Utilize the concepts of single degree and multi-degree of freedom systems	-	-	1	-	-	-	-	-	-	3	-	-	-	-	2
CO4	Apply current codal provisions for designing of earthquake resistant structures	-	-	1	-	-	-	-	-	-	3	-	-	-	-	2
CO5	Design of earthquake resistant structures and behavior of shear walls	-	-	2	-	-	-	-	-	-	3	-	-	-	-	1
Course Code	17IHS6T07 EMPLOYABILITY SKILLS-IV	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Find profit and loss, simple and compound interest for different models.	1	-	-	-	-	1	2	-	-	-	-	-	-	-	1
CO2	Identify leadership and make use of group dynamic skills.	2	-	-	-	-	2	3	-	-	-	-	-	-	-	2
CO3	Calculate solutions for time and work, time and distance and data interpretation.	3	2	-	-	-	2	2	-	-	-	-	-	-	-	-
CO4	Define and focus on Interview skills.	1	1	-	-	-	1	2	-	-	-	-	-	-	-	1

-	CO Statements	POs												PSOs		
Course Code	17ICE6L06 GEOTECHNICAL ENGINEERING LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Apply the knowledge of soil mechanics in the field of civil engineering.	2	1	-	-	-	2	-	-	-	-	2	-	-	1	-
CO2	Determine the identification of physical properties of various soils.	2	1	-	-	-	2	-	-	-	-	2	-	-	1	-
CO3	Interpret with permeability characteristics of soils	3	2	-	-	-	3	-	-	-	-	3	-	-	2	-
CO4	Determine the identification of consolidation properties of clayey soils.	2	2	-	-	-	2	-	-	-	-	2	-	-	1	-
CO5	Distinguish various types of shear parameters by using UCS test	2	2	-	-	-	2	-	-	-	-	2	-	-	1	-
Course Code	17ICE6L07 IRRIGATION DESIGN AND DRAWING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Design and draw diversion head works surplus weir and Tank sluice with tower head.	-	-	2	-	-	3	-	2	-	-	2	-	-	1	-
CO2	Design and draw canal drop with notch type.	-	-	2	-	-	3	-	2	-	-	2	-	-	3	-
CO3	Design and draw canal regulator.	-	-	2	-	-	3	-	2	-	-	2	-	-	2	-
CO4	Design and draw under tunnel	-	-	2	-	-	3	-	2	-	-	2	-	-	3	-
CO5	Design and draw syphon aqueduct type-III.	-	-	2	-	-	3	-	2	-	-	2	-	-	1	-
VII SEM																
Course Code	17ICE7T18 GEOTECHNICAL ENGINEERING-II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Illustrate the phenomenon of soil exploration.	3	-	1	-	-	-	-	-	-	-	2	-	-	2	-
CO2	Solve the problems related to concept of earth-retaining structures.	2	-	2	-	-	-	-	-	-	-	2	-	-	1	-
CO3	Demonstrate the concepts of stability analysis.	1	-	1	-	-	-	-	-	-	-	1	-	-	1	-
CO4	Determine the allowable bearing pressure and dimensions of the footings.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
CO5	Explain the load carrying capacity of pile sand design principles of well foundations.	-	-	3	-	-	-	-	-	-	-	2	-	-	1	-
Course Code	17ICE7T19 ENVIRONMENTAL ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Apply basic principles of water supply in designing of protected water for a city.	3	-	1	-	-	2	-	-	-	-	2	-	-	1	-
CO2	Illustrate various treatment methods based on characteristics of raw water.	3	-	1	-	-	2	-	-	-	-	2	-	-	-	-
CO3	Interpret different treatment technologies of wastewater based on characteristics of sewage	3	-	1	-	-	2	-	-	-	-	2	-	-	-	-
CO4	Select an appropriate secondary and tertiary treatment method of sewage.	3	-	2	-	-	2	-	-	-	-	2	-	-	3	-
CO5	Demonstrate the concepts of sludge management and its disposal methods	3	-	1	-	-	2	-	-	-	-	2	-	-	-	-
CO6	Choose the method of recycling of treated water	3	-	1	-	-	2	-	-	-	-	2	-	-	2	-

-	CO Statements	POs												PSOs		
Course Code	171CE7T20 REMOTE SENSING AND GIS APPLICATIONS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Classify the information content of remotely sensed data.	2	1	-	-	-	-	-	-	3	-	-	-	-	-	2
CO2	Explain the energy interactions in the atmosphere and earth surface features.	2	1	-	-	-	-	-	-	3	-	-	-	-	-	3
CO3	Interpret the images for preparation of thematic maps.	2	1	-	-	-	-	-	-	3	-	-	-	-	-	3
CO4	Analyze spatial and attribute data for solving spatial problems.	3	2	-	1	-	-	-	-	3	-	-	-	-	-	3
CO5	Develop GIS and cartographic outputs for presentation.	3	2	-	1	-	-	-	-	3	-	-	-	-	-	3
Course Code	171CE7T21 ESTIMATION, SPECIFICATIONS AND CONTRACTS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Describe the importance of specifications and abstract estimate for different civil engineering works.	2	1	-	-	-	2	-	-	3	-	-	-	1	-	-
CO2	Prepare rate analysis for different civil work items.	3	2	-	-	-	2	-	-	2	-	-	-	2	-	-
CO3	Estimate the earth work quantities for roads and canals	3	3	-	-	-	2	-	-	2	-	-	-	3	-	-
CO4	Prepare bar bending schedule for different RCC components	3	2	-	-	-	2	-	-	2	-	-	-	2	-	-
CO5	Classify different types of Contracts and Tenders.	2	1	-	-	-	2	-	-	3	-	-	-	1	-	-
Course Code	191CE7E16 ADVANCED STRUCTURAL ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the basics of theory of elasticity	2	1	-	-	-	-	-	-	3	-	-	-	-	-	1
CO2	Distinguish between the rectangular and polar co-ordinates in two dimensional problems..	3	2	-	-	-	-	-	-	1	-	-	-	-	-	2
CO3	Appreciate the issues related to the dynamic elastic behaviour of structures.	3	2	-	-	-	-	-	-	2	-	-	-	-	-	3
CO4	Explain the concept of un damped single degree of freedom system	3	2	-	-	-	-	-	-	2	-	-	-	-	-	2
CO5	Determine the response of structures for free and forced vibrations.	2	2	-	-	-	-	-	-	1	-	-	-	-	-	2
Course Code	171CE7E11 WATERSHED MANAGEMENT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the objectives and characteristics of water shed management.	-	-	-	-	-	2	3	-	-	-	-	-	-	2	-
CO2	Classify the types of soil erosion and choose the methods to control soil erosion.	-	-	-	-	-	2	3	-	-	-	-	-	-	2	-
CO3	Select suitable water harvesting techniques.	-	-	2	-	-	2	3	-	-	-	-	-	-	2	-
CO4	Organize the land and drought management techniques.	-	-	1	-	-	3	3	-	-	-	-	-	-	3	-
CO5	Make use of the water shed models.	-	-	1	-	-	3	2	-	-	-	-	-	-	1	-
Course Code	171CE7E12 DESIGN OF TALL BUILDINGS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain different types of concrete used in construction of tall buildings.	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
CO2	Calculate various loads acting on buildings.	1	2	1	-	-	-	-	-	-	-	-	1	-	-	2

-	CO Statements	POs												PSOs		
CO3	Summarize the behavior of various structural systems.	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
CO4	Design various structural systems for tall buildings.	2	3	2	-	-	-	-	-	-	-	-	2	-	-	3
CO5	Analyze stability of structural members in tall buildings.	2	3	2	-	-	-	-	-	-	-	-	2	-	-	3
Course Code	17ICE7E13 BRIDGE ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Make use of standard loading specifications for bridge design followed by IRC codes.	-	-	1	-	-	-	-	-	-	3	-	-	-	2	-
CO2	Design various types of bearings and joints in bridge structures.	-	-	2	-	-	-	-	-	-	3	-	-	-	3	-
CO3	Analyze and perform design of RC slab culverts and RC T-Beam Bridges.	-	-	2	-	-	-	-	-	-	3	-	-	-	3	-
CO4	Design of plate girder bridges and composite bridges.	-	-	2	-	-	-	-	-	-	3	-	-	-	3	-
CO5	Design various elements of sub-structures of abridge.	-	-	2	-	-	-	-	-	-	3	-	-	-	3	-
Course Code	17ICE7T14 ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the basic concepts of EIA.	1	-	-	-	-	-	-	-	-	-	2	-	-	1	-
CO2	Classify the various EIA methodologies.	2	-	-	-	2	-	-	-	-	-	2	-	-	2	-
CO3	Illustrate the systematic procedure of assessment of impacts of developmental activities on various sectors of environment.	3	-	-	1	2	-	-	-	-	-	2	-	-	2	-
CO4	Describe the concept of risk assessment and management in EIA.	1	-	-	-	2	-	-	-	-	-	2	-	-	1	-
CO5	Apply the knowledge of EIA to day to day activities.	3	-	-	1	1	-	-	-	-	-	2	-	-	2	-
Course Code	17ICE7E15 WATER RESOURCES SYSTEMS PLANNING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the concepts of systems analysis and role of optimization models.	-	-	1	-	-	-	-	-	-	3	-	-	-	2	-
CO2	Illustrate various linear programming models in water resources system management.	-	-	2	-	-	-	-	-	-	3	-	-	-	3	-
CO3	Demonstrate various dynamic programming principles for resource allocation in water resources systems.	-	-	1	-	-	-	-	-	-	3	-	-	-	2	-
CO4	Examine the use of non-linear optimization techniques in design problems of water resources systems.	-	-	2	-	-	-	-	-	-	3	-	-	-	3	-
CO5	Apply the water resources economics, simulation and management techniques in water resources systems planning.	-	-	2	-	-	-	-	-	-	3	-	-	-	2	-
Course Code	17ICE7L08 ENVIRONMENTAL ENGINEERING LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Determine the chemical quality parameters of water.	3	-	-	-	-	-	2	-	-	-	-	3	-	3	-
CO2	Estimate the extent of pollution in the given waste water by comparing with the IS10500 : 2012 drinking water standards.	2	-	-	-	-	-	-	-	-	-	-	3	-	2	-

-	CO Statements	POs												PSOs		
CO3	Determine the treatment methods to be followed in order to supply the water for public consumption.	-	-	-	-	-	-	-	-	-	-	-	3	-	1	-
CO4	Estimate the level of treatment methods to be followed for the given waste water sample.	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-
CO5	Judge whether the given waste water sample can be disposed into the environment.	1	-	-	-	-	1	-	-	-	-	-	3	-	1	-
Course Code	171CE7L09 GIS AND COMPUTER AIDED DESIGN (CAD) LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Extend the knowledge on GIS software.	-	-	-	-	2	-	-	-	-	3	-	-	-	-	3
CO2	Classify thematic map, digitize and extract important features from satellite images.	-	-	2	2	3	-	-	-	-	2	-	-	-	-	2
CO3	Develop digital elevation model.	-	-	1	1	3	-	-	-	-	2	-	-	-	-	2
CO4	Analyze the structural components using software.	-	-	2	2	3	-	-	-	-	2	-	-	-	-	3
CO5	Design the concrete and steel structures using software.	-	-	2	2	3	-	-	-	-	2	-	-	-	-	3
Course Code	171CE7P01 INDUSTRY ORIENTED (INTERNSHIP) MINOR PROJECT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Outline the working environment and professional ethics in an industry	-	-	-	-	-	-	-	2	-	-	-	3	-	-	-
CO2	Relate with real time tools used in industries	2	-	-	-	2	-	-	-	-	-	-	-	2	-	-
CO3	Apply respective domain knowledge to understand an industrial process	3	-	-	-	-	3	3	-	-	-	-	-	3	-	-
CO4	Utilize an industrial process involved in delivering/developing a final service/product for project building	-	2	-	-	-	-	3	-	-	-	3	-	-	2	2
CO5	Analyze the relevance of their course curriculum with that used in industries	-	3	-	-	-	-	-	-	-	3	-	-	-	-	-
VIII SEM																
Course Code	171CE8E16 URBAN TRANSPORTATION PLANNING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Describe the transport planning process and variables.	2	1	-	-	-	2	-	-	-	-	-	-	2	-	-
CO2	Interpret the sampling techniques and accuracy checks	2	1	-	-	-	2	-	-	-	-	-	-	3	-	-
CO3	Explain the trip generation and distribution.	3	1	-	-	-	-	-	-	-	2	-	-	3	-	-
CO4	Estimate the mode choice and traffic assignment.	2	1	-	-	-	2	-	-	-	-	-	-	2	-	-
CO5	Assess the master plan and corridor efficiency.	2	1	-	-	-	2	-	-	-	3	-	-	2	-	-
Course Code	171CE8E17 SOIL DYNAMICS AND FOUNDATIONS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Deduce the equations for free and forced vibrations with and without damping for single degree freedom system.	-	-	2	-	-	-	-	-	-	3	-	-	-	2	-
CO2	Solve one dimensional wave motion using wave propagation theory.	-	-	1	-	-	-	-	-	-	3	-	-	-	-	-

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-	CO Statements	POs												PSOs		
Course Code	19ICE8P05 PROJECT-PART 2	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Demonstrate technical skills of data collection and data analysis adhering to professional ethics	1	1	-	-	-	-	-	2	-	-	-	1	-	2	-
CO2	Design the solutions for the critical problem areas marked in data analysis in the light of environmental and societal adherence	-	-	3	2	-	1	1	-	-	-	-	-	-	1	-
CO3	Build a team of people to work together and communicate well in the critical stages of project progress.	-	-	-	-	-	-	-	-	1	2	1	1	-	2	-
CO4	Use modern tools to derive conclusions of the project work effectively	-	-	-	-	3	-	-	-	-	2	1	1	-	2	-
CO5	Demonstrate the results of the project work as a functional product prototype/application/analytical solution for a specified operation	-	-	-	-	1	-	-	-	-	1	1	1	-	1	-
Course Code	17ICE8O03 ALTERNATIVE ENERGY SOURCES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Intrepet renewable energy sources and solar radiation.	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-
CO2	Apply the knowledge of solar principles for its applications.	3	2	-	-	-	2	-	-	-	2	-	-	-	-	-
CO3	Discuss the working principles of wind and Bio-mass energy resources	3	2	2	-	-	2	-	-	-	2	-	-	-	3	-
CO4	Illustrate the techniques and conversion principles of Geothermal and tidal energy resources.	3	2	2	-	-	2	-	-	-	2	-	-	-	3	-
CO5	Make use of working principles in energy conversion	2	1	-	-	-	2	-	-	-	2	-	-	-	-	-
Course Code	17ICE8O04 WASTE WATER MANAGEMENT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Summarize the importance of sanitation.	2	1	-	-	-	-	1	-	-	-	-	-	-	-	-
CO2	Find the rate of sewage flow.	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-
CO3	Identify the various characteristics of sewage.	3	2	1	-	-	-	3	-	-	-	-	-	-	-	2
CO4	Outline various waste water treatment technologies	2	1	-	-	-	-	1	-	-	-	-	-	-	-	1
CO5	Explain the different treated effluent disposal methods	2	1	-	-	-	-	3	-	-	-	-	-	-	-	-
CO6	Illustrate the need of waste water recycling	2	1	-	-	-	-	2	-	-	-	-	-	-	-	-
Course Code	17ICE8O05 FUNDAMENTALS OF LIQUEFIED NATURAL GAS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Explain the LNG value chain	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-
CO2	Classify the different liquefaction technologies of LNG	3	2	-	-	-	2	-	-	-	2	-	-	-	-	-
CO3	Describe the components of LNG receiving terminals.	3	2	2	-	-	2	-	-	-	2	-	-	-	3	-
CO4	Summarize LNG storage and transportation facilities	3	2	2	-	-	2	-	-	-	2	-	-	-	3	-
CO5	Identify major equipment and safety aspects of LNG industry.	2	1	-	-	-	2	-	-	-	2	-	-	-	-	-

-	CO Statements	POs												PSOs		
Course Code	17ICE8006 GREEN FUEL TECHNOLOGIES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Summarize the different Coal Liquefaction techniques.	2	-	-	-	-	2	-	-	-	-	-	-	-	-	-
CO2	Identify the process steps involved in conversion of ligno-cellulosic materials into Ethanol fuel	3	2	-	-	-	2	-	-	-	2	-	-	-	-	-
CO3	Analyze the Chemistry and Catalysts of Fischer-Tropsch synthesis in conversion of Natural gas into liquid fuels	3	2	2	-	-	2	-	-	-	2	-	-	-	3	-
CO4	Evaluate the chemical reaction mechanisms, catalysts and process technologies of Methane synthesis	3	2	2	-	-	2	-	-	-	2	-	-	-	3	-
CO5	Outline the basic concepts of fuel cell technologies	2	1	-	-	-	2	-	-	-	2	-	-	-	-	-
Course Code	17ICE8007 GREEN ENGINEERING SYSTEMS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Describe the principles and working of solar radiation and solar radiation collection	-	1	-	-	-	-	-	-	2	-	-	-	-	1	-
CO2	Demonstrate the principles and working of solar, wind, biomass, geothermal, Ocean energies	2	1	-	-	-	-	3	-	-	-	-	-	-	1	-
CO3	Illustrate electrical and mechanical systems	3	2	1	-	2	-	-	-	-	-	-	-	-	2	-
CO4	Analyze energy efficient processes.	-	3	-	2	-	-	-	-	-	-	-	-	-	-	-
CO5	Explain green buildings	-	1	1	2	-	-	-	-	-	-	-	-	-	-	-
Course Code	17ICE8P02 MAJOR PROJECT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Demonstrate management skills required for project development	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
CO2	Illustrate the problem statement and scope of the project clearly	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-
CO3	Make use of a proper methodology in solving problems related to a project	3	2	-	-	2	-	-	-	-	-	-	-	-	2	-
CO4	Analyze data into meaningful information for a project using relevant tools	-	-	-	2	-	3	-	-	-	-	-	-	-	3	-
CO5	Adapt to work independently and ethically to effectively present the results in written and oral formats	-	-	-	-	-	-	-	-	3	2	2	2	-	-	-