

DEPARTMENT OF CIVIL ENGINEERING

REGULATION: 2017

S.NO	COURSE NAME	COURSE OUT COMES	
1	C101 -Communicative English	C101.1	Understand the basics of English Grammar
		C101.2	Able to read articles in Magazines and News papers
		C101.3	Participate effectively and confidently in Technical discussions and conversations
		C101.4	Able to write Technical, Personal letters and E - Mails
		C101.5	Able to write Technical essays and write-ups.
2	C102 - Engineering Mathematics – I	C102.1	Use limit definition and rules of differentiation to differentiate functions.
		C102.2	Apply differentiation to solve maxima and minima problems
		C102.3	Evaluate integral problems by using techniques of integration.
		C102.4	Apply integration concepts to compute multiple integrals.
		C102.5	Apply various techniques in solving differential equations.
3	C103 - Engineering Physics	C103.1	Gain knowledge on the properties of matter and its application.
		C103.2	Acquire knowledge on the concepts of waves and optical devices and their application in fibre optics.
		C103.3	Explain the thermal properties of materials like thermal conductivity and thermal expansion and its application in heat exchangers.
		C103.4	Understand the concepts of quantum theory and its application in tunneling microscopes.
		C103.5	Able to classify various crystal structures, parameters and defects.
4	C104 - Engineering Chemistry	C104.1	Understand the types of water and water treatment techniques.
		C104.2	Utilize the various adsorbent in industries.
		C104.3	Classify the types of alloys and understand the component present in the alloys.
		C104.4	Explain the types of fuels and manufacturing of secondary fuels.
		C104.5	Illustrate the types of energy resources.
	Living & Programming	C105.1	Develop algorithmic solutions for simple computational problems
		C105.2	Demonstrate programs using simple Python statements and expressions

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5	C105 - Problem Solving Python Program	C105.3	Explain control flow and functions concept in Python for solving problems
		C105.4	Use Python data structures – lists, tuples & dictionaries for representing compound data
		C105.5	Explain files, exception, modules and packages in Python for solving problems
6	C106 - Engineering Graphics	C106.1	Discuss about conics and orthographic views of engineering components
		C106.2	Draw the projection of points, lines and planes
		C106.3	Classify solids and projection of solids at different positions
		C106.4	Show sectioned view of solids and development of surface
		C106.5	Draw isometric projection and perspective views of an object/solid
7	C107 - Problem Solving and Python Programming Laboratory	C107.1	Develop solutions to simple computational problems using Python programs
		C107.2	Solve problems using conditionals and loops in Python.
		C107.3	Develop Python programs by defining functions and calling them.
		C107.4	Use Python lists, tuples & dictionaries for representing compound data.
		C107.5	Develop Python programs using files.
8	C108 - Engineering Physics & Chemistry Lab	C108.1	Analyze the various modulus of elasticity of different types of materials.
		C108.2	Able to find the velocity of ultrasonic waves in different liquid.
		C108.3	Understand the various parameter affecting the thermal conductivity of poor conductor
		C108.4	Understand the concept of Laser and its diffraction for different usage
		C108.5	Analyze the acceptance angle and numerical aperture of optical fibers.
		C108.6	Understand the method of determine the strength of a pure acid and mixture of acids by using conductivity meter.
		C108.7	Understand the method of estimate the amount of iron content present in a given solution by means of potentiometric titration.
9	Technical English	C109.1	Read technical texts and write area specific texts effortlessly
		C109.2	Write formal letters / emails using vocabulary.
		C109.3	Speak appropriately and effectively in varies formal and informal contexts.

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	C109 - Technical Writing	C109.4	Prepare reports and winning job applications.
		C109.5	Listen and comprehend lectures in the area of specialization successfully.
10	C110 - Engineering Mathematics - II	C110.1	Understand the Concepts of Diagonalization of matrices.
		C110.2	Understand the concepts of Vector Calculus and their applications.
		C110.3	Interpret the Concepts of analytic functions and Conformal mapping.
		C110.4	Understand the integration concepts on Complex integration
		C110.5	Demonstrate the concepts of Laplace transformations and their applications
11	C111 - Materials Science	C111.1	Understand the various phase diagrams and their applications.
		C111.2	Acquire knowledge on Fe-Fe ₃ C phase diagram, various microstructures and alloys.
		C111.3	Acquire the knowledge on mechanical properties of materials and their measurement
		C111.4	Understand the properties on magnetic, dielectric and superconducting properties of materials.
		C111.5	Understand the basics of ceramics, composites and nano materials
12	C112 - Basic Electrical, Electronics and Instrumentation Engineering	C112.1	Applying the fundamentals of DC electric circuits and theorems
		C112.2	Applying the fundamentals of AC electric circuits and wiring
		C112.3	Understanding the concepts of electrical machines
		C112.4	Understand the concepts of various electronic devices
		C112.5	Acquire knowledge on various electrical measuring instruments
13	C113 - Environmental Science & Engg	C113.1	Understand the types, characteristics of Ecosystem & Biodiversity.
		C113.2	Understand the types of pollution & its causes.
		C113.3	Understand the importance of Natural Resources.
		C113.4	Understand the Environmental problems.
		C113.5	Explain the importance of women, child education and HIV /AIDS.
	Physics	C114.1	Illustrate the vectorial and scalar representation of forces and moments.

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14	C114 - Engineering Mechanics	C114.2	Analyse the rigid body in equilibrium.
		C114.3	Evaluate the properties of surfaces and solids.
		C114.4	Calculate dynamic forces exerted in rigid body.
		C114.5	Determine the friction and the effects by the laws of friction.
15	C115 - Engineering Practices Laboratory	C115.1	Apply the knowledge of pipeline connections to household fittings and industrial buildings.
		C115.2	Prepare the different joints in roofs, doors, windows and furniture.
		C115.3	Perform step turning operation in a lathe.
		C115.4	Perform the various welding processes and know about its applications.
		C115.5	Produce a funnel using sheet metal.
16	C116 - Computer Aided Building Drawing	C116.1	Understand the elevation and sectional views of the paneled and glazed doors and windows.
		C116.2	To gain the knowledge on the basis work in plan, elevation and section of residential buildings.
		C116.3	Gain the knowledge on specified skills in plan, section and elevation of building with sloping roof.
		C116.4	Develop knowledge on various basic ideas in RCC framed structures.
		C116.5	Recognize the orientation and function of industrial buildings.
17	C201 - Transforms and Partial Differential Equations	C201.1	Demonstrate the effective mathematical tools used for Solving partial differential equations
		C201.2	Illustrate the Fourier series which is central to many applications in engineering.
		C201.3	Apply the applications of partial differential equations for boundary value problems using Fourier series analysis.
		C201.4	Acquire Fourier transform techniques used in wide variety of situations.
		C201.5	Explain Z transform techniques for discrete time systems and solve difference equations using Z transform.
18	C202 - Strength of Materials -I	C202.1	Understand the concepts of stress and strain, principal stresses and principal planes.
		C202.2	Determine Shear force and bending moment in beams and understand concept of theory of simple bending.
		C202.3	Calculate the deflection of beams by different methods and selection of method for determining slope or deflection.
		C202.4	Apply basic equation of torsion in design of circular shafts and helical springs, .

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	C202	C202.5	Analyze the pin jointed plane and space trusses
19	C203 - Fluid Mechanics	C203.1	Get a basic knowledge of fluids in static, kinematic and dynamic equilibrium
		C203.2	Understand and solve the problems related to equation of motion
		C203.3	Gain knowledge about dimensional and model analysis
		C203.4	Learn types of flow and losses of flow in pipes
		C203.5	Understand and solve the boundary layer problems
20	C204 - Surveying	C204.1	To understand the use of various surveying instruments and mapping
		C204.2	To explain the measuring Horizontal angle and vertical angle using different instruments
		C204.3	To explain the methods of Leveling and setting Levels with different instruments
		C204.4	Explain the concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth
		C204.5	To understand the concept and principle of modern surveying
21	C205 - Construction Materials	C205.1	Compare the properties of most common and advanced building materials.
		C205.2	To understand the typical and potential applications of lime, cement and aggregates.
		C205.3	To know the production of concrete and also the method of placing and making of concrete elements.
		C205.4	To understand the applications of timber and other materials.
		C205.5	To understand the importance of modern material for construction.
22	C206 - Engineering Geology	C206.1	Will be able to understand the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies
		C206.2	Will get basics knowledge on properties of minerals.
		C206.3	Gain knowledge about types of rocks, their distribution and uses
		C206.4	Will understand the methods of study on geological structure
		C206.5	Will understand the application of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbor
	Construction Materials Laboratory	C207.1	To understand about the physical properties of fine aggregates
		C207.2	To gain knowledge about the various mechanical and physical properties of coarse aggregates

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23	C207 - Construction Laboratory	C207.3	To understand about the workability of fresh concrete of various mix
		C207.4	To determine the strength of various standards of bricks
		C207.5	To determine the strength of various standards of blocks
24	C208 - Surveying Laboratory	C208.1	Students would have acquired practical knowledge on handling basic survey instruments including Theodolite, Tacheometry
		C208.2	Students gain practical knowledge in setting out works like foundation marking.
		C208.3	Students able to handle survey instruments including Theodolite and Tacheometry.
		C208.4	Students gain knowledge in using total station and GPS.
		C208.5	They acquire adequate knowledge to carry out Triangulation and Astronomical surveying including general field marking for various engineering projects and location of site etc.,
25	C209 - Interpersonal Skills / Listening and Speaking	C209.1	Equip students with the English language skills required for the successful undertaking of academic studies with primary emphasis on academic speaking and listening skills.
		C209.2	Provide guidance and practice in basic general and classroom conversation and to engage in specific academic speaking activities.
		C209.3	Improve general and academic listening skills
		C209.4	Make effective presentations
		C209.5	To make students effective in grammar and vocabulary
26	C210 - Numerical Methods	C210.1	Understand the basic concepts and techniques of solving algebraic and transcendental equations.
		C210.2	Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.
		C210.3	Apply the numerical techniques of differentiation and integration for engineering problems.
		C210.4	Understand the knowledge of various techniques and methods for solving first and second order differential equations.
		C210.5	To understand the knowledge of various techniques and methods of solving various types of partial differential equations.
27	C211 - Construction Techniques and Practices	C211.1	Know the different construction techniques and structural systems.
		C211.2	Understand various techniques and practices on masonry construction, flooring and roofing.
		C211.3	Plan the requirements for sub-structure construction.
		C211.4	Know the methods and techniques involved in the construction of various types of super structures.

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	C211	C211.5	Select, maintain and operate hand and power tools and equipment used in the building construction sites.
28	C212 - Strength of Materials II	C212.1	Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.
		C212.2	Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.
		C212.3	Find the load carrying capacity of columns and stresses induced in columns and cylinders
		C212.4	Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure
		C212.5	Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams.
29	C213 - Applied Hydraulic Engineering	C213.1	Apply their knowledge of fluid mechanics in addressing problems in open channels
		C213.2	Able to identify a effective section for flow in different cross sections
		C213.3	To solve problems in uniform, gradually and rapidly varied flows in steady state conditions
		C213.4	Understand the principles, working and application of turbines
		C213.5	Understand the principles, working and application of pumps
30	C214 - Concrete Technology	C214.1	To know the various requirements of cement, aggregates and water for making concrete
		C214.2	To understand the various effect of admixtures on properties of concrete
		C214.3	To make the student knowledge about the concept and procedure of mix design as per IS method
		C214.4	To impart the properties of concrete at fresh and hardened state
		C214.5	To apply the importance and application of special concretes.
31	C215 - Soil Mechanics	C215.1	Classify the soil and assess the engineering properties, based on index properties
		C215.2	Understand the stress concepts in soils
		C215.3	Understand and identify the settlement in soils
		C215.4	Determine the shear strength of soil
		C215.5	Analyze both finite and infinite slopes.
32	C216 - Strength of Materials Laboratory	C216.1	The students will have the required knowledge in the area of testing of materials and components of structural elements experimentally.
		C216.2	Students gain knowledge about testing of hardness of variious materials.
		C216.3	To calculate the deflection of beams.
		C216.4	To find consistency, setting time of cement.
		C216.5	To acquire knowledge about testing of compressive strngth of cement.
	ring	C217.1	The students will be able to measure flow in pipes.

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33	C217 - Hydraulic Engineering Laboratory	C217.2	The students will be able to determine frictional losses.
		C217.3	The students will be able to develop Characteristics of pumps.
		C217.4	The students will be able to develop Characteristics of Turbines.
		C217.5	To understand and calculate metacentric height.
34	C218 - Advanced Reading and Writing	C218.1	Write different types of essays.
		C218.2	Write winning job applications.
		C218.3	Read and evaluate texts critically.
		C218.4	Display critical thinking in various professional contexts.
		C218.5	To make them effective in communication.
35	C301- Design of Reinforced Cement Concrete Elements	C301.1	Understand the various design methodologies for the design of RC elements
		C301.2	Know the analysis and design of flanged beams by limit state method and sign of beams for shear, bond and torsion.
		C301.3	Design the various types of slabs and staircase by limit state method
		C301.4	Design columns for axial, uniaxial and biaxial eccentric loadings
		C301.5	Design of footing by limit state method
36	C302 - Structural Analysis I	C302.1	To analyze the indeterminate frames, pin jointed plane frames, continuous beams and rigid jointed plane frames by energy methods
		C302.2	Analyze the continuous beams and rigid frames by slope deflection method.
		C302.3	To understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.
		C302.4	To analyze the indeterminate structure like pin jointed plane frames, continuous beams and rigid jointed plane frames by matrix flexibility method.
		C302.5	To impart the indeterminate structure like pin jointed plane frames, continuous beams and rigid jointed plane frames by matrix stiffness method.
37	C302 - Water Supply Engineering	C303.1	An insight into the structure of drinking water supply systems, including water transport, treatment and distribution
		C303.2	The knowledge in various unit operations and processes in water treatment
		C303.3	An ability to design the various functional units in water treatment
		C303.4	An understanding of water quality criteria and standards, and their relation to public health
		C303.5	The ability to design and evaluate water supply project alternatives on basis of chosen criteria
	neering	C304.1	Understand the site investigation, methods and sampling

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38	C304 - Foundation Engi	C304.2	Get knowledge on bearing capacity and testing methods
		C304.3	Design shallow footings
		C304.4	Determine the load carrying capacity, settlement of pile foundation
		C304.5	Determine the earth pressure on retaining walls and analysis for stability
39	C305 - Human Rights	C305.1	Apply effective written and oral communication skills to business and legal situations
		C305.2	Analyze the global legal environment.
		C305.3	Students will graduate with the ability to analyze complex problems
		C305.4	Use critical thinking skills in business situations.
		C305.5	Apply an ethical understanding and perspective to business situations.
40	C306 - Environment and Agriculture	C306.1	To understand the role of environment in the current practice of agriculture
		C306.2	To understand the concerns of sustainability especially in the context of climate change
		C306.3	To describe the emerging global issues
		C306.4	To explain the ecological content of agriculture and its concerns
		C306.5	To describe the environmental impacts on agriculture
41	C307 - Soil Mechanics Laboratory	C307.1	Students know the techniques to determine index properties.
		C307.2	Students know the techniques to determine engineering properties.
		C307.3	To test shear strength parameters of various types of soil.
		C307.4	To test compressibility and permeability by conducting appropriate tests.
		C307.5	To calculate consolidation of soil.
42	C308 - Water and Waste Water Analysis Laboratory	C308.1	Quantify the pollutant concentration in water and wastewater
		C308.2	Suggest the type of treatment required and amount of dosage required for the treatment
		C308.3	Examine the conditions for the growth of micro-organisms
		C308.4	The students completing the course will be able to characterize waste water.
		C308.5	Students can able to conduct treatability studies.
43	C309 - Survey Camp	C309.1	To conduct triangulation, trilateration and rectangulation surveying.
		C309.2	To conduct trilateration surveying.
		C309.3	To carry out rectangulation surveying.
		C309.4	Able to plot Longitudinal and cross sectional levelling.
		C309.5	Students able to prepare contour maps with azimuth surveying.

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44	C310 - Design of Steel Structural Elements	C310.1	Understand the concepts of various design philosophies
		C310.2	Design common bolted and welded connections for steel structures
		C310.3	Design tension members and understand the effect of shear lag.
		C310.4	Understand the design concept of axially loaded columns and column base connections.
		C310.5	Understand specific problems related to the design of laterally restrained and unrestrained steel beams.
45	C311 - Structural Analysis II	C311.1	Draw influence lines for statically determinate structures and calculate critical stress resultants.
		C311.2	Understand Muller Breslau principle and draw the statically indeterminate beams.
		C311.3	Analyse of three hinged, two hinged and fixed arches.
		C311.4	Analyse the suspension bridges with stiffening girders.
		C311.5	Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames.
46	C312 - Irrigation Engineering	C312.1	Have knowledge and skills on crop water requirements.
		C312.2	Understand the methods and management of irrigation.
		C312.3	Gain knowledge on types of Impounding structures
		C312.4	Understand methods of irrigation including canal irrigation.
		C312.5	Get knowledge on water management on optimization of water use.
47	C313 - Highway Engineering	C313.1	Get knowledge on planning and aligning of highway.
		C313.2	Geometric design of highways
		C313.3	Design flexible and rigid pavements.
		C313.4	Gain knowledge on Highway construction materials, properties, testing methods
		C313.5	Understand the concept of pavement management system, evaluation of distress and maintenance of pavements.
48	C314 - Wastewater Engineering	C314.1	An ability to estimate sewage generation and design sewer system including sewage pumping stations
		C314.2	The required understanding on the characteristics and composition of sewage, self-purification of streams
		C314.3	An ability to perform basic design of the unit operations and processes that are used in sewage treatment
		C314.4	Understand the standard methods for disposal of sewage.
		C314.5	Gain knowledge on sludge treatment and disposal

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49	C315 - Air Pollution and Control Engineering	C315.1	An understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management
		C315.2	Ability to identify, formulate and solve air and noise pollution problems
		C315.3	Ability to design stacks and particulate air pollution control devices to meet applicable standards.
		C315.4	Ability to select control equipments.
		C315.5	Ability to ensure quality, control and preventive measures.
50	C316 - Highway Engineering Laboratory	C316.1	Student knows the techniques to characterize various pavement materials through relevant tests.
		C316.2	Students able to determine properties of aggregates by conducting various tests.
		C316.3	Students acquire knowledge to conduct tests on bitumen to study its various properties.
		C316.4	They will be able to test and identify the properties of aggregates.
		C316.5	Students will acquire knowledge on various bitumen mixes and their properties.
51	C317 - Irrigation and Environmental Engineering Drawing	C317.1	The students after completing this course will be able to design various units of Municipal water treatment plants and sewage treatment plants.
		C317.2	The students after completing this course will be able to draw the various units of Municipal water treatment plants and sewage treatment plants.
		C317.3	Students will be able to design various irrigation structures.
		C317.4	They will be able to draw all types of irrigation components.
		C317.5	Students should sound knowledge on planning, execution and construction of all structures related to irrigation and environmental engineering.