RAMCO INSTITUTE OF TECHNOLOGY

Department of Civil Engineering

Course Outcomes

Semester / Year, Branch: 01 – 07, I – III, B.E. Civil Engineering

Regulations: 2017

I Year (Odd Semester)

C101: HS8151 Communicative English, Year of study 2017 - 2018

C101.1	Communicate clearly both in the written form and orally using appropriate vocabulary and comprehend written texts to make inferences.
C101.2	Speak persuasively in different social contexts and write biographical details and technical documents cohesively, coherently and flawlessly using appropriate words.
C101.3	Speak, read and write effectively for a variety of professional and social settings.
C101.4	Read descriptive, narrative, expository and interpretive texts and write using creative, critical, analytical and evaluative methods.
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.

C102: MA8151Engineering Mathematics – I, Year of study 2017 - 2018

C102.1	Use both the limit definition and rules of differentiation to differentiate functions.
C102.2	Apply differentiation to solve maxima and minima problems.
C102.3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus, also evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts, in addition to determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
C102.4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
C102.5	Apply various techniques in solving differential equations

C103: PH8151 Engineering Physics, Year of study 2017 – 2018

C103.1	Analyze the elastic nature of materials and be able to choose the materials depending upon the modulus of elasticity for different applications.
C103.2	Illustrate the advantages of optical communication using LASER.
C103.3	Explain the conducting properties of solids, liquids, good thermal conductor and bad thermal conductors.
C103.4	Apply the knowledge of quantum mechanics and classical mechanics in addressing the problems related to science and technology.
C103.5	Describe the crystal structures, crystal defects and various crystal growth techniques.

C104: CY8151 Engineering Chemistry, Year of study 2017 - 2018

C104.1	Comprehend the importance of water technology in the purification of water and its domestic and industrial applications.
C104.2	Understand the concept of absorption in surface chemistry and catalysis and its applications.
C104.3	Make use of the phase rule in identifying its application in metallurgy and manufacture of alloys.
C104.4	Learn the different types of industrial techniques of petroleum processing and the determination of caloric values and combustion parameters.
C104.5	Empathize the fundamentals of different alternative source of energy, the generation process and batteries.

C105: GE8151 Problem Solving and Python Programming, Year of study 2017 - 2018

C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Read, write and execute simple python programs.
C105.3	Apply control, looping structures and functions to solve problems.
C105.4	Represent compound data using python lists, tuples, and dictionaries.
C105.5	Read and Write data from/to files in python programs.

C106: GE8152 Engineering Graphics, Year of study 2017 - 2018

C106.1	Familiarize with the fundamentals and standards of Engineering graphics
C106.2	Perform freehand sketching of basic geometrical constructions and multiple views of objects.
C106.3	Project orthographic projections of lines and plane surfaces.
C106.4	Draw projections and section of solids and development of surfaces.
C106.5	Visualize and to project isometric and perspective sections of simple solids.

C107 (L): GE8161 Problem Solving and Python Programming Laboratory, Year of study 2017 - 2018

C107(L).1	Write, test, and debug simple Python programs.
C107(L).2	Implement Python programs with conditionals and loops.
C107(L).3	Develop Python programs step-wise by defining functions and calling them.
C107(L).4	Demonstrate the use Python lists, tuples, and dictionaries for representing compound data.
C107(L).5	Illustrate the concepts of read and write data from/to files in Python.

C108 (L): BS8161 Physics and Chemistry Laboratory, Year of study 2017 - 2018

C108(L).1	Test materials by using their knowledge of applied physics principles in optics and properties of matter.
C108(L).2	Perform the quantitative chemical analysis of chloride, dissolved oxygen, hardness, alkalinity and copper ions by titration methods.
C108(L).3	Demonstrate basic concepts in the determination of acids, sodium, potassium and iron by the instrumental methods of analysis.

I Year (Even Semester)

C109: HS8251 Technical English, Year of study 2017 - 2018

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

C110: MA8251 Engineering Mathematics-II, Year of study 2017 - 2018

C110.1	Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
C110.2	Gradient, divergence and curl of a vector point function and related identities, Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
C110.3	Analytic functions and conformal mapping Complex integration.
C110.4	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

C111: PH8201 Physics for Civil Engineering, Year of study 2017 – 2018

C112.1	Apply the knowledge about the thermal performance of buildings using thermal physics concepts.
C112.2	Explain the concepts of designing the buildings with good acoustic properties for perfect sound wave propagation.
C112.3	Construct the lighting designs for buildings with artificial lighting.
C112.4	Explain the properties and applications of new engineering materials.
C112.5	Explain various factors of hazards and types of hazards.

C112: BE8251 Basic Electrical and Electronics Engineering, Year of study 2017 – 2018

C112.1	Apply the basic concepts of electric circuits for steady state analysis and measuring instruments
C112.2	Demonstrate the construction and principle of operation of electrical machines such as DC generators, DC motors, Single phase transformer and single phase induction motors for various applications.
C112.3	Illustrate the characteristics of several semiconductor devices such as PN junction diode, Zener diode and Bipolar Junction Transistor with its applications.
C112.4	Explore the concepts in design of digital circuits and conversion and storage of signals.
C112.5	Explain the basics of analog and digital communication and also to explain the working of different communication system.

C113: GE8291 Environmental Science and Engineering, Year of study 2017 - 2018

C113.1	Understand the importance of Environment, biodiversity, ecosystem and how to solve environmental related problems.
C113.2	Identify and explain about the causes, effect and control measures of air pollution, water pollution, soil pollution, noise pollution, radioactive pollution and thermal pollution with its relevant case studies.
C113.3	Discuss the various renewable and non-renewable resources and energy conservation processes.
C113.4	Explain the social issues and solutions for sustainable environment with relevant Act and case studies.
C113.5	Summarize the impact of human population in the environment and its remedial measures.

C114: GE8292 Engineering Mechanics, Year of study 2017 - 2018

C114.1	Illustrate the vectorial and scalar representation of forces and moments
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

C115 (L): GE8261 Engineering Practices Laboratory, Year of study 2017 - 2018

C115(L).1	Construct carpentry components and pipe connections including plumbing works.
C115(L).2	Use welding equipment's to join the structures.
C115(L).3	Carry out the basic machining operations.
C115(L).4	Make the models using sheet metal works.
C115(L).5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings
C115(L).6	Fabricate Electrical and Electronics circuits.
C115(L).7	Design the simple electrical circuits based on the applications.
C115(L).8	Solder the electrical and electronic devices and components in the PCB.
C115(L).9	Explain the functioning of electrical and electronic circuits.

C116 (L): Basic Electrical, Electronics and Instrumentation Engineering Laboratory, Year of Study 2017 – 2018

C116(L).1	Draw the performance characteristics of various DC generators, D.C. Motors and understand the applications of it to power system.
C116(L).2	Determine the performance of various A.C. Induction motors and understand the applications of it to power system.
C116(L).3	Calculate the efficiency and determine the performance of the single phase transformer.
C116(L).4	Understand the characteristics of LVDT, RTD and Thermistor.
C116(L).5	Apply the circuit laws and theorems to simple electrical circuits.
C116(L).6	Design and Analyze the simple circuits with diode and transistor.

II Year (odd Semester)

C201: MA8353Transforms and Partial Differential Equations, Year of study 2018 - 2019

C201.1	Understand how to solve the given standard partial differential equations.
C201.2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
C201.3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
C201.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
C201.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

C202: CE8301Strength of Materials I, Year of study 2018 - 2019

C202.1	Explain the concepts of stress and strain, principal stresses and principal planes.
C202.2	Determine Shear Force and Bending Moment in beams and understand the concept of theory of simple bending.
C202.3	Compute the deflection of beams by different methods and selection of method for determining slope and deflection.
C202.4	Apply basic equation of torsion in design of circular shafts and helical springs.
C202.5	Analyse the pin jointed plane and space trusses.

C203: CE8302 Fluid Mechanics, Year of study 2018 - 2019

C203.1	Explain the fundamental concepts of fluid fluids in static, kinematic and dynamic equilibrium.
C203.2	Apply and solve the problems related to equation of motion.
C203.3	Demonstrate the concepts about dimensional and model analysis.
C203.4	Explain types of flow and losses of flow in pipes.
C203.5	Apply and solve the boundary layer problems.

C204: CE8351Surveying, Year of study 2018 - 2019

C204.1	Explain the various surveying instruments and mapping.
C204.2	Calculate horizontal and vertical angles using theodolites.
C204.3	Apply corrections and adjust simple triangulation works.
C204.4	Explain the methods to determine time, longitude, latitude and azimuth and the concepts of hydrographic surveying
C204.5	Explain the concept and principles of modern surveying.

C205: CE8391Construction Materials, Year of study 2018 - 2019

C205.1	Compare the properties of most common and advanced building materials.
C205.2	Explain the typical and potential applications of lime, cement and aggregates.

C205.3	Acquire knowledge on the production of concrete and the method of placing and making of concrete elements.
C205.4	Explain the applications of timbers and other materials.
C205.5	Explain the importance of modern material for construction.

C206: CE8392 Engineering Geology, Year of study 2018 - 2019

C206.1	Identify the importance of geology in civil engineering and the theory of plate tectonics.
C206.2	Enumerate the formation of minerals and identify the properties of minerals.
C206.3	Illustrate the formation of rocks their types, distribution and uses.
C206.4	Examine geological maps and identify the geological structures from the maps.
C206.5	Explain the application of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbor.

C207 (L): CE8311 Construction Materials Laboratory, Year of study 2018 - 2019

C207.1(L)	The students will able to Ensure quality control while testing/ sampling and acceptance criteria.
C207.2(L)	The students will able to Apply the principles and procedures of testing construction materials.
C207.3(L)	The students will able to Determine the properties of fresh and hardened concrete.
C207.4(L)	The students will able to Test the construction materials and components of construction elements experimentally
C207.5(L)	The students will able to Determine the properties of bricks, blocks and tiles according to the required specifications.

C208 (L): CE8361 Surveying Laboratory, Year of study 2018 - 2019

C208(L).1	The students will able to Acquire practical knowledge on handling basic survey instruments including Theodolite, Tacheometry, Total Station and GPS.
C208(L).2	The students will able to Experiment Triangulation and Astronomical surveying including general field marking for various engineering projects and Location of site etc

C209 (L): HS8381 Interpersonal Skills / Listening & Speaking, Year of study 2018 - 2019

C209(L).1	Speak effectively on various academic topics and respond to questions.
C209(L).2	Converse effectively with the use of conversation starters and discourse markers.
C209(L).3	Listen and respond to various academic dialogues and discussions.
C209(L).4	Participate confidently and appropriately in informal and formal conversations and group discussions.
C209(L).5	Use a range of presentation tools like PPT, Videos, and Charts etc. to make an engaging presentation.

II Year (Even Semester)

C210: MA8491 Numerical Methods, Year of study 2018 - 2019

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 ordinary differential equations
C210.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

C211: CE8401 Construction Techniques and Practices, Year of study 2018 - 2019

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 substructure construction.
C211.4	Know the methods and techniques involved in the construction of various types of super structures.
C211.5	Select, maintain and operate hand and power tools and equipment used in the Building construction sites.

C212: CE8402 Strength of Materials II, Year of study 2018 - 2019

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.

C213: CE8403 Applied Hydraulic Engineering, Year of study 2018 - 2019

C213.1	Apply their knowledge of fluid mechanics in addressing problems in open channels.
C213.2	Solve problems in gradually varied flows in steady state conditions.
C213.3	Apply the energy equation and momentum equation for rapidly varied flow.
C213.4	Analyze the performance of turbines.
C213.5	Describe the performance of a centrifugal pump.

C214: CE8404 Concrete Technology, Year of study 2018 – 2019

C214.1	Explain the various requirements of cement, aggregates and water for making concrete.
C214.2	Describe the effect of admixtures on properties of concrete.
C214.3	Summarize the concept and procedure of mix design as per IS method.
C214.4	Discuss the properties of concrete at fresh and hardened state.
C214.5	Explain the importance and application of special concretes.

C215: CE8491 Soil Mechanics, Year of study 2018 - 2019

C215.1	Determine Index properties, classify the soil and to select the suitable method to compact the particular soil mass.
C215.2	Calculate permeability of soil, seepage flow and seepage pressure.
C215.3	Compute the stress distribution in soil medium and to make use of Terzaghi's one dimensional consolidation theory to calculate the settlement of soil mass.
C215.4	Determine shear strength of cohesion-less and cohesive soils.
C215.5	Identify the stability of infinite and finite slopes by applying the principles of soil mechanics.

C216 (L): CE8481 Strength of Materials Laboratory, Year of study 2018 - 2019

C216(L).1	Determine the tensile strength on steel and compressive strength for wood.
C216(L).2	Estimate the impact strength of metal by using Izod and Charpy test.
C216(L).3	Find the Rockwell and brinell hardness number for various metals.
C216(L).4	Evaluate the deflection of beams.
C216(L).5	Find the compression on helical spring.

C217 (L): CE8461 Hydraulic Engineering Laboratory, Year of study 2018 – 2019

C217(L).1	The students will be able to Report the calibration of rotometer.
C217(L).2	The students will be able to Calculate the coefficient of discharge of orifice, mouthpiece and venturimeter.
C217(L).3	The students will be able to Verify the Bernoulli's energy equation.
C217(L).4	The students will be able to Measure flow in pipes and determine frictional losses.
C217(L).5	The students will be able to Develop the characteristics curves for pumps and turbines.

C218 (L): HS8461 Advanced Reading and Writing, Year of study 2018 - 2019

C218(L).1	Read and evaluate different types of texts critically and predict content.
C218(L).2	Write different types of essays using appropriate discourse markers.
C218(L).3	Display critical thinking in various professional contexts.
C218(L).4	Write winning job applications.
C218(L).5	Prepare technical documents like project proposals and statement of purpose

III Year (Odd Semester)

C301: CE8501 Design of Reinforced Cement Concrete Elements, Year of study 2019 - 2020

C301.1	Apply the basic notions of groups, rings, fields which will then be used to solve related problems
C301.2	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
C301.3	Demonstrate accurate and efficient use of advanced algebraic techniques.
C301.4	Demonstrate their mastery by solving non – trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
C301.5	Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.

C302: CE8502 Structural Analysis I, Year of study 2019 - 2020

C302.1	Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method
C302.2	Analyze the continuous beams and rigid frames by slope defection method.
C302.3	Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.
C303.4	Analyze the indeterminate pin jointed plane frames, continuous beams and rigid frames using matrix flexibility method.
C305.5	Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames.

C303: EN8491 - Water Supply Engineering, Year of study 2019 - 2020

C303.1	Explain the basic concepts of water supply system and water quality characteristics.
C303.2	Compute hydraulics of flow in pressure pipes as gravity mains.
C303.3	Plan for the primary water treatment units.
C303.4	Summarize the concepts and terminologies of advanced water treatment units.
C303.5	Analyse the water distribution networks..

C304: CE8591 - Foundation Engineering, Year of study 2019 - 2020

C304.1	Investigate the soil condition.
C304.2	Learn about types and purposes of different foundation systems and structures.
C304.3	Build the necessary theoretical background for design and construction of foundation systems.
C304.4	Select type of foundation required for the soil at a place.
C304.5	Design shallow foundation, deep foundation and retaining structures.

C305: GI8013 Advanced Surveying, Year of study 2019 - 2020

C305.1	Know the Astronomical Surveying
C305.2	Do the photogrammetric surveying and interpretation
C305.3	Solve the field problems with Total station.
C305.4	Know the GPS surveying and the data processing
C305.5	Understand the route surveys and tunnel alignments.

C306: OME551 Energy Conservation and Management, Year of study 2019 - 2020

C306.1	Explain energy auditing methodology
C306.2	Illustrate possible economic measures in electrical systems
C306.3	Discuss possible economic measures in thermal systems.
C306.4	Describe various energy saving opportunities in major utilities..
C306.5	Analyze the payback period for energy conservation opportunities.

C307: OCH551 Industrial Nanotechnology, Year of study 2019 - 2020

C307.1	Describe the principle of nanotechnology in electric and electronic devices.
C307.2	Illustrate the therapeutic applications of bio nanotechnology
C307.3	Explain the concepts of nanotechnology in chemical industries..
C307.4	Summarize the applications of nanotechnology based agriculture and food industries.
C307.5	Discuss the contemporary industrial applications of nanotechnology in textiles and cosmetics.

C308: ORO551 Renewable Energy Sources, Year of study 2019 - 2020

C308.1	Explain the physics of solar radiation
C308.2	Discuss the classification of solar energy collectors and methodologies of storing solar energy.
C308.3	Illustrate the concepts of solar energy utilization in a useful way and applications of solar energy.
C308.4	Describe the concepts in wind energy and biomass with its economic aspects.
C308.5	Analyze in capturing and applying other forms of energy sources like geothermal, Wave, Tidal, OTEC, mini-hydel energies

C309 (L): CE8511 Soil Mechanics Laboratory, Year of study 2019 - 2020

C309. (L).1	Determine the index properties such as liquid limit, plastic limit and shrinkage limit
C309. (L).2	Find the density of soil using sand replacement and core cutter method
C309. (L).3	Classify the type of soil based on grain size distribution
C309. (L).4	Estimate the engineering properties of soil such as shear strength, compressibility by conducting appropriate tests
C309. (L).5	Determine the permeability of soil using constant head and falling head methods.

C310 (L): CE8512 Water and Waste Water Analysis Laboratory, Year of study 2019 - 2020

C310(L).1	Quantify the pollutant concentration in water and wastewater
C310(L).2	Suggest the type of treatment required
C310(L).3	Determine the amount of dosage required for the treatment
C310(L).4	Examine the conditions for the growth of micro-organism
C310(L).5	Compute the quantity of sludge.

C311 (L): CE8513 Survey Camp, Year of study 2019 - 2020

C311(L).1	Acquire practical knowledge and handling survey instruments like theodolite, tacheometry and total station and have adequate knowledge to carryout triangulation and trilateration including general field marking for various engineering projects.

III Year (Even Semester)

C312: CE8601 - Design of Steel Structural Elements, Year of study 2019 - 2020

C312.1	Design the beam and angle members under compression and tension.
C312.2	Explain the different failure modes of bolted connections for tension or compression members.
C312.3	Design the tension members.
C312.4	Analyze the most suitable section shape and size for a compression member as per provisions of current code (IS 800-2007).
C312.5	Design the beams and purlins.

C313: CE8602 Structural Analysis II, Year of study 2019 - 2020

C313.1	Draw influence lines for statically determinate structures and calculate critical stress resultants.
C313.2	Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.
C313.3	Analyze three hinged, two hinged and fixed arches.
C313.4	Analyze the suspension bridges with stiffening girders
C313.5	Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames.

C314: CE8603- Irrigation Engineering, Year of study 2019 - 2020

C314.1	Have knowledge and skills on crop water requirements
C314.2	Understand the methods and management of irrigation.
C314.3	Gain knowledge on types of Impounding structures.
C314.4	Understand methods of irrigation including canal irrigation.
C314.5	Get knowledge on water management on optimization of water use.

C315: CE8604 Highway Engineering, Year of study 2019 - 2020

C315.1	Get knowledge on planning and aligning of highway
C315.2	Do Geometric design of highways
C315.3	Design flexible and rigid pavements.
C315.4	Gain knowledge on Highway construction materials, properties, testing methods
C315.5	Understand the concept of pavement management system, evaluation of distress and maintenance of pavements.

C316: EN8592 - Wastewater Engineering, Year of study 2019 - 2020

C316.1	Summarize the characteristics of sewage and compute the quantity of sewage to design sewer system including sewage pumping systems.
C316.2	Design the unit operations for primary treatment of sewage.
C316.3	Design the biological treatment units for sewage.
C316.4	Explain the standard methods for disposal of sewage.
C316.5	Describe methods of sludge treatment and disposal.

C317: CE8005 - Air Pollution and Control Engineering, Year of study 2019 - 2020

C317.1	Understand the nature and characteristics of air pollutants with its impact on human, vegetation, animals and properties.
C317.2	Recognize the meteorological effects of air pollution.
C317.3	Explain the design of stacks and control devices of particulate pollutants to meet applicable standards.
C317.4	Select equipment to control gaseous contaminants.
C317.5	Summarize the sources, types and control measures of indoor air pollutants and noise pollution.

C318 (L). CE8611 Highway Engineering Laboratory, Year of study 2019 - 2020

C318.(L).1	Determine the quality and properties of various highway materials.
C318.(L).2	Find the properties and suitability of coarse aggregates to be used as Highway materials
C318.(L).3	Estimate the properties, grade and other related values of bitumen and bituminous mixes.
C318.(L).4	Demonstrate the working of field testing equipments like Skid Resistance Tester and Benkelman Beam.

C319(L).CE8612 Irrigation and Environmental Engineering Drawing, Year of study 2019 - 2020

C319(L).1	Design and draw various components of tanks
C319(L).2	Design and draw various of canal regulation structures
C319(L).3	Design and draw Clariflocculator, Rapid sand filter
C319.(L).4	Design and draw biological treatment units

C320 (L). HS8581 Professional Communication, Year of study 2019 - 2020

C320(L).1	Cultivate intercultural communication skills, to guide students in making appropriate and responsible decisions, to develop leadership traits and soft skills and to create a desire to fulfill individual goals and team goals.
C320(L).2	Help the learners acquire listening and speaking skills through lab based activities, and enable them to introduce themselves and make effective presentations.
C320(L).3	Guide learners to evaluate their thinking skills, acquire listening and speaking skills and enable them to involve in group participation.
C320(L).4	Teach various formats of interview, answering techniques, body language and paralinguistic skills.
C320(L).5	Clarify and prioritize learners' objectives and goals, to contribute and work as a team by creating more leadership opportunities.

IV Year (Odd Semester)

C401: CE8701 – Estimation, Costing and Valuation Engineering, Year of study 2020 – 2021

C401.1	Estimate the quantities for buildings.
C401.2	Prepare the Rate Analysis for all Building works, canals, and Roads and Cost Estimate.
C401.3	Understand types of specifications, principles for report preparation, tender notices types.
C401.4	Gain knowledge on types of contracts
C401.5	Evaluate valuation for building and land.

C402: CE8702 – Railways, Airports, Docks and Harbour Engineering, Year of study 2020 – 2021

C402.1	Understand the methods of route alignment and design elements in Railway Planning and Constructions.
C402.2	Understand the Construction techniques and Maintenance of Track laying and Railway stations.
C402.3	Gain an insight on the planning and site selection of Airport Planning and design.
C402.4	Analyze and design the elements for orientation of runways and passenger facility Systems in knowledge on types of contracts.
C402.5	Understand the various features in Harbours and Ports, their construction, coastal protection works and coastal Regulations to be adopted.

C403: CE8703 – Structural Design and Drawing, Year of study 2020 – 2021

C403.1	Design the cantilever and counterfort retaining wall.
C403.2	Design the flat slab and solid slab bridges.
C403.3	Design the different types of water tanks.
C403.4	Select the most suitable elements for truss roof system.
C403.5	Design the different methods of waste disposal.

C404: EN8591 – Municipal Solid Waste Management, Year of study 2020 – 2021

C404.1	Explain the concepts of source and characteristics of solid waste, Public health and environmental impacts.
C404.2	Apply the concept of source reduction, Waste storage and recycling.
C404.3	Understand the concept collection and Transfer of wastes.
C404.4	Identify the techniques processing of wastes.
C404.5	Explain the different methods of waste disposal.

C405: OML751-TESTING OF MATERIALS, Year of study 2020 – 2021

C405.1	Learn about different type of materials, classification and Testing Standards.
C405.2	Analyze engineering components using various mechanical testing procedure.
C405.3	Explain about Principles, Techniques, Advantages and Limitations, Applications of Non-Destructive Testing.
C405.4	Exploit Principles, Types, Advantages and Limitations, Applications of materials Characterization process.
C405.5	Ability to use the different technique and know its applications and limitations

C406: OIE751-Robotics, Year of study 2020 – 2021

C406.1	Explain the concepts of industrial robots, classification, specifications and coordinate systems. Also summarize the need and application of robots in different sectors.
C406.2	Illustrate the different types of robot drive systems as well as robot end effectors.
C406.3	Apply the different sensors and image processing techniques in robotics to improve the ability of robots.
C406.4	Develop robotic programs for different tasks and familiarize with the kinematics motions of robot.
C406.5	Examine the implementation of robots in various industrial sectors and interpolate the economic analysis of robots.

C407: OCS752 Introduction to C Programming, Year of study 2020 – 2021

C407.1	Implement C programs using basic programming constructs.
C407.2	Develop simple applications using arrays.
C407.3	Design and implement Programs using strings.
C407.4	Develop simple applications using functions.
C407.5	Implement C program using structures.

C408(L): CE8711- Creative and Innovative Project,Year of study 2020 – 2021

C408(L).1	Carryout the design engineering solutions to complex projects using fundamental knowledge, skills and attitudes of a professional engineer.
C408(L).2	Develop compute code expressing their ideas in a novel way for civil engineering problems.
C408(L).3	Fabricate the structure related to Civil Engineering problems
C408(L).4	Interact with team members in a professional and ethical manner, respecting differences, to ensure a collaborative project environment.
C408(L).5	Communicate effectively to present ideas clearly and coherently both in the written and oral forms.

C409(L): CE8712- Industrial Training, Year of study 2020 – 2021

C409(L).1	The intricacies of implementation textbook knowledge into practice
C409(L).2	The concepts of developments and implementation of new techniques