

RAMCO INSTITUTE OF TECHNOLOGY

Department of Civil Engineering

Course Outcomes (R-13)

Semester / Year, Branch: 01 – 08, I – IV, B.E. Civil Engineering

Regulations: 2013

I Year (ODD SEMESTER)

C101: HS6151 Technical English I, Year of study 2015-2016

C101.1	Explain clearly, confidently, comprehensibly, and communicate with one or many listeners using appropriate communicative strategies.
C101.2	Construct cohesively and coherently and flawlessly avoiding grammatical errors, using a wide vocabulary range, organizing their ideas logically on a topic.
C101.3	Organize different genres of texts adopting various reading strategies.
C101.4	Distinguish and comprehend different spoken discourses/excerpts in different accents.
C101.5	Improve listening to different accents, speeches and presentations.

C102: MA6151 Mathematics I, Year of study 2015-2016

C102.1	The students will be able to infer canonical form from quadratic form using the concepts of Eigen values and Eigen vectors.
C102.2	Students will be able to test the convergence of sequences and series.
C102.3	Students will be able to apply the techniques of differential calculus to find the evolute and envelope of curves.
C102.4	Students will be able to determine the maxima and minima of functions of two variables using partial derivatives.
C102.5	Students will be able to find the area enclosed by plane curves and volume of solids using multiple integrals

C103: PH6151 Engineering Physics I, Year of study 2015-2016

C103.1	Describe the crystal structures and various crystal growth techniques
C103.2	Analyze the elastic nature of materials and thermal behaviour of materials.
C103.3	Apply the knowledge of quantum mechanics and classical mechanics in addressing the problems related to science and technology.
C103.4	Apply the knowledge about designing an auditorium with good acoustical properties and make use of Ultrasonics and its applications in various fields.
C103.5	Illustrate the advantages of optical communication using LASER.

C104: CY6151 Engineering Chemistry I, Year of study 2015-2016

C104.1	Describe the methods of polymerization, types, properties and uses of polymers.
C104.2	Illustrate the concepts of basic thermodynamics and problem solving skills in various disciplines of Engineering.
C104.3	Discuss the laws of photochemistry in recognizing the interaction of light with matter and its applications in luminescence and spectroscopy.
C104.4	Review the use of phase rule in identifying its applications in metallurgy and alloys.
C104.5	Summarize the basic knowledge in Nanochemistry and distinguish the existing technology with nanotechnology.

C105: GE6151 - Computer Programming, Year of study 2015-2016

C105.1	Elaborate the organization of a digital computer and design the solution for simple computing problems using algorithm, flowchart and pseudo code
C105.2	Apply different looping structures to solve simple scientific and statistical problems
C105.3	Devise solutions for simple problems using array and strings
C105.4	Demonstrate the usage of Dynamic memory allocation and pointer variables
C105.5	Illustrate the concepts of structures and unions with example programs

C106: GE6152 Engineering Graphics, Year of study 2015-2016

C106.1	The students will be able to sketch the conic sections, special curves, and draw orthographic views from pictorial views and models.
C106.2	Students will be able to apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.
C106.3	Students will be able to sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures.
C106.4	Students will be able to practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces.
C106.5	Students will be able to sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.

C107: GE6161 Computer Programming Laboratory, Year of study 2015-2016

C107.1	Understand the usage of office automation tools.
C107.2	Apply good programming design methods for program development.
C107.3	Design and implement the C programs for simple applications.
C107.4	Develop and implement the recursive programs.
C107.5	Implement the c programs with the help of structures and unions.

C108: EPL, Year of study 2015-2016

C108(L).1	Construct carpentry components and pipe connections including plumbing works
C108(L).2	Use welding equipment's to join the structures
C108(L).3	Illustrate the basic machining operations.
C108(L).4	Construct the models using sheet metal works.
C108(L).5	Describe centrifugal pump, Air conditioner, operations of smithy, foundry and fittings.
C108(L).5	Construct the basic electrical and electronic circuits.
C108(L).5	Examine the different types of electronic circuits and components.
C108(L).5	Explain the electrical safety rules, grounding, general house wiring.
C108(L).5	Perform soldering in various electronic circuits.
C108(L).5	Illustrate the basic operation of domestic electrical appliances.

C109: GE6163 Physics and Chemistry Laboratory – I, Year of study 2015-2016

C109(L).1	The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.
C109(L).2	Perform the quantitative chemical analysis of chloride and dissolved oxygen.
C109(L).3	Determine the amount of acids by using the instruments of conductivity meter and pH meter.

I Year (EVEN SEMESTER)

C110: HS6251 Technical English II, Year of study 2015-2016

C110.1	Speak convincingly, express their opinions clearly, initiate a discussion, negotiate, argue using appropriate communicative strategies.
C110.2	Write effectively and persuasively and produce different types of writing such as narration, description, exposition and argument as well as creative, critical, analytical and evaluative writing.
C110.3	Read different genres of texts, infer implied meanings and critically analyse and evaluate them for ideas as well as for method of presentation.
C110.4	Listen/view and comprehend different spoken excerpts critically and infer unspoken and implied meanings.
C110.5	Become accomplished, active readers and will be able to write effectively for a variety of professional and social settings.

C111: MA6251 Mathematics II, Year of study 2015-2016

C111.1	Students will be able to apply the knowledge of vector calculus in engineering disciplines
C111.2	Students will be able to solve ordinary differential equations that model the engineering problems
C111.3	Students will be able to find the Laplace transform of functions and solve the ordinary differential equations using Laplace transform
C111.4	Students will be able to construct analytic functions and apply the knowledge of conformal mappings in engineering disciplines
C111.5	Students will be able to evaluate contour integration and apply it in engineering problems

C112: PH6251 Engineering Physics II, Year of study 2015-2016

C112.1	Describe the conducting materials and their properties.
C112.2	Analyze the semiconductors and able to differentiate various types of semiconductors.
C112.3	Apply the knowledge of magnetic and superconducting materials for modern day to day applications.
C112.4	Explain the properties and applications of dielectrics.
C112.5	Apply the knowledge about the modern engineering materials for various applications.

C113: CY6251 Engineering Chemistry II, Year of study 2015-2016

C113.1	Describe water technology in the purification of water in domestic and industrial applications.
C113.2	Explain the principles of electrochemistry, the factors affecting corrosion and the prevention of corrosion.

C113.3	Classify the different alternative sources of energy and the generation processes.
C113.4	Enumerate the different types of engineering materials and their applications.
C113.5	Discuss the industrial techniques of petroleum processing and the determination of calorific values and combustion parameters.

C114: GE6252 Basic Electrical and Electronics Engineering, Year of study 2015-2016

C114.1	Apply the basic concepts of electric circuits and measuring instruments.
C114.2	Demonstrate the construction and working of various electrical machines.
C114.3	Illustrate the characteristics of various electronic devices.
C114.4	Explore the basics concepts in design of digital circuits.
C114.5	Explain the basics of different communication systems.

C115: GE6253 Engineering Mechanics, Year of study 2015-2016

C115.1	Determine the magnitude of force in rigid bodies under equilibrium conditions.
C115.2	Determine the resultant of the forces and moments of rigid body system under equilibrium conditions.
C115.3	Calculate the center of gravity, centroid and moment of inertia of surfaces and solids.
C115.4	Explain the differential principles apply to solve engineering problem dealing with force, displacement, velocity and acceleration.
C115.5	Solve the elements of rigid body dynamics subjected to frictional forces and dynamic forces.

C116: GE6261 Computer Aided Drafting and Modelling Laboratory, Year of study 2015-2016

C116(L).1	Use the software packages for drafting and modeling.
C116(L).2	Create 2D and 3D models of Engineering Components.

C117: GE6262 Physics and Chemistry Laboratory – II, Year of study 2015-2016

C117(L).1	The students will have the ability to test materials by using their knowledge of applied physics principles in optics and properties of matter.
C117(L).2	Determine the hardness, alkalinity and metal ion content in the water samples by volumetric titration.
C117(L).3	Estimate the water quality parameters by potentiometer, conductometer and flame photometer.

II Year (ODD SEMESTER)

C201: MA6351 Transforms and Partial Differential Equations, Year of study 2016-2017

C201.1	Solve the Partial Differential Equations.
C202.2	Determine the Fourier series expansion of functions and hence evaluate the value of infinite series.
C203.3	Apply the method of separation of variables to solve one dimensional wave equation, one dimensional heat equation and two dimensional heat equation
C204.4	Find the Fourier transform of functions and also evaluate definite integrals using Fourier transform.
C205.5	Calculate the Z-transform of discrete time systems and solve the difference equation using Z-transform.

C202: GE6351 Environmental Science and Engineering, Year of study 2016-2017

C202.1	Understand the importance of public awareness on environment and nature of biodiversity.
C202.2	Know about the various causes, effect and control measures of environmental pollution.
C202.3	Comprehend the human development that leads to environmental disasters, the value of natural resources and their conservation.
C202.4	Recognize the value of public participation in environmental protection, Environmental Management and Legislation Acts and sustainable development.
C202.5	Learn the problems related to population and their remedial measures.

C203: CE6301 Engineering Geology, Year of study 2016-2017

C203.1	Explain the importance of geology in civil engineering and the theory of plate tectonics.
C203.2	Enumerate the formation of minerals and identify the properties of minerals.
C203.3	Illustrate the formation of rocks and differentiate them based on their properties.
C203.4	Examine geological maps and identify the geological structures from the maps.
C203.5	Design and construction of engineering projects such as dams, tunnels and roads.

C204: CE6302 Mechanics of Solids, Year of study 2016-2017

C204.1	Define the fundamental concepts of stresses and strain in mechanics of solids.
C204.2	Analysis the beams and to draw shear force and bending moment diagrams.
C204.3	Compute the slopes and deflections of determinant beams using different methods.
C204.4	Find the stresses and deflections in various shafts and helical springs.
C204.5	Find the stresses and deflections in various shafts and helical springs.

C205: CE6303 Mechanics of Fluids, Year of study 2016-2017

C205.1	Define fundamental concepts of fluid mechanics including hydro static forces on surfaces, pressure measurement, buoyancy and floatation.
C205.2	Apply Euler's and Bernoulli's equations and the conservation of mass to determine velocities, pressures, and accelerations for incompressible and in viscous fluids.
C205.3	Determine flow rates, pressure changes, minor and major head losses for viscous flows through

	pipes, ducts, simple networks and the effects of pumps, fans, and blowers in such systems.
C205.4	Develop the concepts of viscous boundary layers and the momentum integral and use them to determine integral thicknesses, wall shear stresses, and skin friction coefficients.
C205.5	Make use of principles of dimensional analysis and similitude to simple models using Dimensionless parameters.

C206: CE6304 Surveying I, Year of study 2016-2017

C206.1	Identify error sources and the procedures to minimize the error.
C206.2	Compute the included angles in compass surveying and to convert the field observations into a small scale map using plane table surveying.
C206.3	Find the differences in elevation using different methods of leveling.
C206.4	Calculate the cross sectional areas and volumes using Contour methods
C206.5	Determine the elevation of the objects.

C207(L): CE6311 Survey Practical – I, Year of study 2016-2017

C207(L).1	Acquire practical knowledge on handling basic survey instruments including leveling and development of contour map on given area
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C208(L): CE6312 Computer Aided Building Drawing, Year of study 2016-2017

C208(L).1	Draw the plan, elevation and sectional views of the buildings, industrial structures and framed buildings using AutoCAD.
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II Year (EVEN SEMESTER)

C209: MA6459 Numerical Methods, Year of study 2016-2017

C209.1	Solve the algebraic, transcendental and system of linear equations.
C209.2	Apply the interpolation and approximations in various problems.
C209.3	Find the differentiations and integration using numerical tools.
C209.4	Determine the solution of initial value problems for ordinary differential equations.
C209.5	Determine the Solution of boundary value problems in ordinary and partial differential equations.

C210: CE6401 Construction Materials, Year of study 2016-2017

C210.1	Compare the properties of most common building materials such as stones bricks and concrete blocks.
C210.2	Interpret the fundamentals of construction materials and mainly focusing on cement, aggregate and mortar.
C210.3	Outline the importance of fresh and hardened concrete properties in the construction industry.
C210.4	Identify different materials such as plywood, steel and paint for use in various applications in the construction field.
C210.5	Explain the typical and potential application of modern construction materials.

C211:CE6402 Strength of Materials, Year of study 2016-2017

C211.1	Define the fundamental concepts of stress energy principles.
C211.2	Analysis of indeterminate beams and use of energy method for estimating the slope and deflections of beams and trusses.
C211.3	Assess the behavior of columns, beams and failure of materials.
C211.4	Find the principal stresses, principal strain and principal planes.
C211.5	Analyze bending of beams and curved beams.

C212:CE6403 Applied Hydraulic Engineering– II, Year of study 2016-2017

C212.1	Apply their knowledge of fluid mechanics in addressing problems in open channels.
C212.2	Solve problems in gradually varied flows in steady state conditions
C212.3	Apply the energy equation and momentum equation for rapidly varied flow.
C212.4	Analyze the performance of turbines.
C212.5	Describe the characteristic performance of a centrifugal pump and working principle of reciprocating pumps

C213:CE6404 Surveying II, Year of study 2016-2017

C213.1	Explain the different surveying methods.
C213.2	Apply corrections and adjust simple triangulation networks
C213.3	Understand total station surveying and its maintenance.
C213.4	Summarize the working principle, signal structure, components and error sources of GPS.
C213.5	Understand the fundamentals of route surveying, hydrographic surveying, astronomical surveying, photogrammetry and remote sensing.

C214:CE6404 Soil Mechanics, Year of study 2016-2017

C214.1	Determine Index properties, classify the soil and to select the suitable method to compact the particular soil mass.
C214.2	Calculate permeability of soil, seepage flow and seepage pressure.
C214.3	Understand the stress distribution in soil medium and to make use of Terzaghi's one dimensional consolidation theory to know the settlement characteristics of soil mass.
C214.4	Determine shear strength of cohesionless and cohesive soils and its measurement using laboratory methods.
C214.5	Identify the stability of infinite and finite slopes by applying the principles of soil mechanics.

C215(L):CE6411Strength of Materials Laboratory, Year of study 2016-2017

C215(L).1	At the end of this course students would have acquired practical knowledge on testing various materials for its strength and components of structural experimentally
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C216(L): CE6412 Hydraulic Engineering Laboratory, Year of study 2016-2017

C216(L).1	Measure flow in pipes and determine frictional losses
C216(L).2	Develop characteristics of pumps and turbines

C217(L):CE6413 Survey Practical II, Year of study 2016-2017

C217(L).1	Handle survey instruments like theodolite, tacheometry and total station and have adequate knowledge to carryout triangulation astronomical surveying including general field marking for various engineering projects and curves setting.
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III Year (ODD SEMESTER)

C301: CE6501 Structural Analysis I, Year of study 2017-2018

C301.1	Analysis indeterminate trusses and frames by energy and consistent deformation method.
C301.2	Analysis the determinate and indeterminate structures for moving load.
C301.3	Analysis the different types of arches.
C301.4	Conversant with slope deflection method.
C301.5	Conversant with moment distribution method

C302: CE6502 Foundation Engineering, Year of study 2017-2018

C302.1	Investigate the soil condition.
C302.2	Learn about types and purposes of different foundation systems and structures.
C302.3	Build the necessary theoretical background for design and construction of foundation systems
C302.4	Select type of foundation required for the soil at a place.
C302.5	Design shallow foundation, deep foundation and retaining structures

C303: CE6503 Environmental Engineering, Year of study 2017-2018

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: CE6504 Highway Engineering, Year of study 2017-2018

C304.1	Explain the highway planning with respect to classification and know about the factors influencing highway alignment
C304.2	Interpret the geometric design fundamentals of highway and focusing on horizontal and vertical curves.
C304.3	Develop the road pavement design and analysis of flexible and rigid pavement.
C304.4	Identify the different materials to be used in different layers of road and suitable construction machineries.
C304.5	Explain the possible causes of defects and appropriate road monitoring and maintenance program

C305: CE6505 Design of Reinforced Concrete Elements, Year of study 2017-2018

C305.1	Explain the concept of elastic, ultimate load and limit state methods.
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C305.2	Design of Reinforced concrete beams and slabs subjected to various boundary conditions.
C305.3	Analyze the behaviour of RC members subjected to shear and torsion.
C305.4	Design short circular and rectangular columns for axial, uniaxial and biaxial bending.
C305.5	Design axially and eccentrically loaded rectangular footing

C306: CE6506 Construction Techniques, Equipment and Practice, Year of study 2017-2018

C306.1	Apply the theoretical concepts of concrete technology in the real world construction techniques.
C306.2	Summarize the construction practices starting from sub structure to super structure using different materials and innovative techniques
C306.3	Explain the construction knowledge of sub structure element using techniques such as tunneling, piling, shoring for deep cutting and dewatering
C306.4	Find the different construction techniques for super structure construction
C306.5	Identify and select the construction equipment for earth work.

C307(L): GE6674 -Communication & Soft Skills – Laboratory Based, Year of study 2017-2018

C307(L).1	Listen and interpret visuals, involve in formal and informal conversations, make presentations, and participate in GD.
C307(L).2	Solve reading comprehension passages of higher levels, draft Resume, cover letter, reports, emails, and write blogs.
C307(L).3	Possess knowledge about IELTS, TOEFL, GRE, and placement oriented verbal ability.
C307(L).4	Perform well in a job interview with the non-verbal and paralinguistic skills acquired.
C307(L).5	Exhibit leadership traits, team skills and essential soft skills and efficiency to excel as a professional.

C308(L): CE6511 - Soil Mechanics Laboratory, Year of study 2017-2018

C308(l).1	Able to execute how to measure the basic properties and engineering characteristics of soils.
C308(l).2	Able to practice how to use index and engineering properties in geotechnical designs.

C309(L): CE6512 – Survey Camp, Year of study 2017-2018

C309(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.
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III Year (EVEN SEMESTER)

C310: CE6601 Design of Reinforced Concrete & Brick Masonry Structures, Year of study 2017-2018

C310.1	Design cantilever and counterfort retaining walls.
C310.2	Design rectangular and circular water tanks above and below the ground level.
C310.3	Design and draw the detailing of staircases & flat slabs and prepare bar bending schedule
C310.4	Apply the design principles of mat foundation, box culvert, road bridges and apply the concept of yield line theory for designing various types of slabs
C310.5	Analyze and design the brick masonry walls and continuous beams subjected to various load conditions.

C311: CE6602 Structural Analysis II, Year of study 2017-2018

C311.1	Explain the different types of indeterminacy and the use of compatibility conditions in analyzing indeterminate structures.
C311.2	Construct the element stiffness matrix and assemble the structure stiffness matrix for solving indeterminate problems
C311.3	Able to apply the concept of finite element method to the structural analysis.
C311.4	Calculate the collapse loads for beams and frames using plastic analysis.
C311.5	Determine the member forces in suspension bridges and space truss.

C312: CE6603 Design of Steel Structures, Year of study 2017-2018

C312.1	Explain the different failure modes of bolted connections for tension or compression members.
C312.2	Design the tension members.
C312.3	Analyze the most suitable section shape and size for a compression member as per provisions of current code (IS 800 – 2007).
C312.4	Design the beams and plate girders.
C312.5	Design the structural systems such as roof trusses, side coverings and gantry girders.

C313: CE6604 Railways, Airport and Harbour Engg, Year of study 2017-2018

C313.1	Apply the fundamental concepts of railway planning and describe the engineering survey for track alignment.
C313.2	Explain the railway track construction, maintenance and able to find out the suitable method of tunneling.
C313.3	Describe the criteria for airport site selection and airport layout.
C313.4	Find the basic runway length required for an airport and explain marking and lighting for runway and taxiway
C313.5	Classify the harbour and describe the harbour requirements and various coastal structures.

C314: CE6605 Environmental Engineering II, Year of study 2017-2018

C313.1	Summarize the sewage characteristics and estimate sewage flow and runoff
C313.2	Compute hydraulics of flow in sewers and identify suitable pumps and pipes.
C313.3	Plan for the primary sewage treatment units
C313.4	Design the biological treatment units for sewages.
C313.5	Explain the sewage disposal methods and sludge management.

C315: GE6075 Professional Ethics, Year of study 2017-2018

C315.1	Apply ethics, morals and human values in society.
C315.2	Explain about engineering ethics
C315.3	Realize the responsibilities of engineers as experimenters.
C315.4	Recognize the safety, risks, risk benefit analysis and rights of an engineer
C315.5	Discuss the importance of the global issues, moral leadership and code of conduct.

C316(L): CE6611 Environmental Engineering Laboratory, Year of study 2017-2018

C316(L) .1	Perform common environmental experiments relating to water and wastewater quality.
C316(L) .2	Characterize wastewater conduct treatability studies
C316(L) .3	Determine the amount of COD and COD present in the sample
C316(L) .4	Estimate the amount of pollutant present in the waste water.
C316(L) .5	Apply the laboratory results to the problem identification

C317 (L): CE6612 Concrete and Highway Engg. Laboratory, Year of study 2017-2018

C317(L).1	Explain the properties of concrete and testing procedures.
C317(L).2	Measure the test values and compare the test results.
C317(L).3	Ensure quality control while testing/sampling and acceptance criteria
C317(L).4	Determine the properties of fresh and hardened concrete.
C317(L).5	Practice the usage of bitumen as pavement material in the highway engineering field.

IV Year (ODD SEMESTER)

C401: CE6701 Structural Dynamics and Earthquake Engineering, Year of study 2018-2019

C401.1	explain the fundamental concepts of static and dynamics in structural response.
C401.2	evaluate the equations of motion of multi degree of freedom system
C401.3	Illustrate the earthquake parameters, magnitude and intensity.
C401.4	Analyse the effect on reinforced cement concrete, steel and pre-stressed concrete structure under earthquake load.
C401.5	Design the structures for seismic loading as per code provisions IS: 13920-1993.

C402: CE6702 Prestressed Concrete Structures, Year of study 2018-2019

C402.1	Determine the suitable method of prestressing according to the requirements and calculate the various losses of prestress.
C402.2	design the Type I, Type II post-tensioned, pretensioned beams and shear based on IS code
C402.3	Determine the anchorage zone stresses in posttensioned beams and design the anchorage zone reinforcement.
C402.4	calculate the resultant stresses developed in composite beams and to analyse for the secondary moments
C402.5	design the various tension and compression members according to the requirements.

C403: CE6703 Water Resources and Irrigation Engineering, Year of study 2018-2019

C403.1	Estimate the reservoir capacity based on the water requirement for Irrigation and Drinking
C403.2	Identify the importance of National water policy and Economics of water resources planning.
C403.3	Calculate the water requirements of crops based on crop's base period and delta
C403.4	Explain about the Irrigation structures such as Dams and diversion head works.
C403.5	Differentiate different types of Irrigation methods.

C404: CE6704 Estimation and Quantity Surveying, Year of study 2018-2019

C404.1	Estimate the different item of work in residential building
C404.2	Estimate the different type of structure such as culvert, road work, sanitary and water supply works.
C404.3	Arrive the schedule of rates, tender, contract document.
C404.4	Valuate the building with depreciation.
C404.5	Prepare a report on estimate of residential building, culvert

C405: CE6006 Traffic Engineering and Management (E II), Year of study 2018-2019

C405.1	Describe the Characteristics of Vehicles, Road users and the fundamentals of traffic flow.
C405.2	Examine about origin and destination, parking, accident studies and traffic forecasting.
C405.3	Describe the design of Traffic signals, signal coordination, grade separation and traffic signs
C405.4	Explain the road accidents, street lighting, traffic and environment hazards.
C405.5	Describe the Traffic System Management and the Intelligent Transport System.

C406: CE6011 Air Pollution Management (E III), Year of study 2018-2019

C406.1	Explain the nature and characteristics of air pollutants and basic concepts of air quality management.
C406.2	Design stacks and particulate air pollution control devices to meet applicable standards
C406.3	Explain the gaseous pollutant control by adsorption, absorption, condensation and combustion
C406.4	Demonstrate the environmental impact assessment and air quality.
C406.5	Identify and solve noise pollution problems.

C407(L): CE6711 Computer Aided Design and Drafting Laboratory, Year of study 2018-2019

C407(L):.1	Acquires hands on experience in design and preparation of structural drawings for concrete/steel structures normally encountered in civil engineering practice
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C408(L): CE6712 Design Project, Year of study 2018-2019

C408(L).1	Design engineering solutions to complex projects using fundamental knowledge, skills and attitudes of a professional engineer
C408(L).2	Identify project outcomes, constraints, deliverables, performance criteria, control needs, and resource requirements etc.
C408(L).3	Analyze the structure related to Civil Engineering design 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

IV Year (EVEN SEMESTER)

C409: MG6851 Principles of Management, Year of study 2018-2019

C409.1	Discuss the evolution of management, functions and roles of managers
C409.2	Explain the different types of planning process and tools used for planning

C409.3	Elaborate different organization structures and functions of human resources manager
C409.4	Illustrate the different theories of motivation and leadership
C409.5	Describe the control techniques and the role of technology in management

C410: CE6016 Prefabricated Structures, Year of study 2018-2019

C410.1	Explain the prefabricated elements and also have the knowledge of the construction methods.
C410.2	Determine the importance and purpose of constructing the shear wall in building.
C410.3	Explain the design of cross section based on efficiency of the materials.
C410.4	Describe the different types of joints in precast connection.
C410.5	Determine the loads for considering abnormal effects such as earthquakes, cyclones, etc.

C411: CE6021 Repair and Rehabilitation of Structures, Year of study 2018-2019

C411.1	Explain the concepts of Repair and Rehabilitation, importance of maintenance and Assessment procedure for evaluating a damaged structure.
C411.2	Apply the concept of durability aspects and properties of Concrete in damaged Structures.
C411.3	Identify the quality of concrete, causes of deterioration and effects of cover thickness.
C411.4	Explain the purposes of special concretes like Polymer concrete, Sulphur infiltrated concrete, Fibre reinforced concrete, High strength concrete, etc.,
C411.5	Identify the techniques for repair and protection methods and Acquire knowledge in techniques of Strengthening of Structural elements and Demolition.

C412(L): CE8611 Project Work, Year of study 2018-2019

C412(L).1	Design engineering solutions to complex projects using fundamental knowledge, skills and attitudes of a professional engineer.
C412(L).2	Identify project outcomes, constraints, deliverables, performance criteria, control needs, and resource requirements etc
C412(L).3	Demonstrate effective project execution that results in successful projects.
C412(L).4	Interact with team members in a professional and ethical manner, respecting Differences, to ensure a collaborative project environment.
C412(L).5	Communicate effectively to present ideas clearly and coherently both in the written And oral forms.
C412(L).6	Learn independently and synthesize knowledge from various areas of learning, and critically and creatively apply it to real life situations.