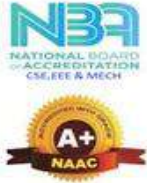




# **M.I.E.T. ENGINEERING COLLEGE**

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Website:www.miet.edu, E-mail:principalengg@miet.edu, contact@miet.edu



## **DEPARTMENT OF CIVIL ENGINEERING**

**Regulation – 2017 UG**

**Course Outcome**



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S.No	Course Outcome
<b>SEM-I</b>	
<b>C101- HS 8151 – COMMUNICATIVE ENGLISH</b>	
At the end of the course, the student will able to	
<b>C101.1</b>	Read different genres of text adopting various reading strategies
<b>C101.2</b>	Develop the collaborative and social aspects of research and writing process.
<b>C101.3</b>	Use different types of structure of writing skills in various situations.
<b>C101.4</b>	Understand the basics of English skills in Communicative and Technical Writing.
<b>C101.5</b>	Analyse various types of technical issues and solve the problem.
<b>C101.6</b>	Apply language aptly in their professional career.
<b>C102 - MA 8151 – ENGINEERING MATHEMATICS - I</b>	
At the end of the course, the student will able to	
<b>C102.1</b>	Evaluate limit indeterminate forms, using L hospital rule.
<b>C102.2</b>	Calculate the maxima and minima value functions of two variables.
<b>C102.3</b>	Evaluate, Definite integrals using Reductions formula.
<b>C102.4</b>	Find the area of plain curves and volume of solid using double and triple integrals
<b>C102.5</b>	Have the basic knowledge of differential equation in typical mechanical fields.
<b>C102.6</b>	Apply and solve physics and engineering problems
<b>C103 - PH 8151 – ENGINEERING PHYSICS</b>	
At the end of the course, the student will able to	
<b>C103.1</b>	Use various surveying instruments and mapping
<b>C103.2</b>	Measure horizontal angle and vertical angle using different instruments
<b>C103.3</b>	Know the methods of leveling and setting levels with different instruments
<b>C103.4</b>	Learn the concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth
<b>C103.5</b>	Understand the concept and principle of modern surveying.
<b>C103.6</b>	Gain knowledge and understanding on various techniques available in basic surveying and they will be aware of modern surveying techniques available.



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## C104 CY8151- ENGINEERING CHEMISTRY

At the end of the course, the student will able to

<b>C104.1</b>	Understand the main knowledge and processes for potable water and the design for basic treatment processes
<b>C104.2</b>	Relate basic knowledge of adsorption and catalysis
<b>C104.3</b>	Illustrate the phase changes of one component and two component systems and the types of alloys and their applications in industries
<b>C104.4</b>	Knowledge of methods to determine the calorific values of fuels, perform flue gas analysis and combustion analysis
<b>C104.5</b>	Analyse and identify alternative energy storage devices
<b>C104.6</b>	Applying the knowledge to perform gas analysis & combustion analysis in engineering fields

## C105 GE8151 - PROBLEM SOLVING AND PYTHON PROGRAMMING

At the end of the course, the student will able to

<b>C105.1</b>	Demonstrate algorithm, flowchart for various programs
<b>C105.2</b>	Do simple programs using python programming basics
<b>C105.3</b>	Illustrate programs by using arrays and string functions
<b>C105.4</b>	Develop simple programs using functions and pointers
<b>C105.5</b>	Design mini projects with structures.

## C106 GE8152 - ENGINEERING GRAPHICS

At the end of the course, the student will able to

<b>C106.1</b>	Construct engineering curves
<b>C106.2</b>	Sketch all the views of engineering objects in free hand.
<b>C106.3</b>	Draw the projection of points, lines and planes.
<b>C106.4</b>	Draw the projection of solids in any orientation.
<b>C106.5</b>	Develop the section and lateral surfaces of sectioned solids
<b>C106.6</b>	Sketch the solids in perspective and isometric approaches



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## C107 - GE8161 - PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY

At the end of the course, the student will able to

C107.1	Demonstrate algorithm and flowchart for various programs
C107.2	Do simple programs using python programming basics
C107.3	Illustrate programs by using arrays and string functions
C107.4	Develop simple programs using functions and pointers
C107.5	Design mini projects with structures.
C107.6	Develop applications using python Programming Language

## C108 BS 8161 – PHYSICS AND CHEMISTRY LAB.

At the end of the course, the student will able to

C108.1	Analyze the physical principle involved in the various instruments; also relate the principle to new application.
C108.2	Perform various experiments in the areas of elasticity, optics, mechanics and thermal physics that will nurture the students in all branches of Engineering.
C108.3	Able to think innovatively and also improve the creative skills that are essential for engineering.

## SEM-II

### C109 HS 8251 – TECHNICAL ENGLISH

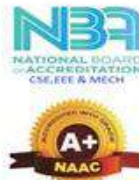
At the end of the course, the student will able to

C109.1	Acquire the skills in reading and listening of Technical English.
C109.2	Understand the basics of English skills in Technical Writing.
C109.3	Prepare resume, curriculum-vitae and bio-data for the career development.
C109.4	Grasp the logical evolution of thought and content.
C109.5	Develop the collaborative and social aspects of research and writing process.
C109.6	Prepare job application, instructions, and recommendations confidently



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## C110 MA 8251 – ENGINEERING MATHEMATICS - II

At the end of the course, the student will able to

C110.1	Transform many problems into simultaneous equations and their solutions can easily to find with matrices.
C110.2	Apply the vector concepts of vector calculus in engineering disciplines
C110.3	Understand the standard techniques of complex variable theory and use them to solve core engineering problems.
C110.4	Evaluate real integrals by applying concept of complex integration.
C110.5	Understand and apply the knowledge of Laplace transform in solving ordinary differential equation..
C110.6	Have knowledge in basic telephone engineering field.

## C111 PH 8201 – PHYSICS FOR CIVIL ENGINEERING

At the end of the course, the student will able to

C111.1	Understand the basics of thermal performance of buildings.
C111.2	Understand the concepts of Acoustical properties of buildings.
C111.3	Studying the concept of lighting design for buildings.
C111.4	Discuss the properties and performance of engineering materials.
C111.5	Understand the hazards of buildings.

## C112 BE8251 – BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

At the end of the course, the student will able to

C112.1	Know about the functions of various electrical components and parameters measurement for electrical circuits
C112.2	Design magnetic circuits and installation of various electrical circuit devices
C112.3	Understand the basics of semiconducting materials and their applications in analog devices
C112.4	Understand the working of various types of motors and transformers
C112.5	Understand the fundamentals of communication engineering.
C112.6	Gain knowledge of working electrical components used in various instruments and devices



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## C113 GE 8291 – ENVIRONMENTAL SCIENCE & ENGINEERING

At the end of the course, the student will able to

<b>C113.1</b>	Understand the values, threats and conservation of biodiversity and classify various ecosystems.
<b>C113.2</b>	Identify and implement technological and eco solutions to environmental problems
<b>C113.3</b>	Develop the knowledge on various natural resources, their causes and their effects
<b>C113.4</b>	Understand various environmental acts and disaster management.
<b>C113.5</b>	Relate population and environment and the role of IT in environment and human health.
<b>C113.6</b>	Analyze the impact of environment integrated themes and social issues

## C114 - GE8292 - ENGINEERING MECHANICS

At the end of the course, the student will able to

<b>C114.1</b>	Illustrate the vectorial and scalar representation of forces and moments.
<b>C114.2</b>	Analyze the rigid body in equilibrium
<b>C114.3</b>	Evaluate the properties of distributed forces
<b>C114.4</b>	Determine the friction and the effects by the laws of friction.
<b>C114.5</b>	Calculate dynamic forces exerted in rigid body.
<b>C114.6</b>	Understand the concept of statics of particles, equilibrium of rigid bodies, distributed forces, friction, dynamics of particles.

## C115 - GE8261 - ENGINEERING PRACTICES LABORATORY

At the end of the course, the student will able to

<b>C115.1</b>	Get exposure regarding Joining operations in engineering materials.
<b>C115.2</b>	Carry out the basic machining operations in engineering materials.
<b>C115.3</b>	Carry out basic home electrical works and appliances
<b>C115.4</b>	Measure the electrical quantities
<b>C115.5</b>	Understand basic electronic components.
<b>C115.6</b>	Integrate the components and gates using soldering practices.



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## C116 - CE8211 COMPUTER AIDED BUILDING DRAWING

At the end of the course, the student will able to

<b>C116.1</b>	Draft the plan, elevation and sectional view of the load bearing buildings
<b>C116.2</b>	Draw the plan, elevation and section of framed buildings.
<b>C116.3</b>	Draw the plan, elevation and section of Industrial Structures.
<b>C116.4</b>	Impart knowledge and skill relevant to Building drawing and Detailing lab using computer software.

### SEM-III

## C201- MA8353 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS

At the end of the course, the student will able to

<b>C201.1</b>	Understand the basic concepts of PDE for solving standard partial differential equations.
<b>C201.2</b>	Apply Fourier series analysis which is central to many applications in engineering apart from its use in solving boundary value problems
<b>C201.3</b>	Understand and Apply the student with Fourier series techniques in solving heat flow problems used in various situations.
<b>C201.4</b>	Apply Fourier transform techniques used in wide variety of Situations.
<b>C201.5</b>	Use effective mathematical tools for the solutions of partial differential Equations that model several physical processes and to develop Z transform techniques for discrete time systems.
<b>C201.6</b>	Solve, analyze and obtain solutions for the transforms and differential related applications in Civil Engineering

## C202-CE8301 STRENGTH OF MATERIALS I

At the end of the course, the student will able to

<b>C202.1</b>	Understand the concepts of stress and strain, principal stresses and principal planes.
<b>C202.2</b>	Determine Shear force and bending moment in beams and understand concept of theory of simple bending.
<b>C202.3</b>	Calculate the deflection of beams by different methods and selection of method for determining slope or deflection.
<b>C202.4</b>	Apply basic equation of torsion in design of circular shafts and helical springs.
<b>C202.5</b>	Analyze the pin jointed plane and space trusses
<b>C202.6</b>	Gain adequate knowledge on materials strength and its behavior under external loading.



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## C203-CE8302 FLUID MECHANICS

At the end of the course, the student will able to

<b>C203.1</b>	Get a basic knowledge of fluids properties and fluid statics.
<b>C203.2</b>	Understand and solve the problems related to equation of motion in kinematic and dynamic equilibrium.
<b>C203.3</b>	Gain knowledge about dimensional and model analysis.
<b>C203.4</b>	Learn types of flow and losses of flow in pipes.
<b>C203.5</b>	Understand and solve the boundary layer problems.
<b>C203.6</b>	Get knowledge on properties and behavior of fluids.

## C204 - CE8351 SURVEYING

At the end of the course, the student will able to

<b>C204.1</b>	Use of various surveying instruments and mapping
<b>C204.2</b>	Measure horizontal angle and vertical angle using different instruments
<b>C204.3</b>	Know the methods of leveling and setting levels with different instruments
<b>C204.4</b>	Learn the concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth
<b>C204.5</b>	Understand the concept and principle of modern surveying.
<b>C204.6</b>	Gain knowledge and understanding on various techniques available in basic surveying and they will be aware of modern surveying techniques available.





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## C205 - CE8391 CONSTRUCTION MATERIALS

At the end of the course, the student will able to

<b>C205.1</b>	Compare the properties of most common and advanced building materials.
<b>C205.2</b>	Understand the typical and potential applications of lime, cement and aggregates
<b>C205.3</b>	Know the production of concrete and also the method of placing and making of concrete Elements.
<b>C205.4</b>	Understand the applications of timbers and other materials
<b>C205.5</b>	Understand the importance of modern material for construction.
<b>C205.6</b>	Gain knowledge on the materials used in the construction industry.

## C206 - CE8392 ENGINEERING GEOLOGY

At the end of the course, the student will able to

<b>C206.1</b>	Understand the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies.
<b>C206.2</b>	Have basics knowledge on properties of minerals.
<b>C206.3</b>	Gain knowledge about types of rocks, their distribution and uses.
<b>C206.4</b>	Will understand the methods of study on geological structure.
<b>C206.5</b>	Will understand the application of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbor.
<b>C206.6</b>	Understand the importance of geology in Civil Engineering field.

## C207 - CE8311 CONSTRUCTION MATERIALS LABORATORY

At the end of the course, the student will able to

<b>C207.1</b>	Conduct quality control tests on Fine Aggregates
<b>C207.2</b>	Conduct quality control tests on Coarse Aggregates
<b>C207.3</b>	Conduct quality control tests on concrete
<b>C207.4</b>	Perform quality control tests on bricks, blocks and tiles



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## C208-CE8361 SURVEYING LABORATORY

At the end of the course, the student will able to

<b>C208.1</b>	Gain practical knowledge on handling chain survey.
<b>C208.2</b>	Gain practical knowledge on handling compass survey.
<b>C208.3</b>	Gain knowledge on Levelling
<b>C208.4</b>	Gain practical knowledge on handling Theodolite
<b>C208.5</b>	Gain adequate knowledge to carryout Triangulation and Tachometry survey.
<b>C208.6</b>	Acquire knowledge on handling Total Station and GPS for surveying

## C209 HS8381- INTERPERSONAL SKILLS/LISTENING AND SPEAKING

<b>C209.1</b>	Listen and respond appropriately.
<b>C209.2</b>	Participate in group discussions
<b>C209.3</b>	Make effective presentations
<b>C209.4</b>	Participate confidently and appropriately in conversations both formal and informal
<b>C209.5</b>	Improve general and academic listening skills

## SEM-IV

## C210 - MA8491 NUMERICAL METHODS

At the end of the course, the student will able to

<b>C210.1</b>	Understand the basic concepts and techniques of solving algebraic and transcendental equations
<b>C210.2</b>	Apply the numerical techniques of interpolation and error approximations in various Intervals in real life situations.
<b>C210.3</b>	Apply the numerical techniques of differentiation and integration for engineering Problems.
<b>C210.4</b>	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations
<b>C210.5</b>	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications
<b>C210.6</b>	Have adequate knowledge on applying these mathematical formulations in civil engineering applications



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<b>C211 - CE8401 Construction Techniques And Practices</b>	
At the end of the course, the student will able to	
<b>C211.1</b>	Know the different construction techniques and structural systems
<b>C211.2</b>	Understand various techniques and practices on masonry construction, flooring, and roofing.
<b>C211.3</b>	Plan the requirements for substructure construction.
<b>C211.4</b>	Know the methods and techniques involved in the construction of various types of super structures
<b>C211.5</b>	Select, maintain and operate hand and power tools and equipment used in the building construction sites.
<b>C211.6</b>	Understand the different construction techniques practices being followed in the construction industry.
<b>C212 - CE8402 STRENGTH OF MATERIALS II</b>	
At the end of the course, the student will able to	
<b>C212.1</b>	Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.
<b>C212.2</b>	Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.
<b>C212.3</b>	Find the load carrying capacity of columns and stresses induced in columns and cylinders
<b>C212.4</b>	Determine principal stresses and planes for an element in three-dimensional state of stress and study various theories of failure
<b>C212.5</b>	Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams.
<b>C212.6</b>	Understand the behavior of different types of structural elements used in the day to day life.



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## C213 - CE 8403 APPLIED HYDRAULIC ENGINEERING

At the end of the course, the student will able to

<b>C213.1</b>	Apply their knowledge of fluid mechanics in addressing problems in open channels.
<b>C213.2</b>	Identify an effective section for flow in different cross sections.
<b>C213.3</b>	Solve problems in uniform, gradually and rapidly varied flows in steady state conditions.
<b>C213.4</b>	Understand the principles, working and application of turbines.
<b>C213.5</b>	Understand the principles, working and application of pumps.
<b>C213.6</b>	Understand the properties of fluid flow and machines propelled by the fluid flow

## C214 - CE8404 CONCRETE TECHNOLOGY

At the end of the course, the student will able to

<b>C214.1</b>	Know the various requirements of cement, aggregates and water for making concrete
<b>C214.2</b>	Understand the effect of admixtures on properties of concrete
<b>C214.3</b>	Gain knowledge on the concept and procedure of mix design as per IS method
<b>C214.4</b>	Classify the properties of concrete at fresh and hardened state
<b>C214.5</b>	Understand the importance and application of special concretes.
<b>C214.6</b>	Understand the properties of materials, concrete, admixtures and its applications.

## C215 -CE8491 SOIL MECHANICS

At the end of the course, the student will able to

<b>C215.1</b>	Classify the soil and assess the engineering properties and index properties
<b>C215.2</b>	Understand the stress concepts in soils
<b>C215.3</b>	Identify various settlements in soils
<b>C215.4</b>	Determine the shear strength of soil
<b>C215.5</b>	Analyze both finite and infinite slope stability
<b>C215.6</b>	Understand the basic properties of soil, its strength and its resistance to the external force.



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## C216 -CE8481 STRENGTH OF MATERIALS LABORATORY

At the end of the course, the student will able to

<b>C216.1</b>	Acquire knowledge on testing of steel rod
<b>C216.2</b>	Gain knowledge in the area of testing of wood
<b>C216.3</b>	Acquire knowledge in the area of testing metal
<b>C216.4</b>	Acquire knowledge in the testing of beams and test on springs.

## C217 - CE8461 HYDRAULIC ENGINEERING LABORATORY

At the end of the course, the student will able to

<b>C217.1</b>	Study the measurement of flow
<b>C217.2</b>	Measure flow in pipes and determine frictional losses.
<b>C217.3</b>	Develop characteristics of pumps.
<b>C217.4</b>	Study the Characteristics of turbine.
<b>C217.5</b>	Determine Metacentric height of floating bodies.

## C218 - HS8461 ADVANCED READING AND WRITING

At the end of the course, the student will able to

<b>C218.1</b>	Write different types of essays
<b>C218.2</b>	Write winning job applications.
<b>C218.3</b>	Read and evaluate texts critically.
<b>C218.4</b>	Display critical thinking in various professional contexts.
<b>C218.5</b>	Ability to write manuscripts and testimonials
<b>C218.6</b>	Ability to read and write like a professional.

## SEM-V

### C301- CE8501 DESIGN OF REINFORCED CEMENT CONCRETE ELEMENTS

At the end of the course, the student will able to

<b>C301.1</b>	Understand the various design methodologies for the design of RC elements.
<b>C301.2</b>	Know the analysis and design of beams by limit state method.
<b>C301.3</b>	Design the various types of slabs and staircase by limit state method.
<b>C301.4</b>	Design of columns for axial, uniaxial and biaxial eccentric loadings.



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<b>C301.5</b>	Design of footings by limit state method.
<b>C301.6</b>	Gain knowledge on design of reinforced cement concrete elements.
<b>C302-CE8502 STRUCTURAL ANALYSIS I</b>	
At the end of the course, the student will able to	
<b>C302.1</b>	Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method
<b>C302.2</b>	Analyse the continuous beams and rigid frames by slope deflection method.
<b>C302.3</b>	Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.
<b>C302.4</b>	Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.
<b>C302.5</b>	Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames.
<b>C302.6</b>	Gain knowledge on analysis of beams and frames.
<b>C303 - EN8491 WATER SUPPLY ENGINEERING</b>	
At the end of the course, the student will able to	
<b>C303.1</b>	Gain knowledge on identification of sources and characteristics of water.
<b>C303.2</b>	Understand the concept in collection and conveyance of water supply system.
<b>C303.3</b>	Design the various functional units in water treatment.
<b>C303.4</b>	Design the various functional units in advanced water treatment.
<b>C303.5</b>	Analysis and design of distribution networks for a water supply system.
<b>C303.6</b>	Design and evaluate water supply project alternatives on basis of chosen criteria.
<b>C304-CE8591 FOUNDATION ENGINEERING</b>	
At the end of the course, the student will able to	
<b>C304.1</b>	Carry out soil investigation for Civil Engineering construction
<b>C304.2</b>	have sufficient knowledge on bearing capacity of soils
<b>C304.3</b>	Analyze and design the shallow foundation.
<b>C304.4</b>	Analyze and design the deep foundation.
<b>C304.5</b>	Analyze and design the earth retaining structures for any kind of soil medium
<b>C304.6</b>	Gain knowledge on site investigation and will be able to design various types of



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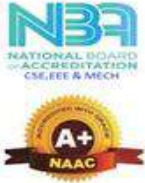


	foundations.
<b>C305 - GI8013 ADVANCED SURVEYING</b>	
At the end of the course, the student will able to	
<b>C305.1</b>	Know the astronomical surveying
<b>C305.2</b>	Do the photogrammetric surveying and interpretation
<b>C305.3</b>	Solve the field problems with Total station
<b>C305.4</b>	Know the GPS surveying and the data processing
<b>C305.5</b>	Understand the route surveys and tunnel alignments
<b>C305.6</b>	Gain knowledge about advanced surveying.
<b>C306 - ORO551 RENEWABLE ENERGY SOURCES</b>	
At the end of the course, the student will able to	
<b>C306.1</b>	Understand of the principles of solar radiation.
<b>C306.2</b>	Classify the solar energy collectors and methodologies of storing solar energy.
<b>C306.3</b>	Understand about application of solar energy in a useful way.
<b>C306.4</b>	Know about wind energy and biomass with its economic aspects.
<b>C306.5</b>	Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.
<b>C306.6</b>	Have acquired knowledge about possible ways of utilizing renewable energy for the day to day life.
<b>C307 - CE8511 SOIL MECHANICS LABORATORY</b>	
At the end of the course, the student will able to	
<b>C307.1</b>	Conduct tests to determine index properties of soils.
<b>C307.2</b>	Conduct tests to determine in situ density and compaction characteristic of soil.
<b>C307.3</b>	Conduct tests to determine Engineering properties of soil.
<b>C308 - CE8512 WATER AND WASTE WATER ANALYSIS LABORATORY</b>	
At the end of the course, the student will able to	
<b>C308.1</b>	Quantify the characteristics of water and wastewater.
<b>C308.2</b>	Conduct tests to determine Chemical dosage test.
<b>C308.3</b>	Conduct tests to determine Chloride and residual test.
<b>C308.4</b>	Examine the conditions for the growth of micro-organisms



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## C309 - CE8513 SURVEY CAMP

At the end of the course, the student will able to

<b>C309.1</b>	Gain knowledge on using total station for surveying.
<b>C309.2</b>	Prepare contour maps and Curve setting
<b>C309.3</b>	Prepare building offsets and plotting the location.
<b>C309.4</b>	Determine the azimuth& Prepare topographical map on an area using GPS





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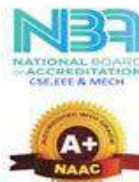


SEM-VI	
<b>C310 - CE8601 DESIGN OF STEEL STRUCTURAL ELEMENTS</b>	
At the end of the course, the student will able to	
<b>C310.1</b>	Understand the concepts of various design philosophies
<b>C310.2</b>	Design of common bolted and welded connections for steel structures
<b>C310.3</b>	Design of tension members and understand the effect of shear lag.
<b>C310.4</b>	Understand the design concept of axially loaded columns and column base connections.
<b>C310.5</b>	Understand specific problems related to the design of laterally restrained and unrestrained steel beams.
<b>C310.6</b>	Capable on design of steel structural elements and connections.
<b>C311 - CE8602 STRUCTURAL ANALYSIS II</b>	
At the end of the course, the student will able to	
<b>C311.1</b>	Draw influence lines for statically determinate structures.
<b>C311.2</b>	Understand Muller Breslau's principle and draw the influence lines for statically indeterminate beams.
<b>C311.3</b>	Analyse the different types of arches.
<b>C311.4</b>	Analyse the cables and suspension bridges.
<b>C311.5</b>	Understand the concept of Plastic analysis for beams and frames.
<b>C311.6</b>	Be capable of analysing beams, frames, arches, cables and suspension bridges.
<b>C312 - CE8603 IRRIGATION ENGINEERING</b>	
At the end of the course, the student will able to	
<b>C312.1</b>	Have knowledge and skills on crop water requirements.
<b>C312.2</b>	Understand the methods and management of irrigation
<b>C312.3</b>	Gain knowledge on types of Impounding structures
<b>C312.4</b>	Understand methods of irrigation including canal irrigation.
<b>C312.5</b>	Get knowledge on water management on optimization of water use.
<b>C312.6</b>	Be exposed to different phases of irrigation management.



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## C313 - CE8604 HIGHWAY ENGINEERING

At the end of the course, the student will able to

<b>C313.1</b>	Get knowledge on planning and aligning of highway
<b>C313.2</b>	Geometric design of highways
<b>C313.3</b>	Design of flexible and rigid pavements.
<b>C313.4</b>	Gain knowledge on Highway construction materials and practice.
<b>C313.5</b>	Understand the concept of pavement management system, evaluation of distress and maintenance of pavements.
<b>C313.6</b>	Be exposed on highway engineering with respect to planning, design, construction and maintenance of highways as per IRC standards.

## C314 - EN8592 WASTEWATER ENGINEERING

At the end of the course, the student will able to

<b>C314.1</b>	Have the ability to estimate sanitary sewage and storm runoff.
<b>C314.2</b>	Able to design primary treatment units.
<b>C314.3</b>	Able to design Secondary treatment units.
<b>C314.4</b>	Understand the standard methods for disposal of sewage
<b>C314.5</b>	Gain knowledge on sludge treatment and disposal
<b>C314.6</b>	Gain knowledge on design, operation and maintenance of sewage treatment plant.

## C315 - CE8004 URBAN PLANNING AND DEVELOPMENT

At the end of the course, the student will able to

<b>C315.1</b>	Describe basic issues in urban planning
<b>C315.2</b>	Formulate plans for urban and rural development
<b>C315.3</b>	Gain knowledge to develop and formulation of urban plans.
<b>C315.4</b>	Design of urban development projects
<b>C315.5</b>	Manage urban development projects.
<b>C315.6</b>	Know regulations and laws related to urban planning.



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## C316 - CE8611 HIGHWAY ENGINEERING LABORATORY

At the end of the course, the student will able to

- |               |   |
|---------------|---|
| <b>C316.1</b> | Understand the test on aggregates                     |
| <b>C316.2</b> | Gain knowledge on test on bitumen                     |
| <b>C316.3</b> | Know about tests on bituminous mixes                  |
| <b>C316.4</b> | Utilize skid resistance tester/ benkelmen beam method |

## C317 - CE8612 IRRIGATION AND ENVIRONMENTAL ENGINEERING DRAWING

At the end of the course, the student will able to design and draw

- |               |  |
|---------------|--|
| <b>C317.1</b> | tank and its components  |
| <b>C317.2</b> | Earth dam and profile of Gravity Dam, Cross drainage works, Canal regulation structures. |
| <b>C317.3</b> | Water supply and treatment units Canal regulation structures                             |
| <b>C317.4</b> | design and draw Various units of sewage treatment plants                                 |

## C318 - HS8581 PROFESSIONAL COMMUNICATION

At the end of the course, the student will able to

- |               |   |
|---------------|---|
| <b>C318.1</b> | Make effective presentations                              |
| <b>C318.2</b> | Participate confidently in Group Discussions.             |
| <b>C318.3</b> | Attend job interviews and be successful in them.          |
| <b>C318.4</b> | Develop adequate Soft Skills required for the workplace   |
| <b>C318.5</b> | Develop work culture while studying                       |
| <b>C318</b>   | Get easily adapted to the industry/corporate environment. |

## SEM-VII

### C401 - CE8701 ESTIMATION, COSTING AND VALUATION ENGINEERING

At the end of the course, the student will able to

- |               |  |
|---------------|--|
| <b>C401.1</b> | Estimate the quantities for buildings and other structures.                                  |
| <b>C401.2</b> | Analysis the rate and cost estimate for building works, canals, and Roads.                   |
| <b>C401.3</b> | Understand types of specifications, principles for report preparation, tender notices types. |
| <b>C401.4</b> | Gain knowledge on types of contracts.  |



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<b>C401.5</b>	Evaluate valuation for building and land.
<b>C401.6</b>	Do cost estimation and valuation for various projects.
<b>C402 - CE8702 RAILWAYS, AIRPORTS, DOCKS AND HARBOUR ENGINEERING</b>	
At the end of the course, the student will able to	
<b>C402.1</b>	Understand the methods of route alignment and design elements in Railway Planning and Constructions.
<b>C402.2</b>	Understand the Construction techniques and Maintenance of Track laying and Railway stations.
<b>C402.3</b>	Gain an insight on the planning and site selection of Airport Planning and design.
<b>C402.4</b>	Analyze and design the elements for orientation of runways and passenger facility systems.
<b>C402.5</b>	Understand the various features in Harbours and Ports, their construction, coastal protection works and coastal Regulations to be adopted.
<b>C402.6</b>	Gain knowledge on railways, airports, docks and harbour Engineering.
<b>C403 CE8703 STRUCTURAL DESIGN AND DRAWING</b>	
At the end of the course, the student will able to	
<b>C403.1</b>	Design and draw the detailing for reinforced concrete cantilever and counterfort retaining walls
<b>C403.2</b>	Design and draw the detailing for flat slab as per code provisions
<b>C403.3</b>	Design and draw the detailing for reinforced concrete and steel bridges
<b>C403.4</b>	Design and draw the detailing for reinforced concrete and steel water tanks
<b>C403.5</b>	Design and draw the detailing for the various steel trusses and gantry girders
<b>C403.6</b>	Design and detail the RCC and steel structures
<b>C 404 -EN8591 MUNICIPAL SOLID WASTE MANAGEMENT</b>	
At the end of the course, the student will able to	
<b>C404.1</b>	Understand the nature and characteristics of municipal solid wastes and the regulatory requirements regarding municipal solid waste management.
<b>C404.2</b>	Know about reduction, reuse and recycling of waste.
<b>C404.3</b>	Plan and design systems for storage, collection, transport, processing and disposal of municipal solid waste.
<b>C404.4</b>	Gain knowledge on the issues on solid waste management from an integrated and holistic



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	perspective, as well as in the local and international context.
<b>C404.5</b>	Design and operation of sanitary landfill
<b>C404.6</b>	Gain knowledge on solid waste management and will be able to find new solutions to the waste disposal.
<b>C405 -OEN751 GREEN BUILDING DESIGN</b>	
At the end of the course, the student will able to	
<b>C405.1</b>	Understands the environmental implications of buildings energy.
<b>C405.2</b>	Gain knowledge on implications of building technologies embodied energy of building.
<b>C405.3</b>	Acquire knowledge on providing comforts in building
<b>C405.4</b>	Acquire knowledge on utility of solar energy in buildings
<b>C405.5</b>	Understand about green composites for buildings.
<b>C405.6</b>	Design green buildings in their future endeavour.
<b>C406 CE8711 CREATIVE AND INNOVATIVE PROJECT</b>	
At the end of the course, the student will able to	
<b>C406.1</b>	Take up any practical problems and find solution by formulating proper methodology.
<b>C406.2</b>	Acquire desired knowledge and skills for solving the identified problems.
<b>C406.3</b>	Develop skills in project writing and presentation.
<b>C406.4</b>	Provide solutions for the identified problem.
<b>C407 CE8712 INDUSTRIAL TRAINING</b>	
At the end of the course, the student will able to	
<b>C407.1</b>	Understand the intricacies of implementation textbook knowledge into practice
<b>C407.2</b>	Understand the concepts of developments and implementation of new techniques
<b>SEM-VIII</b>	
<b>C408 - GE8076 PROFESSIONAL ETHICS IN ENGINEERING</b>	
At the end of the course, the student will able to	
<b>C408.1</b>	Gain insight on human values
<b>C408.2</b>	Acquire knowledge on engineering ethics
<b>C408.3</b>	Get familiar with Codes of Ethics
<b>C408.4</b>	Acquire knowledge on assessment of safety, professional rights and responsibilities.
<b>C408.5</b>	Overcome unawareness on global issues due to ethical misuses



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<b>C408.6</b>	apply professional ethics in Engineering.
<b>C409 - CE8020 MAINTENANCE, REPAIR AND REHABILITATION OF STRUCTURES</b>	
At the end of the course, the student will able to	
<b>C409.1</b>	Understand the importance of maintenance and assessment method of distressed structures.
<b>C409.2</b>	Understand the strength and durability properties, their effects due to climate and temperature.
<b>C409.3</b>	Understand recent development in concrete
<b>C409.4</b>	Understand the techniques for repair and protection methods
<b>C409.5</b>	Understand repair, rehabilitation and retrofitting of structures and demolition methods
<b>C409.6</b>	Gain knowledge on Quality of concrete, durability aspects, causes of deterioration, assessment of distressed structures, repairing of structures and demolition procedures.
<b>C410 CE8811 PROJECT WORK</b>	
At the end of the course, the student will able to	
<b>C410.1</b>	Acquire knowledge on current social problems and find solution by formulating proper methodology.
<b>C410.2</b>	Analyze and prepare literature review using research articles.
<b>C410.3</b>	Find a research gap in the field.
<b>C410.4</b>	Develop skills in preparing project reports and presentations.
<b>C410.5</b>	Identify and suggest future scope of work in the relevant field.