



DEPARTMENT OF CIVIL ENGINEERING

COURSE OUTCOMES (REGULATION 2021)

SEMESTER III

MA3351: Transforms and Partial Differential Equations	
C201.1	Solve the given standard partial differential equations.
C201.2	Apply the principles of Fourier series to solve engineering problems and evaluate their results in practical applications
C201.3	Apply Fourier series techniques to solve one- and two-dimensional heat flow problems and one-dimensional wave equations
C201.4	Apply the mathematical principles of Fourier transforms to formulate and solve engineering-related physical problems
C201.5	Use the Z-transform techniques to solve given difference equations.
ME3351: Engineering Mechanics	
C202.1	Illustrate the vector and scalar representation of forces and moments.
C202.2	Analyse the rigid body in equilibrium.
C202.3	Evaluate the properties of distributed forces.
C202.4	Determine the friction and the effects by the laws of friction.
C202.5	Calculate dynamic forces exerted in rigid body.
CE3301: Fluid Mechanics	
C203.1	Examine the various properties of fluids and variation of pressure under static condition.
C203.2	Apply continuity equation and Bernoulli's equation for solving various types of fluid flows problems associated with fluid kinematics and dynamics.
C203.3	Perform dimensional analysis and model analysis to validate various hydraulic engineering problems.
C203.4	Evaluate major and minor losses associated with fluid flow in piping networks

C203.5	Interpret the boundary layer aspects of laminar and turbulent flows
CE3302: Construction Materials and Technology	
C204.1	Determine whether concrete blocks, bricks, stones, and lime are of high quality, and also classify and test the materials.
C204.2	Recognize the many applications for composite materials like FRP, Geomembranes, geotextiles and the market forms of steel, aluminium and timber.
C204.3	Determine the optimum building design and maintenance techniques, such as thermal insulation and building air conditioning.
C204.4	Select various equipment for earthwork excavation, concreting, and material handling, erection of structures, dewatering and pumping equipment.
C204.5	Understand the construction planning, scheduling the activities along with CPM and PERT network modelling and time analysis.
CE3303: Water Supply and Wastewater Engineering	
C205.1	Comprehend the various elements influencing water demand, assess the characteristics of water and apply knowledge to design intake structures and conveyance systems for efficient water transmission.
C205.2	Develop analytical skills and design physical units of water treatment plant in Construction, Operation and Maintenance aspects.
C205.3	Demonstrate the principles and design procedures for water supply systems in buildings and develop efficient water distribution networks.
C205.4	Design effective sewer systems including gravity and pressure sewers, integrate pumping stations when necessary and analyze sewage characteristics to estimate generation rates accurately.
C205.5	Interpret sludge analysis results, design appropriate sludge treatment processes and apply best practices for environmentally sound sludge disposal.
CE3351: Surveying and Levelling	
C206.1	Impart knowledge on the use of conventional surveying instruments like chain/tape, compass and levelling instruments.
C206.2	Develop knowledge about levelling instrument which is used for different surveying operations.
C206.3	Utilize advanced equipment's like theodolite instrument which is used for measuring horizontal angles and vertical angles.
C206.4	Carry out the elevation of the objects using tacheometer by Single plane and stadia method.
C206.5	Determine the gradient of a line by tangential tacheometry, total station and to prepare plan metric maps.
CE3361: Surveying and Levelling Laboratory	
C207.1	Impart knowledge on the use of conventional surveying instruments like chain/tape, compass and levelling instruments.
C207.2	Develop knowledge about levelling instrument which is used for different surveying operations.
C207.3	Utilize advanced equipment's like theodolite instrument which is used for measuring horizontal angles and vertical angles.

C207.4	Carry out the elevation of the objects using tacheometer by Single plane and stadia method.
C207.5	Determine the gradient of a line by tangential tacheometry, total station and to prepare plan metric maps.
CE3311: Water and Wastewater Analysis Laboratory	
C208.1	Gain knowledge about water sampling and preservation techniques and analyse the physical characteristics of water.
C208.2	Assess the chemical characteristics of water such as iron, sulphate, coagulant, chlorine, available Chlorine in Bleaching powder and residual chlorine in water sample
C208.3	Estimate the availability of total solids, dissolved solids and settle able solids in the wastewater.
C208.4	Determine the Sludge Volume Index, Bio-Chemical Oxygen demand, Chemical Oxygen demand and presence of ammonia in the wastewater sample.
C208.5	Test and Confirm total and faecal coliform by using most probable number (MPN) test
GE3361: Professional Development	
C209.1	Analyze the different tools in MS Word that can be used to structure and organize content for creating technical and academic documents.
C209.2	Apply MS Excel functions to organize, retrieve, and analyze data, and create visual representations for improved understanding.
C209.3	Assess the effectiveness of different Design engaging academic presentations using MS PowerPoint by integrating tables, charts, media, and hyperlinks.

SEMESTER IV

CE3401: Applied Hydraulics Engineering	
C210.1	Design open channels of various cross-sections, including economical channel sections for the open analysis of uniform flow under steady-state conditions, utilizing the specific energy concept and its applications.
C210.2	Analyze steady gradually varied flow, including water surface profiles and length calculations using direct and standard step methods and Examine variations in water surface profiles due to changes in channel slopes
C210.3	Derive the relationship between sequent depths in steady rapidly varied flow and estimate energy loss in a hydraulic jump, while also considering the effects of positive and negative surges.
C210.4	Design turbines and explain their working principles based on given data. Understand their operational characteristics under different working conditions.
C210.5	Differentiate between pumps, explain their working principles, and illustrate characteristic curves. Additionally, design both centrifugal and reciprocating pumps

CE3402: Strength of Materials	
C211.1	Recognise the meanings of primary stresses, principal planes, and stress and strain.
C211.2	Ascertain the shear force and bending moment in beams and comprehend the basic bending theory.
C211.3	Determine the deflection of beams using several techniques and choose a method for calculating the slope or deflection.
C211.4	Examine continuous, fixed, and propped beams for external loads and settlement support.
C211.5	Ascertain the stresses resulting from asymmetrical beam bending, identify the shear centre, and examine the diverse theories of failure.
CE3403: Concrete Technology	
C212.1	Identify the qualities of the materials used in the preparation of concrete, as well as the needs for cement, aggregates, and water.
C212.2	Choose appropriate admixtures to improve the characteristics of the concrete and learn more about the mineral and chemical admixtures that are present in the concrete.
C212.3	Design concrete mixes using the IS technique of mix design and become knowledgeable about the characteristics and ratios associated with mix design according to the most recent IS code.
C212.4	Analyze the characteristics of both fresh and hardened concrete by comprehending the test protocols in accordance with the most recent IS code.
C212.5	Recognize the significance of unique concretes for particular needs and comprehend the uses and benefits of special concrete in the contemporary environment.
CE3404: Soil Mechanics	
C213.1	Explain the fundamental properties of soils, including classification, phase relationships, and soil composition, for application in geotechnical engineering
C213.2	Analyze permeability and seepage in soil mediums, evaluate fluid flow through soils, and assess their implications on engineering solutions
C213.3	Evaluate stress distribution in soils due to surface loads and understand soil settlement behavior caused by consolidation under varying conditions
C213.4	Exhibit an understanding of soil shear strength and its influence on engineering solutions for loaded soils, while staying informed about current issues related to soil shear strength.
C213.5	Design finite and infinite slopes, applying stability analysis principles to meet engineering specifications and practical requirements
CE3405: Highway and Railway Engineering	
C214.1	Understand the need of highway infrastructure, its design, construction for both in rural and urban areas using conventional and modern methods.
C214.2	Demonstrate the ability to focus on different elements related to the design of highways and proceed the practice for flexible and rigid pavements using IRC methods.

C214.3	Study different materials used in highway construction and the testing of different materials along with the maintenance of pavements.
C214.4	Understand different elements of permanent way, gauge selection, surveys using conventional and modern methods and design efficiently for construction of railway structures.
C214.5	Design and understand the working principle of railway track and utilize the knowledge in maintenance of the track and the operational part in the railway tracks.
GE3451: Environmental Sciences and Sustainability	
C215.1	Understand the concept of Environment and bio diversity, duty of individual in conservation of environment and bio diversity.
C215.2	Create awareness on environmental pollution, its causes, effects and control, management of natural disasters.
C215.3	Understand energy management and conservation and also the importance of new sources of energy.
C215.4	Understand the sustainability and management process and analyse climate changes, concept of carbon credit and the challenges of environmental management.
C215.5	Analyse the role of sustainable urbanization and to understand green materials, energy cycles and explain the rules and regulation of sustainability practices.
CE3411: Hydraulic Engineering Laboratory	
C216.1	Apply Bernoulli equation and determination the coefficient of discharge through Rotameter, venturimeter and orificemeter
C216.2	Determine the major losses in pipe, Darcy's friction factor and minor losses in pipes and compare with Moody diagram.
C216.3	Identify the performance characteristics of Centrifugal pumps, Gear pump and roto dynamic pumps.
C216.4	Figure out the performance characteristics of Submersible pump, Reciprocating pump and displacement pumps.
C216.5	Check the performance characteristic of Pelton wheel turbine, Francis turbine, and Kaplan turbine and to determine the Metacentric height of floating bodies.
CE3412: Materials Testing Laboratory	
C217.1	Test for the mechanical properties of different types of steel rod, metal beams and springs
C217.2	Determine the physical properties of cement by using fineness, consistency test, Vicat apparatus and specific gravity test
C217.3	Assess the physical properties of fine and coarse aggregate by using specific gravity, water absorption, loose bulk density and impact value test
C217.4	Estimate the flakiness & elongation index, crushing value, coarse aggregate, compressive strength, water absorption of coarse aggregate
C217.5	Determine the workability and compressive strength of concrete by using slump cone and compressible strength test

CE3413: Soil Mechanics Laboratory	
C218.1	Determine the index properties of soils using specific gravity test, Liquid limit and plastic limit test
C218.2	Identify the properties of soils utilising sieve analysis and Hydrometer analysis
C218.3	Assess the insitu density using standard proctor compaction test and Field density of soil using sand replacement method
C218.4	Test the properties of cohesive soil, compressibility, permeability and shear strength using Direct shear test, Unconfined compression test and California Bearing Ratio Test
C218.5	Understand the tensile strength and interfacial friction angle on Geosynthetics.

SEMESTER V

CE3501: Design of Reinforced Concrete Structural Elements

C301.1	Develop a clear understanding of design philosophies and apply both Working Stress Method (WSM) and Limit State Method (LSM) for the design of reinforced concrete structures.
C301.2	Apply LSM principles for the analysis and design of reinforced concrete elements considering shear, torsion, bond, anchorage, and development length, ensuring structural stability under various loading conditions.
C301.3	Compute the reinforcement required for structural elements such as slabs and staircases, complying with strength, serviceability, and safety requirements as per Indian Standards.
C301.4	Design short reinforced concrete columns under axial, uni-axial, and bi-axial eccentric loading using appropriate code provisions.
C301.5	Calculate axial load and moment for various types of footings (wall, isolated, and combined footings) ensuring proper reinforcement detailing for strength and serviceability.

CE3502: Structural Analysis I

C302.1	Examine the deflections of pin-jointed plane frames and space frames also change in temperature method of tension coefficient
C302.2	Analyse the continuous beams, rigid frames with inclined members and support settlements by using slope deflection method.
C302.3	Apply the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway
C302.4	Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.
C302.5	Implement the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames.

CE3503: Foundation Engineering

C303.1	Understand the plan and execute a detailed site investigation to select geotechnical design parameters and type of foundations
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C303.2	Demonstrate an ability to design shallow foundations, its component or process as per the needs and specifications
C303.3	Illustrate an ability to design combined footings and raft foundations, its component or process as per the needs and specifications
C303.4	Interprete an ability to design deep foundations, its component or process as per the needs and specifications
C303.5	Analyze an ability to design retaining walls, its component or process as per the needs and specifications
CE3026: Traffic Engineering and Management	
C304.1	Conduct traffic surveys, evaluate issues, and connect them to standards using your understanding of science and engineering principles.
C304.2	Recognize the fundamentals of traffic flow characteristics and how they relate to one another and also to analyse the traffic stream flow characteristics.
C304.3	Identify different the approaches to traffic management that address the applications of ITS and demand pricing with various traffic control devices for traffic segregation.
C304.4	Creating a variety of regulatory and control measures to meet the needs of an effective traffic network by designing the road intersections and interchanges.
C304.5	Identify different kinds of facilities and make plans for non-motorized transportation and also to design the parking, pedestrian pathway and cycle tracks.
CE3033: Solid and Hazardous waste management	
C305.1	Interpret the various functional elements of solid and hazardous waste management including the associated legal, health, safety, and cultural issues as well as responsibilities of different stakeholders
C305.2	Apply the knowledge of science and engineering fundamentals to characterize different types of solid and hazardous wastes, assess the factors affecting variation and assess performance of waste treatment and disposal systems
C305.3	Design of systems and processes to meet specified needs of waste minimization, storage, collection, transport, recycling, processing and disposal.
C305.4	Select appropriate methods for processing and disposal of solid and hazardous wastes, taking into account the impact of the solutions in a sustainability context
C305.5	Conduct research pertinent to solid and hazardous waste management and communicate effectively to different stakeholders as well as engage in independent lifelong learning
CE 3040 Urban Water Infrastructure	
C306.1	Understand the structure of urban ecosystem and its functional elements in terms of ecology, human involvement, patterns, demography and community dynamics
C306.2	Calculate the urban runoff with the knowledge of urban hydrological cycle, to identify the human induced changes in urban watersheds and plot hydrographs.
C306.3	Compare different types of drainage systems, inlets and identify the appropriate design system. Utilise newer advancements and trends in stormwater management.
C306.4	Asses the importance of supply and demand of water in urban scale, identify the optimum conservation techniques and engage in activities of public awareness.
C306.5	Apply the knowledge of urban runoff, design systems, drainage systems and conservation techniques to link with possible governance mechanism and follow best management practices for Indian Urban context.

MX3084: Disaster Risk Reduction and Management	
C307.1	Impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)
C307.2	Enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction
C307.3	Develop disaster response skills by adopting relevant tools and technology
C307.4	Enhance awareness of institutional processes for Disaster response in the country.
C307.5	Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity
CE3511: Highway Engineering Laboratory	
C308.1	Determine the properties of aggregate using specific gravity, abrasion test and water absorption test.
C308.2	Ascertain the Quality of Bitumen using specific gravity, Consistency and Softening point test
C308.3	Estimate the loss of bitumen on heating and determine the ductility value of the bitumen
C308.4	Test the optimum binder content of the bitumen using Marshall method
C308.5	Assess the stripping value and bitumen content in the bituminous mix by cold solvent extraction method
CE3512: Survey Camp (2 weeks)	
C309.1	Apply advanced surveying instruments such as theodolite, total station, and GPS to perform traversing, levelling, and contouring with accuracy.
C309.2	Develop contour maps using radial tachometric method, block levelling, and profile levelling for road and canal alignments with proper field data collection
C309.3	Execute field work related to setting out of buildings, curve setting, and offset measurements, profile levelling (LS & CS) and prepare corresponding survey drawings
C309.4	Determine azimuth by conducting sun observations and establish directions for geodetic control.
C309.5	Integrate GPS technology for determining latitude, longitude, traversing, and mapping the survey camp location, and compare its effectiveness with conventional methods
<div>SEMESTER VI</div>	
CE3601: Design of Steel Structural Elements	
C310.1	Determine the design strengths of bolted and welded connections, as well as the various failure types of these connections. Acknowledge the design philosophy of steel structures.
C310.2	Choose the best section size and shape based on specified design requirements for tension and compression members, beams, and members.

C310.3	Conduct an analysis and design of steel tension members, columns, column bases, and beams using the current code requirements, techniques, and concepts.
C310.4	Determine and calculate the roof trusses, purlin, gantry girder design loads on industrial structures and to gain knowledge on pre-engineered buildings
C310.5	Determine the loads on continuous beams, purling and portal frames using plastic analysis approach.
CE3602: Structural Analysis II	
C311.1	Analyse the statically determinate structures, draw influence lines and compute the critical stress resultants.
C311.2	Recognise the Muller-Breslau principle and calculate the influence lines for beams that are statically indeterminate.
C311.3	Analyse the three-hinged, two-hinged and fixed arches - Parabolic and circular arches - influence lines, rib shortening
C311.4	Analyse the suspension bridges, Influence lines for three hinged stiffening girders and space trusses using method of tension coefficients
C311.5	Analyse the gravity loadings and frames using approximation techniques for horizontal stresses and gravity.
AG3601: Engineering Geology	
C312.1	Describe the internal structure of earth and its relation to earthquakes. Landforms created by various geological agents and their importance in civil engineering
C312.2	Gain knowledge on various minerals and rocks that can be used as construction materials and road aggregates. In addition, testing the suitability of rocks for foundation purposes.
C312.3	Study various geological structures and their impact in engineering constructions. Further, learning the geo-mechanical properties of rocks and their significance in engineering projects.
C312.4	Gain knowledge on the role of geological mapping, remote sensing and geophysics for surface and subsurface investigations. In addition, students will also gain knowledge on borehole logging techniques and their applications in civil engineering.
C312.5	Apply geological knowledge for designing and constructing major civil engineering structures, and also mitigating various geological hazards such as earthquakes, landslides and tsunamis.
CE3003: Prefabricated Structures	
C313.1	Understand Need for prefabrication and principles Standardization, production, transportation, erection of prefabrication, components.
C313.2	Acquire knowledge Behaviour and types of structural components, panel systems, slabs, beams, shear walls and columns used in precast construction.
C313.3	Gain knowledge of design philosophy through that design joint flexibility of precast structures and design the cross section based on efficiency of material used.
C313.4	Familiarize about various types of joints, Types of structural connections and Types of sealants in precast construction.
C313.5	Gain knowledge about structural stability, abnormal loads and Importance of avoidance of progressive collapse.

CE3025: Airports and Harbours	
C314.1	Gain an insight on the Air transport characteristics, classification planning and site selection for airport and its design.
C314.2	Know about classification of airport, Planning of Airfield Components Planning, Geometric design of various Airfield Components and drainage.
C314.3	Analyze and design the elements for orientation of runways and passenger facility systems and Air Traffic Control Tower.
C314.4	Understand the various features in Harbours and components Ports, their construction, coastal protection works.
C314.5	Familiarize on various Environmental Regulations and Acts, methods of impact analysis and its process.
CCE334: Industrial Wastewater Management	
C315.1	Explain the source and types of industrial wastewater and their environmental impacts and choose the regulatory laws pertaining to environmental protection
C315.2	Identify industrial wastewater pollution and implement methods for pollution prevention, waste minimization in industries
C315.3	Apply knowledge and skills to design various industrial wastewater treatment process and understand treatability studies.
C315.4	Audit and analyze environmental performance of industries to internal, external client, regulatory bodies and design water reuse management techniques
C315.5	Conduct research to develop effective management systems for industrial wastewater that are technically sound, economically feasible and socially acceptable.
OCS352 : IOT Applications and Concepts	
C316.1	Understand the fundamental concept of the Internet of Things (IoT), including its components and their roles in creating interconnected systems.
C316.2	Explore various communication models and protocols employed in IoT ecosystems to enable seamless data exchange and connectivity between devices.
C316.3	Design portable IoT systems by utilizing platforms like Arduino, Raspberry Pi, and other open-source tools, focusing on practical applications and functionality.
C316.4	Implement data analytics techniques and integrate cloud computing services in IoT systems to enhance data processing, storage, and remote access.
C316.5	Analyze real-time IoT applications across different industries and domains, understanding their impact and practical use cases.
MX3089: Industrial Safety	
C317.1	Understand the basic concept of safety.
C317.2	Obtain knowledge of Statutory Regulations and standards.
C317.3	Know about the safety Activities of the Working Place.
C317.4	Analyze on the impact of Occupational Exposures and their Remedies
C317.5	Obtain knowledge of Risk Assessment Techniques.

CE3611: Building Drawing and Detailing Laboratory	
C318.1	Draft the plan, elevation and sectional view of the load bearing and framed building using AutoCAD software
C318.2	Draw the structural detailing of RCC elements like slabs, beams and columns
C318.3	Draw the structural detailing of RCC water tanks, footings((isolated, stepped, combined) and retaining walls
C318.4	Draw the structural detailing of steel structures like beam to beam connections, beam to column connections.
C318.5	To draft the structural detailing of Industrial structures (truss and purlin)

SEMESTER VII

CE3701: Estimation, Costing and Valuation Engineering	
C401.1	Understand the types and concepts of estimation of quantities for buildings, culverts, pavements and soak pits using different methods of estimation.
C401.2	Schedule of rates and analysis of rates for all building works, canals, roads along with the estimates of cost with given and available data (standard data and observed data)
C401.3	Gain knowledge on the specifications and its types, report preparation along with the types of tenders along with drafting procedure for the tenders.
C401.4	Develop knowledge on the types of contracts, BOT along with condition, formations and problems in contracts and also to know the MORTH Standard bidding documents.
C401.5	Evaluate the valuation of land using different valuation methods and to get know the depreciation, escalation and to calculate the mortgage and lease value of the property.
AI3404: Hydrology and Water Resources Engineering	
C402.1	Define the hydrological components and its behaviour. Apply different equipments and methodologies to measure the components to quantify for further usage.
C402.2	Understand the characteristics of catchments and factors affecting runoff, utilise the knowledge to estimate runoff using methods such as SCS-CN method and IUH.
C402.3	Define and explain the concept of hydrological extremes such as floods and droughts, its analysis, estimation and management techniques.
C402.4	Classify the types of reservoirs, analyse the site selection for reservoirs and explain the details about sedimentation and life of reservoirs.
C402.5	Apply the concepts of aquifers and its types and its functioning, the governing equations involved in it and design the rainwater harvesting systems in rural and urban areas.

GE3791: Human Values and Ethics	
C403.1	Explain the impact of the French Revolution, American Independence, and the Indian Freedom Movement on the development and implementation of democratic values.
C403.2	Apply secular principles to contemporary issues of religious tolerance and discrimination, proposing practical solutions based on secular values.
C403.3	Analyze the role of evidence-based approaches in validating facts and developing scientific knowledge.
C403.4	Assess the role of inclusive practices in promoting social equity, justice and promote gender equality.
C403.5	Propose ethical guidelines for responsible scientific research, innovation and frameworks for ensuring fairness and accountability in scientific advancements.
GE3752: Total Quality Management	
C404.1	understanding of quality, its evolution, basic concepts, contribution of quality gurus, TQM framework, Barriers and Benefits of TQM
C404.2	Upon completion of the course, students will be able to understand the TQM Principles for application
C404.3	Students will be able to understand basics of Six Sigma and apply Traditional tools, New tools, Benchmarking and FMEA.
C404.4	Students will be able to Taguchi's Quality Loss Function, Performance Measures and apply Techniques like QFD, TPM, COQ and BPR
C404.5	Students will be able to apply QMS and EMS in any organization
OCS351 : Artificial Intelligence and Machine Learning Fundamentals	
C405.1	Apply the knowledge of mathematics, engineering fundamentals, problem solving approaches and various search techniques to build AI based applications.
C405.2	Understand the design and development of informed search techniques and solve the problems using advanced search techniques and CSP.
C405.3	Build and evaluate machine learning models, including regression and classification by using first principles of mathematics and engineering sciences.
C405.4	Develop and apply supervised learning techniques, including neural networks and decision trees using the knowledge of mathematics, science and engineering fundamentals to solve complex Problems
C405.5	Implement unsupervised learning techniques, including clustering and PCA to build a neural network model mathematics to design a solution for any complex engineering problem.
OML351: Introduction to Non-Destructive Testing	
C406.1	Apply the concepts of Non-destructive testing using the fundamentals of Visual testing by direct and indirect methods.

C406.2	Conduct Liquid Penetrant and Magnetic Particle Inspection methods and interpret and evaluate the test indications.
C406.3	Understand Eddy Current Testing and Thermography principles of NDT by Contact & Non-Contact inspection methods and do interpretation and evaluation of the tests outputs.
C406.4	Determine the defects of engineering components using Ultrasonic Testing and Acoustic Emission Techniques.
C406.5	Acquire the knowledge of film radiography and digital radiography for inspection of materials using X-rays and Gamma rays.
OGI352 : Geographical Information System	
C407.1	Familiarize about basic concepts and components of GIS including the types of data and levels of measurement.
C407.2	Identify and differentiate between various spatial data models and structures and apply appropriate models for specific GIS applications.
C407.3	Apply data input techniques and perform coordinate transformations, ensuring geospatial data is properly referenced and formatted.
C407.4	Evaluate GIS data quality using standard metrics, and interpret metadata and standards to ensure interoperability and consistency in GIS projects.
C407.5	Perform GIS data management tasks and generate outputs, including maps, graphs and multimedia presentations, using both proprietary and open-source GIS software.

SEMESTER VIII

CE3811 : Project Work/Internship	
C408.1	Gain knowledge of construction equipment's practices to be used in the field.
C408.2	Demonstrate knowledge of engineering techniques for effective project management and professional development to face emerging
C408.3	Apply the theoretical and practical aspects of project management techniques to achieve project goals