

First Year: Semester I:

Course Name: Engineering Mechanics		Course Code: CV2101
CO1	Describe the fundamental concepts of statics and dynamics	
CO2	Apply the basic concepts of applied mechanics for solution of problems on planar force system.	
CO3	Determine the properties of surface like centroid, moment of inertia, etc. for planar surfaces and mass moment of inertia for rigid body.	
CO4	Analyze pin jointed truss frame structure and beam structure analytically and graphically.	
CO5	Evaluate the dynamic variables of kinetics of particles and simple lifting machine	

Course Name: LAB: Engineering Mechanics		Course Code: CV2102
CO1	Describe the fundamental concepts of statics and dynamics	
CO2	Apply the basic concepts of applied mechanics for solution of problems on planar force system.	
CO3	Determine the properties of surface like centroid, moment of inertia, etc. for planar surfaces and mass moment of inertia for rigid body.	
CO4	Analyze pin jointed truss frame structure and beam structure analytically and graphically.	
CO5	Evaluate the dynamic variables of kinetics of particles and simple lifting machine	

First Year: Semester II:

Course Name: Engineering Mechanics		Course Code: CV2101
CO1	An ability to apply the concept of mechanics and can solve problems on planar force system for smooth as well rough surfaces.	
CO2	An ability to analyze pinned jointed truss frame using method of joint.	
CO3	An ability to understand the properties of surface and can find centroid, moment of inertia, product of inertia, etc.	
CO4	An ability to determine the dynamic variables by applying Kinetics of Particle, work energy method and linear impulse momentum methods.	

Course Name: LAB: Engineering Mechanics		Course Code: CV2102
CO1	An ability to apply the concept of mechanics and can solve problems on planar force system for smooth as well rough surfaces.	
CO2	An ability to analyze pinned jointed truss frame using method of joint.	
CO3	An ability to understand the properties of surface and can find centroid, moment of inertia, product of inertia, etc.	
CO4	An ability to determine the dynamic variables by applying Kinetics of Particle, work energy method and linear impulse momentum methods.	

Second Year: Semester III:

Course Name: Fluid Mechanics		Course Code: CV2205
CO1	Examine the fundamental principles of fluid mechanics and related applications and estimate Fluid pressure, forces on various surface.	
CO2	Analyze the motion of fluid, various flow pattern produced without reference of force	
CO3	Understand the kinetics of flow and computation of flow using various devices.	

Course Name: LAB: Fluid Mechanics		Course Code: CV2206
CO1	An ability to determine floating conditions of ship model.	
CO2	An ability to verify Bernoulli's theorem.	

CO3	An ability to measure velocity, discharge in pipe, tank, channel and to determine hydraulic coefficients of devices.
CO1	An ability to determine hydraulic jump, roughness, concept of specific energy in open channels.
CO2	An ability to determine types of flow in pipes and flow around immersed bodies

Course Name: Geotechnical Engineering		Course Code: CV2203
CO1	An ability to characterize and classify soils.	
CO2	An ability to determine index and engineering properties of soil.	
CO3	An ability to understand surface stresses and their distribution within a soil mass.	
CO4	An ability to understand the principles of compaction and consolidation.	
CO5	An ability to determine shear strength of soil.	

Course Name: LAB: Geotechnical Engineering		Course Code: CV2204
CO1	An ability to determine the Index properties of soil.	
CO2	An ability to determine the Engineering properties of soil.	

Course Name: Strength of Materials		Course Code: CV2201
CO1	An ability to understand basic concepts and mechanical properties of materials.	
CO2	An ability to analyze behavior of material under various types of loading pattern.	
CO3	An ability to draw diagram showing variation of shear force, bending moment and stresses.	
CO4	An ability to check feasibility of different sections subjected to different loading patterns.	

Course Name: LAB: Strength of Materials		Course Code: CV2202
CO1	An ability to understand basic concepts & mechanical properties of material.	
CO2	An Ability to understand behavior of various materials such as Steel, Aluminum, Wood etc. when subjected to various types of loading.	

Course Name: Water Supply Engineering		Course Code: CV2207
CO1	An ability to understand significance of community water supply scheme.	
CO2	An ability to design water conveyance system.	
CO3	An ability to understand importance of water quality and its treatment aspects.	
CO4	An ability to understand different patterns of distribution of water.	
CO5	An ability to understand the significance and concept of solid waste management.	

Course Name: LAB: Water Supply Engineering		Course Code: CV2208
CO1	To understand importance of water quality standards.	
CO2	An ability to perform various physical and chemical tests on water sample.	
CO3	An ability to understand various biological tests performed on water sample and to perform a few biological tests on water.	

Second Year: Semester IV:

Course Name: Advanced Mathematical Techniques		Course Code: GE2204
CO1	Utilize numerical techniques to obtain approximate solutions of mathematical	
CO2	Measure the Statistical parameters for random variables	
CO3	Design and determine the solution of linear programming problems	
CO4	Explain the basic concept of fuzzy sets, Relations and fuzzy logic.	

Course Name: Concrete Technology		Course Code: CV2251
CO1	An ability to understand the properties of the constituent materials of concrete.	
CO2	An ability to understand the properties of fresh and hardened concrete and tests to determine these properties	
CO3	An ability to design concrete mixes and apply statistical quality control techniques	
CO4	An ability to understand admixtures and their role in concrete properties	
CO5	An ability to understand the durability of concrete.	
CO6	An ability to understand importance of Non-destructive testing and various equipment used.	

Course Name: Lab: Concrete Technology		Course Code: CV2252
CO1	An ability to conduct different tests on cement.	
CO2	An ability to assess the different properties of coarse and fine aggregate.	
CO3	An ability to conduct different workability tests on fresh concrete and various tests on hardened concrete.	
CO4	An ability to understand working of various Non-destructive testing equipment.	

Course Name: Surveying		Course Code: CV2253
CO1	An ability to understand the basic concepts of surveying and use of conventional surveying equipment.	
CO2	An ability to understand the basic principles, operation, handling & uses of various advanced surveying equipment.	
CO3	An ability to draw the location map, contour map using various surveying equipment.	

Course Name: Lab : Surveying		Course Code: CV2254
CO1	An ability to work in a team to carry out a survey of a small area using appropriate methods.	
CO2	An ability to describe the observation, computation and adjustment of a Traverse to carry out basic survey computation and adjustment.	
CO3	An ability to understand the angle and distance measurement; and differential, profile, cross-section, and topographic leveling procedures and apply them to field conditions.	

Course Name: Structural Analysis		Course Code: CV2255
CO1	An ability to understand basic concepts of structural analysis.	
CO2	An ability to apply various methods of structural analysis to analyze different types of structures.	
CO3	An ability to express results of forces generated in structure with diagrams.	

Course Name: Lab: Structural Analysis		Course Code: CV2256
CO1	An ability to understand various types of strain gauges and to measure the strain in beam.	
CO2	An ability to find the deflections in truss analytically and graphically.	
CO3	An ability to determine the horizontal thrust of different types of arches.	
CO4	An ability to understand the various properties of beam.	
CO5	An ability to understand the behavior of the column, curved member and portal frame.	

Course Name: Transportation Engineering		Course Code: CV2257
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CO1	An ability to understand basic concepts of transportation and traffic engineering.
CO2	An ability to understand concepts of geometric design, construction and maintenance of road pavements.
CO3	An ability to understand importance of various tests conducted on highway materials.
CO4	An ability to understand basics of bridge and railway engineering

Course Name: Lab :Transportation Engineering		Course Code: CV2258
CO1	An ability to conduct various tests on aggregates and soil.	
CO2	An ability to conduct various tests on aggregates, bitumen and bitumen mix.	

Course Name: Fundamentals of Economics		Course Code: GE1312
CO1	Recognize consumer's behavior and analyze Market price	
CO2	Extrapolate operations in market with production constraints	
CO3	Describe the national income accounting and public finance	
CO4	Analyze international trade and institutions.	

Third Year: Semester V:

Course Name: OE I : Building Services Engineering		Course Code: CV1327
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CO1	An ability to understand relevance of services related to lighting, ventilation & acoustics & understand the methodologies, materials & equipment in this regards.
CO2	An ability to understand special installations in buildings such as electrical, air conditioning, heating & mechanical ventilation & related practices.
CO3	An ability to understand specifications & usage of mechanical installations like lifts, security systems etc. & special features required as per need.
CO4	An ability to understand causes of fires in buildings & their preventive and protective strategies

Course Name: OE I: Construction Techniques		Course Code: CV1329
CO1	An ability to understand the construction techniques to be used in the construction of building	
CO2	An ability to understand the demolition techniques, Importance of rehabilitation, Strengthening etc.	

Course Name: OE I : Environmental Management		Course Code: CV1325
CO1	Identify the scientific and social aspects of environmental issues.	
CO2	Understand the procedure of environmental protection by legislation.	
CO3	Understand the role of environmental management system in protecting the resources.	

Course Name: Reinforced Concrete Structures		Course Code: CV1331
CO1	An ability to understand the structural properties of steel and concrete and their applications in structural planning.	
CO2	An ability to acquire the knowledge about the basic methods of structural design.	
CO3	An ability to understand the analysis, design and detailing of RCC structural elements required for building.	
CO4	An ability to understand the concept and application of Prestressed concrete	

Course Name: Structural Analysis-I		Course Code: CV1307
CO1	An ability to understand the basic concept of structural analysis	
CO2	An ability to understand the behavior of structural components subjected to various loadings.	

CO3	An ability to understand various methods of analysis of structural elements.
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Course Name: LAB: Structural Analysis-I		Course Code: CV1308
CO1	An ability to understand various types of strain gauges and to measure the strain in beam.	
CO2	An ability to find the deflections in truss analytically and graphically.	
CO3	An ability to determine the horizontal thrust of different types of arches.	
CO4	An ability to understand the various properties of beam.	
CO5	An ability to understand the behavior of the column, curved member and portal frame.	

Course Name: Surveying-II		Course Code: CV1301
CO1	An ability to understand the importance of modern technique of surveying.	
CO2	An ability to understand and operate the modern Surveying equipment's	
CO3	An ability to understand basic concepts of GIS, GPS & Remote sensing	

Course Name: LAB: Surveying-II		Course Code: CV1302
CO1	An ability to measure distance by using tachometry	
CO2	An ability to plot Horizontal curve by using theodolite	
CO3	An ability to understand the rectangular coordinate system	
CO4	An ability to Understand (introductory level) geographic information systems and Global positioning system (GIS, GPS)	

Course Name: Transportation Engineering-I		Course Code: CV1304
CO1	An ability to understand concept of Geometric design of roads and various aspects of traffic engineering.	
CO2	An ability to understand various types of bridges and their design aspects.	
CO3	An ability to understand various traffic characteristics and analysis and use the data for road design.	
CO4	An ability to understand various Highway materials and their suitability under different conditions.	

Course Name: LAB: Transportation Engineering-I		Course Code: CV1305
CO1	An ability to conduct various tests on aggregates and study its desirable properties.	
CO2	An ability to conduct various tests on bitumen and understand its properties.	
CO3	An ability to perform the CBR value.	
CO4	An ability to perform Marshall stability of bituminous mixture.	
CO5	An ability to conduct traffic volume survey.	
CO6	An ability to understand about bridges and various components.	

Third Year: Semester VI:

Course Name: Fluid Mechanics – II		Course Code: CV1310
CO1	Students will be able to examine the fundamental principles of fluid mechanics and related applications.	
CO2	Students will be able to analysis of network and Estimate discharge, shear stresses, pressure drop, water losses, water hammer in pipe flow.	
CO3	Students will be able to estimate flow parameter and Design the most economical open channels for conveyance of water	
CO4	Students will be able to estimate and study the specific energy, slope, analyze flow profile, profile length, uniform flow, critical flow, gradually & Rapidly varied flow in open channel.	
CO5	Students will be able design and analyze the model to predict the performance of hydraulic structure, partially and fully submerged body.	

Course Name: Lab: Fluid Mechanics – II		Course Code: CV1311
CO1	An ability to determine the forces around the submerged bodies.	
CO2	An ability to carry out the head loss in pipes for design of pipe network.	
CO3	An ability to carry out analysis of water distribution network.	
CO4	An ability to determine velocity and sketch various profiles, back water length, hydraulic jump, roughness, concept of specific energy in open channels.	
CO5	An ability to determine the performance of hydraulic machines.	

Course Name: Lab : Seminar		Course Code: CV1314
CO1	An ability to utilize technical resources.	
CO2	An ability to understand information in detail for report writing.	
CO3	An ability to write and present report of associated work effectively.	

Course Name: PE I : Water Treatment		Course Code: CV1315
CO1	An ability to understand importance of water treatment	
CO2	An ability to analyse available data and design a water treatment unit.	

Course Name: PE I : Prestressed Concrete		Course Code: CV1316
CO 1	An ability to understand the basic concepts of prestressed concrete structures.	
CO 2	An ability to analyze the prestressed concrete structural elements.	
CO 3	An ability to design the prestressed concrete structural elements.	
CO 4	An ability to exercise the limit state of serviceability to prestressed concrete members.	

Course Name: PE I : Building Services		Course Code: CV1317
CO1	An ability to understand relivance of services related to lighting, ventilation & acoustics & understand the methodologies, materials & equipments in this regards.	
CO2	An ability to understand special installations in buildings such as electrical, air conditioning, heating & mechanical ventilation & related practices.	
CO3	An ability to understand specifications & usage of mechanical installations like lifts, security systems etc& special features required as per need.	
CO4	An ability to understand facilities necessary for physically handicapped and aged people.	

Course Name: PE I : Pavement Design		Course Code: CV1323
CO1	Students will be able to identify various types of pavement, design parameters and material characteristic for flexible and rigid pavements.	
CO2	Students will be able to analyze and design of flexible and rigid pavements for highway and airfields pavement.	
CO3	Students will be able to identify and refer various standards and specifications related to highway and airfields pavement.	
CO4	Students will be able to rectify various pavement distresses and their repair or maintenance strategies.	

Course Name: Steel Structures		Course Code: CV1332
CO1	An ability to understand effect of forces and its impact on structure	

CO2	An ability to identify the type of structure and its design methodology
CO3	An ability to utilize the application of Indian Standard code for design purpose.
CO4	An ability to design the simple, built up section and column bases.

Course Name: Geotechnical Engineering - II		Course Code: CV1333
CO1	An ability to understand & apply the fundamentals of earth pressure to earth retaining structure.	
CO2	An ability to understand & apply knowledge of stability of slopes and ground improvement techniques	
CO3	An ability to comprehend and utilize the geotechnical literature to establish the framework for foundation design.	
CO4	An ability to execute a site investigation for determination of soil properties and to develop good technical reporting and data presentation skills.	

Course Name: OE II: Elements of Earthquake Engineering		Course Code: CV1341
CO1	An ability to understand the necessity and importance of earthquake engineering	
CO2	An ability to understand the provision of IS code used for earthquake resistant design of structure	
CO3	An ability to understand provision for earthquake resistant design of structures as per Indian standard	
CO4	An ability to study of damages caused due to past earthquake in & outside India and remedial measures	

Course Name: OE II: Air Pollution and Solid Waste Management		Course Code: CV1342
CO1	Students will be able to Analyze the type, sources & effect of air pollutants.	
CO2	Students will be able to Determine and estimate the parameters affecting air pollution and various methods of measurement.	
CO3	Students will be able to Use various air pollution control equipments & pollution caused due to automobile exhaust and basics of noise pollution.	
CO4	Students will be able to Interpret the concepts of solid waste management, treatment and disposal methods.	

Course Name: OE II : Introduction to Finite Element Method		Course Code: CV1343
CO1	An ability to apply the steps required for FEM solution to variety of physical systems.	
CO2	An ability to create models for simple structures.	
CO3	An ability to solve engineering problems.	
CO4	An ability to extend the knowledge of the application of FEM to solve engineering problems.	

Fourth Year: Semester VII:

Course Name: Environmental Engineering-II		Course Code: CV1441
CO1	An ability to understand importance of effective collection and conveyance of sewage.	
CO2	An ability to understand methods of construction and maintenance of sewerage system including house drainage system.	
CO3	An ability to understand working of sewage treatment plant including difference with industrial wastewater treatment plant.	
CO4	An ability to understand importance of air pollution control including methods to control it.	

Course Name: PE II: Advanced Hydraulics		Course Code: CV1411
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CO1	Examine the fundamental principles of fluid mechanics and related applications.
CO2	Estimate and analyze various flow parameters, flow profiles and profile length in open channel.
CO3	Estimate time flow establishment for unsteady flow and the pressure develop in pipe by considering Rigid and Elastic water column theory.
CO4	Analyze the stability of surge tank

Course Name: PE II : Computer Application in Civil Engineering		Course Code: CV1459
CO1	An ability to understand the basic concepts of C Programming language	
CO2	An ability to develop computer programs for the solution of Civil Engineering problems.	
CO3	An ability to translate numerical methods into simple, reusable program modules	
CO4	An ability to develop good technical understanding & application with good presentation skills.	

Course Name: LAB: Computer Application in Civil Engineering		Course Code: CV1442
CO1	An ability to understand the basic concepts of C Programming language.	
CO2	An ability to develop computer programs for the solution of Civil Engineering problems.	
CO3	An ability to translate numerical methods into simple, reusable program modules.	
CO4	An ability to develop good technical reporting and data presentation skills.	

Course Name: PE II : Natural Resources Management		Course Code: CV1413
CO1	An ability to solve important natural resource management problems.	
CO2	An ability to describe planning and responsibilities taken by professional authorities.	
CO3	An ability to understand laws, policies & practice implementation for private and public resource owners and users.	
CO4	An ability to work on multiple environmental issues for a sustainability.	

Course Name: PE II : Traffic Engineering		Course Code: CV1410
CO1	An ability to understand different methods for measurement of spot speed, journey speed & running speed,	
CO2	An ability to understand different statistical methods which can be used in various analyses of traffic studies.	
CO3	An ability to understand design of rotary intersections, Parking& Accidents	
CO4	An ability to understand design of signals at various intersections considering practical problems.	

Course Name: Structural Analysis - II		Course Code: CV1402
CO1	An ability to understand the matrix methods of structural analysis and its applications.	
CO2	An ability to understand the flexibility matrix method and apply its application to beam structure.	
CO3	An ability to understand the stiffness matrix method and apply its application to pin jointed frame structure and beam structure.	
CO4	An ability to understand the column analogy method and apply its application to beam and frame structure.	
CO5	An ability to understand the moment distribution method and apply its application to frames with sway.	
CO6	An ability to understand the approximate method of analysis and apply its application to multistoried frame structures	

Course Name: LAB: Structural Analysis - II		Course Code: CV1403
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CO1	An ability to understand the effect of forces on structure.
CO2	An ability to develop and execute the Beam models in the software package without any error
CO3	An ability to develop and execute the Plane truss models in the software package without any error
CO4	An ability to develop and execute the Frame models in the software package without any error
CO5	An ability to compare the result between hand calculation (manual analysis) and output result of the software.
CO6	An ability to understand the application of software package and limitation of manual analysis

Course Name: Transportation Engineering-II		Course Code: CV1422
CO1	An ability to update and upgrade knowledge about transportation system in India	
CO2	An ability to design railway tracks, crossings	
CO3	An ability to avail information about development of air transportation in urban areas	
CO4	An ability to understand the construction of tunnel and advances in tunneling	

Course Name: Water Resource Engineering		Course Code: CV1410
CO1	An ability to understand water requirement for various crop pattern.	
CO2	An ability to understand parameters and procedures adopted in reservoir planning.	
CO3	An ability to understand the design of water conveyance system like canal.	
CO4	An ability to understand the analysis and design of various water retaining structures like weirs and dams.	

Fourth Year: Semester VIII:

Course Name: Estimating and Costing		Course Code: CV1442
CO1	An ability to understand the definitions in estimates of structures.	
CO2	An ability to develop the specifications and find out the quantities of materials in different items to prepare the estimate.	
CO3	An ability to workout the valuation and rent of civil engineering structures.	
CO4	An ability to workout the estimate and costing of building, road, hill road and canal.	
CO5	An ability to fill the tenders and carry out the construction of civil engineering structures.	

Course Name: Comprehensive Viva-Voce		Course Code: CV1424
CO1	An ability to collect information regarding only topic related in civil engineering	
CO2	An ability to present the information collected in the expected format	
CO3	An ability to express and communicate about the information collected	

Course Name: Project Phase-II (GEO)		Course Code: CV1425
CO1	Demonstrate a sound technical knowledge of their selected project topic.	
CO2	Understand problem identification, formulation and solution.	
CO3	Design engineering solutions to complex problems utilizing a systems approach including ability to work in a team.	
CO4	Communicate effectively to discuss and solve engineering problems.	

Course Name: Project Phase-II (STR & CT)		Course Code: CV1425
CO1	Demonstrate a sound technical knowledge of their selected project topic.	

CO2	Understand problem identification, formulation and solution.
CO3	Design engineering solutions to complex problems utilizing a systems approach including ability to work in a team.
CO4	Communicate effectively to discuss and solve engineering problems.

Course Name: Project Phase-II (TRE)		Course Code: CV1425
CO 1	Demonstrate a sound technical knowledge of their selected project topic.	
CO 2	Understand problem identification, formulation and solution.	
CO 3	Design engineering solutions to complex problems utilizing a systems approach including ability to work in a team.	
CO 4	Communicate effectively to discuss and solve engineering problems.	

Course Name: Project Phase-II (WRE)		Course Code: CV1425
CO 1	Demonstrate a sound technical knowledge of their selected project topic.	
CO 2	Understand problem identification, formulation and solution.	
CO 3	Design engineering solutions to complex problems utilizing a systems approach including ability to work in a team.	
CO 4	Communicate effectively to discuss and solve engineering problems.	

Course Name: Extra / Co-Curricular / Competitive Examination		Course Code: CV1426
CO1	An ability to work initially as well as part of team to achieve set goals	
CO2	An ability to work to serve society and for betterment of society.	
CO3	An ability to communicate with people at large.	

Course Name: PE IV: Waste Water Treatment		Course Code: CV1427
CO1	An ability to understand the necessity of water quality management	
CO2	An ability to understand & design various treatment units for wastewater treatment	
CO3	An ability to understand Advanced waste water treatment	
CO4	An ability to understand treatment for Industrial waste.	

Course Name: PE IV : Earthquake Engineering		Course Code: CV1428
C O1	After completion of course the student will be able to understand the fundamentals and Importance of Earthquake Engineering	
C O2	Apply the basic principles for seismic design and construction of structures in accordance with the provisions of Indian Standard Codes.	
C O3	Understand various special aspects in Multi-story buildings	
C O4	Understand the social aspects of earthquake disaster, its management and damages caused due to past Earthquake in & outside India and remedial measures.	

Course Name: PE IV : Matrix Analysis of Structures		Course Code: CV1429
CO1	An ability to understand the stiffness method for analyzing statically indeterminate structures.	

CO2	An ability to model the behaviour of various structural elements and systems.
CO3	An ability to understand the effect of various loading and support conditions on structural elements and systems.
CO4	An ability to implement the computer program to analyse the structures.

Course Name: PE V: Water Transmission & Distribution Systems		Course Code: CV1432
CO1	Students will be able to examine the fundamental principles of fluid mechanics and related applications.	
CO2	Students will be able to estimate discharges in multy -reservoir system connected by pipes	
CO3	Students will be able to analyze the water distribution network by using various method	
CO4	Students will be able to design optimal diameter of rising main and water distribution network	
CO5	Students will be able to optimize water distribution network	

Course Name: PE V : Advanced Steel Design		Course Code: CV1433
CO1	An ability to understand different types of loading with respect to structural parameters.	
CO2	An ability to identify the type of structure and its design methodology.	
CO3	An ability to utilize the application of Indian Standard code for design purpose.	

Course Name: PE V: Maintenance & Rehabilitation Engineering		Course Code: CV1434
CO1	Students will know about different high quality materials for civil engineering applications.	
CO2	Ability to use materials for better and durable Civil Engineering Structures.	
CO3	Student will know about various smart materials.	

Course Name: PE III - New Engineering Materials		Course Code: CV1446
CO1	An ability to understand different high quality materials for Civil Engineering applications	
CO2	An ability to use engineering materials for better and durable Civil Engineering Structures	
CO3	An ability to utilize bio nondegradable materials for Civil Engineers	
CO4	An ability to understand the use of Composite sections for effective utilization of materials	

Course Name: PE III : Advanced R.C.C.		Course Code: CV1447
CO 1	An ability to understand the importance of various structures like multistoried buildings, bridges, water tanks and retaining walls.	
CO 2	An ability to analyze the structures for various types of loading conditions as per Codal provisions	
CO 3	An ability to design various structures such as bridges, tanks, and retaining walls.	

Course Name: PE III : Remote Sensing & GIS		Course Code: CV1448
CO1	Explain the principles of Geoinformatics.	
CO2	Describe the process of data acquisition of satellite images and their characteristics.	

CO3	Illustrate knowledge of remote sensing and GIS in different civil engineering applications.
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Course Name: PE III : Urban Transportation Planning		Course Code: CV1451
CO1	Students understood about traffic forecasting and its effects on environment.	
CO2	Students understood the necessity and importance of Traffic regulations.	
CO3	Students understood the necessity and arrangement of street lighting.	
CO4	Students understood about planning process and traffic problems.	

Course Name: PE IV : Advanced Survey		Course Code: CV1452
CO 1	The students will be able to understand the advantages of electronic surveying over conventional surveying methods.	
CO 2	The student will be able to handle and understand the working principle of Advanced Electronic Devices and total Station.	
CO 3	The student will be able to understand and to apply knowledge of GPS, GIS and Remote Sensing technique / data for required purpose.	

Course Name: PE V – Advanced Foundation Engineering		Course Code: CV1458
CO1	An ability to understand various approaches of determining bearing capacity of shallow foundation.	
CO2	An ability to predict and calculate settlement of foundation.	
CO3	An ability to design deep and machine foundations	