

Course Outcomes (COs): BCEE

Course Outcome	After successful completion of the course student should be able to
CO 101.1	Predict role of civil engineer in various projects by understanding the basic areas of civil engineer.
CO 101.2	Identify and categorize basic materials used for construction and illustrate the parts of structure.
CO 101.3	Understand the concepts of field survey and solve leveling problems.
CO 101.4	Describe the concept of waste management, sustainable development, EIA and basic concepts of environment.
CO 101.5	Understand Principles of Planning, building bylaws and solve FSI problems.
CO 101.6	Distinguish between Conventional and Non conventional energy sources and identify the sources, effects, remedial measures of water, air, land and soil pollution.

Course Outcomes (COs): Engineering Mechanics

Course Outcome	After successful completion of the course student should be able to
CO111.1	Use principles of statics, resolve the force, find resultant, apply varignons theorem. Calculate centroid of lamina and wire bends.
CO111.2	Solve problems on variable acceleration, constant acceleration, motion under gravity, dependant motion and relative motion. Apply newton's second law to bodies in rectilinear motion
CO111.3	Use basic concepts of kinematics and kinetics to bodies travelling in curved path in Cartesian coordinates, normal and tangential coordinates and polar coordinates.
CO111.4	Apply work energy principle, impulse momentum principle and conservation of energy for motion of particle.
CO111.5	Use concept of statics in equilibrium of concurrent, non-concurrent, parallel forces in plane. Solve the problems of simple and compound beam. To find the resultant of concurrent and parallel forces in space.
CO111.6	Analyse forces in cable, frame and truss by method of joints and method of sections. Understand concepts of block, belt and ladder friction.

Course Outcomes (CO): SOM

Course Outcome	After successful completion of the course students should be able to
C202.1	Compute different type of stresses in determinate, indeterminate, homogeneous and composite structures.
C202.2	Develop bending and shear stress diagram.
C202.3	Determine the torsional stresses and stresses due to strain energy for different loading conditions.
C202.4	Explain the concept of principal stresses due to combined loading and able to compare the values of analytical and graphical (Mohr's circle) method.
C202.5	Plot loading diagram, Shear Force Diagram (SFD) and Bending Moment Diagram (BMD).
C202.6	Analyze axially and eccentrically loaded column

Course Outcomes (CO): SURVEYING

Course Outcome	After successful completion of the course students should be able to
C203.1	Correction for local attraction, dip, declination and calculation of true bearings .Draw plan or map of the existing permanent features on the ground by plane Table surveying,
C203.2	use of dumpy level, auto level, digital level and laser level in construction industry .determining reciprocal leveling, curvature and refraction corrections, distance to the visible horizon.
C203.3	Measure the horizontal angles by repetition and reiteration, vertical angles, measurement of deflection angles using transit theodolite . compute the consecutive and independent co-ordinates, adjustment of closed traverse by transit rule and Bowditch's rule, Gales traverse table.
C203.4	Apply principle of stadia tacheometry, fixed hair method with vertical staff to determine horizontal distances and elevations of points, finding tacheometric constants. Tacheometric contouring Use of Electronic Tacheometer (Total station) .
C203.5	Identify horizontal and vertical curves & Its application .Design the curve. Setting out the curve on field.
C203.6	Establishing of horizontal and vertical controls. setting out of buildings, survey for open traverse (roadway, railways, drainage lines, water lines, canals). Application of GPS, GLONASS, Galileo, GAGAN, BeiDou and their features, Segments of SBPS .

Course Outcomes (COs): GEOTECHNICAL ENGINEERING

Course Outcome	After successful completion of the course student should be able to
CO205.1	Determine index properties of soil like LL, PL and SL in laboratory, classify soils from each other, solve the problems on Index properties of soil
CO205.2	Find the permeability of soil in laboratory by using Constant head method and variable head method, concept of seepage and permeability, draw the flow net.
CO205.3	Understand the difference between compaction and consolidation, find OMC and MDD of soil by using Standard proctor test and Modified Proctor test
CO205.4	Determine shear strength of soil and shear strength parameters of soil by using, UCS test, Vane shear test, Direct shear test and Triaxial Shear test, to solve the problems of shear strength of soil.
CO205.5	Understand the concept of lateral earth pressure, understand At rest pressure, AEP and PEP, determine AEP and PEP by using Rankine's Earth pressure theory, Coulomb's Wedge theory, Culmann's Graphical method and Rehmann's Graphical method.
CO205.6	Understand the concept of Slope stability, Taylor's Stability number, understand the concept of landslide and environmental Geotechnology.

Course Outcomes (COs): HWRE

Course Outcome	After successful completion of the course student should be able to
CO301.1	Define Hydrology, and should be able to analyze precipitation data.
CO301.2	Understand Methods of Irrigation. Its Advantages and Disadvantages? And able to analyze duty delta for various crops.
CO301.3	Remember hydraulics of wells in confined and unconfined aquifers.
CO301.4	Explain the concept of Runoff. And remember theory of Hydrograph
CO301.5	Understand concept of Reservoir and its planning.
CO301.6	Understand the Various components of Lift Irrigation.

Course Outcomes (CO): IECT

Course Outcome	After successful completion of the course students should be able to
C302.1	Understand the Meaning and scope of Infrastructure Engineering.
C302.2	Understand the basic concept of the railway engineering with permanent way structure. Design the Super elevation, Equilibrium cant, Equilibrium speed, Maximum permissible limits for cant, Cant deficiency, Cant excess in rail. Calculate Speed on curves, Safe speed on curves using Indian railways formula only for fully transition curves,
C302.3	Necessity of mechanization. Apply Dewatering techniques- Well Point system, Vacuum dewatering, Electro osmosis. Application of prefabrication.
C302.4	Selection Criteria for of size & shape of tunnels. Types of Tunnel. Operations in tunneling like mucking, Drainage in tunneling- Pre drainage and permanent drainage, Ventilation in tunneling-temporary and permanent, Micro tunneling and trenchless tunneling
C302.5	Classify harbors & Docs. Explain the components of ports, types of Break waters, Different term like Tetra pod, Tri bar, Hexapod, Quay wall, Wet & dry dock, Floating dock, Wharves, Jetties,
C302.6	Identify construction Equipments & Machine use in industries like Dozers, Power shovels, Excavators, Loaders, Scrapers, Dumpers.

Course Outcomes (COs): FM-II

Course Outcome	After successful completion of the course student should be able to
CO305.1	Are you able to Understand Fluid flow around submerged object.
CO305.2	Can you able to Explain Depth Energy relationships in open Channel Flow.
CO305.3	Are you able to Understand concept of Uniform Flow in Open Channel and Hydraulic Jump.
CO305.4	Can you able to Calculate force and work done due to impact of jet on different surfaces and to understand working of Centrifugal pumps.
CO305.5	Are you able to Understand performance of Hydraulic turbines and Elements of hydropower plant.
CO305.6	Are you Familiar with Various methods of Gradually varied flow computations.

Course Outcomes (CO): TRE

Course Outcome	After successful completion of the course students should be able to
C401.1	Identify types of road pattern, able to know the policies of various road patterns, determination of road length, importance of traffic studies and its methods, traffic regulation and control devices-traffic signs.
C401.2	How to select highway alignment, find SSD, OSD, Design overtaking sight zone, how to provide SE at curve portion, design of various curve On road alignment, provision of drainage along the road sides.
C401.3	Identified the Traffic Characteristics, able to traffic engineering studies, could measure traffic flow and capacity, traffic regulation and control devices (signs, signals, islands, road markings); Accident studies, understand types of road intersections.
C401.4	Able to select the Materials used in Highway Construction and find the results of related tests - Soil subgrade and CBR Test, Marshall Stability Mix Design and Test, Stone aggregates, bituminous binders, bituminous paving mixes, viscosity based gradation of bitumen, differentiate Modified Bitumen (Cutbacks, Emulsions, Crumbed Rubber Modified Bitumen – CRMB, Polymer Modified Bitumen-PMB, Foamed Bitumen),
C401.5	Understand the flexible pavements – Computation of design traffic (Vehicle Damage Factor VDF, Lane distribution factor LDF, Traffic growth rate); stresses in flexible pavements. Rigid pavements- components and functions; factors affecting design; stresses in rigid pavements (ESWL); design guidelines
C401.6	Students able to understand the construction procedure of various road pavement and their components.

Course Outcomes (CO): DHS

Course Outcome	After successful completion of the course students should be able to
C402.1	Compute different type of stresses in dams and calculate its values
C402.2	Design the earthen dam with the requirements given below
C402.3	Analysis and design of arch dam
C402.4	Design and analysis of buttress dam
C402.5	Design and analysis of spillways with the IS Method
C402.6	What are the types of stilling basins, weirs etc

Course Outcomes (CO): AGERM

Course Outcome	After successful completion of the course students should be able to
CO404.1	Illustrate Distribution and Geological characters of Major rock formations of India. The study of Plate Tectonics and highlights of Seismic Zones of India.
CO404.2	Illustrate geohydrological characters and factors controlling various characters of rocks. Various water conservation techniques. Rock weathering conditions favorable for decomposition, disintegration, residual and transported soils.
CO404.3	Illustrate utility of various rock formations as construction material. Illustrative case studies. Influence of geological factors upon urban development & planning. Reclamation of abandoned grounds and mining regions, illustrative examples
CO404.4	Illustrate R.M.R., R.S.R., Q. system, Deer and Miller Methods of Geomechanical classifications of rocks. Calculate of R.Q.D.of given drilling data of drill hole.
CO404.5	Illustrate the strength and water tightness of rocks found at the dam, reservoir and percolation tank site. Causes of erosion of tail channel.
CO404.6	Illustrate variations in methodology of investigation for different types of tunnels for different purposes. Investigation for bridge foundation. Bridge foundation based on nature & structure of rock.

Course Outcomes (CO): IWRPM

C405.1	After successful completion of the course students should be able to
C405.2	Remember various water resources and various institutional frameworks for water.
C405.3	Understand water as finite resource, concept of green water, blue water etc.
C405.4	Understand concept of ground water recharge, drought forecasting, etc.
C405.5	Distinguish various water demands for Irrigation, Industrial, nuclear and thermal power plant.
C405.6	Understand various Social impact of water resources development such as management of rehabilitation & resettlement
C405.1	Describe watershed, role of GIS and remote sensing inn watershed management.

Course Outcomes (COs): Hydropower Engineering

Course Outcome	After successful completion of the course student should be able to
CO409.1	Understand different energy patterns in India, hydropower development in India.
CO409.2	Explain different types of hydropower plant.
CO409.3	Understand concept of connected load, maximum demand, plant capacity factor, diversity factor.
CO409.4	Explain different types of penstocks, intakes.
CO409.5	Understand performance of hydraulic turbines & elements of hydropower plant.
CO409.6	Calculate cost of electrical power.

Course Outcomes (CO): QSCT

Course Outcome	After successful completion of the course students should be able to
CO405.1	Define Estimate and Valuation? Do you Remember meaning of various terms of estimate? (M.S., Abstract sheet, Face Sheet, etc).
CO405.2	Explain PWD method and Center line Method? Are you able to Find out the Quantities of various items of works by using DSR?
CO405.3	Define various terms of Valuation?
CO405.4	Remember Specification, purpose and its types? Are you able to write specification for various item of works ? Do you know rate analysis?
CO405.5	Understand concept of Tender and its types? Can you able to prepare tender for load bearing OR RCC structure?
CO405.6	Familiar with Contracts and its various types? Do you know the role of Arbitrator, Its Qualities?