Vidya Jyothi Institute of Technology

(An Autonomous Institution)

(Approved by AICTE New Delhi & Permanently Affiliated to JNTUH)

Aziz Nagar Gate, C.B. Post, Hyderabad - 500 075

Department of Civil Engineering
R-15 Course Outcomes

I YEAR I SEM

C101	Course Name: English-I	Bloom's Taxonomy
CO	Year of Study: I YEAR I SEM	
CO1	Demonstrate real life skills in the light of literature.	3
CO2	Understand influential personalities, and practice human and professional values	2
CO3	Explain new versions of technology for effective use of human resources towards development and to avoid risks	2
CO4	Identify principles and values to build collaborative knowledge and to cultivate social responsibility	1
CO5	Enhance communication skills through grammar, vocabulary with emphasis on LSRW skills.	2

C102	Course Name: Mathematics-I	Bloom's Taxonomy
CO	Year of Study: I YEAR I SEM	
CO1	Understand the term rank and Elementary Transformations of a Matrix, System of Equations.	2
CO2	Compute Eigenvalues and corresponding Eigenvectors of a square matrix, finding Inverse and methods of Diagonalization	4
CO3	Evaluate the Mean value theorems and maxima and minima of functions of two variables	5
CO4	Evaluate of improper integrals by using beta, gamma functions and evaluation of double and triple integrals by tracing the region of integration	5
CO5	Apply Laplace transforms of various functions and solve the initial value problems by using Laplace transforms.	3

C103	Course Name: Engineering Physics-I	Bloom's Taxonomy
CO	Year of Study: I YEAR I SEM	
CO1	Analyze the crystal structures and identify defects in crystals	4
CO2	Explain the diffraction, interference and polarization phenomenon of light	2
CO3	Understand the basics of statistical mechanics and applications of LASERs in various fields	2
CO4	Interpret the significance of Magnetic materials	3
CO5	Explain fundamentals of Dielectrics and their applications	2

C104	Course Name: C Programming	Bloom's Taxonomy
CO	Year of Study: I YEAR I SEM	
CO1	Explain the basics of computers and its Generations	2
CO2	Solve problems using flowcharts, algorithms and programs	3
CO3	Develop programs on control structures.	6
CO4	Develop programs using Arrays, Strings and derived data types	6
CO5	Design programs on functions	5

Department of Civil Engineering
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C105	Course Name: Electrical Graphics-I	Bloom's Taxonomy CO
CO	Year of Study: I YEAR I SEM	
CO1	Analyze given solids and represent sectional views, developments and their intersections.	4
CO2	Represent and differentiate Isometric and Orthographic projections	3
CO3	Generate isometric and corresponding orthographic views of any given component.	2
CO4	Visualize and draw the perspective view of a given solid.	2
CO5	Appreciate the concepts of Computer Aided Drafting.	3

C106	Course Name: Engineering Mechanics -I	Bloom's Taxonomy
CO	Year of Study: I YEAR I SEM	
CO1	Understand and apply the concepts of force, moment and their resolutions.	2
CO2	Develop free body diagrams in system of forces.	6
CO3	Analyze and apply the concepts of friction.	4
CO4	Identify centroid for plane figures and centre of gravity for any given topology.	1
CO5	Calculate area and mass Moment of Inertia for given cross-sections.	3

C107	Course Name: C Programming Lab	Bloom's Taxonomy
CO	Year of Study: I YEAR I SEM	
CO1	Have Fundamental Concept On Basic Commands In Linux.	2
CO2	Write, Compile And Debug Programs in C Language	1
CO3	Formulate Problems and Implement in C Language.	3
CO4	Choose Control Structures and Arrays to Solve Computing Problems in Real-World	4
CO5	Implement Functions and Recursion	2

C108	Course Name: English Language Communication Skills Lab-I	Bloom's Taxonomy
CO	Year of Study: I YEAR I SEM	
CO1	Facilitate computer-aided multimedia instruction enabling individualized and independent language learning.	2
CO2	Improve accent and intelligibility in pronunciation of English through Ice breaking and JAM sessions	4
CO3	Use vocabulary, glosses and pronunciation for appropriate usage of the target language.	3
CO4	Develop learners' communicative ability through frequent exchange of ideas and discussions.	6
CO5	Explain the concepts of verbal and non-verbal skills of communication useful in day-to- day life	2

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C109	Course Name: Engineering Physics Lab	Bloom's Taxonomy
CO	Year of Study: I YEAR I SEM	
CO1	Understand the practical concept of stationary waves using Meld's apparatus	2
CO2	Study the mechanical properties of material using Torsional pendulum	2
CO3	Visualize the fundamental optical phenomenon like Interference, diffraction and Dispersion	4
CO4	Study the basic Electrical characteristics of LED, RC circuits	3
CO5	Identify the variation of magnetic field by Stewart and Gee's apparatus experimentally	1

C110	Course Name: Engineering Workshop	Bloom's Taxonomy
CO	Year of Study: I YEAR I SEM	
CO1	Study and practice on workshop tools and their operations.	1
CO2	Manufacture wooden and metallic components using carpentry and foundry respectively.	6
CO3	Join two or materials using welding equipment.	3
CO4	Fabricate ferrous components using blacksmith technique	2
CO5	Demonstrate skills on plumbing and machine shops trades.	3

I YEAR II SEM

C131	Course Name: English-II	Bloom's Taxonomy
CO	Year of Study: I YEAR II SEM	
CO1	Acquire the real life skills in the light of literature.	1
CO2	Develop managerial skills for successful careers. By making critical decisions	6
CO3	Demonstrate physical and mental fitness with true sportsman spirit.	3
CO4	Build collaborative knowledge and cultivate social responsibility.	2
CO5	Enhance communication skills through grammar, vocabulary with emphasis on LSRW skills.	2

C132	Course Name: Mathematics-II	Bloom's Taxonomy
CO	Year of Study: I YEAR II SEM	
CO1	Solve first order differential equations and their applications.	2
CO2	Identify different types of higher order differential equations and their applications in engineering problems	1
CO3	Apply Fourier series and defining it for various types of functions	3
CO4	Evaluating the Fourier transforms of functions of single variable	5
CO5	Justify integrals of functions or vector-related quantities over curves, surfaces, and domains in two- and three-dimensional space.	4

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C133	Course Name: Engineering Physics-II	Bloom's Taxonomy
CO	Year of Study: I YEAR II SEM	
CO1	Understand the principles of Quantum mechanics & free electron theory.	2
CO2	Differentiate the types of solids based on band theory of solids and to understand the applications of optical fibers in various fields.	4
CO3	Explain the basics of semiconductors and semiconductor devices	2
CO4	Explain superconductivity and their applications in modern technology	2
CO5	Identify the importance of Nanomaterial's in various fields	1

C134	Course Name: Applied Chemistry	Bloom's Taxonomy
CO	Year of Study: I YEAR II SEM	
CO1	Understand the operating principles and the reaction mechanisms of batteries and fuel cells.	2
CO2	Apply their knowledge for the protection of different metals from corrosion.	3
CO3	Apply the concept of adsorption in various industries	3
CO4	Apply the knowledge of fuels and lubricants in industry.	3
CO5	Understand the various applications of advanced engineering materials.	2

C135	Course Name: Engineering Mechanics-II	Bloom's Taxonomy
CO	Year of Study: I YEAR II SEM	
CO1	Analyze given system and find reaction forces in each member of Trusses.	4
CO2	Identify the rigid body motion to compute velocity and acceleration.	1
CO3	Understand the kinetics of rigid body in translation and rotation.	2
CO4	Analyze the motion of bodies with and without considering cause of motion. Appreciate and apply the concept of Work Energy method.	4
CO5	Analyze the free vibration concepts from the fundamentals of Simple Harmonic Motion.	4

C136	Course Name: Engineering Graphics-II	Bloom's Taxonomy
CO	Year of Study: I YEAR II SEM	
CO1	Analyze given solids and represent sectional views, developments and their intersections.	4
CO2	Represent and differentiate Isometric and Orthographic projections	5
CO3	Generate isometric and corresponding orthographic views of any given component.	6
CO4	Visualize and draw the perspective view of a given solid.	2
CO5	Appreciate the concepts of Computer Aided Drafting.	3

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R-15 Course Outcomes

C137	Course Name: English Language Communication Skills Lab-II/	Bloom's Taxonomy
CO	Year of Study: I YEAR II SEM	
CO1	Build the language proficiency in English with emphasis on LSRW skills.	2
CO2	Develop communication skills through various language learning activities.	6
CO3	Summarize the nuances of English speech sounds, stress, rhythm, intonation and syllable division.	2
CO4	Acquire and exhibit acceptable etiquette essential in social & professional settings.	2
CO5	Improve the fluency in spoken English and neutralize the mother tongue influence.	3

C138	Course Name: Engineering Physics /Applied Chemistry Lab	Bloom's Taxonomy
CO	Year of Study: I YEAR II SEM	
CO1	Experiment on Melde's and Torsional pendulum with knowledge in waves and mechanics	4
CO2	Visualize the fundamental optical phenomenon like Interference, diffraction and Dispersion	2
CO3	Identify the basic Electrical characteristics of LED, RC circuits	1
CO4	Apply Titrimetric analysis for estimating the quantity of the compound accurately.	3
CO5	Evaluate and record the physical properties like Viscosity and Surface tension	5

C139	Course Name: IT & Engineering Workshop	Bloom's Taxonomy
CO	Year of Study: I YEAR II SEM	
CO1	Understand the process of assembly/disassembly of computer parts.	2
CO2	Work on advanced concepts of Microsoft word software.	4
CO3	Appreciate the usage of advanced options in MS Excel and PowerPoint.	2
CO4	Apply basic electrical engineering knowledge for house wiring practice.	3
CO5	Fabricate components using tin smithy and fitting.	1

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R-15 Course Outcomes
B TECH - II YEAR I SEM

C201	Course Name: Numerical Methods	Bloom's Taxonomy
CO	Year of Study: II YEAR I SEM	
CO1	Develop skills in solving engineering problems involving Algebraic and transcendental equations.	4
CO2	Acquires the knowledge of interpolation in predicting future outcomes based on the present knowledge	3
CO3	Evaluating the Numerical Solutions for Integrals and Fitting of different types of curves to the given data	5
CO4	Understand the various Numerical Methods to solve Initial Value Problems.	2
CO5	To solve the initial and boundary value problems of differential equations which are essential in engineering applications.	3

C202	Course Name: Engineering Geology	Bloom's Taxonomy
CO	Year of Study: II YEAR I SEM	
CO1	Classify and compare different rocks and minerals across the construction site.	4
CO2	Identify and build the knowledge on main and most common igneous, sedimentary and metamorphic rocks encountered by foundations and sites.	2
CO3	Define And Interpret The Geological Structures In The Geological Maps And Cross Sections	1
CO4	Understand the importance of graphical studies and various geophysical methods.	2
CO5	Illustrate the factors which affect the dams, reservoirs and tunnels.	2

C203	Course Name: Strength Of Materials I	Bloom's Taxonomy
CO	Year of Study: II YEAR I SEM	
CO1	Examine stress – strain, elastic constants and strain energy.	2
CO2	Analyse the shear force and bending moment diagrams of beams and relationship between them.	3
CO3	Evaluate the flexural and shear stresses for various beam cross sections.	3
CO4	Calculate principal stresses and strains using analytical and graphical solutions for the safety using failure theories.	2
CO5	Determine the deflections of beams with various loadings using different methods.	5

C204	Course Name: Surveying	Bloom's Taxonomy
CO	Year of Study: II YEAR I SEM	
CO1	Evaluate the basic principles of surveying and its Classification.	2
CO2	Determine the contour points and their importance in surveying	3

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R-15 Course Outcomes

CO3	Determine various areas and volumes based on regular and irregular boundaries.	3
CO4	Understand the advancements in surveying.	2
CO5	Application of Theodolite in surveying and valuation of it with basic surveying	5

C205	Course Name: Environmental Science	Bloom's Taxonomy
CO	Year of Study: II YEAR I SEM	
CO1	Understand the importance of Ecosystem and its Resources.	2
CO2	Be aware on the Variety of Living organism and the need to conserve them.	3
CO3	Understand the impacts of Developmental Activities.	2
CO4	Understand the Environmental Policies, Management Plan and Regulations.	2
CO5	Sensitize on a Sustainable Future.	5

C206	Course Name: Fluid Mechanics	Bloom's Taxonomy
CO	Year of Study: II YEAR I SEM	
CO1	Understand the Concepts of fluid properties and the relationship between them and to obtain the principles of continuity, momentum, and energy as applied to fluid motions.	2
CO2	Differentiate various flow lines and to formulate the Continuity equation for One dimensional, Two dimensional and three dimensional flows.	4
CO3	Formulate the Euler's and Bernoulli's equation with practical applications, to determine the discharge over notches and weirs and to apply the Momentum equation for a pipe bend.	3
CO4	Evaluate the head losses in pipes, flow between parallel plates and to solve the pipe network problems.	4
CO5	Demonstrate Boundary layer concepts and to explain the separation of the boundary layer.	4

C207	Course Name: Survey Lab	Bloom's Taxonomy
CO	Year of Study: II YEAR I SEM	
CO1	Survey of an area using chains and tapes.	5
CO2	Determine the area of land by using a compass	4
CO3	Determine the area of a given field of plane table	4
CO4	Functioning of dumpy level and its applications in leveling.	5
CO5	Determine the contour points and their importance in surveying	4

Department of Civil Engineering

R-15 Course Outcomes

C208	Course Name: Engineering Geology Lab	Bloom's Taxonomy
CO	Year of Study: II YEAR I SEM	
CO1	To study the physical properties and identification of minerals referred under the theory.	1
CO2	Describe and identify the rocks referred under the theory.	2
CO3	Illustrate the Microscopic study of rocks.	2
CO4	Interpret and draw the sections for geological maps showing tilted beds, faults, unconformities etc.,	4
CO5	Solve the simple structural geological problems.	4

B TECH – II YEAR II SEM

C231	Course Name: Probability & Statistics	Bloom's Taxonomy
CO	Year of Study: II YEAR II SEM	
CO1	To differentiate among random variables involved in the probability models which are useful for all branches of engineering	3
CO2	Derive the relationship among a variety of performance measures using probability distributions	4
CO3	Acquire elementary knowledge of parametric and non-parametric tests and understand the use of observing state analysis for predicting future conditions	3
CO4	Identify and examine situations that generate using problems and able to solve the tests of ANOVA for classified data.	2
CO5	Apply proper measurement, Indicators and techniques of correlation and Regression analysis.	3

C232	Course Name: Structural Analysis I	Bloom's Taxonomy
CO	Year of Study: II YEAR II SEM	
CO1	Analyze propped cantilever, fixed beams for external loadings and support settlements.	4
CO2	Understand the concept of Slope deflection, moment distribution method and analysis of continuous beams.	2
CO3	Calculate the deflection of beams by different methods for determining slope and deflection and understand the concept of three hinged arches	5
CO4	Analyze the pin-jointed plane frames.	4
CO5	Draw the influence line diagram for moving loads and calculate critical stress resultants.	3

C233	Course Name: Strength of Materials II	Bloom's Taxonomy
CO	Year of Study: II YEAR II SEM	

Department of Civil Engineering
R-15 Course Outcomes

CO1	Realize the basic concepts of torsion and locate the bending stress	2
CO2	Identify the types of columns and calculate the failure load for various end conditions	3
CO3	Understand the basic concepts of direct and bending stresses and calculate the bending moment	2
CO4	Differentiate about thin and thick cylinders and calculate the various stresses	4
CO5	Determine the stresses due to Unsymmetrical bending of beams and locate the shear	5

C234	Course Name: Concrete Technology	Bloom's Taxonomy
CO	Year of Study: II YEAR II SEM	
CO1	Understanding the properties of cements and admixtures.	2
CO2	Analyse the properties of aggregates.	3
CO3	Evaluate the properties of fresh concrete.	4
CO4	Analyse the behavior of hardened concrete and durability of concrete.	2
CO5	Design the concrete mix using IS Code and describe the special concretes.	6

C235	Course Name: Hydraulics & Hydraulic Machinery	Bloom's Taxonomy
CO	Year of Study: II YEAR II SEM	
CO1	Explain the concept of different types of flows, designing of most Economical section of open channel & to understand the concept of specific energy	5
CO2	Demonstrate the concept of dimensional quantities and the application of similitude concepts in designing a model and prototype.	2
CO3	Understand the concept, working applications of impact of jets with the importance of Constructing velocity triangles.	2
CO4	Compare the design concept of Pelton, Francis and Kaplan turbines, Centrifugal pumps along with the most economical designs.	4
CO5	Determine the working mechanism of different types of the pumps with their important characteristic curves	5

C236	Course Name: Building Materials, Construction and Planning	Bloom's Taxonomy
CO	Year of Study: II YEAR II SEM	
CO1	Develop knowledge of material science and behavior of various building materials used in construction.	3
CO2	Provide procedural knowledge of the simple testing methods of cement, lime and Admixtures.	5

Department of Civil Engineering
R-15 Course Outcomes

CO3	List the building components and Importance of building services.	**1**
CO4	Classify Masonry and finishing work.	**3**
CO5	Applications of Building Bye Laws & formwork.	**4**

C237	**Course Name: Survey Lab II**	**Bloom's Taxonomy**
CO	**Year of Study: II YEAR II SEM**	
CO1	Evaluate horizontal and vertical angles by different methods using a theodolite	**5**
CO2	Assess heights and distances using trigonometric method.	**5**
CO3	Illustrate the principle for theory of errors for correction of measurement.	**2**
CO4	Assess heights and distances by using tachometric survey.	**5**
CO5	Determine area and remote height using a total station.	**5**

C238	**Course Name: Strength of Material Lab**	**Bloom's Taxonomy**
CO	**Year of Study: II YEAR II SEM**	
CO1	Predict the behavior of materials under impact, hardness, tensile and compressive loads	**6**
CO2	Determine elastic constants by flexural and torsion test.	**5**
CO3	Determine the spring constants under various loadings.	**5**
CO4	Understand the deflection of materials under bending	**2**
CO5	Understand basic material properties stress and strain	**2**

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R-15 Course Outcomes
B TECH - III YEAR I SEM

C301	Course Name: Managerial Economics and Financial Analysis	Bloom's Taxonomy
CO	**Year of Study: III YEAR I SEM**	
CO1	Describe the economic activities for profit earning and also understand the significance of demand and its forecasting	4
CO2	Evaluate the production function through the Cobb Douglas Production Function.	5
CO3	Design and implement different structures of market coverage how price is determined under different market structures.	6
CO4	Understand the Ratio analysis to give an idea about financial forecasting, financial planning, controlling the business and decision making.	2
CO5	Describe and demonstrate the concepts of capital budgeting and allocation of the resources through capital budgeting methods	4, 2

C302	Course Name: Design of Reinforced Concrete Structures	Bloom's Taxonomy
CO	**Year of Study: III YEAR I SEM**	
CO1	Understand the various design concepts and design a beam under flexure and draw the reinforcement details.	6
CO2	Design the beam under shear and torsion, Calculate the anchorage and development length and check the serviceability requirements for RC structural elements.	6
CO3	Analyze and solve various RC slabs and draw the reinforcement details	4
CO4	Classify short, long columns and draw the reinforcement details	2
CO5	Explore the design concept of footing & staircase.	3

C303	Course Name: Geo-Technical Engineering	Bloom's Taxonomy
CO	**Year of Study: III YEAR I SEM**	
CO1	Illustrate the soil formation and classification.	4
CO2	Explain the Hydrostatic effect in soil mass.	2
CO3	Illustrate the stress distribution mechanism and compaction in soil mass.	2
CO4	Illustrate the mechanism of consolidation.	2
CO5	Identify the Shear strength parameters through analytical and experimental approach.	5

C304	Course Name: Water Resources Engineering –I	Bloom's

Department of Civil Engineering

R-15 Course Outcomes

CO	Year of Study: III YEAR I SEM	Taxonomy
CO1	Describe the components in the hydrologic cycle and all hydrological processes and methods.	2
CO2	Analyze the flood analysis and its measurement by means of hydrograph.	4
CO3	Analyze the phenomenon of Ground water occurrence by means of aquifers.	4
CO4	Assess the methods of irrigation and its quality with help of duty delta relationship.	5
CO5	Design the canals by using standard theories.	6

Professional Electives – 1

C305	Course Name: Indeterminate Structural Analysis	Bloom's Taxonomy
CO	Year of Study: III YEAR I SEM	
CO1	Apply the methods of slope deflection and moment distribution to carry out the structural analysis of Continuous beams and Portal frames.	3
CO2	Analyze the continuous beams, portal frames by Kani's method and pin jointed frames by Castiglione's second theorem.	4
CO3	Evaluate the shear forces and bending moments in Two-Hinged arches and to execute secondary stresses due to rise of temperature and Elastic Shortening of rib.	5
CO4	Analyze the Multi-storey frames by approximate methods for gravity (vertical) and horizontal loads.	4
CO5	Understand the concept of Matrix method for the analysis of continuous beams and Pin jointed plane frames.	4

C306	Course Name: Groundwater Hydrology	Bloom's Taxonomy CO
CO	Year of Study: III YEAR I SEM	
CO1	Understand different types of aquifers and their characteristics	2
CO2	Analysis the pumping test data for different aquifers	4
CO3	Distinguish the surface and subsurface investigation methods of ground water.	4
CO4	Discuss the methods of artificial recharging of ground water.	6
CO5	Evaluation and control of saline water intrusion.	5

C307	Course Name: Rock Mechanics	Bloom's Taxonomy
CO	Year of Study: III YEAR I SEM	
CO1	Illustrate the physical properties of rocks.	2
CO2	Explain the elastic behavior of rocks.	5

Department of Civil Engineering

R-15 Course Outcomes

CO		
CO3	Describe the methods of laboratory testing of rocks.	3
CO4	Analysis the stress distribution matrix insitu and around the rock opening.	4
CO5	Apply the basic rock design principles in the tunneling design system.	3

Open Elective – 1

C308	**Course Name: Energy Management**	**Bloom's Taxonomy**
CO	**Year of Study: III YEAR I SEM**	
CO1	Understand the process of planning, initiating an energy management program, promoting, monitoring an energy conservation methods in any system.	2
CO2	Evaluate energy potential by conducting a systematic search of energy saving opportunities in different energy conservation schemes.	5
CO3	Understand and exploit the energy saving opportunities in an industry through efficient lighting management and power factor control of the electrical gadgets.	2
CO4	Understand the qualities and functions of Energy manager and language of energy manager.	2
CO5	Economic analysis through various evaluation methods such as depreciation, time value of money, risk analysis and replacement analysis.	4

C309	**Course Name: Non-Conventional Energy Source**	**Bloom's Taxonomy**
CO	**Year of Study: III YEAR I SEM**	
CO1	Realize the importance of renewable energy sources for energy planning.	3
CO2	Understand the value of solar energy potential and exploit the solar energy for real world applications.	2
CO3	Understand the potential of wind energy, types of wind mills, performance characteristics and Betz criteria.	2
CO4	Analyze the potential of both tidal and ocean thermal energies and learn the extraction methods.	4
CO5	Know the potential of Geothermal, biomass energies and learn relevant extraction methods.	2

C310	**Course Name: Basic Electronic & Instrumentation**	**Bloom's Taxonomy CO**
CO	**Year of Study: III YEAR I SEM**	
CO1	Summarize the concepts of different semiconductor devices with its characteristics.	3
CO2	Describe the fundamental concepts and basic principle of meters.	4
CO3	Categorize different transducers and their working principles	3

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CO4	Explain different bridges and understand how different physical parameters can be acquired.	2

C311	Course Name: Introduction to Microcontrollers and Application	Bloom's Taxonomy
CO	**Year of Study: III YEAR I SEM**	
CO1	Describe the architecture of 8051 with its special function registers.	3
CO2	Develop and analyze the programming concepts of 8051	4
CO3	Understand the various interfacing techniques pertaining to system design.	3
CO4	Express and infer advanced architectures using ARM Controllers.	2

C312	Course Name: Java Programing	Bloom's Taxonomy
CO	**Year of Study: III YEAR I SEM**	
CO1	Understand OOP concepts to apply basic Java constructs	2
CO2	Analyze different forms of inheritance and handle different kinds of file I/O	4
CO3	Evaluate the usage of Exception Handling and Multithreading in complex Java programs	5
CO4	Contrast different GUI layouts and design GUI applications	3
CO5	Construct a full-fledged Java GUI application, and Applet with database connectivity	4

C313	Course Name: Operating Systems	Bloom's Taxonomy
CO	**Year of Study: III YEAR I SEM**	
CO1	Understanding the operating system concepts and process management	2
CO2	Analyze process scheduling and synchronization.	4
CO3	Understand memory management concepts.	2
CO4	Illustrate File System implementation and Mass Storage Structure.	3
CO5	Analyze Deadlock mechanisms.	4

C314	Course Name: Total Quality Management in Engineering	Bloom's Taxonomy
CO	**Year of Study: III YEAR I SEM**	
CO1	Explore the quality framework in production and operational aspects.	3
CO2	Evaluate the role of quality in product design and analysis.	5
CO3	Analyze quality in process improvement and modern production	4

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	management tools.	
CO4	Analyze the requirements of quality management system.	**4**

C315	**Course Name: Geotechnical Engineering Laboratory**	**Bloom's Taxonomy**
CO	**Year of Study: III YEAR I SEM**	
CO1	Demonstrate the engineering properties the soil.	**2**
CO2	Illustrate the field bulk and dry density of cohesive and cohesion less soils.	**2**
CO3	Classify the Coarse grained soils based on sieve analysis test & a grain size distribution curve.	**2**
CO4	Compute the shear strength of cohesive and cohesion less soil.	**5**
CO5	Determine the permeability of coarse grained soil and fine grained soil by constant head permeability test and falling head method.	**5**

C316	**Course Name: Fluid Mechanics And Hydraulic Machinery Laboratory**	**Bloom's Taxonomy**
CO	**Year of Study: III YEAR I SEM**	
CO1	Examine the calibration of different flow meters.	**4**
CO2	Illustrate flow measuring devices used in pipes, channels and tanks.	**2**
CO3	Determine major and minor losses in pipes.	**5**
CO4	Analyze the energy equation for problems on in pipes flow.	**4**
CO5	Examine the performance characteristics of turbines and pumps.	**4**

B TECH - III YEAR II SEM

C331	**Course Name: Environmental Engineering**	**Bloom's Taxonomy**
CO	**Year of Study: III YEAR II SEM**	
CO1	Predict the population forecasting and test the quality of water.	**6**
CO2	Design the filter and apply disinfection practices for water treatment.	**6**
CO3	Design water distribution system and examine sewage.	**6**
CO4	Analysis and design sewerage system.	**4**
CO5	Design different units of sewage treatment plant and trickling filters.	**6**

C332	**Course Name: Steel Structure Design and Drawing**	**Bloom's Taxonomy**
CO	**Year of Study: III YEAR II SEM**	
CO1	Classify the types of connections and specifications as per IS: 800-2007.	**2**
CO2	Apply the provisions of IS: 800-2007 to design tension members.	**3**

Department of Civil Engineering

R-15 Course Outcomes

CO3	Analyze and design compression members.	4
CO4	Illustrate behaviour of beams and design strengths as per IS code.	2
CO5	Adapt IS code procedures to design welded plate girder.	6

C333	Course Name: Highway Engineering	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Summarize the road developments in India from different periods.	2
CO2	Apply the concept of geometric design in real time engineering.	3
CO3	Make use of parameters related to traffic studies.	3
CO4	Design & model the intersections with specific standards.	6
CO5	Evaluate the different pavement design methods using IRC standards.	5

C334	Course Name: Foundation Engineering	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Organize the preparation and programme of soil investigation.	3
CO2	Examine the earth pressure theories and stability of retaining walls.	2
CO3	Evaluate the bearing capacity of soil and allowable settlement.	2
CO4	Analyse the capacity and settlement of pile foundation.	4
CO5	Analyse the stability of finite and infinite slopes using various methods.	4

Professional Electives – 2

C335	Course Name: Ground Improvement Techniques	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Illustrate the several Ground modification mechanisms	2
CO2	Illustrate the Ground Improvement Techniques through mechanical approach.	2
CO3	Identify the different Hydraulic ground improvement techniques through Dewatering techniques.	3
CO4	Explain the quick settlement techniques through chemical and physical modification.	5
CO5	Distinguish the inclusion and confinement techniques of ground improvement.	4

C336	Course Name: Earthquake Engineering	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Quantify mechanical behaviour of earth's surface, seismic hazards and its effects.	4
CO2	Identify, formulate and solves engineering problems subjected to dynamic loading conditions.	3

Department of Civil Engineering
R-15 Course Outcomes

CO3	Understand the internal parameters of the structures for seismic design source.	2
CO4	Assess the design component or process to meet desired needs within realistic constraints.	6
CO5	Analyze and design the members for earthquake resisting parameters.	6

C337	Course Name: Building, Planning, Design and Drawing	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Identify various building components, conventional signs and symbols.	3
CO2	Illustrate the building bye-laws and the principles of planning.	2
CO3	Understand about the building services and safety.	2
CO4	Design and Sketch the plans of various types of buildings and detailing of doors, windows, etc.	6
CO5	Understand the elements of perspective drawing involving simple problems.	2

Open Elective – 2

C338	Course Name: Fundamentals of Nano Science Technology	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Understand the fundamental concepts of Nano science and Technology	2
CO2	Select appropriate synthesis route for production of different nanostructures.	2
CO3	Describe principles of operation and uses of various characterization techniques	3
CO4	Analyze the properties of nanomaterial's	4
CO5	Apply the Nanostructures for various engineering applications.	3

C339	Course Name: Principles of Electric Power Utilization	Bloom's Taxonomy CO
CO	Year of Study: III YEAR II SEM	
CO1	Understand terms and concepts of illumination	2
CO2	Apply the concepts of different electric lamps and good lighting Practices for artificial lighting systems.	3
CO3	Understands the methods of electric heating and welding	2
CO4	Understands the concepts of different electric traction systems and existing traction system in India.	2
CO5	Analyze the mechanics of train movement	4

C340	Course Name: Energy Auditing and Conservation	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	

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R-15 Course Outcomes

CO1	Realize the need for energy auditing and conservation. Get awareness on types of energy audit; represent energy flows and energy consumption in tabular and graphical methods.	3
CO2	Understand and exploit energy saving opportunities in energy efficient motors and power factor improvement methods.	2
CO3	Learn energy auditing and conservation opportunities in HVAC systems with respect to energy efficient buildings.	1
CO4	Analyze the economic viability with respect to real world problems using depreciation methods.	4
CO5	Know the check lists for energy conservation in boilers, heat pumps, cooling systems, compressors and fans.	2

C341	Course Name: Fundamentals of Embedded Systems	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Contrast the basics of embedded system with its application	4
CO2	Illustrate the components required for embedded system design.	3
CO3	Summarize the different development tool for embedded system	2
CO4	Relate the concepts of RTOS in real time programming	1
CO5	Outline the features of advanced buses of distributed data transfer system design.	3

C342	Course Name: Principles of Communications	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Understanding the fundamentals of communications	3
CO2	Summarize the different modulation techniques involved in analog Communication	2
CO3	Summarize the different modulation techniques involved in digital Communication	2
CO4	Identify the applications of various wired and wireless communications in real time.	3
CO5	Elaborate the fundamentals of satellite and optical communications.	2

C343	Course Name: Database Management Systems	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Design Entity-Relationship Model for enterprise level databases.	5
CO2	Develop the database and provide restricted access to different users of database and formulate the Complex SQL queries.	2
CO3	Analyze various Relational Formal Query Languages and various Normal forms to carry out Schema refinement.	4
CO4	Use of suitable Indices and Hashing mechanisms for real time implementation.	3
CO5	Analyze various concurrency control protocols and working principles of recovery algorithms	4

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C344	Course Name: Software Engineering	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Choose a process model to apply for given project requirements	2
CO2	Analyze and apply the framework activities for a given project	4
CO3	Design various system models for a given scenario	5
CO4	Design and apply various testing techniques	5
CO5	Understand metrics for Process and Products	3

C345	Course Name: Financial Institutions & Markets	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Explore Indian investment environment.	3
CO2	Evaluate available investment avenues.	5
CO3	Analyze the role of regulatory bodies in the Indian Financial system.	4
CO4	Identify recent trends and challenges in Indian banking sector	2

C346	Course Name: Computer Aided Drafting of Building Lab	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Assess the Software with aiding source.	5
CO2	Draft the Plan and Elevation & Sectional views of the buildings.	3
CO3	Develop the components of the building.	3
CO4	Replicate the detailing of framed and Industrial structures.	3
CO5	Interpret the isometric and orthogonal projection of buildings.	2

C347	Course Name: Advance English Communication Skills Lab	Bloom's Taxonomy
CO	Year of Study: III YEAR II SEM	
CO1	Develop sound communication skills in various situations with the help of (enriched) vocabulary.	6
CO2	Practice reading techniques for a faster and better comprehension.	2
CO3	Exhibit strong writing skills to express ideas effectively.	5
CO4	Demonstrate effective presentation skills.	3
CO5	Use appropriate verbal and non-verbal skills for a successful career.	2

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R-15 Course Outcomes
B.Tech IV YEAR I SEM

C401	Course Name: Estimating & Costing	Bloom's Taxonomy
CO	**Year Of Study : IV YEAR I SEM**	
CO1	Summarize the basic principal and standard methods for working out quantities in estimating.	2
CO2	Determine the earthwork estimate of buildings, roads and canals.	5
CO3	Estimate the rate analysis of the various items of work.	6
CO4	Understand the process of contracting for roads and buildings.	2
CO5	Evaluate the valuation of buildings and provide practical knowledge of standard specifications of items of building construction.	5

C402	Course Name: Water Resources Engineering-II	Bloom's Taxonomy
CO	**Year Of Study : IV YEAR I SEM**	
CO1	Estimate the capacity of reservoir, life of the reservoir and selection of type of dam along with its site.	6
CO2	Determine the forces on Gravity dam, practical profile, and limiting the height of Gravity dam with galleries.	5
CO3	Design the Earthen dam and spillways along with measures to control seepage through hydraulic structures.	6
CO4	Design the Diversion head work and its components along with weir, barrage, silt exclude and silt ejector.	6
CO5	Design the Canal falls and other regulatory works along with cross drainage work at required site.	6

C403	Course Name: Railways, Airports and Harbours Engineering	Bloom's Taxonomy
CO	**Year Of Study : IV YEAR I SEM**	
CO1	Define and understand the various components of railways.	2
CO2	Understand and solve the geometric elements needed for the design of permanent way.	2
CO3	Define, understand, and design the various components of the airport.	6
CO4	Define, understand the planning and requirements of a harbor.	2
CO5	Improve and Visualize the working of intelligent transportation system.	6

Course Code C404	Course Name: Finite Element Methods	Bloom's Taxonomy

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R-15 Course Outcomes

CO	Year Of Study : IV YEAR I SEM	
CO1	Explain plane stress-plane strain equations and develop displacement functions.	2
CO2	Analyze one-dimensional problems using stiffness matrix.	4
CO3	Examine the different elements based on continuity and compatibility.	4
CO4	Illustrate quadrilateral elements using nodal points and shape functions.	2
CO5	Determine displacements, strains and stresses for static loads.	6
C405	Course Name: Advanced Foundation Engineering	Bloom's Taxonomy
CO	Year Of Study : IV YEAR I SEM	
CO1	Identify the suitable bearing capacities theories for different foundation analysis.	2
CO2	Analyze the design of pile foundation.	4
CO3	Evaluate the of pressure theories in foundation design.	5
CO4	Analyze and design to sheet pile and cofferdam.	4
CO5	Examine and discuss the various expansive soil problems.	4

C406	Course Name: Solid Waste Management	Bloom's Taxonomy
CO	Year Of Study : IV YEAR I SEM	
CO1	Illustrate the hierarchical structure in solid waste management and a requirement for an integrated solution.	2
CO2	Apply the legal legislation related to solid waste management and make an economical analysis of the solid waste management system.	3
CO3	Identity route optimization for a solid waste collection and transport system.	2
CO4	Evaluate the subject from the technical, legal and economical points by learning of all terms related to general solid waste management.	6
CO5	Plan site selection for a landfill.	3

C407	Course Name: Remote Sensing & GIS	Bloom's Taxonomy
CO	Year Of Study : IV YEAR I SEM	
CO1	Understand the concepts of Photogrammetry and compute the heights of the objects using parallax.	2
CO2	Understand the principles of aerial Photogrammetry and remote sensing, Able to comprehend the energy interactions with earth surface features, spectral properties of water bodies.	2
CO3	Analyze the basic concept of GIS and its applications, able to work with GIS software in various application fields.	4

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R-15 Course Outcomes

CO4	Illustrate spatial and non-spatial data features in GIS and understand the map projections and coordinate systems.	2
CO5	Understand the application of vector and raster data structure to the real world, the importance of source map and learning the on-screen digitization.	2

C408	Course Name: Advanced Structural Design	Bloom's Taxonomy
CO	Year Of Study : IV YEAR I SEM	
CO1	Analyze and design of cantilever retaining wall.	4
CO2	Apply the provision of IS :3370-2009 to design water tank.	3
CO3	Apply the provision of IS 456-2000 for designing flat slab.	3
CO4	Adapt the provision of IRC 21-1987 to class AA loading to design T beam girder.	6
CO5	Summarize the force components and design principles of RCC Chimney.	2

C409	Course Name: Air Pollution and Control Methods	Bloom's Taxonomy
CO	Year Of Study : IV YEAR I SEM	
CO1	Find the sources, causes & effects of air pollution.	1
CO2	Understand the meteorological components and the plume behavior for atmospheric stability conditions.	2
CO3	Identify the types of equipments to control the particulates at sources.	2
CO4	Miimize the control measures of NOX, SOX and other gaseous emissions.	6
CO5	Examine the SPM, SOx, NOx and CO emission standards.	4

C410	Course Name: Water Resources Systems Analysis	Bloom's Taxonomy
CO	Year Of Study : IV YEAR I SEM	
CO1	Understand the concept of water resource systems and techniques involved in it.	2
CO2	Formulate the linear programming models and examine their application in water resource.	6
CO3	Measure the sensitivity of formulated models and revised simplex techniques.	5
CO4	Apply the dynamic programming for resource allocation.	3
CO5	Analyze various factors involved in water resource economics and compare the alternate principles of economics for analysis.	4

C411	Course Name: Industrial Waste Water Treatment	Bloom's Taxonomy
CO	Year Of Study : IV YEAR I SEM	
CO1	Define the Physical, chemical, organic and biological properties of industrial wastes.	2
CO2	Illustrate the Pre and primary treatment methods of wastewater.	2

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CO3	Explain the various methods for „Oil separation by floatation" while wastewater treatment process.	2
CO4	Distinguish the different types of Industrial Wastes.	4
CO5	Summarize the Common effluent treatment plant's location, design, and operation and maintenance problems.	2

C412	Course Name: Electrical & Hybride Vechicles	Bloom's Taxonomy
CO	Year of Study: IV YEAR I SEM	
CO1	Understand the components of electric vehicles and fundamentals of electric vehicles.	2
CO2	Summerize the types of batteries and principles of operation of Batteries.	2
CO3	Preceive the basic principles of electric motors which can be used in electric vehicles	2
CO4	Restate the transmission of the drive system and the components of the transmission.	2
CO5	Outline the concepts of hybrid vehicles and analyze the performance of hybrid vehicles.	2

C413	Course Name: Energy Storage Systems	Bloom's Taxonomy
CO	Year of Study: IV YEAR I SEM	
CO1	Preceive the Electrical Energy Storage Technologies.	2
CO2	Understand the needs of electric energy storage	2
CO3	Analyze the characteristics and features of energy from various sources.	4
CO4	Classify various types of energy storage and various devices used for the purpose.	3
CO5	Apply the same concepts to real time solutions like electric vehicles, smart Grid and SCADA etc.	3

C414	Course Name: Mat Lab	Bloom's Taxonomy
CO	Year of Study: IV YEAR I SEM	
CO1	Breakdown computational problems into a series of simple steps.	2
CO2	Create programs in the MATLAB language for engineering applications.	5
CO3	Apprise and get familiarized with the visualization techniques.	3
CO4	Formalized with different application tools required different area of the domain.	3
CO5	Expose to the most common algorithms and techniques that are the Building blocks of Mat lab	4

C415	Course Name: Circuit Simulation using PSPICE	Bloom's Taxonomy
CO	Year of Study: IV YEAR I SEM	
CO1	Describe circuits for PSpice simulation	2
CO2	Outline the types of DC TO AC and their output variable analysis.	2
CO3	Understand the response of transient analysis and obtain their output variable	2
CO4	Analyze and develop simulation circuit for different applications	4

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C416	Course Name: Information System for Engineers	Bloom's Taxonomy
CO	Year of Study: IV YEAR I SEM	
CO1	Understand the concepts of Information Systems.	2
CO2	Evaluate the design, development and security of Information Systems	5
CO3	Analyze the various modules in social issues while using Information Systems.	4
CO4	Analyze the issues in data security	4
CO5	Analyze the concept of ethics in information systems.	4

C417	Course Name: Web Design	Bloom's Taxonomy
CO	Year of Study: IV YEAR I SEM	
CO1	Create static web pages using HTML	2
CO2	Design styles for HTML web pages	5
CO3	Create interactive web pages using Javascript	4
CO4	Develop web applications using server side scripting language-PHP	3
CO5	Develop and analyze web applications with Java Server Pages	3

C418	Course Name: Fundamentals of Entrepreneurship	Bloom's Taxonomy
CO	Year of Study: IV YEAR I SEM	
CO1	Provide awareness about entrepreneurship	3
CO2	Develop idea generation, creative and innovative skills among students	4
CO3	Self motivate the students by making aware of the different opportunities by exploring themselves by discussing the successful growth/failure stories	2
CO4	Start an enterprise and design business plans are those suitable for funding by considering all dimensions of business.	2

C419	Course Name: Concrete & Highway Materials Lab	Bloom's Taxonomy
CO	Year Of Study : IV YEAR I SEM	
CO1	Examine the experimental strength of aggregate materials as per codal provisions.	4
CO2	Illustrate the stability & properties of bituminous materials & mixes by conducting tests.	2
CO3	Determine the properties of cement by conducting the test.	6
CO4	Define the workability of fresh concrete by conducting tests.	2
CO5	Estimate the strength of hardened concrete by conducting destructive and non destructive testing.	6

C420	Course Name: Environmental Engineering Lab	Bloom's Taxonomy

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CO	Year Of Study : IV YEAR I SEM	
CO1	Understand principles and their practical application in water treatment.	2
CO2	Determine physical, chemical and biological characteristics of water and wastewater.	6
CO3	Determine the optimum dose of coagulant.	6
CO4	Estimate the chloride, nitrate and iron content in water.	6
CO5	Summarize the solutions using titration, conductivity meter, pH meter, turbidity meter and DO meter.	2

C421	Course Name: Industry Oriented Mini Project	Bloom's Taxonomy
CO	Year Of Study : IV YEAR I SEM	
CO1	Interpret the literature and develop solutions for framing problem statement.	2
CO2	Select software techniques for identifying problems.	3
CO3	Analysis and test the modules of planned project.	4
CO4	Design technical report and deliver presentations.	6
CO5	Apply engineering and management principles to achieve project goals.	3

IV YEAR II SEM

C431	Course Name: Construction Management	Bloom's Taxonomy
CO	Year Of Study : IV YEAR II SEM	
CO1	Understand the behavioural aspect of entrepreneurs, various approaches of time management, their strength and weakness.	2
CO2	Apply the concepts of project management during the construction phase, project organization, project planning and control using CPM,PERT techniques.	3
CO3	Analysis various materials and equipment's for construction work.	4
CO4	Examine the on different types of contracts and specifications.	4
CO5	Outline the labour regulations and safety in construction.	2

C432	Course Name: Rehabilitation and Retrofitting of Structures	Bloom's Taxonomy
CO	Year Of Study : IV YEAR II SEM	
CO1	Understand the causes and prevention of deterioration in structures.	2
CO2	Identify the types of damages and the mechanisms of corrosion in steel reinforcement and fire induced damages.	3
CO3	Examine to inspect and assess the structures using techniques of visual inspection and NDT.	4
CO4	Estimate the structural damage and recommend suitable repair and strengthening methods.	6

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CO5	Apply the latest health monitoring and building instrumentation methods.	3

C433	Course Name: Pre-stressed Concrete Structures	Bloom's Taxonomy
CO	**Year Of Study : IV YEAR II SEM**	
CO1	Classify the concepts, principles, types and methods of PSC structures.	4
CO2	Evaluate the losses of PSC structures.	6
CO3	Analysis and design of PSC slabs and beams using IS:1343 (2012).	4
CO4	Explain transmission of prestressing force, end block analysis by different methods.	2
CO5	Analyse the stress distribution of composite beams and asses the deflection of beams.	4

C434	Course Name: Technical Seminar	Bloom's Taxonomy
CO	**Year Of Study : IV YEAR II SEM**	
CO1	Demonstrate the skills in identifying, analysing, and presenting a research topic.	2
CO2	Demonstrate the quality of knowledge gained from the literature survey on recent technologies.	2
CO3	Demonstrate the skills developed to communicate effectively on engineering activities with the engineering community.	2
CO4	Demonstrate ability to effectively manage time in presentation skills.	2
CO5	Design a technical report with the principal of ethics.	6

C435	Course Name: Major Project	Bloom's Taxonomy
CO	**Year Of Study : IV YEAR II SEM**	
CO1	Identity, Analyse and apply suitable current techniques and tools to solve a problem in the civil engineering domain and societal issues.	2
CO2	Function effectively in teams to accomplish a common goal.	4
CO3	Organise the technical report writing and communication effectively.	3
CO4	Extend in lifelong activity.	2
CO5	Define and analyse a problem to assess health, safety and legal issues.	4

C436	Course Name: Comprehensive Viva Voce	Bloom's Taxonomy
CO	**Year of Study: IV YEAR II SEM**	
CO1	Explain comprehensively to answer questions from all the courses.	3
CO2	Test Oral Presentation skills by answering questions in a precise and concise manner	2
CO3	Build confidence and interpersonal skills	4
CO4	Support the students to face interview both in the academic and the industrial sector	3
CO5	Improve placements and better performers in their future.	3