



TEEGALA KRISHNA REDDY ENGINEERING COLLEGE

(UGC-Autonomous)

Approved by AICTE, Affiliated by JNTUH, Accredited by NAAC- 'A' Grade

Medbowli, Meerpet, Balapur, Hyderabad, Telangana- 500097

Mob: 9393959597. Email: info@tkrec.ac.in, deanacademics@tkrec.ac.in



Department of CIVIL Engineering I B.Tech I Semester Course Outcomes

Course Name: Mathematics – I

Course Code: BS01		Academic Year: 2019-20
CO1	Write the matrix form of a set of linear equations and to analyse the solution of the system of equations.	
CO2	Reduce the Quadratic form to Canonical form.	
CO3	Describe the nature of sequence and series.	
CO4	Apply the mean value theorems.	
CO5	Calculate the extreme values of functions of two variables with / without constraints.	

Course Name:) ENGINEERINGPHYSICS

Course Code: BS02		Academic Year: 2019-20
CO1	Gain knowledge on mechanism of physical bodies upon the Action of forces in different coordinates	
CO2	Able to learn concepts of simple harmonic motion and apply their knowledge in various damped harmonic oscillators.	
CO3	Apply the knowledge of transmission and reflection of harmonic and Acoustic waves to analyze transmission laws and Absorption coefficient	
CO4	Understand the concepts of optics like interference and Diffraction	
CO5	Apply the concepts of lasers and fiber optics in Communication systems.	

Course Name: PROGRAMMING FOR PROBLEM SOLVING

Course Code: ES01		Academic Year: 2019-20
CO1	Built the algorithm for the given unsolved problem	
CO2	Apply the concept of arrays, strings, structures and pointers to find the solution for given problem	
CO3	Apply the various pre processor commands in a given different real time situation.	
CO4	Understand the dynamics of memory by pointers.	
CO5	Dissect the problem in sub function to develop modular reusable code.	

Course Name: ENGINEERING GRAPHICS

Course Code: ES02		Academic Year: 2019-20
CO1	Apply the principles of Engineering Graphics to create Engineering Drawings of various geometric constructions, conic sections, curves and scales as per BIS standards	
CO2	Construct orthographic projections for points, lines and planes in different quadrants and Auxiliary views.	
CO3	Draw the sectional views and true shape of sections of solids, by applying principles of projections.	
CO4	Draw the development of surfaces and intersections of solids in real time situations	
CO5	Develop isometric and orthographic views of the objects.	

Course Name:) ENGINEERING PHYSICS LAB

Course Code: BS03		Academic Year: 2019-20
CO1	Able to learn different types of waves on string. Determine the rigidity modulus of wire using Torsional pendulum	
CO2	Able to examine the formation of interference pattern using Newton's rings	
CO3	Able to learn dispersive power of prism and diffraction grating of light using spectrometer	
CO4	Able to interpret the characteristics of coupled oscillator, LCR and LASER circuits.	
CO5	Examine the bending losses and numerical aperture for different optical fiber cables.	

Course Name: PROGRAMMING FOR PROBLEM SOLVING LAB

Course Code: ES03		Academic Year: 2019-20
CO1	Formulate the algorithms for simple problems	
CO2	Translate given algorithms to C programs.	
CO3	Correct logical errors found during program execution	
CO4	Make use of pointers in different types, modularize the code with functions	
CO5	Apply appropriate sorting techniques for the given list of elements	

Course Name: ENVIRONMENTAL SCIENCE

Course Code: ES04		Academic Year: 2019-20
CO1	Explain the concept of ecological perspective and the value of the environment	
CO2	Value the significance of various natural resources and its management.	
CO3	Demonstrate a comprehensive understanding of the world's biodiversity and the importance of its conservation.	
CO4	Identify different types of pollution and their control measures, effective methods of waste management with best possible solutions.	
CO5	Develop an awareness about environmental laws and sustainable development	

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Department of CIVIL Engineering

I B.Tech II Semester Course Outcomes

Course Name: MATHEMATICS – II

Course Code: BS04		Academic Year: 2019-20
CO1	Determine different types of ordinary differential equations of first order	
CO2	Apply the concept of differential equation to real world problems.	
CO3	Apply the concept of multiple integrals to find areas, volumes.	
CO4	Evaluate the Centre of mass and gravity for cubes, sphere and rectangular parallelopiped.	
CO5	Calculate the line, surface and volume integrals and converting them from one to another.	

Course Name:CHEMISTRY

Course Code: BS05		Academic Year: 2019-20
CO1	Analyze microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces	
CO2	Measure various parameters of water and its significance in industrial and domestic purpose	
CO3	Make use of essential aspects of Electro chemistry and Corrosion in industry.	
CO4	Explain stereochemistry and synthetic aspects useful for understanding reaction pathways	
CO5	Apply the basic principles of various Spectroscopic techniques in chemical industry and medical field.	

Course Name: ENGINEERING MECHANICS

Course Code: ES05		Academic Year: 2019-20
CO1	Solve problems related to resultant of forces acting on a body and equilibrium of a body subjected to a system of forces.	
CO2	Solve problem of bodies subjected to friction and find Centre of Gravity	
CO3	Calculate moment of inertia of a given section.	
CO4	Solve problem on Particle dynamics and work kinetic energy	
CO5	Solve problem of D'Alembert's principle and its applications, work energy principle and kinetics of rigid body rotation	

Course Name:ENGINEERING WORKSHOP

Course Code: ES06		Academic Year: 2019-20
CO1	Apply different workshop trades like fitting,carpentry, foundry and welding.	
CO2	Practice workshop trades like Tim smithy, Blacksmithy.	
CO3	Apply suitable tools for different trades of engineering processes including drilling, material removing, measuring, chiseling.	
CO4	Apply basic electrical engineering knowledge for house wiring practice	
CO5	Demonstrate various machines, tools and their operations.	

Course Name: ENGLISH

Course Code: HS01		Academic Year: 2019-20
CO1	Use English Language effectively in spoken and written communication	
CO2	Comprehend the given texts and respond appropriately.	
CO3	Communicate confidently in various contexts and different cultures.	
CO4	Demonstrate basic proficiency in English including reading and listening comprehension, writing and speaking skills.	
CO5	Improve language proficiency to meet their academic and professional needs	

Course Name: ENGINEERING CHEMISTRY LAB

Course Code: BS06		Academic Year: 2019-20
CO1	An ability to analyze the quality of water by determining its chemical parameters.	
CO2	The synthesis of common drugs like Paracetamol and Aspirin	
CO3	Determination of rate constant of a reaction from concentration – time relationships.	
CO4	Determination of physical properties like adsorption and viscosity of lubricants	
CO5	Estimation of different types of qualitative and quantitative measurements of a given compound.	

Course Name: ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB

Course Code: HS02		Academic Year: 2019-20
CO1	Employ the nuances of English language through audio-visual experience and group activities	
CO2	Articulate a neutral accent of English for intelligibility by overcoming mother tongue influence.	
CO3	Develop the skill of using appropriate language in various speaking contexts	
CO4	Take part in oral presentations using formal language.	
CO5	Improve speaking skills with clarity and confidence which in turn enhance their interpersonal skills.	

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II B.Tech I Semester Course Outcomes

Course Name: PROBABILITY & STATISTICS

Course Code: BS07		Academic Year: 2019-20
CO1	Apply Statistical Methods and random variables for analyzing experimental data	
CO2	Apply concept of probability distributions to find out finite and infinite values	
CO3	Estimate Statistical Measures by using Statistical parameters.	
CO4	Able to calculate the Co-relation and co-Variance of random variables	
CO5	Apply the concept of Probability and random variables in solving given real time problems.	

Course Name: STRENGTH OF MATERIALS – I

Course Code: PC01		Academic Year: 2019-20
CO1	Calculate stresses, strains and strain energy for sections and conditions	
CO2	Calculate shear force and Bending Moment diagram for different types of beams with different loading conditions	
CO3	Calculate flexural and shear stresses for different sections of beams	
CO4	Calculate slope and deflection for different types of beams using different methods	
CO5	Calculate principal stresses and application of theories of failures.	

Course Name: FLUID MECHANICS

Course Code: PC02		Academic Year: 2019-20
CO1	Calculate fluid pressure.	
CO2	Calculate problems based on fluid kinematics and fluid dynamics.	
CO3	Calculate flow in pipes, notches and weirs.	
CO4	Determine loss of head, minor losses, power transmission through pipes and analysis of pipe network	
CO5	Determine flow in laminar and turbulent conditions.	

Course Name: ENGINEERING GEOLOGY

Course Code: PC03		Academic Year: 2019-20
CO1	Understand importance of geology in civil engineering and weathering of rocks.	
CO2	Understand about Mineralogy and Petrology	
CO3	Illustrate about structural geology and ground water.	
CO4	Demonstrate about earthquakes and geophysical studies	
CO5	Illustrate about geology of Dams, Reservoir and Tunnels.	

Course Name: SURVEYING AND GEOMATICS

Course Code: PS04		Academic Year: 2019-20
CO1	Calculate distance, directions using chains, tapes, prismatic compass and plane table	
CO2	Determine levels, areas and volumes using levelling instruments.	
CO3	Apply theodolite surveying for various calculations.	
CO4	Illustrate about curves, tachometric surveying and modern surveying methods.	
CO5	Explain Photogrammetry surveying.	

Course Name: SURVEYING LAB

Course Code: PC05		Academic Year: 2019-20
CO1	To understand the principle of surveying for civil Engineering Applications.	
CO2	To understand Calculation of areas, drawing plans and contour maps using different measuring equipment at field level.	
CO3	Apply radiation method, intersection methods.	
CO4	Apply principles of tachometric surveying	
CO5	Apply write a technical laboratory report.	

Course Name: STRENGTH OF MATERIALS LAB

Course Code: PC06		Academic Year: 2019-20
CO1	Configure & operate a data acquisition system using various testing machines of solid materials	
CO2	Compute and Analyze engineering values (e.g., stress or strain) from laboratory measurements	
CO3	Compute and Analyze deflection of material and Modulus of Rigidity.	
CO4	Compute and Analyze hardness of material and different forces acting on material	
CO5	Write a technical laboratory report	

Course Name: ENGINEERING GEOLOGY LAB

Course Code: PC07		Academic Year: 2019-20
CO1	Understands the method and ways of investigations required for civil engineering projects	
CO2	Identify the various rocks, minerals depending on geological classifications	
CO3	Learn to couple geologic expertise with the engineering properties of rock and unconsolidated materials in the characterization of geologic sites for civil work projects and the quantification of processes such as rock slides and settlement.	
CO4	Apply of outcrop patterns of different types of Rocksland forms	
CO5	Write a technical laboratory report	

Course Name: HS01) PROFESSIONAL AND ENGINEERING ETHICS

Course Code: HS01		Academic Year: 2019-20
CO1	The students will understand the importance of Values and Ethics in their personal lives and professional careers	
CO2	The students will learn the rights and responsibilities as an employee, team member and a global citizen.	

Course Name:QUANTITATIVE ANALYSIS – I

Course Code: HS02		Academic Year: 2019-20
CO1	To Understand and Practice Simplifications	
CO2	To Understand and Practice the Problems on Ages	
CO3	To Understand and Practice the Quadratic Equations	
CO4	To Understand and Practice arrangement and selection in their daily life.	
CO5	To Understand and Practice commercial mathematics.	

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Department of CIVIL Engineering

II B.Tech II Semester Course Outcomes

Course Name: BASIC MECHANICAL ENGINEERING FOR CIVIL ENGINEERS

Course Code: ES07		Academic Year: 2019-20
CO1	Understand types of Cams and Followers, Basic Materials and riveted joints.	
CO2	Understand the Working Principles of power transmitting elements and various industrial material equipment's.	
CO3	Understand Power generation, Refrigeration, modes and mechanism of heat transfer.	
CO4	Understand various manufacturing process, welding and casting.	
CO5	To understand about machine tools, operations of lathe, drilling, milling and grinding machines.	

Course Name: STRENGTH OF MATERIALS - II

Course Code: PC01		Academic Year: 2019-20
CO1	Calculate torsion for circular shafts and deflection of springs.	
CO2	Evaluate columns and struts for different types of loadings.	
CO3	Calculate direct and bending stresses for different sections and structures.	
CO4	Evaluate thin and thick cylinders for different stresses.	
CO5	Evaluate sections for unsymmetrical bending' s.	

Course Name: HYDRAULICS AND HYDRAULIC MACHINERY

Course Code: PC02		Academic Year: 2019-20
CO1	Apply knowledge of fluid mechanics in addressing problems in open channel flow and critical Flow	
CO2	Solve problems of gradually varied flow and rapidly varied flow in open channels.	
CO3	Apply dimensional analysis, the model, prototype and similitude conditions and turbo machinery for practical problems	
CO4	Apply the principles of Turbines.	
CO5	Illustrate about Centrifugal pumps and Hydropower engineering	

Course Name: BUILDING MATERIALS, CONSTRUCTION AND PLANNING

Course Code: PC03		Academic Year: 2019-20
CO1	Illustrate different types of Stones, Bricks, Tiles, Timber, Aluminum, glass, paints and plastics	
CO2	Explain about cement, concrete and admixtures.	
CO3	Demonstrate different types of Building components and services.	
CO4	Explain about Mortars, Masonry, finishing mortars and formwork.	
CO5	Illustrate about building planning and its bye-laws.	

Course Name: STRUCTURAL ANALYSIS - I

Course Code: PC04		Academic Year: 2019-20
CO1	Analyze different types of frames.	
CO2	Analyze different types of Arches.	
CO3	Analyze propped cantilever and fixed beams for different load conditions, supports and sections	
CO4	Analyze continuous beams and bay frames.	
CO5	Analyze structures using energy theorems and ILD for moving loads.	

Course Name: SURVEYING LAB

Course Code: PC05		Academic Year: 2019-20
CO1	To understand the principle of surveying for civil Engineering Applications.	
CO2	To understand Calculation of areas, drawing plans and contour maps using different measuring equipment at field level.	
CO3	Apply radiation method, intersection methods.	
CO4	Apply principles of tachometric surveying	
CO5	Apply write a technical laboratory report.	

Course Name :Basic Electrical and Electronics Engineering

Course Code: ES08		Academic Year: 2019-20
CO1	Solve electrical circuits using network laws and theorems.	
CO2	Analyze basic Electric and Magnetic circuits	
CO3	Teach different parts of a DC machine & understand its operation	
CO4	Demonstrate components of Low Voltage Electrical Installations	
CO5	Sketch the characteristics of diodes and various types of transistors.	

Course Name: HYDRAULICS AND HYDRAULIC MACHINERY LAB

Course Code: PC05		Academic Year: 2019-20
CO1	Describe the basic measurement techniques of fluid mechanics and its appropriate application.	
CO2	Interpret the results obtained in the laboratory for various experiments.	
CO3	Discover the practical working of hydraulic machines– different types of turbines, pumps, and other miscellaneous hydraulics machines.	

CO4	Compare the results of analytical models introduced in lecture to the actual behavior of real fluid flows and draw correct and sustainable conclusions.
CO5	Write a technical laboratory report.

Course Name: COMPUTER AIDED CIVIL ENGINEERING DRAWING

Course Code: PC06		Academic Year: 2019-20
CO1	Use the AutoCAD commands for drawing 2D & 3D building drawings required for different civil engineering applications.	
CO2	Plan and draw Civil Engineering Buildings as per aspect and orientation.	
CO3	Apply of 2D and 3D plan	
CO4	Present drawings as per user requirements and preparation of technical report Course.	
CO5	Understand the steel roof truss and built-up sections	

Course Name:Basic Electrical and ElectronicsEngineering Lab

Course Code: ES09		Academic Year: 2019-20
CO1	Solve electrical circuits using network laws and theorems.	
CO2	Analyze basic Electric and Magnetic circuits	
CO3	Teach the working principles of Electrical Machines	
CO4	Demonstrate components of Low Voltage Electrical Installations	
CO5	Sketch the characteristics of diodes and various types of transistors	

Course Name: GENDER SENSITIZATION LAB

Course Code: HS03		Academic Year: 2019-20
CO1	Students will have developed a better understanding of important issues related to gender in contemporary india.	

CO2	Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
CO3	Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
CO4	Students will acquire insight into the gendered division of labour and its relation to politics and economics.
CO5	Students will develop a sense of appreciation of women in all walks of life.

Course Name: QUANTITATIVE LOGICAL AND REASONING

Course Code: BS03		Academic Year: 2019-20
CO1	To understand and practice logical reasoning	
CO2	To understand and practice the different classifications	
CO3	To understand and practice different Sitting Arrangements, Data Sequences.	
CO4	To understand and practice the Non-Verbal Reasoning.	
CO5	To understand and practice the graphs.	

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Department of CIVIL Engineering

III B.Tech I Semester Course Outcomes

Course Name: ENVIRONMENTAL ENGINEERING

Course Code: PC01		Academic Year: 2019-20
CO1	Understand quality of water, water demand and sources.	
CO2	Illustrate water treatment and distribution.	
CO3	Illustrate about sewage collection and disposal process.	
CO4	Explain about waste water treatment plant.	
CO5	Explain about Air Pollution.	

Course Name: DESIGN OF REINFORCED CONCRETE STRUCTURES

Course Code: PC02		Academic Year: 2019-20
CO1	Understand IS456 Code provisions and Design of beams as per IS Code Provisions.	
CO2	Design shear, torsion, development length as per IS Code Provisions.	
CO3	Design Slabs and Staircase as per IS Code Provisions.	
CO4	Design columns as per the IS code provisions.	
CO5	Design footing as per the IS code provisions.	

Course Name: GEOTECHNICAL ENGINEERING

Course Code: PC03		Academic Year: 2019-20
CO1	Classify the Soils.	
CO2	Estimate Permeability, seepage, stresses under various loading conditions and flow-net characteristics	
CO3	Determine stress distribution in soil and illustrate compaction.	
CO4	Determine consolidation of soil.	
CO5	Determine shear strength of soil.	

Course Name: STRUCTURAL ANALYSIS - II

Course Code: PC04		Academic Year: 2019-20
CO1	Analyze continuous beams and bay frames by different methods.	
CO2	Analyze suspension bridges.	
CO3	Analysis of multistory frames by different methods.	
CO4	Analysis by matrix method.	
CO5	Analysis of influence lines for shear force and Bending moment.	

Course Name: ADVANCED STRUCTURAL ANALYSIS

Course Code: PE01		Academic Year: 2019-20
CO1	Analyze by matrix method.	
CO2	Solve by stiffness matrix method	
CO3	Analyze plane-truss, continuous beam, plane frame and grids by flexible methods.	
CO4	Analyze plane-truss, continuous beam, plane frame and grids by stiffness methods.	
CO5	Analysis of static condensation and sub structuring and shear walls.	

Course Name: WATERSHED MANAGEMENT

Course Code: PE02		Academic Year: 2019-20
CO1	Illustrate about watershed.	
CO2	Explain about Soil Erosion.	
CO3	Design water harvesting and groundwater recharge structures	
CO4	Explain about Artificial recharge.	
CO5	Illustrate about Reclamation of saline soils, micro farming, biomass management	

Course Name : TRAFFIC ENGINEERING

Course Code: PE03		Academic Year: 2019-20
CO1	Illustrate about traffic studies.	
CO2	Analysis of traffic studies.	
CO3	Determine capacity and LOS.	
CO4	Design signals and effective movement of traffic.	
CO5	Analyze the transportation system management	

Course Name: BRIDGE ENGINEERING

Course Code: PE05		Academic Year: 2019-20
CO1	Design the T beam bridge and substructures.	
CO2	Design the RCC Bridges.	
CO3	Design the steel bridges.	
CO4	Apply Hydraulic & Structural Design.	
CO5	Design bridge foundation.	

Course Name: ENGINEERING ECONOMICS AND ACCOUNTANCY

Course Code: HS05		Academic Year: 2019-20
CO1	Evaluate the economic theories, cost concepts and pricing policies.	
CO2	Understand the measures of national income, the functions of banks and concepts of globalization.	
CO3	Analyze the profitability of various projects using capital budgeting techniques.	
CO4	Apply the concepts of financial management for project appraisal.	
CO5	Understand accounting systems and analyze financial statements using ratio analysis.	

Course Name:GEOTECHNICAL ENGINEERING LAB

Course Code: PC06		Academic Year: 2019-20
CO1	Understand the limits	
CO2	Understand the field density and relative density	
CO3	Understand the specific gravity of soil grain size.	
CO4	Analyse the Permeability of soil	
CO5	Analyse the Proctor' s Compaction Test	

Course Name: ENVIRONMENTAL ENGINEERING LAB

Course Code: PC07		Academic Year: 2019-20
CO1	Understand about the equipment used to conduct the test procedures	
CO2	Perform the experiments in the lab	
CO3	Examine and Estimate water, waste water, air and soil Quality	
CO4	Compare the water, air quality standards with prescribed standards set by the local governments	
CO5	Develop a report on the quality aspect of the environment	

Course Name: INTELLECTUAL PROPERTY RIGHTS

Course Code: MC09		Academic Year: 2019-20
CO1	Realize the importance of IPR and the problems associated with IPR	
CO2	Know how to acquire trade mark rights and the registration process.	
CO3	Understand the copyright ownership issues, copy right registration, international copyright law, and how to file a patent.	
CO4	Differentiate between the genuine and false advertising, and clear understanding of trade secrets	
CO5	Get themselves with latest developments on IPR.	

Course Name: PERSONALITY DEVELOPMENT AND SOFT SKILLS

Course Code: MC10		Academic Year: 2019-20
CO1	Students will possess the personality development techniques and communication skills.	
CO2	Students will possess knowledge about leadership.	
CO3	Students will be able to acquire the skills to manage stress and conflict.	
CO4	Students will be able to acquire Problem Solving & Critical Thinking.	
CO5	Students will be able to acquire different resume preparation & Essay Writing Techniques.	

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Department of CIVIL Engineering

III B.Tech II Semester Course Outcomes

Course Name: HYDROLOGY AND WATER RESOURCES ENGINEERING

Course Code: PC01		Academic Year: 2019-20
CO1	Analyze hydro metrological data.	
CO2	Estimate abstraction from precipitation and runoff.	
CO3	Analyze hydrographs from given data.	
CO4	Compute yield from surface and subsurface basin.	
CO5	Analyse canal system and water logging	

Course Name: CONCRETE TECHNOLOGY

Course Code: PC02		Academic Year: 2019-20
CO1	Explain about cement and its characteristics.	
CO2	Explain about aggregates and its characteristics.	
CO3	Explain about fresh concrete and its properties.	
CO4	Explain about hardened concrete and its properties.	
CO5	Illustrate about mix design and special concretes.	

Course Name: TRANSPORTATION ENGINEERING - I

Course Code: PC03		Academic Year: 2019-20
CO1	Illustrate the importance of highways and its developments.	
CO2	Illustrate various geometric designs of Highways.	
CO3	Demonstrate about traffic engineering.	
CO4	Explain about tests and bitumen concrete mix design.	
CO5	Explain about tests and bitumen concrete mix design.	

Course Name: DESIGN OF STEEL STRUCTURES

Course Code: PC04		Academic Year: 2019-20
CO1	Design of connections and IS Code provisions.	
CO2	Design the tension members, compression members and column bases and joints and connections	
CO3	Analyze and design the beams including built-up sections and beam and connections.	
CO4	Identify and design the various components of welded plate girder including stiffeners	
CO5	Apply the roof trusses and design of structural members	

Course Name: REHABILITATION AND RETROFITTING OF STRUCTURES

Course Code: PE01		Academic Year: 2019-20
CO1	Illustrate maintenance and repair strategies.	
CO2	Demonstrate effect on serviceability and durability by various causes.	
CO3	Demonstrate various testing methods.	
CO4	Explain about various repair and retrofitting materials.	
CO5	Demonstrate about health monitoring techniques and its maintenance	

Course Name: GROUND IMPROVEMENT TECHNIQUES

Course Code: PE02		Academic Year: 2019-20
CO1	Demonstrate necessity of Engineering ground modifications.	
CO2	Demonstrate about mechanical ground modifications.	
CO3	Demonstrate about Hydraulic ground modifications.	
CO4	Demonstrate about Physical and Chemical ground modifications.	
CO5	Apply the Modification by Inclusions and Confinement.	

Course Name : PRESTRESSED CONCRETE

Course Code: PE03		Academic Year: 2019-20
CO1	Explain about general principles of PSC.	
CO2	Calculate losses of prestressed concrete as per IS Code provisions.	
CO3	Design of sections for flexure and shear as per IS Code provisions.	
CO4	Analyze transfer of prestress as per IS Code provisions.	
CO5	Analysis of composite beams and calculation of deflections	

Course Name: FINITE ELEMENT METHODS FOR CIVIL ENGINEERING

Course Code: PE03		Academic Year: 2019-20
CO1	Explain the Finite element method and its terminology.	
CO2	Explain about Finite element analysis of different elements.	
CO3	Finite element analysis of beam elements, stiffness matrix and shape functions.	
CO4	Analysis of 2D problems.	

CO5	Demonstrate various solution techniques.
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Course Name: DISASTER MANAGEMENT

Course Code:		Academic Year: 2019-20
CO1	Understanding Disasters, man-made Hazards and Vulnerabilities	
CO2	Understanding disaster management mechanism	
CO3	Understanding capacity building concepts and planning of disaster managements	

Course Name:ENVIRONMENTAL IMPACT ASSESSMENT

Course Code:		Academic Year: 2019-20
CO1	1. Identify the environmental attributes to be considered for the EIA study	
CO2	2. Formulate objectives of the EIA studies	
CO3	3. Identify the methodology to prepare rapid EIA	
CO4	4. Prepare EIA reports and environmental management plans	

Course Name: JAVA PROGRAMMING

Course Code: OE01		Academic Year: 2019-20
CO1	Demonstrate the concepts of OOPS using java.	
CO2	Implement complex programs using java standard API library.	
CO3	Build java programs using multithreading and exception handling techniques.	
CO4	Solve the problems using java collection framework.	
CO5	Develop interactive programs using applets and swings for the given problem.	

Course Name: OPERATING SYSTEMS

Course Code: 0E02		Academic Year: 2019-20
CO1	Demonstrate the fundamental components of a computer operating system.	
CO2	Identify appropriate scheduling algorithm for process management.	
CO3	Solve the situations occurred by deadlock to maintain appropriate process synchronization.	
CO4	Make use of page replacement algorithm for effective memory management.	
CO5	Apply the various system calls to enable the operating system services.	

Course Name: CYBER SECURITY

Course Code: 0E03		Academic Year: 2019-20
CO1	1. Identify various cybercrimes and attacks-global study.	
CO2	2. Study of various cybercrimes and bottlenecks.	
CO3	3. Apply critical thinking and problem-solving skills to detect current and future attacks on an organization's computer systems and networks.	
CO4	4. Study of various toolsinvolved in cybercrime.	
CO5	5. Apply critical thinking and problem-solving skills to detect current and future attacks on an organization's computer systems and networks.	

Course Name: HIGHWAY ENGINEERING & CONCRETE TECHNOLOGY LAB

Course Code: PC05		Academic Year: 2019-20
CO1	Categorize the test on materials used Civil Engineering Building & Pavementconstructions	
CO2	Perform the tests on concrete for it characterization.	
CO3	Design Concrete Mix Proportioning by Using Indian Standard Method.	
CO4	Examine the tests performed for Bitumen mixes.	

CO5	Prepare a laboratory report
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Course Name: COMPUTER AIDED STRUCTURAL DESIGN LAB - I

Course Code: PC05		Academic Year: 2019-20
CO1	Model the geometry of real-world structure Represent the physical model of structural element	
CO2	Perform analysis	
CO3	Interpret from the Post processing results	
CO4	Design the structural elements and a system as per IS Codes	
CO5	Analyse & Design of Roof Trusses	

Course Name: ADVANCED COMMUNICATION SKILLS LAB

Course Code: HS04		Academic Year: 2019-20
CO1	Develop LSRW skills and soft skills.	
CO2	Demonstrate the nuances of language through group activities and oral presentations.	
CO3	Build written communication skills to meet the needs of their academic and career endeavors.	
CO4	Take part in interviews with confidence thereby enhancing their employability skills.	
CO5	Choose appropriate language in their social and professional communication.	

Coordinator

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TEEGALA KRISHNA REDDY ENGINEERING COLLEGE

(UGC-Autonomous)

Approved by AICTE, Affiliated by JNTUH, Accredited by NAAC- 'A' Grade

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Department of CIVIL Engineering

IV B.Tech IISemester Course Outcomes

Course Name: ESTIMATION, COSTING AND PROJECT MANAGEMENT

Course Code: PC01		Academic Year: 2019-20
CO1	understand the technical specifications for various works to be performed for a project and how they impact the cost of a structure.	
CO2	quantify the worth of a structure by evaluating quantities of constituents, derive their cost rates and build up the overall cost of the structure.	
CO3	understand how competitive bidding works and how to submit a competitive bid proposal.	
CO4	An idea of how to optimize construction projects based on costs	
CO5	An idea how construction projects are administered with respect to contract structures and issues	

Course Name: WASTE MANAGEMENT

Course Code: PE01		Academic Year: 2019-20
CO1	Identify the physical and chemical composition of solid wastes	
CO2	Analyse the generation, storage, collection and handling techniques.	
CO3	Understand the techniques and methods used in transformation, conservation, and recovery of	
CO4	materials from solid wastes.	
CO5	Understand the landfill techniques.	

Course Name: CONSTRUCTION TECHNOLOGY AND MANAGEMENT

Course Code: PE02		Academic Year: 2019-20
CO1	Understand the fundamentals of project management.	
CO2	Identify construction facilities and equipment' s required.	
CO3	Develop project activity networks.	
CO4	Understand Building Information Modelling integrated approach.	
CO5	Understand about contract management techniques.	

Course Name: (20CE7PE03) AIR POLLUTION AND CONTROL

Course Code: PE03		Academic Year: 2019-20
CO1	Identify sampling and analysis techniques for air quality assessment.	
CO2	Understands about Atmospheric behavior with air pollution.	
CO3	Understands control mechanism of Air pollutants Apply plume dispersion modelling and assess the concentrations	
CO4	Understand process, working principle and equipment' s for control of gaseous pollutants.	
CO5	Understand vehicular pollution, indoor air pollution, their causes and preventive measures.	

Course Name: (20CE7PE04) ELEMENTS OF EARTHQUAKE ENGINEERING

Course Code: PE04		Academic Year: 2019-20
CO1	Discuss and explain causes and Theories on earthquake, seismic waves, measurement of earthquakes.	
CO2	Understand conceptual design, ductility and Seismic design requirements.	
CO3	Analyze design principles for Reinforced concrete buildings.	

CO4	Analyze design principles for Masonry Buildings.
CO5	Evaluate structural and non-structural walls and ductility requirement for earthquake resistant buildings

Course Name: REMOTE SENSING AND GIS

Course Code:		Academic Year: 2019-20
CO1	Describe different concepts and terms used in Remote Sensing and its data	
CO2	Understand the Data conversion and Process in different coordinate systems of GIS interface	
CO3	Evaluate the accuracy of Data and implementing a GIS	
CO4	Understand the applicability of RS and GIS for various applications.	

Course Name : AIR POLLUTION

Course Code:		Academic Year: 2019-20
CO1	Identify sampling and analysis techniques for air quality assessment	
CO2	Describe the plume behavior for atmospheric stability conditions	
CO3	Apply plume dispersion modelling and assess the concentrations	
CO4	Design air pollution controlling devices	

Course Name: (20CE7HS01) PROFESSIONAL PRACTICE LAW AND ETHICS

Course Code: HS01		Academic Year: 2019-20
CO1	understand professional Practice and Ethics.	

CO2	understand contract laws.
CO3	Arbitration, Conciliation and ADR (Alternative Dispute Resolution) system.
CO4	Labor and employment laws, RERA and NBC rules.
CO5	Intellectual property rights.

Course Name: (20CE7PC03) COMPUTER AIDED STRUCTURAL DESIGN LAB – II

Course Code: PC03		Academic Year: 2019-20
CO1	Analyze and design buildings for different load conditions using design software.	
CO2	Illustrate proper detailing of RCC elements using drafting software.	
CO3	Analyze and design overhead water tank.	

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Department of CIVIL Engineering

IV B.Tech II Semester Course Outcomes

Course Name: TRANSPORTATION ENGINEERING – II

Course Code: PE01		Academic Year: 2019-20
CO1	understand about railway engineering. design railway track geometry. understand about Airport engineering.	
CO2	design the runways and taxiways.	
CO3	Understands about ports and harbors	
CO4	understand about railway engineering. design railway track geometry. understand about Airport engineering.	
CO5	design the runways and taxiways	

Course Name: GROUND WATER HYDROLOGY

Course Code: PE03		Academic Year: 2019-20
CO1	Identify different fundamental equations and concepts as applied in the Groundwater studies.	
CO2	Analysis of steady flow ground water.	
CO3	Analysis of unsteady flow ground water.	
CO4	Illustrate surface and sub-surface investigation	
CO5	Illustrate control of saline water intrusion.	

Course Name: DISASTER MANAGEMENT

Course Code: PE05		Academic Year: 2019-20
CO1	Understands Disasters, man-made Hazards and Vulnerabilities	
CO2	Understands disaster management mechanism	
CO3	Understands capacity building concepts. Understands how to cope with disaster & industrial safety. Understand how to cope with disaster management.	
CO4	Understands how to cope with disaster & industrial safety.	
CO5	Understand how to cope with disaster management.	

Course Name: ADVANCED STRUCTURAL DESIGN

Course Code: PE07		Academic Year: 2019-20
CO1	Design retaining walls and check its stability.	
CO2	Design flat slabs and check for shear, deflections.	
CO3	Design of RCC Circular water tank.	
CO4	Design of RCC Bridges.	
CO5	Design of steel Gantry Girders	

Course Name: SAFETY IN CIVIL ENGINEERING PRACTICE

Course Code: PE08		Academic Year: 2019-20
CO1	understand about accident causes, regulations and safety training.	
CO2	illustrate various hazards in construction and preventive measures.	
CO3	illustrate working at heights and safety precautions.	
CO4	understand selection, operation, inspection, testing of construction machinery.	

CO5	understand safety in demolition work.
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Course Name: GREEN BUILDING TECHNOLOGY

Course Code:		Academic Year: 2019-20
CO1	Understands green building features, benefits, rating system and agencies involved.	
CO2	Understands site selection, planning, water conservation and efficiency	
CO3	Understands energy efficiency, wind and solar energy.	
CO4	Understands improvement of indoor environmental quality	

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