



Methodist College of Engineering and Technology

Department of Civil Engineering

Course Outcomes

AY: 2018-19

III Semester

Course Code	Course Name	Course Outcomes	Taxonomy
BS301MT	Engineering Mathematics - III	CO1 - Find solutions of first order and second order partial differential equations.	Remembering
		CO2 - Apply Fourier series to find solutions of partial differential equations.	Applying
		CO3- Solve complex and real integrals using residue theorem.	Applying
		CO4- Analyze a given function in the form of Fourier series	Analysing
		CO5- Determine the analyticity of a complex functions and expand functions as Taylor and Laurent series.	Evaluating
		CO6 - Classify types of partial differential equations and find their solution.	Understanding
ES321EE	Electrical Technology	CO1 - Analyze and solve problems of electrical circuits using network laws	Analysing
		CO2 - Construct the single-phase transformer and identify the losses of single-phase Transformer	Creating
		CO3 - Illustrate the different testing methods of transformer to analyse the system Transformer Performance	Understanding
		CO4 - Develop the circle diagram by using No-Load and Blocked Rotor Tests	Applying
		CO5 - Explain the speed control of induction motors	Understanding

		CO6 - Define the three phase circuits with Star / Delta connected balanced and unbalanced Loads	Remembering
ES321ME	Mechanical Technology	CO1 - Illustrate functioning of various Earth moving, excavating equipment's, hoists, cranes and various conveyor systems	Understanding
		CO2 - Apply suitable Equipment for a given function for various types of operating conditions like bucket type , size, boom length, loads, materials, Terrain etc.	Applying
		CO3 - Design conveyor system with optimum system for the given constraints.	Creating
		CO4 - Explain the functioning of various components of concrete and aggregate making equipment and as well have exposure to various pneumatic tools, crushers, compactors, screens, vibrators etc.	Understanding
PC301CE	Engineering Geology	CO1 - Explain the process of weathering, formation of rocks, soil and concept of geomorphology and how they relate with each other	Understanding
		CO2 - Identify the features of rocks like Igneous, sedimentary and metamorphic, geological structures like faults, folds, joints, In construction field to determine the problems that they may arise because of their presence.	Applying
		CO3 - Make use of site investigation techniques and scientific exploration methods in identification of geological features like ground water, properties and behaviour of rocks, soil types.	Applying

		CO4 - Examine rocks for their suitability in various construction applications.	Analysing
		CO5 - Investigate and determine the geological problems in dams, reservoirs and tunnels.	Evaluating
		CO6 - Explain the geological causes of earthquakes, tsunamis and landslides.	Understanding
PC302CE	Strength of Materials - I	CO1 - Explain the mechanical properties, elastic theories of behavior, stress-strain relationships of solid deformable bodies under various loadings (such as axial, bending, shear, combinations and multi-axial bending).	Understanding
		CO2 - Apply the key concepts, theories and mathematical fundamentals to derive mathematical relations involved in evaluation of stresses and strains in a solid material under various load types mentioned above.	Applying
		CO3 - Make use of mathematically formulated stress-strain relations based on elastic theories in solid mechanics to solve for the stresses, strains and associated quantities in solid bodies subjected to various loadings.	Applying
		CO4 - Examine the solid material behaviour subject to various load types loads by constructing and analysing diagrams such as Stress-Strain diagram, Mohr's Circle, SFD, BMD, bending & shear stress distributions, etc.	Analysing
		CO5 - Evaluate two or more geometries and/or materials to choose the more safe and economical design of a structural member.	Evaluating
		CO6 - Design simple structural members to be able to safely resist axial, bending, shear and combined stresses within the imposed factors of safety.	Creating

PC303CE	Fluid Mechanics - I	CO1 - Define the fluid properties and pressure measurement by using different manometers and Compressible flow. (like Specific weight, specific volume, specific mass, gravity, viscosity, bulk modulus)	Remembering
		CO2 - Evaluate the pressure measurement by using different types of manometers	Evaluating
		CO3 - Compare different types of flow patterns and different types of fluid flows	Analysing
		CO4 - Apply basic physics fundamentals and obtain the pressure drop in flow systems.	Applying
		CO5 - Evaluate the discharge of flow by using different flow meters	Evaluating
		CO6 - Solve Different parameters of Stagnation point, Velocity of sound wave for different process (Adiabatic process & Isothermal Process) And Stagnation pressure in compressible flow.	Applying
PC304CE	Building Materials and Construction	CO1 - Demonstrate the ability to know different building materials such as stones bricks, timber etc, properties and their application	Understanding
		CO2 - Compare different types of cement different grades, IS specification and types of mortar preparation, setting and curing	Understanding
		CO3 - Explain the importance of energy conservation , damp proof courses and fire protection in buildings	Understanding
		CO4 - Choose different materials used in construction of form works and scaffolding	Applying
		CO5 - Analyse types of joints in concrete and cracks in building.	Analysing
		CO6 - Explain different types of masonries and their applications	Understanding

PC305CE	Surveying - I	CO1 - Define the concepts and terminology involved in basic surveying, chaining, prismatic compass, plane table, levelling and contouring	Remembering
		CO2 - Define the various surveying instruments that are required to plot the plan/map of the field using linear and angular measurements	Remembering
		CO3 - Demonstrate the working principles of basic surveying instruments like chain, prismatic compass, plane table and dumpy level.	Understanding
		CO4 - Apply the knowledge of basic surveying in calculating lengths, bearings, plotting of given field work.	Applying
		CO5 - Analyse the errors incorporated during measurements by conducting checks and apply the necessary corrections.	Analysing
		CO6 - Apply the knowledge of levelling in finding the elevation differences, reduced levels of ground, areas & volumes of given field work	Applying
PC351CE	Engineering Geology Lab	CO1 - Define the features of geological maps, geotechnical maps, geomorphological maps, hydrogeological maps, and foundation geological maps at certain site locations	Remembering
		CO2 - Classify the minerals, rocks, geological structures	Understanding
		CO3 - Identify the physical properties of minerals, geological and geotechnical characteristics of rock.	Applying
		CO4 - Examine aerial photographs using stereoscopes to study landforms, vegetation and water bodies.	Analysing

		CO5 - Determine the specific gravity, porosity, water absorption of different rocks	Evaluating
		CO6 - Determine Vertical electrical sounding to identify the depth of water table and bedrock.	Evaluating
PC352CE	Surveying - I Lab	CO1 - Demonstrate the working principles and handling procedures of basic surveying instruments like chain, prismatic compass, plane table in finding out linear and angular measurements	Understanding
		CO2 - Make use of surveying equipment's in computing lengths, areas & bearings of given field work	Applying
		CO3 - Develop the plan of location by depicting various objects in the field using plane table	Applying
		CO4 - Demonstrate the levelling instruments and apply the knowledge of levelling in finding out the reduced levels of ground	Applying
		CO5 - Analyse the errors incorporated in a closed traverse during measurements and its adjustment by graphical method	Analysing
		CO6 - Make use of digital planimeter in finding the areas from the plans	Applying



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IV Semester

Course Code	Course Name	Course Outcomes	Taxonomy
BS423MT	Numerical Methods	CO1 - Find solutions of algebraic and transcendental equations by using different methods.	Remembering
		CO2 - Evaluate the eigenvalues of a matrix numerically	Evaluating
		CO3 - Evaluate double integrals using different methods	Evaluating
		CO4 - Develop an approximate interpolating polynomials for equal and unequal intervals.	Applying
		CO5 - Define the concepts of numerical differentiation and integration to calculate velocity, acceleration, area of the region	Understanding
		CO6 - Discuss ordinary and partial differential equations using numerical methods	Creating
PC401CE	Strength of Materials -II	CO1 - Estimate the Slope and deflection of beams subjected to different loading by adopting various methods.	Evaluating
		CO2 - Apply the key concepts, theories and mathematical fundamentals to derive mathematical relations involved in evaluation of slope and deflections in a beam under various load types mentioned above.	Applying

		CO3 - Determine the safe and economical section of a circular shaft.	Evaluating
		CO4 - Evaluate the deflection & stiffness of springs.	Evaluating
		CO5 - Make use of strain energy principles for beams and calculate the strain energy stored using various theorems and also analysis of continuous beams.	Applying
		CO6 - Formulate of equivalent length for long columns using Rankine's theory & safe load coming on the columns	Creating
PC402CE	Fluid Mechanics - II	CO1 - Define Reynolds number and classify the types of flows based on Reynolds number	Remembering
		CO2 - Explain the pressure drop in a given length of pipe due to friction in a pipe and compare Heigen poseuille with Darcy's equation and also solve problems of flow through pipes in parallel and series	Applying
		CO3 - Define critical period in case of water hammer phenomenon and compare gradual valve closure with sudden valve closure	Analysing
		CO4 - Explain Boundary layer types with their different thicknesses and give reason for boundary layer separation and apply the concept to calculate drag and lift forces on sphere, cylinder, flat plate etc.,	Applying
		CO5 - Compare pipe flow and channel flow and define most efficient channel section and construct velocity profiles and pressure profile diagrams	Analysing

		CO6 - Classify gradually varied flow profiles with different methods and explain difference between hydraulic jump and surge and also classify hydraulic jump based on Freuds number	Understanding
PC403CE	Surveying -II	CO1 - Explain the terminologies and concepts involved in modern surveying equipment's and technologies like theodolite, total station, remote sensing, GIS,GPS etc. and also defines the concepts of horizontal and vertical curves.	Understanding
		CO2 - Demonstrate the parts, working principles and applications of theodolite, EDM and total station instruments.	Understanding
		CO3 - Apply the knowledge of basic surveying in finding out Horizontal and vertical angles, traversing methods using theodolite instrument	Applying
		CO4 - Apply the knowledge of theodolite and basic trigonometry in finding heights of inaccessible points	Applying
		CO5 - Make use of knowledge of curves concept in surveying in setting out both horizontal and vertical curves for the purpose of roadway and railway alignment	Applying
		CO6 - Analyse the amount of closing error of a traverse after finding out the omitted measurements in traverse and computes the missing data	Analysing
PC404CE	Hydrology and Water Management	CO1 - Estimate the rainfall over a catchment area.	Evaluating
		CO2 - Evaluate the evaporation, infiltration and runoff hydrograph.	Evaluating
		CO3 - Assess different aquifer parameters influencing the groundwater occurrence	Evaluating

		CO4 - Apply statistical methods in the field of hydrological analysis	Applying
		CO5 - Compare and evaluate a number of methods for determining peak flows and flood hydrographs	Analysing
		CO6 - Estimate the ground water potential based on theoretical principles	Evaluating
MC916CE	Environmental Sciences	CO1 - Adapt Environmental ethics and verbally discuss environmental issues to attain sustainable development.	Creating
		CO2 - List out common and adverse human impacts on biotic communities, soil, water, and air quality and suggest sustainable strategies to mitigate these impacts	Remembering
		CO3 - Identify various levels, values and threats of biodiversity and biogeographical classification of India.	Applying
		CO4 - Elaborate social and environmental issues to prevent future damage of the environment.	Creating
		CO5 - Explain the importance of Environmental legislation policies.	Understanding
		CO6 - Categorize the types of environmental pollution and the various treatment technologies for the diminution of environmental pollutants and contaminants.	Analysing
HS401BM	Managerial Economics and Accountancy	CO1 - Illustrate the responsibility of a manager and fundamental concepts of Managerial Economics.	Understanding
		CO2 - Illustrate demand analysis and determinants of demand.	Understanding

		CO3 - Analyse production & markets and compute the future sales level.	Analysing
		CO4 - Illustrate the features, merits, uses & limitations of Pay back , ARR,NPV, PI & IRR methods of capital budgeting.	Understanding
		CO5 - Illustrate the Principles of accounting and prepare Journal, Ledger, Trial balance, manufacturing	Understanding
		CO6 – For-cast and compute the Break Even Points /profits /Profit Volume Ratios of the Enterprise	Applying
PC451CE	Material Testing Lab	CO1 - Appraise behavior of a ductile material under direct tension test, in addition to gaining knowledge on elastic properties of the material	Evaluating
		CO2 - Identify the importance of hardness of various metals like steel, brass, copper, aluminium etc. and would be able to compare the relative hardness of various engineering metals.	Applying
		CO3 - Perceive and formulate the compressive strength of different engineering materials so as o apply this knowledge in the safe design of buildings and structures.	Evaluating
		CO4 - Assess and understand the flexural properties of beams (simply supported, cantilever and fixed) made of different materials like wood, steel, copper etc. and this knowledge would help him in the design of engineering structures.	Evaluating

		CO5 - Interpret the application of tension and compression springs in practice and will understand the properties like stiffness, capacity, shear modulus etc. of the springs.	Understanding
		CO6 - Illustrate the impact properties of the materials like steel or concrete will help the student to compare the impact resistance capacity, energy absorption etc. of the material which is been put to use in structures which may undergo impact sometimes.	Understanding
PC452CE	Fluid Mechanics- I Lab	CO1 - Examine the variation of coefficient of discharge of Venturimeter and orifice meter	Analysing
		CO2 - Compare Coefficient of discharge of mouth piece with circular orifice	Analysing
		CO3 - Compare Coefficient of discharge of Rectangular notch with Triangular notch	Analysing
		CO4 - Classify different types of flows using reynolds apparatus	Understanding
		CO5 - Compare various losses in pipes and pipe fittings	Analysing
		CO6 - Show that coefficient of discharge is more than unity in Broad crested weir	Understanding
PC453CE	Surveying- II Lab	CO1 - Demonstrate the working principles and handling procedures of theodolite	Understanding
		CO2 - Construct the traverse using theodolite and balance using bowditch's method	Applying
		CO3 - Make use of theodolite in finding out horizontal and vertical angles and also in setting out horizontal curves	Applying

	<p>CO4 - Apply the knowledge of trigonometrical levelling in finding out reduced levels of elevated objects which are both accessible and inaccessible</p>	<p>Applying</p>
	<p>CO5 - Demonstrate the principles and uses of total station</p>	<p>Understanding</p>
	<p>CO6 - Make use of total station to determine elevation differences, reduced levels and areas of traverse</p>	<p>Applying</p>



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V Semester

Course Code	Course Name	Course Outcomes	Taxonomy
PC501CE	Reinforced cement concrete	CO1 - Define the characteristic strength of materials and partial safety factors for load and materials. Explain the design philosophies of working stress method and Limit state method.	Understanding
		CO2 - Apply the key concepts, theories and mathematical fundamentals to analyze and design the structural elements.	Applying
		CO3 - Analyze the moment capacity of structural elements. Design the structural elements for flexure, shear and torsion	Creating
		CO4 - Examine the serviceability and durability of structural elements	Analysing
		CO5 - Decide the safety of the design as per IS code specification to choose the more safe and economical design of a structural member.	Evaluating
		CO6 - Design simple structural members to be able to safely resist bending, shear, torsion, deflection and compression within the imposed factors of safety.	Creating
PC502CE	Theory of Structures - I	CO1 - Determine degree of static and kinematic indeterminacies of beams and frames and to analyze its responses under external load using Moment Distribution Method and plotting their responses in SFD and BMD	Evaluating

		CO2 - Perform analysis of Continuous beams and frames using Slope Deflection Method and plotting their responses in SFD and BMD	Analysing
		CO3 - Analyse Continuous beams and frames using Rotation Contribution (Kani's) Method and plotting their responses in SFD and BMD	Analysing
		CO4 - Apply strain energy principles for the displacements and Redundant forces of Trusses and displacements of beams and Frames.	Applying
		CO5 - Evaluate the stresses generated in determinate and indeterminate arches of various geometries by applying strain energy principles.	Evaluating
		CO6 - Evaluate , beams and frames using unit load, fictitious and virtual work method	Evaluating
PC503CE	Concrete Technology	CO1 - Identify the functional role of ingredients of concrete and apply this knowledge to mix design philosophy	Applying
		CO2 - Acquire and apply fundamental knowledge in the fresh and hardened properties of concrete	Understanding
		CO3 - Evaluate the effect of the environment on service life performance, properties and failure modes of structural concrete and demonstrate techniques of measuring the Non Destructive Testing of concrete structure	Applying
		CO4 - Develop an awareness of the utilisation of waste materials as novel innovative materials for use in concrete	Applying

		CO5 - Design a concrete mix which fulfils the required properties for fresh and hardened concrete	Remembering
		CO6 - Adapt the concepts of mix design according to American standards, British standards and Indian standards and comparison of standards and durability concepts for each type of mix design	Creating
PC504CE	Hydraulic Machines	CO1 - Illustrate dimensional analysis as a useful tool to solve fluid mechanics problem in real field	Understanding
		CO2 - Distinguish between distorted models and undistorted models	Analysing
		CO3 - Demonstrate impact of jet on different vanes	Understanding
		CO4 - Compare the performance of Hydraulic turbines including design aspect	Analysing
		CO5 - Classify functional aspects of centrifugal pump	Analysing
		CO6 - Compare Centrifugal pump and reciprocal pump	Analysing
PC505CE	Transportation Engineering -I	CO1 - Plan the road network development and Highway planning in India	Applying
		CO2 - Distinguish various geometric elements of the roads based on the geographical conditions	Analysing
		CO3 - Analyze the traffic data and interpret the results	Understanding
		CO4 - Analyze various highway materials for their suitability for highway construction	Analysing
		CO5 - Analyze and Design flexible pavement	Analysing
		CO6 - Analyze and Design rigid pavement	Understanding

PC506CE	Environmental Engineering	CO1 - Estimate water quality and design the water supply Network.	Evaluating
		CO2 - Design the components of water treatment plant.	Creating
		CO3 - Estimate the sewage flow using different approaches through various sources.	Evaluating
		CO4 - Design the components of a simple sewerage system.	Creating
		CO5 - Impart the knowledge on sludge, solid waste treatment and disposal.	Applying
		CO6 - Design of septic tank, oxidation ponds and RBC and its components	Creating
PC507CE	Water Resources Engineering -I	CO1 - Define water rights and water quality management principles.	Remembering
		CO2 - Differentiate between Single and multipurpose projects, types of dams, types of irrigation tanks, types of spillways and spillway crest gates.	Understanding
		CO3 - Apply the knowledge of storage works and regulatory systems	Applying
		CO4 - Analyze the structural stability of different storage works	Analysing
		CO5 - Design different types of storage works and fixation of different levels of reservoirs (LWL, FRL, MWL), evaporation reduction techniques.	Applying
		CO6 - Apply the Design of different types of storage works	Applying

PE503CE	Infrastructure Engineering	CO1 - Explain the basic theory of infrastructure engineering, Defining, economic zone, Compare urban infrastructure and Rural Infrastructure projects, Summarize, the Infrastructure Projects in power Sector, Water Supply and Sanitation Sector, Transportation Sector.	Understanding
		CO2 - Explain Infrastructure Privatization, Compare public and private sector role in infrastructure development, List Problems with Infrastructure Privatization	Understanding
		CO3 - Explaining infrastructure planning and implementation, Identifying Risks related to infrastructure Projects.	Understanding
		CO4 - Asses the Social & Environmental impacts due to infrastructure Projects. List the Environmental laws.	Evaluating
		CO5 - Identify the strategies for successful Infrastructure project implementation, Risk Management framework For infrastructure projects.	Understanding
		CO6 - Explain , Role of Government in infrastructure implementation.	Understanding
PC551CE	Fluid Mechanics -II Lab	CO1 - Examine Mannings rugosity and chezys coefficient and estimate loss of energy in Hydraulic jump	Analysing
		CO2 - Compare impact of jet coefficient for different vanes flat, inclined and semi hemi spherical	Analysing
		CO3 - Find the overall efficiency of the centrifugal pump and draw operating characteristic curves	Remembering

		CO4 - Find the overall efficiency of the pelton wheel turbine and draw operating characteristic curves	Analysing
		CO5 - Compare prototype and model of Rectangular notch	Analysing
		CO6 - Inspect the critical slope of the channel for the given discharge in an open channel	Analysing
PC552CE	Transportation Engineering Lab	CO1 - Identify the grade & properties of bitumen	Applying
		CO2 – Create the awareness about various traffic studies in the field	Creating
		CO3 - Find out peak hour traffic & peak time for a given location on the road	Remembering
		CO4 - Find design speed, maximum speed & minimum speed limits of a location through spot speed	Remembering
		CO5 - Identify engineering properties of aggregate	Applying
		CO6 - Explain mix design of bitumen and CBR test etc.,	Understanding
PC553CE	Environmental Engineering Lab	CO1 - Explain about water and its importance to human survival.	Evaluating
		CO2 - Classify and analyze various quality parameters of raw water.	Analysing
		CO3 - Evaluate water assessment report.	Evaluating
		CO4 - Interpret type of treatments to purify waste water	Evaluating
		CO5 - Explain the different quality requirements for industrial waters and domestic waters	Evaluating
		CO6 - Estimate B.O.D and C.O.D of water and detect purity of water	Evaluating



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VI Semester

Course Code	Course Name	Course Outcomes	Taxonomy
PC 601 CE	Steel Structures	CO1 - Explain the connections in steel sections	Understanding
		CO2 - Explain the differences of welded and bolted connections	Understanding
		CO3 - Adopt IS codal provisions and basics of design of steel structures	Applying
		CO4 - Explain the design of different types of connections.	Evaluating
		CO5 - Estimate the design of tension, compression members, column bases and beams.	Applying
		CO6 - Explain the design of roof trusses.	Applying
PC 602 CE	Structural Engg Design and Detailing I	CO1 - Explain the behavior of soil pressure on combined footing and principles of design, understand the concepts of water tank design philosophies and bridge slab design Understanding the IRC loadings for the analysis of bridges according to IRC5: 2000 and IRC6: 2000.	Understanding
		CO2 - Analyse cantilever and counter fort retaining walls for different load conditions with limit state method according to IS 456: 2000	Analysing
		CO3 - Analyse water tanks, resting on ground and overhead water tanks according to IS3370: 2009.Design of staging of water tanks	Analysing

		CO4 - Design rectangular combined footing and understand the principles of design of trapezoidal footing with limit state method according to IS 456: 2000.	Creating
		CO5 - Design of cantilever type and counter fort type retaining walls. Design of staging of water tanks	Creating
		CO6 - Design of Deck Slab bridge and T-beam bridge with IRC loadings according to IRC21: 2000.	Creating
PC 603 CE	Theory of Structures-II	CO1 - Define various terminology involved in analysis of complex structural problems and indeterminate structures.	Remembering
		CO2 - Explain the basics of Engineering sciences in analysing structures subjected to moving loads.	Understanding
		CO3 - Apply basic concepts to analyze structures subjected to moving loads by drawing ILD's and compute its Reactions, Maximum Shear Force and Bending moment.	Applying
		CO4 - Analyze indeterminate structures through matrix methods of analysis (Flexibility and Stiffness methods), and Direct element approach.	Analysing
		CO5 - Determine the impact of cables and suspension bridges on structures.	Evaluating
		CO6 - Select FEM based Software's for design and analysis of Structures.	Remembering
PC 604 CE	Water Resource Engineering - II	CO1 - Define the different components of hydraulic structures.	Remembering
		CO2 - Explain the concepts of canals, weirs, seepage forces, canal falls types, regulators ; modules and cross drainage works.	Understanding

		CO3 - Make Use of the Garrett's diagram for design of canals, fixation of still level of head sluice, scouring sluice and crest level of weir and selection of cross drainage works.	Applying
		CO4 - Analyze the causes of failure of structure on permeable foundations, significance of exit gradient.	Analysing
		CO5 - Evaluate different possible hydraulic structures to choose the more safe and economical design for conveyance and storage of water for the needy.	Evaluating
		CO6 - Design of lined canals, Head regulators, vertical Drops, sloping glacis weir, surface & sub- surface flow, length- level- thickness of D/S apron , U/S & D/S Cut-off's, protection works, types of Cross Drainage works.	Creating
PC 605 CE	Soil Mechanics	CO1 - Explain the classification of soils	Understanding
		CO2 - Calculate the Permeability and seepage in Soil	Applying
		CO3 - Determine the Compaction characteristics in Soils	Applying
		CO4 - Determine the Shear strength in Soils	Applying
		CO5 - Explain and analyse the Earth pressures in Retaining Walls	Analysing
		CO6 - Explain and analyse the stability of finite and infinite Earthen slopes	Analysing
PC 606 CE	Transportation Engineering - II	CO1 - Describe the requirements of alignment and its surveys and explain the permanent way component with its functions	Understanding
		CO2 - Design Procedure of the railway track elements.	Applying
		CO3 - Present the techniques for construction for construction and maintenance of railway	Applying

		CO4 - Analyse the requirements of airport layout and explain aircraft characteristics	Analysing
		CO5 - Draw wind rose diagrams and determine the corrected runway length	Applying
		CO6 - Design and constructional procedure of airport.	Applying
PE 603 CE	Ground Improvement techniques	CO1 - Define terminologies in Ground improvement techniques and various materials used in it	Remembering
		CO2 - Explain the necessity of ground improvement and potential of a particular site to with stand the infrastructure.	Understanding
		CO3 - Identify the appropriate techniques in the improvement of in situ cohesive soils as well as Cohesion less soils	Applying
		CO4 - Analyze an in-situ site, Select the ideal method to attain desired levels of improvement.	Analysing
		CO5 - Evaluate the proposed plan of action in improving ground stability that substantiate the structural loads.	Evaluating
		CO6 - Propose a plan so that project being managed and executed to obtain required level of ground stability.	Creating
OE 601 ME	Industrial Robotics	CO1 - Interpret the mechanical structure of industrial robots, operational workspace, various types of grippers, design considerations.	Understanding
		CO2 - Compare the various types of grippers, sensors and Analyze the best and economical sensors for specific applications.	Analysing
		CO3 - Analyze forward and inverse kinematics problems for serial and parallel robots.	Applying

		CO4 - Summarize the techniques of robot vision, various programming languages and apply these techniques to build robots.	Applying
		CO5 - Explain about RGV and AGV , safety considerations and economic analysis of robots	Understanding
		CO6 - Categorize an industrial robot for a given purpose economically.	Analysing
OE 602 ME	Material Handling	CO1 - Explain working of various conveying systems, bulk solids handling systems, equipment used in each system and modern material handling systems that available in industry	Understanding
		CO2 - Identify the problems in manual work and factors influencing the selection of equipment.	Applying
		CO3 - Distinguish one material handling system with other along with their merits and demeris.	Analysing
		CO4 - Apply suitable material handling system such as pneumatic, hydraulic, mechanical or modern material handling systems for various types of materials.	Applying
		CO5 - Analyze different material handling systems and can implement effective material handling system which is ergonomic in nature.	Analysing
		CO6 - Estimate number of MH systems required, storage space, cost and maintenance	Evaluating
PC 651 CE	Soil Mechanics Lab	CO1 - Determine the Index properties of Soil	Evaluating
		CO2 - Determine the Atterberg's limits of fine grained Soil	Evaluating
		CO3 - Identify and classify the soil the soil	Analysing
		CO4 - Find out the Permeability of Soils	Analysing

		CO5 - Determine the Engineering properties of Soil	Evaluating
		CO6 - Determine the Shear Parameters of Soil by Direct Shear Test	Evaluating
PC 652 CE	Concrete Technology lab	CO1 - Determine fineness ,specific gravity and soundness of cement.	Evaluating
		CO2 - Determine the consistency and setting times of cement	Evaluating
		CO3 - Determine the compressive strength of cement.	Evaluating
		CO4 - Examine specific gravity of coarse aggregate and fine aggregate by sieve analysis	Evaluating
		CO5 - Demonstrate NDT and Apply the knowledge of NDT on concrete cubes	Understanding
		CO6 - Explain the nature and properties of materials in concrete mix design	Understanding
PW661CE	Survey Camp	CO1 - Apply surveying knowledge and tools effectively for projects	Applying
		CO2 - Develop knowledge of practical application of different survey works	Applying
		CO3 - Organise tasks, goals and responsibilities	Applying
		CO4 - Build interpersonal communication skills	Applying
		CO5 - Develop their leadership qualities as well as ability to work in teams	Applying
		CO6 - Create a report on topics based on work done during the survey camp	Applying



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VII Semester

Course Code	Course Name	Course Outcomes	Taxonomy
CE401	Structural Engineering and Design Detailing - II	CO1 - Explain the behavior of plate girder, gantry girder and bearings under various loading conditions (such as axial, bending, shear, combinations and multi-axial bending).	Understanding
		CO2 - Applying the given loading conditions to structural elements by selecting members from IS HAND BOOK number1 and checking them for stresses and deflections.	Applying
		CO3 - Make use of mathematically formulated stress-strain relations and basic strength of materials theories and formulae based on elastic theories and plastic theories to solve for the stresses, strains and associated quantities in girders subjected to various loadings.	Applying
		CO4 - Examine the structures elemental behaviour subjected to various load types by constructing and analysing diagrams such as Stress-Strain diagram, Influence line diagrams.	Evaluating
		CO5 - Evaluate two or more geometries and/or materials to choose the more safe and economical design of a structural member.	Evaluating
		CO6 - Design simple structural members to be able to safely resist axial, bending, shear and combined stresses within the imposed factors of safety.	Evaluating

CE402	Construction management & administration	CO1 - Explain the objectives and Functions of Construction Management	Understanding
		CO2 - Develop the time scheduling using PERT and CPM	Applying
		CO3 - Analyze the cost time in network planning,	Analysing
		CO4 - Estimate The optimistic time for the completion of a Project.	Creating
		CO5 - Classify types of contracts, List the advantages and disadvantages of types of contracts. Explain Tender forms documents etc, Understand project models – BOT, BOOT,PPP.	Understanding
		CO6 - Develop linear program for optimization, Create graphical method linear programming in construction.	Creating
CE403	Foundation Engineering	CO1 - Analyse and understand the stress distribution in soils	Analysing
		CO2 - Classify about the types of Foundations and to evaluate their Bearing capacity.	Understanding
		CO3 - understand and Practice the Design of various types of Pile Foundation and well foundation.	Understanding
		CO4 - Examine the necessity of Geotechnical Investigations	Analysing
		CO5 - Examine about the Foundation related aspects	Analysing
		CO6 - Categorize and to Maintain various records of Investigation for Foundations	Analysing

CE404	Water Resource Engineering -II	CO1 - Recall students about the structure of the dams, canals, spillways and cross drainage works.	Remembering
		CO2 - Differentiate between types of dams, reservoir, types of irrigation tanks, types of spillways and spillway crest gates.	Understanding
		CO3 - Apply the knowledge of storage works and regulatory systems.	Applying
		CO4 - Analyze the structural stability of different storage works.	Analysing
		CO5 - Design different types of storage works and fixation of different levels of reservoirs (LWL, FRL, MWL).	Applying
		CO6 - Apply math, science, and technology in the field of water resource Engineering and water power engineering	Applying
CE405	Concrete Technology	CO1 - Identify the functional role of ingredients of concrete for the production of high quality concrete	Applying
		CO2 - Appraise the fundamental knowledge of the fresh and hardened properties of concrete and apply this knowledge to mix design philosophy	Evaluating
		CO3 - Determine the relationship between various mechanical strengths of concrete & stress-strain of concrete	Evaluating
		CO4 - Make use of mineral and chemical admixtures to vary the properties of concrete	Applying
		CO5 - Design a concrete mix which fulfils the required properties for fresh and hardened concrete and apply statistical quality control techniques to prepare quality concrete	Creating

		CO6 - Develop new concrete using waste materials as novel innovative materials as per the requirement	Creating
CE408	Prestressed Concrete	CO1 - Demonstrate and recognize the importance of materials used in PSC work and to demonstrate the prestressing methods and techniques	Understanding
		CO2 - Explain the behaviour of a PSC beam section under given prestress and loads and identify the losses in prestressing.	Understanding
		CO3 - Extend the knowledge of analysis to design a PSC beam section for the given conditions.	Understanding
		CO4 - Analyze the Shear failure of a PSC beam and outline the procedure for safe shear design of PSC beams	Analysing
		CO5 - Determine the deflections which occur in PSC elements and Compare the short term and long term deflection	Evaluating
		CO6 - Assess the extent of bursting tension in the end block of a PSC beam and develop the method of strengthening the end block	Evaluating
CE431	Concrete Lab	CO1 - Determine fineness, specific gravity and soundness of cement	Evaluating
		CO2 - Determine the consistency and setting times of cement	Evaluating
		CO3 - Determine the compressive strength of cement.	Evaluating
		CO4 - Examine specific gravity of coarse aggregate and fine aggregate by sieve analysis	Evaluating
		CO5 - Demonstrate NDT and Apply the knowledge of NDT on concrete cubes	Understanding
		CO6 - Illustrate the nature and properties of materials in concrete mix design	Understanding

CE432	Computer applications Lab	CO1 - Demonstrate the software skills to solve civil engineering related analysis and design.	Understanding
		CO2 - Make use of software tool to analyze and design of RCC beams using limit state design	Applying
		CO3 - Analyze and solve problems related to hydraulic structures using software.	Creating
		CO4 - Solve the bearing capacity and other geotechnical related problems using software.	Applying
		CO5 - Analyze and solve problems related to hydraulic structures using software	Analysing
		CO6 - Solve the bearing capacity and other geotechnical related problems using software .	Creating
CE433	Project Seminar	CO1 - Choose a particular topic/ research paper for the project work and define the basic outline or summary of the topic / research paper.	Remembering
		CO2 - Explain the Literature review of selected topic/research paper.	Understanding
		CO3 - Asses various sophisticated technologies and methodologies available in the field of civil Engineering	Evaluating
		CO4 - Improve oral and written communication skills and draft a report on the study applying the basic knowledge of Civil Engineering.	Applying
		CO5 - Develop ethics by framing the required documentation without plagiarism	Applying
		CO6 - Make Use Of modern tools and utilities in making the presentation and Report.	Applying



Methodist College of Engineering and Technology

Department of Civil Engineering

Course Outcomes

AY: 2018-19

VIII Semester

Course Code	Course Name	Course Outcomes	Taxonomy
CE 451	Estimation and Specification	CO1 - Define and demonstrate a basic knowledge on different methods and types of estimates, tenders, contracts and their specifications.	Understanding
		CO2 - Outline the procedures adopted for tendering, allotment of contracts and different project delivery methods	Understanding
		CO3 - Make use of standard available procedures and forms like Measurement books, Muster roll, bill of quantities, Schedule of rates, Detailed specifications etc., in estimation	Applying
		CO4 - Analyze rates of different items of work based on specifications using Schedule of rates.	Analysing
		CO5 - Develop an estimate quantities of different items of work for buildings, RCC works and road works	Applying
		CO6 - Develop an estimate for different items of irrigation structures and different civil engineering structures.	Applying
CE 452	Disaster Mitigation and management	CO1 - Attain knowledge on various types, stages, phases in disaster with international & national policies & programmes with reference to the disaster reduction	Understanding
		CO2 - Illustrate various types of natural disaster, their occurrence, Effects, Mitigation and Management Systems in India	Understanding

		CO3 - Classify types of manmade disasters, their occurrence, Effects, Mitigation and Management Systems in India	Understanding
		CO4 - Explain the utility of geographic information systems (GIS), Remote sensing technology in all phases of disaster mitigation and management	Understanding
		CO5 - Explain the concepts of risk, vulnerability, warning and forecasting methods in disaster management	Understanding
		CO6 - Illustrate the role of education and training in disaster prevention.	Understanding
CE 453	Health Monitoring and Retrofitting of structures	CO1 - Define all terms related to Structural Health Monitoring (SHM), explain its importance, classify and contrast its methods and applications	Understanding
		CO2 - Explain the application of capacitive methods in Structural Health Monitoring of bridges, post-tension cables and historical monuments	Understanding
		CO3 - Explain and summarize the various methods of Non-Destructive Testing of concrete structures according to their applications in various situations and contexts.	Understanding
		CO4 - Describe, list and explain the various stages, methods and applications of condition survey and NDE of concrete structures.	Understanding
		CO5 - List and explain the various defects and deterioration mechanisms in concrete and describe the importance and methods of quality control of concrete structures	Understanding
		CO6 - List the various repair materials and methods of strengthening of structures and describe their methodology and applications	Understanding

CE 460	Infrastructure Engineering	CO1 - Explain the basic theory of infrastructure engineering, Define economic zone, Compare urban infrastructure and Rural Infrastructure projects, Summarize, the Infrastructure Projects in power Sector, Water Supply and Sanitation Sector, Transportation Sector.	Understanding
		CO2 - Explain Infrastructure Privatization, Compare public and private sector role in infrastructure development, List Problems with Infrastructure Privatization	Understanding
		CO3 - Explaining infrastructure planning and implementation, Identifying Risks related to infrastructure Projects.	Understanding
		CO4 - Interpret the design concepts and considerations in tall Buildings, List the characteristics of wind in concrete Buildings.	Understanding
		CO5 - Identify the strategies for successful Infrastructure project implementation, Risk Management framework For infrastructure projects.	Understanding
		CO6 - Explain , Role of Government in infrastructure implementation.	Understanding
CE 481	Seminar	CO1 - Choose a particular topic/ research paper from Civil Engineering and define the basic outline or summary of the topic / research paper.	Remembering
		CO2 - Explain the Literature review of selected topic/research paper.	Understanding
		CO3 - Asses various sophisticated technologies and methodologies available in the field of civil Engineering	Evaluating
		CO4 - Improve oral and written communication skills and draft a report on the study applying the basic knowledge of Civil Engineering.	Applying
		CO5 - Develop ethics by framing the required documentation without plagiarism	Applying

		CO6 - Make use of MS Office utilities in making the presentation and Report.	Applying
CE 482	Project	CO1 - Summarize in written form the literature study carried out with relevant data analysis, interpretation and problem identification for the selected project topic.	Understanding
		CO2 - Analyse the specific problem using engineering knowledge to arrive at a solution methodology	Analysing
		CO3 - Formulate an investigation procedure and analyze, interpret and synthesise the obtained data using a laboratory procedure and/ or modern engineering software and tools.	Evaluating
		CO4 - Draw valid conclusions and engineering solutions including design , recommendations or estimations, keeping in view the safety norms and regulations in codes of practice.	Creating
		CO5 - Discuss and communicate in oral and written forms, the technical contents of the project, observing professional ethical principles of documentation.	Understanding
		CO6 - Demonstrate individual and teamwork skills in carrying out and managing the project work	Applying