Vidyavardhini's college of Engineering & Technology Vasai(w)
Department of Civil Engineering
R - 2016

Program Outcomes

PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO12	Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes

At the end of the semester graduate engineers shall be able to:	
PSO1	Employ various approaches, ideologies, code of practice for devising and executing real world problems related to Civil Engineering
PSO2	Apply knowledge of equipment and computing tools to provide innovative ideas to become quality asset of society
PSO3	Implement societal, safety, security, ecological and managing skills necessary for efficient solution

Course Outcomes

At the end of the semester student will able to:	
FEC101	**Applied Mathematics I**
FEC101.1	To Understand and apply the basic concepts of complex numbers for problens in complex numbers ,hyperbolic functions and logarithmic functions
FEC101.2	To Understand and apply basic principals of partial differentiation and its applications.
FEC101.3	To apply principals of basic operations of matrices ,rank and echelon form of matrices to solve linear simultaneous equations.Apply numerical methods to solve transcendetal equations.
FEC101.4	To illustrate the knowledge of successive differentiation.
FEC102	**Applied Physics I**
FEC102.1	Explain the concept of crystallography and apply it to different crystal structures.
FEC102.2	Apply the concept of semiconductor physics in various electronic devices.
FEC102.3	understand the properties of dielectric and magnetic materials and their applications
FEC102.4	Learn the principles behind the Acoustic Design of a Hall and also methods of production of Ultrasonic and its Applications in various fields.
FEC103	**Applied Chemistry I**
FEC103.1	Analyze the quality of water and suggest suitable methods of treatment.
FEC103.2	Illustrate Thermosoftening & Thermosetting polymers with their moulding techniques.
FEC103.3	Apply the knowledge of lubricants their properties & mechanism to avoid frictional resistance. & Interpret various phase transformations using thermodynamics
FEC103.4	Demonstrate knowledge of portland cement.
FEC104	**Engineering Mechanics**
FEC104.1	Illustrate the concept of force, moment and apply the same along with the concept of equilibrium in two and three dimensional systems with the help of FBD.
FEC104.2	Demonstrate the understanding of Centroid and its significance and locate the same.
FEC104.3	Correlate real life application to specific type of friction and estimate required force to overcome friction.
FEC104.4	Establish relation between velocity and acceleration of a particle and analyze the motion by plotting the relation
FEC104.5	Illustrate different types of motions and establish Kinematic relations for a rigid body
FEC104.6	Analyze particles in motion using force and acceleration, work-energy and impulse-momentum principles
FEC105	**Basic Electrical & Electronics Engineering**
FEC105.1	To understand fundamentals of DC circuits and apply knowledge for analysing network theorems in DC circuits
FEC105.2	To learn the fundamentals and analyse single phase AC circuits
FEC105.3	To learn the fundamentals and analyse three phase AC circuits.
FEC105.4	To learn the basic operation and analyse the performance of single phase transformer.
FEC106	**Environmental Studies**
FEC106.1	Classify essential resources and control measures for sustainable development.
FEC106.2	Illustrate sources and effects of environmental decay.
FEC106.3	Select renewable sources of energy and technology essential for sustainable development.

FEC106.4	Apply the regulations of Environmental Protection Act and other bodies for perpetuation of environment.
FEL101	**Basic Workshop Practice I**
FEL101.1	Model different prototypes in the carpentry trade such as Cross cut lap joint, Tee lap joint, Dovetel lap joint.
FEL101.2	Model various basic prototypes in the trade of fitting such as Square, Hexagonal and V Male Female joint.
FEL101.3	Perform various basic House Wiring techniques while taking care of electrical safety.
FEL101.4	Perform various basic domestic plumbing operations such as pipe cutting, threading, fitting etc.
FEC201	**Applied Mathematics II**
FEC201.1	Apply various types of Numerical Methods for solving Differential Equations and Definite Integrals
FEC201.2	Solve and analyse the first order and higher order Differential Equations and its applications in the field of Engineering
FEC201.3	Evaluate various types of Integrals usig Beta and Gamma functions and DUIS
FEC201.4	Apply technique of Rectification to find the Arc length and Multiple Integration to find Area , Mass and Volume
FEC202	**Applied Physics II**
FEC202.1	Comprehend the concepts of interference & diffrcation and their applications
FEC202.2	Understand the working principles of optical fibre, laser & their applications in various tecnology
FEC202.3	Understanding the basics of electrodynamics and Maxwell's equation
FEC202.4	Asssimilate the knowledge of Nanotechnology and tools used like SEM,TEM & AFM
FEC203	**Applied Chemistry II**
FEC203.1	Identify different types of corrosion & suggest control measures in industries.
FEC203.2	Explain the knowledge of determining the quality of fuel and quantify the oxygen required for combustion of fuel.
FEC203.3	Illustrate composition, properties of alloys & properties & application of composite material..
FEC203.4	Illustrate the principles of green chemistry
FEC204	**Engineering Drawing**
FEC204.1	Apply the basic principles of projections in Projection of Lines and Planes
FEC204.2	Apply the basic principles of projections in Projection of Solids & Section of solids
FEC204.3	Apply the basic principles of projections in converting 3D view to 2D drawing.
FEC204.4	Visualize an object from the given two views.
FEC205	**Structured Programming Approach**
FEC205.1	Understand basics of computer,operating system along with terminologies used in computer programming and will be able to formulate the algorithms to support Structure Programming approach.
FEC205.2	Create solutions using c programming constructs like variables, derived data type and control structures.
FEC205.3	Implement solutions to the problem using the concept of strings and functions.
FEC205.4	solve complex computational problem using concepts of pointers, structure-union and files.
FEC206	**Communication Skills**
FEC206.1	Communicate effectively using verbal/non-verbal cues at social and workplace situation
FEC206.2	Speak efficiently at social, academic and business situations.
FEC206.3	Read applying the strategies for faster comprehension and summerization
FEC206.4	Write/ Draft academic, business and technical documents.
FEC206.5	Conduct themselves with confidence in social, academic and professional situations.
FEL201	**Basic Workshop II**
FEL201.1	Model different prototypes in the carpentry trade such as Cross cut lap joint, Tee lap joint, Dovetel lap joint.
FEL201.2	Model various basic prototypes in the trade of fitting such as Square, Hexagonal and V Male Female joint.
FEL201.3	Read various basic Layout drawing; make positive and negative film, and perform PCB etching and drilling, Tinning and soldering operations.
FEL201.4	Dismantle and Assemble a Personal Computer, perform Basic troubleshooting and maintenance, identify network components and perform Basic networking and crimping.
SECEC301	**Applied Mathematics III**
SECEC301.1	Apply the knowledge of Laplace transform to solve ODEs
SECEC301.2	Apply the concept of Fourier Series for expansion of periodic function.
SECEC301.3	Understand the concepts of Analytic functions, Harmonic functions, Orthogonal Trajectories, Bilinear Transformation and Conformal mapping and Evaluate the Contour Integral
SECEC301.4	Solve Partial Differential Equation numerically and analytically and Correlation and Regression, Curve fitting
SECEC302	**Surveying - I**
SECEC302.1	Understand and execute the principles of surveying for civil engineering works.
SECEC302.2	Apply the principles of levelling in profile levelling for road projects, tunnelling, laying of sewer line etc.
SECEC302.3	Use the knowledge of contouring to prepare the plans and sections required for civil engineering projects.
SECEC302.4	Understand and implement the concepts of plane table surveying, computation of area and volume by using various surveying instruments on field
SECEC302.5	Apply the knowledge of compass survey, its principles and theodolite travesring for various applications in civil engineering fields.
SECEC302.6	Employ different methods of tacheometric surveying
SECEC303	**Strength of Materials**
SECEC303.1	The students will be able to determine stress, strain, principal stresses and strains
SECEC303.2	The students will be able to analyse statically determinate beams and draw Shear Force Diagrams and Bending Moment Diagrams
SECEC303.3	The students will be able to analyse the structural behaviour of flexural members under simple bending and also analyse strain energy in beams under impact loading.
SECEC303.4	Analyse the flexural members for its structural behaviour under shear and torsion.
SECEC303.5	The students will be able to analyse the structural behaviour of flexural members under eccentric loading, analyse problems on chimneys, retaining walls etc and also analyse behaviour of columns under different loading.
SECEC303.6	The learners will be able to determine principal planes and stresses graphically and analytically and also determine deformation of thin cylinders and spherical shells under internal pressure

SECEC304	**Engineering Geology**
SECEC304.1	To apply the knowledge of geology to explain major geological processes such as landforms created by geological agents & application of building stones
SECEC304.2	To apply knowledge of several mineral constituents & rock structures for safe, stable and economic design of any civil engineering structure.
SECEC304.3	Explain various geological structures like folds, faults, joints, unconformity, their origin and apply, understand laws of stratification.
SECEC304.4	To employ methods of surface and subsurface investigation, advantages and disadvantages caused due to geological conditions during the construction of dam
SECEC304.5	To employ methods of surface and subsurface investigation, advantages and disadvantages caused due to geological conditions during the construction of tunnel & to understand the ground water featues
SECEC304.6	To understand several geological disasters & their control measures
SECEC305	**Fluid Mechanics -I**
SECEC305.1	Identify of various properties of fluids and state and explain different types of laws and priciples of fluid mechanics based on it
SECEC305.2	Derive the laws when fluid is at rest and calculate Hydrostatic force and is location for a given geometry
SECEC305.3	Compute force of buouyancy on a partially or fully submerged body and analyze the stability of a floating body
SECEC305.4	Classify velocity potential function and stream function and solve for velocity and Acceleration of a fluid at a given location in a fulid flow
SECEC305.5	Derive Euler's Equation of motion and construct Bernoulli's equation
SECEC305.6	Calculate the flow through various devices like orifices, mouthpieces, notches and weirs
SECEC401	**Applied Mathematics-IV**
SECEC401.1	Apply matrix theory to solve system of equations and eigen values, eigen vectors and their applications
SECEC401.2	Apply vector differentiation and integration to engineering problems
SECEC401.3	Optimize LPP using various optimization techniques.
SECEC401.4	Apply the concepts of probability distribution and sampling theory to Engineering problems
SECEC402	**Surveying- II**
SECEC402.1	Use the knowledge of setting out various types of curves by linear and angular methods for civil engineering projects
SECEC402.2	Compute setting out data from survey and design information and implement on site.
SECEC402.3	Operate Total Station & GPS for desired accuracy in surveying
SECEC402.4	Understand and establish survey control of determined accuracy using GPS, GIS and remote sensing.
SECEC402.5	Apply the knowledge of field astronomy and hydrographic survey in feasibility study of project
SECEC402.6	Interpret & appreciate the role of revenue department in mainatining Survey records
SECEC403	**Structural Analysis -I**
SECEC403.1	To analyse statically determinate portal frames and to draw AFD, SFD and BMD
SECEC403.2	To analyse a statically determinate structure and to evaluate deflection parameters using geometrical methods.
SECEC403.3	To analyse a statically determinate structure and to evaluate deflection parameters using energy principle.
SECEC403.4	To analyse a statically determinate structure under the influence of moving loads
SECEC403.5	To analyse cables, suspension bridges and three hinged stiffening girders.
SECEC403.6	To analyse columns and struts subjected to eccentric loading and to evaluate a section under unsymmetrical bending and shear centre.
SECEC404	**Building Design and Drawing**
SECEC404.1	To employ principles of planning, building bye-laws and D.C. rules for preparing drawings of residential building.
SECEC404.2	To employ principles of planning, building bye-laws and D.C. rules for preparing drawings of public building.
SECEC404.3	To understand the concept of green building and it's certification method
SECEC404.4	To sketch perspective drawings (One and Two point)
SECEC404.5	To sketch various components of the buildings.
SECEC404.6	To understand the concepts of of town planning.
SECEC405	**Building Materials and Construction Technology**
SECEC405.1	To understand properties of various building materials & determine their application
SECEC405.2	Explain & interpret manufacturing process of basic construction materials & DPC
SECEC405.3	To identify & understand properties of ingredients of concrete & effects of admixtures
SECEC405.4	To understand & interpret manufacturing process of glass & timber
SECEC405.5	To apply the concepts of concrete mixes design and understand the concept of RMC
SECEC405.6	To understand various types of masonry construction & finishes, formwork & flooring,roofing systems
SECEC406	**Fluid Mechanics - II**
SECEC406.1	To analyze laminar flow through circular pipe, parallel pates (stationary and moving)
SECEC406.2	To distinguish between rough and smooth boundaries for a turbulent flow for a circular pipes
SECEC406.3	To examine forces of drag and lift on submerged bodies and forces due to formation boundary layer on the surface of the body
SECEC406.4	To analyze major and minor losses in pipes, flow through series and parallelpipes,syphon and branched pipes and power transmission thorugh pipesand nozzles
SECEC406.5	To analyze stagnation properties on a body in a compressible flow.
TECEC501	**Structural Analysis- II**
TECEC501.1	To determine static and kinematic indeterminacy of a structure and to distinguish between linear and non linear behaviour of materials
TECEC501.2	To analyse the behaviour of various statically determinate structures using different methods
TECEC501.3	To analyse the behaviour of various statically indeterminate structures using various flexibility methods and by stiffness matrix methods (Displacement Method)
TECEC501.4	To analyse the behaviour of various statically indeterminate structures using various stiffness methods (Slope Deflection Method).
TECEC501.5	To analyse indeterminate structure by stiffness methods (Moment Distribution Method).
TECEC501.6	To determine plastic hinge, plastic moment carrying capacity, shape factor and collapse load for single and multiple span beams and analyse the structure using Approximate method for various loads for Analysisof Building Frames
TECEC502	**Geotechnical Engineering- I**
TECEC502.1	Calculate index properties of soil by different laboratory methods.

TECEC502.2	Examine and Classify soil using Indian soil classification system.
TECEC502.3	Calculate permeability of a given soil mass using different methods.
TECEC502.4	Calculate discharge, seepage pressure and effective stress for a given soil mass.
TECEC502.5	Calculate compactive characterstics for a given soil mass.
TECEC502.6	Understand soil exploration methods and calculate essential properties of soil.
TECEC503	**Applied Hydraulics**
TECEC503.1	To examine impulse momentum principle(pipe bends), moment of momentum equation(lawn sprinklers) and forces exerted on different plates both fixed and stationary
TECEC503.2	To evaluate flow through open channel for different type of cross-section (uniform flow) and for non-uniform type of flow
TECEC503.3	To distinguish between different types of hydraulic turbines and their characteristics curves.
TECEC503.4	To analyze different efficiencies for a centrifugal pump and for a multistage pumps
TECEC503.5	To assess dimensional analysis of fluid and application of different model laws
TECEC504	**Environmental Engineering -I**
TECEC504.1	Identify the need of planned water supply system along with the water demands and distribution systems and analyze the characteristics of drinking water .
TECEC504.2	Describe the types of aeration system, sedimentation tank and tube settlers, summarize the mechanism of coagulation and flocculation and design the various units of water treatment plant
TECEC504.3	Identify the different water softening methods and generalize the kinetics of disinfection and chemistry of chlorination along with the different advanced miscellaneous treatment units of water
TECEC504.4	Identify the building water supply system along with the classification of fixtures and fittings
TECEC504.5	Apply the knowledge of the need of Rainwater Harvesting and compute the water collected for a building
TECEC504.6	Utilize the knowledge of air pollution, noise pollution and thermal pollution and its control measures and formulate the noise levels.
TECEC505	**Transportation Engineering -I**
TECEC604.1	To understand the planning of highway and calculate the geometric parameters essential for highway construction.
TECEC604.2	To understand and apply the Traffic Volume Study for the design of Highway.
TECEC604.3	To examine various materials required for pavement construction as per IRC specifications.
TECEC604.4	To calculate design parameters for flexible pavement.
TECEC604.5	To calculate design parameters for rigid pavement.
TECEC604.6	To understand the construction of different types of roads and analyze the functional and structural evaluation using emperical theories.
TECEDLO5062	**Advanced Concrete Technology**
TECEDLO5062.1	To understand the materials used in concrete & determine their effects on properties of concrete
TECEDLO5062.2	To understand & apply the various types of special concrete
TECEDLO5062.3	To apply concrete mix design principals by different methods (IS/ACI/DOE)
TECEDLO5062.4	To understand & apply concept of Fibre Reinforced Concrete wrt materials, properties & behaviour
TECEDLO5062.5	To understand & apply different non destructive procedures for testing concrete
TECEDLO5062.6	To apply the concept of durability to concrete structures.
TECEDLO5063	**Building Services and Repairs**
TECEDLO5063.1	Use the knowledge of utility services in making a building safe and comfortable
TECEDLO5063.2	Investigate the drawbacks of an installed mechanical, engineering & plumbing service lines.
TECEDLO5063.3	Choose appropriate fire safety systems & integrate the same into building construction projects.
TECEDLO5063.4	Examine the cause of deterioration of damaged structure by assessing its structural health.
TECEDLO5063.5	Choose the correct material and technique for repairing the concrete structures.
TECEDLO5063.6	Employ the methods of steel protection in the field.
TECEC507	**Business Communication and Ethics**
TECEC507.1	Develop the interpersonal skills to progress professionally by building stronger relationships
TECEC507.2	Design a technical document using precise language, suitable vocabulary and apt style
TECEC507.3	Apply the techniques to participate in GD, Interviews and write Resume
TECEC507.4	Display competence required for professional career growth
TECEC601	**Geotechnical Engineering -II**
TECEC601.1	Calculate consolidation characteristics and settlement for a given soil mass.
TECEC601.2	Calculate shear strength for a given soil mass.
TECEC601.3	Analyze slope stability for different conditions based on factor of safety.
TECEC601.4	Calculate lateral earth pressure and other parameters for designing retaining walls.
TECEC601.5	Calculate load bearing capacity of shallow foundation.
TECEC601.6	Calculate load bearing capacity of pile foundation.
TECEC602	**Design and Drawing of Steel Structures**
TECEC602.1	To explain the Limit State Design philosophy as applied to steel structures & limit state approach to design
TECEC602.2	To predict behavior and design members subjected to axial tension & their connections
TECEC602.3	To Predict the behavior and design members subjected to axial compression, column bases and their connection.
TECEC602.4	To Predict the behavior and design members subjected to bending, shear and their connection & welded plate girder
TECEC602.5	To design connections simple (bolted & welded) & beam to beam /column
TECEC602.6	To design & Calculate loading for a truss and design the complete truss
TECEC603	**Transportation Engineering -II**
TECEC603.1	Identify various components of permanent way and their relating properties and functions
TECEC603.2	Calculate the elements of railway track and turnoouts based on geometrics
TECEC603.3	Employ knowledge of aircraft characteristics, airport obstruction, airport marking, layout and air traffic control for airport planning
TECEC603.4	Determine the dimensions of runway and taxiway and will be able to interpret the runway orientation using Wind Rose Diagram
TECEC603.5	Identify various components of water transportation systems
TECEC603.6	Utilize the knowledge of bridge engineering, types of bridges and loadings for design of bridge
TECEC604	**Environmental Engineering -II**

TECEC604.1	Identify the need of sewerage system, house drainage and the conveyance of sewage along with sloving problems on the sewer size and velocity of flow in sewers
TECEC604.2	Classify the characteristics of sewage and categorize the different treatment units in a sewage treatment plant
TECEC604.3	Explain the secondary treatment methods and the concept of constructed wetland, septic tank and soak pit along with design of various secondary treatment units
TECEC604.4	Prepare the oxygen Sag Curve based on the concept of self-purification of streams and identify the various tertiary and grey water treatment methods
TECEC604.5	Utilize theEmploy the knowledge of Sludge treatment and disposal knowledge of sludge characteristics to identify its different processing methods along with its disposal
TECEC604.6	Apply the knowledge of the generation, storage, collection , treatment and disposal of municipal solid waste, hazardous waste, E- Waste and Plastic waste
TECEC605	**Water Resource Engineering -I**
TECEC605.1	Illustrate the development, needs, benefits, illeffects and Water Policy of irrgation in India
TECEC605.2	Understand the different types of irrigation systems and apply the appropriate metod of irrigation
TECEC605.3	Analyze the water requirement of crops, duty & delta, soil water realtionsip, required frequency of irrigation, capacity of canal and reservoir and understand the concept of assessment of irrigation water, rainwater arvesting and water conservation
TECEC605.4	Apply the knowledge of hydrological cycle, types of precipitation, different types of rain gauges and their mechanism to prepare unit hydrograph , s hydrograph and complex hydrograph
TECEC605.5	Apply knowledge of ground water, well hydraulics to estimate the safe yield and ground water potential
TECEC605.6	Apply the concepts of capacity elevation and area elevation curve of reservoir site, control levels, fixation of control levels, reservoir sedimentation to select the appropriate site for reservoir.
TECEDLO6061	**Advanced Construction Equipments**
TECEDLO6061.1	Demonstrate the knowledge of working and application of standard construction equipment's.
TECEDLO6061.2	Select correct method and construction equipment for underground & underwater tunelling
TECEDLO6061.3	Compare and use the appropriate conventional and modern methods of formwork based on productivity, reuse, value, ease of erection and dismantling, flexibility offered and overall cost.
TECEDLO6061.4	Apply the knowledge of pipeline insertion system in locating underground utilities.
TECEDLO6061.5	Implement the knowledge construction techniques for proper working of power generating structures.
TECEDLO6061.6	Schedule the techniques involved and the equipments required thereof for construction of various transporting facilities.
TECEDLO6063	**Ground Improvement Techniques**
TECEDLO6063.1	To Identify problematic soils and their associated issues
TECEDLO6063.2	To Study and design the various ground improvement techniques and propose suitable remedial techniques
TECEDLO6063.3	To derive appropriate soil improvement technique based on the soil type and application.
TECEDLO6063.4	To compare & choose suitable grouting for various engineering applications in the field.
TECEDLO6063.5	To Design stone column layout
TECEDLO6063.6	To understand & design the geotechnical structures (rock anchors, strip anchors) for various conditions
TECEC607	**Software Application in Civil Engineering**
TECEC607.1	To understand and apply MS-Excel for providing solutions to the field problems.
TECEC607.2	To employ use of AutoCAD for design of structure
TECEC607.3	To employ use of MS-Project for schedulling a construction project.
TECEC607.4	To employ various open source software for solving various civil engineering problems.
BECEC701	**Quantity Survey Estimation and Valuation**
BECEC702.1	To prepare an approximate estimates by using Plinth Area Method.
BECEC702.2	To prepare the detailed estimate of a construction project by using Long Wall-Short Wall and Centre Line method.
BECEC702.3	To prepare the Rate Analysis for construction activities as per Indian Standard (IS 1200-1964) and DSR.
BECEC702.4	To prepare Bar Bending Schedule of structural members as per Indian Standard (IS 1200-1964).
BECEC702.5	To compute volume of earthwork for roads and canals by using different methods.
BECEC702.6	To analyse the value of any Land and Building using different methods.
BECEC702	**Theory of Reinforced Concrete Structures**
BECEC702.1	Study the concepts of ULM & LSM and apply for the analysis and design of beams by ULM .
BECEC702.2	Design Singly and Doubly reinforced beam using LSM .
BECEC702.3	Analyse & design a slab by using LSM
BECEC702.4	Analyse & design a column using LSM
BECEC702.5	Analyse & design of T, L beam ,shear, torsion.
BECEC702.6	Analyse & design of footing using LSM.
BECEC703	**Water Resource Engineering -II**
BECEC703.1	Examine the stability of gravity dams
BECEC703.2	Examine the stability of earth and rockfill dams
BECEC703.3	Design diffenrent types of spillways and energy dessipators
BECEC703.4	Design irrigation channels using the concept of Kennedys and Lace's theory
BECEC703.5	Employ the knowledge of Canal Head works & Canal Distribution System.
BECEC703.6	Illustrate the knowledge of different types of canal structures in the field.
BECEDLO7042	**Solid Waste Management**
BECEDLO7042.1	Identify the need of solid waste management and organize the functional elements of solid waste management system
BECEDLO7042.2	Make use of the knowledge of classification of the solid waste based on its sources, types, composition, and characteristics and solve the problems on energy generation
BECEDLO7042.3	Choose the different Waste Collection, Storage and Transportation system
BECEDLO7042.4	Apply the knowledge different waste processing techniques like biological and chemical conversion technologies
BECEDLO7042.5	Employ the knowledge of site selection, components, and Disposal of solid waste in Sanitary Landfills
BECEDLO7042.6	Plan the solid waste management system for Industrial, Hazardous, biomedical and electronic waste

BECEDLO7043	**Pavement Subgrade and Materials**
BECEC7043.1	Examine & Classify the soil using HRB Classification System.
BECEC7043.2	Calculate Modulus of subgrade reaction of various types of soil intended to be used as a subgrade material.
BECEC7043.3	Calculate resilient deformation, resilient strain, resilient modulus of subgrade soils.
BECEC7043.4	Calculate properties of aggregate intended to be used for pavement construction.
BECEC7043.5	Calculate properties of bitumen intended to be used for pavement construction.
BECEC7043.6	Calculate various elements of bituminous mix design.
BEILO7017.1	**Disaster Management and Mitigation**
BEILO7017.1	Illustrate scenario of disaster and its effects in India
BEILO7017.2	Compare Manmade and Natural disasters and their extent and possible effects on the economy
BEILO7017.3	Outline the Government Policies, acts and administration
BEILO7017.4	Employ the knowledge of Institutional Framework for Disaster Management in India
BEILO7017.5	Apply the knowledge of Financing and Relief Measures
BEILO7017.6	Utilize the of Preventive and Mitigation Measures to Know the simple do's and don'ts in disasters
BECEP705	**Project - I**
BECEP705.1	Investigate complex problem through in-depth literature survey.
BECEP705.2	Explore beyond the curriculum to identify and use appropriate methodology to solve the problems.
BECEP705.3	Implement the methodology with modern tools.
BECEP705.4	Analyze and compare the results with the standard results.
BECEP705.5	Work as an individual and contribute as a team member with effectual management skills to achieve a common objective.
BECEP705.6	Write and present their work effectively with ethical values.
BECEP705.7	Engage themselves in area of their interest applying the knowledge gained and exploring new technical trends.
BECEC801	**Design and Drawing of Reinforced Concrete Structures**
BECEC801.1	Design of dog legged and open well type staircase using limit state method.
BECEC801.2	Design different types of cantilever and counter fort type retaining wall using limit state method.
BECEC801.3	Design different components of building such as slab, column, beam,footing using relevant IS codes.
BECEC801.4	Design various types of water tank using working stress method.
BECEC801.5	Study the concept of earthquake engineering and calculate design forces by using seismic coefficient method
BECEC801.6	Apply basic principals of Prestress Concrete to analyse the Members
BECEC802	**Construction Management**
BECEC803.1	To understand principles and functions of Construction Management.
BECEC803.2	To develop a Work Break Down Structure and Bar-Charts for various construction activities.
BECEC803.3	To calculte time required for completion of project by using CPM & PERT techniques.
BECEC803.4	To analyze various resource by using Resource allocation and Resource smoothening method.
BECEC803.5	To understand project monitoring process and optimize the Time-Cost trade-off.
BECEC803.6	To understand Safety Measures, Quality aspects of construction work and legislation (Labour).
BECEDLO8032.1	**Industrial Waste Treatment**
BECEDLO8032.1.1	Utilize the knowledge of the characteristics and effects of industrial wastes and discuss its sampling and analysis .
BECEDLO8032.1.2	Explain the concept of self purification and evaluate the numericals based on oxygen sag curve and Streeter Phelps Equation
BECEDLO8032.1.3	Identify the aerobic and anaerobic biological treatment methods and summarize its modifications along with methods of dewatering and disposal of sludge.
BECEDLO8032.1.4	Employ the knowledge of manufacturing process , volume , characteristics and effect of raw and treated effluent and treatment methods adopted in industries.
BECEDLO8032.1.5	Make use of knowledge of Environment Impact Assessment (EIA) and Environmental Audit and discuss acts pertaining to industrial wastes/effluents
BECEDLO8032.1.6	Identify the need, operation and maintenance problems and economical aspects of Common Effluent Treatment Plant (CETP)
BECEDLO8035.2	**Appraisal Implementation of Infrastructural Projects**
BECEDLO8035.2.1	To classify projects and describe the stages of project formulation.
BECEDLO8035.2.2	To prepare setailed project report of a any construction project
BECEDLO8035.2.3	To predict market demand of any construction project by using different methods.
BECEDLO8035.2.4	To select construction project based financial and economic aspects of the entity.
BECEDLO8035.2.5	To identify various sources of finance and select appropriate source for project implementation.
BECEDLO8035.2.6	To select appropriate method for project implementation.
ILO8029.1	**Environment Management**
ILO8029.1	Illustrate the significance of Environment Management and sustainable development
ILO8029.2	Identify Global Environmental Concerns and Hazards
ILO8029.3	Employ the Concept of Ecology and interdependence between ecosystem and living organisms
ILO8029.4	Utilize the knowledge of Scope of Env Management and Corporate Env Responsibility
ILO8029.5	Outline the EMS Certification and ISO-14000
ILO8029.6	Interpret Environment related legislations and acts
BECEP804	**Project - II**
BECEP804.1	Investigate complex problem through in-depth literature survey.
BECEP804.2	Explore beyond the curriculum to identify and use appropriate methodology to solve the problems.
BECEP804.3	Implement the methodology with modern tools.
BECEP804.4	Analyze and compare the results with the standard results.
BECEP804.5	Work as an individual and contribute as a team member with effectual management skills to achieve a common objective.
BECEP804.6	Write and present their work effectively with ethical values.
BECEP804.7	Engage themselves in area of their interest applying the knowledge gained and exploring new technical trends.