Programme Outcomes (PO's)

At the end of successful completion of program, the graduates will be able to,

1. **Engineering Knowledge**: Apply knowledge of mathematics, science, engineering Fundamentals and an engineering specialization to the solution of complex engineering pr
2. **Problem Analysis**: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. **Design/Development of Solutions**: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental
4. **Conduct investigations** of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid
5. **Modern Tool Usage**: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an under-standing of the limitations.
6. **The Engineer and Society**: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering
7. **Environment and Sustainability**: Understand and the impact of professional engineering solutions in societal and environmental contexts and demonstrates knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering
9. **Individual and Teamwork**: Function effectively as in visual, and as a member or leader in diverse teams and in multidisciplinary s
10. **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
11. **Project Management and Finance**: Demonstrate knowledge and understanding of engineering and management principles and apply these too noels on work, as a member and leader instead, to manage projects and in multidisciplinary envir
12. **Lifelong 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

Program Specific Outcomes (PSO)

1. A board education is necessary to understand practical problems and to suggest the best possible and economical solution for the problem.
2. An ability to function in multidisciplinary teams.
3. An ability to succeed in competitive examination in government and private organizations after successful accomplishment (Degree) by professional development and/or Industrial training course(s) certification.

S.Y. Sem-I	
Course name and code	**course outcome**
ENGINEERING MATHEMATICS-III (BSC-CV301)	1. Solve Liner differential equations and problems related to applications of differential equations
	2. Perform vector differentiation.
	3. Find probabilities by using probability distributions.
	4. Find Laplace transform, Inverse Laplace transform of various functions and application
	5. Find analytic function.
SURVEYING-I (PCC-CV302)	1. To obtain a full understanding of the methods of measurement, errors to be expected, and their control.
	2. To know the basics of levelling and theodolite survey in elevation and angular measurements.
	3. To find out area and volumes using various instruments.
	4. To study the significance of plane table surveying in plan making.
	5. To be able to use minor instruments with efficiency.
	6. To understand the importance of surveying in the field of civil engineering.
Strength of materials (ESC-CV303)	1. Evaluate the response of elastic body for external actions and compute design forces.
	2. Evaluate shear force and bending moment of statically determinate structure.
	3. Analyze the stress, strain and deformation of elastic bodies under bending and shear actions.
	4. Analyze the stress, strain and deformation of elastic bodies under external actions.
Fluid Mechanics- I (ESC-CV304)	1. Study the basic properties of fluids and their behavior under application of various force systems.
	2. Discuss the basic concepts and principles in fluid statics, fluid kinematics and fluid dynamics with their applications in fluid flow problems.
	3. Recognize the principles of continuity, momentum and energy as applied to fluid in motion.
	4. Apply the equations to analyze problems by making proper assumptions and learn systematic engineering methods to solve practical fluid mechanics problems.

BCM (PCC-CV305)	1. Know the building Materials.
	2. Describe properties and suitability of various building materials.
	3. State the different building components.
	4. Demonstrate different bonds in brick masonary.
	5. Produce drawings of different building components.
	6. Explain different types of roof coverings & types of flooring.
NM (ESC-CV306)	1. Identify, classify and choose the most appropriate numerical method for solving a Problems
	2. Illustrate basic theory of correlation and regression.
	3. Form and solve Linear Programming Problem.
	4. Use methods of solutions to solve classical problems.
	5. Deploy skills effectively in the solution of problems in civil engineering.
S.Y.Sem-II	
Structural Mechanics(ESC-CV401)	1. Identify the response of elastic body for external actions.
	2. Distinguish engineering properties of the materials are understood.
	3. Compute the design forces in the structures.
	4. Analyze the stress, strain and deformation of elastic bodies under external forces.
Surveying-II (PCC-CV402)	1. Adopt the principles of advanced surveying instruments.
	2. Formulate triangulation stations, Flight planning and Ground control points (GCPs).
	3. Apply GIS and GPS concepts to civil engineering problems.
	4. Design and setout curves by different methods.
concrete technology (PCC-CV403)	1. Impart knowledge of physical properties of ingredients of concrete and their effect on strength and durability.
	2. Explain the fundamentals of process of making good quality concrete and its elastic properties.
	3. Understand the factors affecting properties of concrete.
	4. Design the concrete mix proportion as per Indian standard code of practice.
	5. Demonstrate Non Destructive Testing (NDT) and evaluate quality of existing concrete.
	6. Understand different types of concrete and their applications.
Fluid Mechanics II (ESC-CV404)	1. Provide students with basic knowledge of fluid properties and utilizing principles developed in fluid mechanics.
	2. Develop the principle and equation for pressure flow and momentum analysis.

	3. Provide the students with the analytical knowledge of pressure and velocity distribution in an open channel in order to solve practical problems.
	4. Illustrate and develop the equations and design principles for open channel flows, including sanitary and storm sewer design and flood control hydraulics.
Building design and drawing (PCC-CV405)	1. Know principles of building planning.
	2. Describe Building Bye-Laws and regulations.
	3. Plan and draw residential building considering principle of planning and Building Bye-Laws and regulations.
	4. Explain techniques of maintenance, repair and rehabilitation of structure.
	5. Draw the working drawing of foundation detail, plumbing and electrification of building.
	6. Illustrate the concept of ventilation, air conditioning and thermal insulation.
	7. Describe different types of building finishes.

T.Y.Sem-I	
Course name and code	**course outcome**
PCC-CV501 WRE-I Water Resource Engineering-I	1. Apply the knowledge of estimation of hydrometeorological parameters.
	2. Estimate direct runoff and peak discharge using hydrograph technique.
	3. Apply different methods of efficient irrigation and water conservation.
	4. Determine reservoir capacity based on crop water requirement.
PCC-CV502 DSS Design of Steel Structures	1. Describe the design philosophy, behavior of steel structure and failure mechanism.
	2. Analyze and design different types of bolted & welded connections.
	3. Assess the strength of structural members as per Indian Standards.
	4. Analyze and design members subjected to tension, compression and flexure.
PCC-CV503 EE-I Environmenta l Engineering- I	1. Describe the various sources of water with respect to quality and quantity of water.
	2. Design the various water treatment units.
	3. Illustrate the special water treatments and sequencing of treatment for various qualities of surface & ground water.
	4. Describe the various components related to transmission and design of distribution of water.
	5. Summarize the different water supply appurtenances.
PCC-CV504 GTE-I Geotechnical Engineering-I	1. Able to evaluate the Index and Engineering properties of soil
	2. Understand the fundamental relationships in properties of soils
	3. Evaluate the stress calculations in soil under different soil conditions
	4. Understands the process and importance of compaction and consolidation
PCC-CV505 Building Planning and Design	1. Specify dimensions and space requirements for various elements of the building in relation to human body measurements.
	2. Plan, design public building considering principles of planning and Building Bye- Laws and regulations.
	3. Prepare the submission and working drawings of public building.

OEC-CV506 Energy & Environment	4. Illustrate the procedures for preparing perspective drawings of various objects as well as buildings.
	5. Apply knowledge of architectural composition and terms for betterment of aesthetic view.
	1. Compare conventional and renewable energy resources
	2. Identity scope and potential of renewable energy
	3. Analyze suitability of renewable energy resource.
	4. Explain energy management principles and strategies
OEC-CV506 Waste management	1. To evaluate the effects of various wastes on human beings, animals and on Environment.
	2. To solve the water and wastewater treat by using conventional and advanced treatment methods.
	3. To estimate quantity of solid waste, E-waste and biomedical wastes and to suggest their disposal methods.

T.Y.Sem-II	
Course name and code	**course outcome**
PCC-CV601 TOS Theory of Structures	1. Understand the concept of determinacy and indeterminacy.
	2. Apply various techniques of structural mechanics to solve indeterminate structures.
	3. Analyze indeterminate structures by using various approaches.
	4. Know the limitations of the methods of solution and their outcomes.
HM-CV602 EM Engineering Management	1. Understand importance of management in construction.
	2. Use the Project planning and management tools in Construction.
	3. Evaluate and draw project network for estimating time and cost.
	4. Know the techniques of Material Management.
	5. Explore and understand the concepts of Economics in construction.
	6. Know the advance concepts in management.
PCC-CV603 EE-II Environmental Engineering- II	1. Explain sources, characteristics and methods of wastewater collection.
	2. Design the primary and secondary wastewater treatment units and describe low cost wastewater treatment units.

	3. Understand various methods of wastewater disposal
	4. Explain the necessity and importance of solid waste management.
	5. Describe air pollution, its effect and controlling techniques.
PCC-CV604 GT-II Geotechnical Engineering-II	1. Use engineering science principles to develop foundation engineering knowledge.
	2. Apply foundation engineering knowledge in the civil engineering projects.
	3. Calculate bearing capacity theoretically as well as practically.
	4. Calculate settlement and design shallow and deep foundation
	5. Apply basics concepts of slope stability on field.
	6. Apply modern foundation techniques.
OEC-CV605 Soil and water conservation techniques	1. Understand methods of soil and water conservation.
	2. Develop an integrated model for sustainable natural conservation.
	3. Explain the groundwater exploration techniques and its artificial recharge.
	4. Analyze the needs for protection of banks and preservation of soil.
OEC-CV605 Diasaster Risk Management	1. Gain the ability to understand and categories the disaster.
	2. Apply preparedness plans for disaster response.
	3. Setting up of early warning systems for risk reductions
	4. Application of Sphere Standards Indian context
PCC-CV606 SDD-I Structural Design and Drawing-I	1. Analyze and design different types of bolted & welded connections
	2. Demonstrate the knowledge of common sections subjected tension and compression members & its design.
	3. Analyze and design of steel column, flexural members and its elements.
	4. Aware of application of software in structural analysis and design.
	5. Prepare the working drawing as per requirement of project execution.

B. Tech Sem-I	
Course Name & Course code	**Course Outcome**
Design of Concrete Structures-I (PCC-CV701)	1. Understand the basic data (Basic Mechanics, Mathematics, and structural analysis)required for design of concrete structures.
	2. Understand the design process of concrete structure
	3. Understand the application of limit state method for structural element such as footing, column, beam slab, staircase etc.
	4. Design the individual members and hence building.
Earthquake Engineering (PCCCV702)	1. Prepare mathematical modelling of Single Degree of Freedom System.
	2. Design earthquake resistant structure by applying various codal provisions related to seismic design
	3. Know the concept of modern earthquake resistant techniques
Quantity Survey and Valuation (PCC-CV703)	1. Explain the importance of estimation in Civil Engineering works.
	2. Prepare rate analysis of various items.
	3. To estimate for various construction projects.
	4. Explain importance of valuation in Civil Engineering works.
Transportation Engineering – I (PCC-CV704)	1. Carry out surveys involved in planning and highway alignment
	2. Design the geometric elements of highways and expressways
	3. Carry out traffic studies and implement traffic regulation and control measures and intersection design
	4.Characterize pavement materials and design flexible and rigid pavements as per IRC
SOLID WASTE MANAGEMENT (PCE-CV705)	1. Learn basic concepts of solid waste management, beginning from source generation to waste disposal in a system of municipality organizational structure.
	2. To acquire a fair amount of knowledge on waste characterization and its management practices
	3. Develop understanding on various technological applications for processing of waste and their disposals in various ways.

	4. Acquire knowledge on waste to energy productions in the perspectives of sustainable development.
	5. Apply basic concepts in hazardous waste management and integrated waste management for urban areas.
Legal Aspects in Civil Engineering (HMCV706)	1. Students will learn Indian contract act, Arbitration act and contract administration.
	2. Students will understand the labour laws.
	3. Students will be understand safety engineering and relevant acts.
Project Phase-I (PW-CV708)	1.Identify the problem statement through literature survey for project work 2.Develop planning and design strategy for the project work. 3. Develop the ability to learn independently and to find/integrate information from different sources required in solving real-life problems. 4. Enhance technical report writing skills with proper organization of materials;
FIELD TRAINING (PW-CV707)	1. Have an exposure to industrial practices and to work in teams 2. Communicate effectively 3. Understand the impact of engineering solutions in economic, environmental, and societal context 4. Develop the ability for life-long learning

B. Tech Sem-II	
Course Name & Course code	**Course Outcome**
DESIGN OF CONCRETE STRUCTURES-II (PCCCV801)	1. Sections subjected totorsion
	2. Continuous beams
	3. Water tanks resting onground
	4. Prestressed concretesections
WATER RESOURCES ENGINEERING - II (PCC-CV802)	1. Identify and understand various issues related to water resources systems.
	2. Understand the role of dams and reservoirs in controlling the floods.
	3. Plan and design different types of hydraulic structures.
	4. Plan, design and monitor an efficient canal network system.
	5. Understand the role of rivers in the development of nation.
TRANSPORTATION ENGINEERING – II (PCC-CV803)	1. Perform geometric design for the railway tracks.
	2. Plan the layout of different types of air terminals.
	3. Carry out the surveys for layout of railways, airports and harbors.
	4. Design various bridge components
STRUCTURAL DESIGN OF FOUNDATION & RETAINING STRUCTURES (PCE-CV804)	1. understand the different types of foundations & their necessities
	2. Select the suitable foundation system based on soil and loading conditions.
	3. Analyse the different types of loading acting on foundation system.
	4. Design the foundation for lighter & heavy structures.
	5. Learn the reinforcement curtailments in foundation systems.
	6. Design the vertical walls to retain water or soil on one side of wall
ADVANCED DESIGN OF CONCRETE STRUCTURES (PCE-CV804)	1. Analysis and design of large span concrete roofs and design flat slab as per IS 456 –2000
	2. Analysis and design deep beams.
	3. Analysis of stresses in concrete chimney and design the chimney
	4. Analysis and design overhead water tank with codal provision of 3370-2009
	5. Analysis and design of cantilever and counter fort retaining wall.
	6. Describe yield line theory and analyze rectangular and circular slab by yield line theory
ADVANCED CONSTRUCTION TECHNIQUES (PCE-CV805)	1. Examine the importance of composite material in construction. & various materials for formwork, loads on formwork & its design.

	2. Identify importance of new materials and their uses in construction.
	3. Interpret & execute the methods of Ground improvement by different methods.
	4. Explain different types of Cofferdams, selection criteria & material used.
	5. Analyse the advancement in construction of and rehabilitation of bridges& retaining structures.
	6. Classify the advance methods in Concrete pavement construction.
CONSTRUCTION PRACTICES (PCE-CV805)	1. Know the earth moving equipments& excavation in hard rock.
	2. Understand new construction methods & techniques.
	3. Know the concreting equipments, plants & concreting methods.
	4. Understand plants &equipments used for steel construction & road construction.
	5. Understand construction of heavy structure & construction management.
STRUCTURAL DESIGN AND DRAWING-II (PCCCV806)	1. Translate the ideas into workableplans
	2. Classify thecomponents
	3. Design the units & hence the structure as awhole
	4. Draft the details forexecution
	5. Toreadandunderstandthesupplieddrawingforexecutiononsite.
Project Phase-II (PW-CV807)	1.Identify the problem statement through literature survey for project work 2. Develop planning and design strategy for the project work. 3. Develop the ability to learn independently and to find/integrate information from different sources required in solving real-life problems. 4. Enhance technical report writing skills with proper organization of materials.