



“EMPOWERMENT THROUGH TECHNOLOGICAL EXCELLENCE”

GENBA SOPANRAO MOZE TRUST'S

GENBA SOPANRAO MOZE COLLEGE OF ENGINEERING

(Recognized by AICTE, New Delhi; Approved by Govt. of Maharashtra; Affiliated to Pune University)

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Department of Civil Engineering

PROGRAM OUTCOME

Programme Outcomes describe what students are expected to know or be able to do by the time of graduation from the programme. The POs for Under Graduate Course in Electronics and Telecommunication Engineering are able to

1. Apply the knowledge of technical fundamentals, mathematics and applied science for solving the domain problems.
2. Identify, Analyse complex engineering problems and review the literature for the same.
3. Design the processes, implement the system for the welfare, safety, and environmental need of the society.
4. Perform experiment, and interpret results
5. Use technical skills and tools for electronic system development.
6. Understand the importance of electronics and telecommunication in modern era.
7. Identify the needs of society for development, growth and human values
8. Understand the legal, professional, ethical responsibilities
9. Work effectively in diversified, multidisciplinary environment to achieve common goal
10. Ability to communicate effectively and possess soft skills
11. Engage themselves in continuous educational, professional and entrepreneurship development
12. Apply effectively electronics and telecommunication engineering and management skills and act as a team leader to solve industrial and social problem.

PROGRAM SPECIFIC OUTCOMES (PSO'S)

PSO1 – Inculcating communicational skills, and leadership attributes towards the team work also developing critical thinking abilities with competence in use of computational tools for current research and industry needs

PSO2 – Understanding and applying the mathematical and scientific concepts for analytical and design skills concerned with civil engineering practice

PSO3 –Enrich the knowledge in various specializations of Civil engineering (Eg: Structural, Geotechnical, Transportation, Environmental Engineering) by means of research and innovative practices

Course Outcomes

SE

Course Code	Subject:
201001	Building Technology and Architectural Planning
	Identify types of building and basic requirements of building components.
	Make use of Architectural Principles and Building byelaws for building construction.
	Plan effectively various types of Residential Building forms according to their utility, functions with reference to National Building Code.
	Plan effectively various types of Public Buildings according to their utility functions with reference to National Building Code.
	Make use of Principles of Planning in Town Planning, Different Villages and Safety aspects.
	Understand different services and safety aspects
201002	Mechanics of structure
	Understand concept of stress-strain and determine different types of stress, strain in determinate, indeterminate homogeneous and composite structures.
	Calculate shear force and bending moment in determinate beams for different loading conditions and illustrate shear force and bending moment diagram.
	Explain the concept of shear and bending stresses in beams and demonstrate shear and bending stress distribution diagram.
	Use theory of torsion to determine the stresses in circular shaft and understand concept of Principal stresses and strains.
	5Analyze axially loaded and eccentrically loaded column.
	Determine the slopes and deflection of determinate beams and trusses.

201003	Fluid Mechanics
	Understand the use of Fluid Properties, concept of Fluid statics, basic equation of Hydrostatics, measurement of fluid pressure, buoyancy & floatation and its application for solving practical problems.
	Understand the concept of fluid kinematics with reference to Continuity equation and fluid dynamics with reference to Modified Bernoulli's equation and its application to practical problems of fluid flow
	Understand the concept of laminar and turbulent flow and flow through pipes and its application to determine major and minor losses and analyze pipe network using Hardy Cross method.
	Understand the concept of open channel flow, uniform flow and depth-Energy relationships in open channel flow and make the use of Chezy's and Manning's formulae for uniform flow computation and design of most economical channel section.
	Understand the concept of gradually varied flow in open channel and fluid flow around submerged objects, compute GVF profile and calculate drag and lift force on fully submerged body.
207009	Engineering Geology
	Explain about the basic concepts of engineering geology, various rocks, and minerals both in lab and on the fields and their inherent characteristics and their uses in civil engineering constructions.
	Exploring the importance of mass wasting processes and various tectonic processes that hampers the design of civil engineering projects and its implications on environment and sustainability.
	Recognize effect of plate tectonics, structural geology and their significance and utility in civil engineering activities.
	Incorporate the various methods of survey, to evaluate and interpret geological nature of the rocks present at the foundations of the dams, percolation tanks, tunnels and to infer site / alignment/ level free from geological defects.
	Assess the Importance of geological nature of the site, precautions and treatments to improve the site conditions for dams, reservoirs, and tunnels.
	Explain geological hazards and importance of ground water and uses of

	common building stones.
201008	Geotechnical Engineering
	1. Identify and classify the soil based on the index properties and its formation process
	2. Explain permeability and seepage analysis of soil by construction of flow net.
	3. Illustrate the effect of compaction on soil and understand the basics of stress distribution.
	4. Express shear strength of soil and its measurement under various drainage conditions.
	5. Evaluate the earth pressure due to backfill on retaining structures by using different theories.
	6. Analysis of stability of slopes for different types of soils.
201009	Surveying
	Define and Explain basics of plane surveying and differentiate the instruments used for it.
	Express proficiency in handling surveying equipment and analyse the surveying data from these equipment.
	Describe different methods of surveying and find relative positions of points on the surface of earth.
	Execute curve setting for civil engineering projects such as roads, railways etc.
	Articulate advancements in surveying such as space based positioning systems
	Differentiate map and aerial photographs, also interpret aerial photographs.
201010	Concrete Technology
	Able to select the various ingredients of concrete and its suitable proportion to achieved desired strength.
	Able to check the properties of concrete in fresh and hardened state.
	Get acquainted to concreting equipments, techniques and different types of special concrete.
	Able to predict deteriorations in concrete and get acquainted to various repairing methods and techniques.

201011	Structural Analysis
	Understand the basic concept of static and kinematic indeterminacy and analysis of indeterminate beams.
	Analyze redundant trusses and able to perform approximate analysis of multi-story multi-bay frames.
	Implement application of the slope deflection method to beams and portal frames.
	Analyze beams and portal frames using moment distribution method.
	Determine response of beams and portal frames using structure approach of stiffness matrix method.
	Apply the concepts of plastic analysis in the analysis of steel structures.
201012	Project Management
	Describe project life cycle and the domains of Project Management.
	Explain networking methods and their applications in planning and management
	Categorize the materials as per their annual usage and also Calculate production rate of construction equipment
	Demonstrates resource allocation techniques and apply it for manpower planning.
	Understand economical terms and different laws associated with project management
	Apply the methods of project selection and recommend the best economical project.

TE

Course Code	Subject
301001	Hydrology and Water Resource Engineering
	Define and explain different components of Hydrological cycle and methods of its measurements
	Design irrigation scheme for dam y considering crop water requirements in nearby area
	Study of Aquifers and its types
	Study of the runoff from given rainfall, hydrograph and its types

	Understanding various aspects for planning of reservoir
	Students are able to design water management schemes
301002	Infrastructure Engineering and Construction Techniques
	To know the scope of infrastructure engineering in national and global development
	To know about the basics of various components of railway engineering, the types and functions of track, junctions and railway stations
	Study of construction techniques as dewatering, dredging, slip form and hoists cranes
	Study of tunneling methods and various operations required in tunneling
	To study about the types and components of docks and harbors
	Concepts of Construction techniques and its practical applications, Earth moving equipments
301003	Structural Design I
	Ability to learn different method of design of steel structures and design of tension member
	Ability to design compression member and built up section used as column
	Ability to design eccentrically loaded column and its base.
	Ability to design laterally supported and laterally unsupported beam.
	Ability to study beam to beam connection, beam to column connection and design of welded plate girder.
	Ability to design roof truss and gantry girder.
301004	Structural Analysis II
	Analyse beams and frames by Slope-deflection method.
	Analyse beams and frames by moment distribution method.
	Analyse beams, trusses and frames by the flexibility method.
	Analyse beams, trusses and frames by the stiffness method.
	Analyse frames by the cantilever method and portal method.
	To know concepts of Finite element method and their applications in various fields of civil engineering.
301005	Fluid Mechanics-II
	Give knowledge about flow around submerged bodies and unsteady flow
	Students are introduced to basics of open channel flow and its depth energy

	relationship
	Students are known with concepts of uniform flow and hydraulic jump in open channel flow
	Students are able to design hydraulic machinery with knowledge of impact of jet
	Students have enhanced knowledge in hydro power plant
	Students can study and analyze the characteristics of GVF profiles in open channel flow
301007	Advanced Surveying
	Ability to understand the GNSS and triangulation.
	Understand concept of hydrographic surveying
	To understand the setting out of engineering works and perform trigonometrical leveling.
	Ability to adjust geodetic traverse and understand laws of weights.
	To understand the concepts of aerial photography.
	To know concepts of RS and GIS and their applications in various fields of civil engineering.
301008	Project Management and Engineering Economics
	Concept of project planning, life cycle and applications to civil engineering
	Applications of networking and project time analysis
	Network analysis for project time and cost control using concepts of crashing, resource allocation and updating of networks
	Concept and applications of project economics, laws and safety practices
	Applications of material management methods, inventory control, ABC, EOQ
	Financial methods and appraisal of construction projects
301009	Foundation Engineering
	Comprehend and utilize the geotechnical literature to establish the framework for foundation design.
	Plan and implement a site investigation program including subsurface exploration to evaluate soil/structure behaviour and to obtain the necessary design parameters.
	Determine allowable bearing pressures and load carrying capabilities of

	different foundation systems.
	Learn about types and purposes of different foundation systems and structures.
	Provide students with exposure to the systematic methods for designing foundations.
	Discuss and evaluate the feasibility of foundation solutions to different types of soil conditions considering the time effect on soil behaviour.
301010	Structural Design –II
	Calculate Moment of Resistance of singly and doubly reinforced R.C.C beam by Working Stress and Limit State Method
	Design one way and two way slab by Limit State Method
	Design open well and dog legged Stair Case
	Design Singly reinforced and doubly reinforced R.C.C beam by Limit State Method
	Design axially loaded column and column with uniaxial, biaxial bending
	Design of isolated column footing for axial load and uniaxial bending
301011	Environmental Engineering-I
	To understand the source, control and effect of air and noise pollution
	To understand the fundamentals of water treatment units and parts of water supply system.
	To understands the importance of laboratory analysis for design of Water treatment units
	Understand the Design of water treatment plant
	Study of Miscellaneous treatment systems
	Study of water distribution system and rain water harvesting

BE

Course Code	Subject
401 002	Transportation Engineering
	Describe the basic components of transport system and infrastructure, their role, importance and characteristics and conduct traffic surveys to collect traffic data and apply engineering principles

	to identify and investigate traffic problems and to devise and evaluate sustainable solutions.
	Prepare a horizontal and vertical highway alignment, including super elevation and design transport system components in particular geometric design of roads and intersections which complies with IRC standards.
	Measure and calculate different traffic parameters like speed, flow, travel time and delay
	Explains the properties, role and tests on of highway materials and
	Understand pavement design and its construction process as per IRC-37 and IRC-58
	Understand the advanced pavement construction process and materials
401 003	Structural Design and Drawing III
	Student need to understand the different types of materials used in the prestress structures and how it difference from materials used in the R.C.C. structures?
	An ability to calculate losses in prestress member and enlist the different types of losses occurs in the prestress. Explain all types of stress calculation method in the prestress. Student able to design prestress girder/ P.S.C slab.
	Students understand how to calculate earthquake forces in the structures and design of earthquake resisting frame. Explains ductile detailing.
	An ability to design retaining wall with different type of embankments.
	An understanding to design of water tank rest on ground with flexible/ rigid base either with IS code method or with approximate method.
	Student need to understand where combine footing is provided and combine footing designs (slab beam type, trapezoidal type, strap beam combine footing)
401 005	TQM and MIS in Civil Engineering

	Be able to understand basic concepts and factors affecting the quality
	Be able to gain basic knowledge about MIS.
	Be able to apply tools and techniques of quality management like six sigma and its impacts
	Be able to understand the various terms of quality and importance of ISO standards and developing quality manual.
	Students should be able to understand overall cost of quality including MIS and Benchmarking.
	Students should be capable to implement modern technology and software in TQM.
401007	Dams and Hydraulic Structures
	Understanding of dam its safety and behavioral aspects with instruments
	Analysis and design of Gravity Dam with different stability conditions.
	Undertake design and detailing of Ogee Spillway.
	Students are gained the knowledge of failure aspects of earthen dam and study of diversion headwork
	Design Canal structures for satisfying irrigation in nearby area.
	Suggest types of cross drainage work for available site conditions.
401 008	Quantity Surveying, Contracts & Tenders
	Understand Estimates and its types.
	Able to take Out Quantities of different Tasks for Load Bearing Structure
	Able to take Out Quantities of different Tasks for RCC frame Structure and valuation
	Able to do Rate Analysis for tasks by studying specifications
	Able to understand tending and work execution method
	Able to understand contracting and arbitration
401004	Advanced Concrete Technology
	Students will know recent aggregates and their compatibility in concrete making
	Understand different types of concrete

	Students will be able to design modern concrete
	Students will know basic of fiber reinforced concrete
	Able to Understand different properties of fresh and hardend fiber reinforced concrete
	Able to Understand precast elements and concept of ferrocement
401010	Construction Management
	To enrich the students with the concepts and applications of Management
	To make learners to understand planning, scheduling and controlling the different activities of construction projects
	To understand the importance of laws related to construction activity and financial aspects of construction projects
	To apply knowledge of advancement in risk management and value engineering of construction projects
	To identify and manage different sources in resource management
	To understand basic terminologies and applications of artificial intelligence in civil engineering