

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal, MP)

CIVIL ENGINEERING DEPARTMENT

Flexible Scheme: Course Outcomes (COs)

The course outcomes of the courses of **2021 admitted batch** from 1st year of the undergraduate course of Civil Engineering Program are given below:

Courses	Course Outcome's	
After the completion of this course, students will be able to:		
110211: Building Planning & Design	CO1	Explain basics of building planning & design.
	CO2	Describe sustainability principle, by laws & characteristics of thermal and sound insulation in building planning & design.
	CO3	Apply sustainability concepts & principles in planning & design of buildings.
	CO4	Evaluate environmental, sustainable & safety aspects of a building.
	CO5	Plan different types of buildings as per by laws & codal provisions.
100020: Basic Civil Engineering & Mechanics	CO1	Explain concepts and terminologies of building materials, surveying and mechanics
	CO2	Apply various methods for surveying and mechanics
	CO3	Determine the location, area and volume of objects on ground surface
	CO4	Solve the problems of surveying and mechanics by using various methods
	CO5	Analyse the effects of system of forces on rigid bodies in static conditions
100026: Basic Civil Engineering (P)	CO1	Follow the guidelines for field surveying.
	CO2	Follow the working principles of survey instruments for measurements.
	CO3	Measure the horizontal distances, difference in elevation and angles of various points
	CO4	Interpret survey data and compute areas
	CO5	Determine various properties of cement, concrete & bricks.
110311: Building Materials & Construction	CO1	Explain the basic elements of buildings, engg. materials & construction.
	CO2	Evaluate the properties of various materials like cement, aggregate, concrete, admixture, brick, stone etc.
	CO3	Distinguish the suitability of building materials in the construction of elements of buildings.
	CO4	Evaluate various types of concrete in building construction accordingly.

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	CO5	Apply various techniques for finishing & protection works of various elements of building.
110311 (P): Building Materials & Construction	CO1	Determine the properties of cement, sand & aggregate as per IS code
	CO2	Determine the workability of concrete for suitability of concrete mix in different construction works
	CO3	Evaluate compressive strength of various concrete mixes
	CO4	Determine physical properties of brick by experiment and practice accordingly
	CO5	Examine the properties of the cement mortar for various elements of the buildings
110312: Fluid Mechanics-I	CO1	Define various fluid properties & states of fluid
	CO2	Apply principles of fluid flow & dimensional analysis
	CO3	Solve fluid flow problems
	CO4	Analyze characteristics of fluid at rest, fluid at motion & dimensionless numbers
	CO5	Discriminate different types of fluid flow, measurement techniques & principles
	CO6	Apply the concepts of laminar flow in solving various fluid flow problems
110312: Fluid Mechanics-I (P)	CO1	Differentiate between different flow measurement devices
	CO2	Notice flow through pipes & fall velocity of particle
	CO3	Correct the instrumental errors
	CO4	Apply Stoke's law to calculate terminal velocity
110313: Surveying	CO1	Explain the techniques used for linear & angular measurements in surveying.
	CO2	Analyse different geodetic methods of survey such as triangulation, trigonometric leveling, tachometry, photographic & GIS.
	CO3	Apply methods in control surveys.
	CO4	Apply tachometry in traverse computations.
	CO5	Apply various methods for setting curves, area & volume computations.
110313: Strength of Materials	CO1	Explain the concepts of stress, strains, bending, deflection, buckling & torsion.
	CO2	Explain various theories for determining stress, buckling of columns & deflections of structures.
	CO3	Apply various theories for determining stress, buckling of columns & deflections of structures.
	CO4	Evaluate the stresses in bending, shear and torsion.
	CO5	Analyze various sections for stresses, strain, bending, torsion, buckling & deflections.

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110314(P): Strength of Materials	CO1	Evaluate properties of material by impact test
	CO2	Evaluate properties of material by hardness test
	CO3	Evaluate properties of material by tensile test
	CO4	Determine compressive & flexural strength of materials
110315 (P): Survey Practice Lab	CO1	Follow the guidelines for field surveying
	CO2	Follow the working principles of survey instruments for measurements
	CO3	Measure horizontal & vertical angle by theodolite for traversing and leveling
	CO4	Determine tachometric constants for linear measurements by tachometry
	CO5	Create a simple circular curve by using Rankine's method for alignment
	CO6	Develop contour map by using tachometer & total station.
110316: Self Learning / Presentation	CO1	Analyze contemporary issues in civil engineering & its allied areas through literature survey
	CO2	Distinguish state of art & relevance of the topic in national & international arena
	CO3	Demonstrate good oral & written communication skills
	CO4	Develop poster and power point presentations for effective communication
	CO5	Display lifelong learning
110317: Summer Internship Project - I	CO1	Observe various activities in field
	CO2	Examine the utility of general and specific equipments for construction
	CO3	Differentiate the construction projects individually and in team

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	CO4	Develop the writing and communication skills for various engineering problems
	CO5	Adapt lifelong learning for benefit of society
Project Management and Financing (1000005)	CO1	Know the attributes of project and its different phases.
	CO2	Develop the project network based on work breakdown structure and estimation of activity durations
	CO3	Analyze the project network and make decide the various alternates.
	CO4	Evaluate the optimum cost of project for assigned deadlines.
	CO5	Understand the different options to arrange the finances to complete it within stipulated time
Geotechnical Engineering - I (110411)	CO1	Evaluate different properties of rocks & soil and its classification
	CO2	Examine the flow and shear parameters & their effects on various types of soil.
	CO3	Determine the stress distribution & shear failure by various methods.
	CO4	Evaluate the shear strength parameter of soil by various methods
	CO5	Analyse the stability of slopes using various methods.
Geotechnical Engineering – II (Practical) (110411)	CO1	Check physical properties of soil.
	CO2	Check strength properties of soil.
	CO3	Differentiate the flow properties and stresses of soil
	CO4	Check shear strength of soil.
Theory of Structure – I (110412)	CO1	Classify different type of structures based on support conditions
	CO2	Explain various methods & principles for analysis of structures
	CO3	Apply various methods & principles for structural analysis.
	CO4	Analyse various structures using various methods, principles & theorems
	CO5	Evaluate different methods of structural analysis.
Transportation Engineering (110413)	CO1	Explain the principles of highway planning & their geometrical design
	CO2	Evaluate physical properties of suitable highway engineering materials with drainage provisions.
	CO3	Apply the concepts of traffic engineering in transportation planning.
	CO4	Design pavements as per regulations.
	CO5	Formulate the layers of pavement along with provisions of its drainage & maintenance.

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Transportation Engineering – Practical (110413)	CO1	Select suitable aggregate material by testing the physical properties.
	CO2	Determine properties of bitumen and its grade.
	CO3	Determine CBR value of material for subgrade and subsequent layers of pavement.
	CO4	Design job mix formula for bituminous surface using Marshal Stability test
Water Resource Engineering (110414)	CO1	Explain the concept of hydrology and hydrograph
	CO2	Apply basic principles for measurement & forecasting of rainfall & runoff
	CO3	Analyse runoff hydrograph by various methods.
	CO4	Analyse various requirements for an efficient irrigation project
	CO5	Design different components of irrigation system using different theories
	CO6	Plan an efficient, economical & safe irrigation system.
Civil Engineering Drawing (110415)	CO1	Attempt to draw different components of a building.
	CO2	Produce plan, elevation & section of various components of a residential and institutional building.
	CO3	Use AutoCAD software in civil engineering drawing.
	CO4	Prepare drawing sheets of various types of buildings like residential, institutional,