MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(Deemed University)

(Declared Under Distinct Category by Ministry of Education, Government of India)

NAAC Accredited with A++ Grade

Department of Civil Engineering

Scheme of Evaluation

M. E. I Semester *(Construction Technology & Management)*

(for batch admitted in academic session 2025-26)

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted						Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode of Major Evaluation	Duration of Major Evaluation
				Theory Block				Practical Block									
				Continuous Evaluation			Major Evaluation	Continuous Evaluation	Major Evaluation		L	T	P				
				Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment		Lab Work & Sessional									
1.	51251101	DC	Computational Techniques	25	25	20	30	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
2.	51251102	DC	Construction Project Management	25	25	20	30	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
3.	51251103	DC	Construction Materials, Machines & Techniques	25	25	20	30	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
4.	512511XX	DE	**Departmental Elective (DE-1)**	25	25	20	30	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
5.	51251104	SPC	Management Theory **(SPC-1)**	25	25	20	30	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
6.	51251105	DLC	**Materials Lab** [#]	-	-	-	-	70	30	100	-	-	4	2	Experiential	SO	-
7.	51251106	SLP	**Seminar/Presentation** [$]	-	-	-	-	70	30	100	-	-	4	2	Mentoring	SO	-
8.	51251110	NEC	**Classified Novel Engaging Course (Activity Based Learning)**	-	-	-	-	-	50	50	-	1	-	1	Interactive	SO	-
Total				**125**	**125**	**100**	**150**	**140**	**110**	**750**	**13**	**03**	**08**	**20**	-	-	-

MCQ: Multiple Choice Question **PP:** Pen Paper **SO:** Submission + Oral **OB:** Open Book

[#] During lab, students have to perform practical/assignments/minor projects related to the courses of respective semester using recent technologies / languages / tools etc.

[$] Seminar/Presentation through SWAYAM / NPTEL (Registration in a course will be compulsory for students but assessment will be based on internal seminar presentation).

DE-1		
S. No.	**Course Code**	**Course Name**
1.	51251107	Maintenance Management
2.	51251108	Infrastructure Development
3.	51251109	Formwork for Concrete Structures

Mode of Learning					Mode of Examination					Total Credits
Theory		Lab		NEC	Theory			Lab	NEC	
Face to Face	Online	Mentoring	Experiential	Interactive	PP	MCQ	OB	SO	SO	
15		2	2	1	15			4	1	20
75%		10%	10%	5%	75%			20%	5%	Credits %

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M. E. II Semester *(Construction Technology & Management)*

(for batch admitted in academic session 2025-26)

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted								Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode of Major Evaluation	Duration of Major Evaluation
				Theory Block				Practical Block		MOOCs									
				Continuous Evaluation			Major Evaluation	Continuous Evaluation	Major Evaluation	Assignment	Exam		L	T	P				
				Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment		Lab Work & Sessional											
1.	51251201	DC	Project Economics & Financing	25	25	20	30	-	-	-	-	100	3	-	-	3	Face to Face	PP	2 Hrs
2.	51251202	DC	Construction Cost Management	25	25	20	30	-	-	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
3.	51251203	DC	Contract Management	25	25	20	30	-	-	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
4.	512512XX	DE	**Departmental Elective*** **(DE-2)**	-	-	-	-	-	-	25	75	100	3	-	-	3	Online	MCQ	3 Hrs
5.	51251204	SPC	Repair, Rehabilitation & Retrofitting of Structures **(SPC-2)**	25	25	20	30	-	-	-	-	100	2	1	-	3	Face to Face	PP	2 Hrs
6.	51251205	DLC	**Computational Lab** #	-	-	-	-	70	30	-	-	100	-	-	4	2	Experiential	SO	-
7.	51251206	SLP	**Seminar/Presentation** $	-	-	-	-	70	30	-	-	100	-	-	4	2	Mentoring	SO	-
8.	51251207	NEC	**Classified Novel Engaging Course (Activity Based Learning)** Fire Safety & Regulation in Building	-	-	-	-	-	50	-	-	50	-	1	-	1	Interactive	SO	-
Total				**100**	**100**	**100**	**120**	**140**	**110**	**25**	**75**	**750**	**12**	**04**	**08**	**20**	-	-	-

MCQ: Multiple Choice Question **PP:** Pen Paper **SO:** Submission + Oral **OB:** Open Book

* This course will run through SWAYAM / NPTEL /MOOC based learning platform (with credit transfer facility). The course can be related & relevant to other domain as well.

During lab, students have to perform practical/assignments/minor projects related to the courses of respective semester using recent technologies / languages / tools etc.

$ Seminar/Presentation through SWAYAM / NPTEL (Registration in a course will be compulsory for students but assessment will be based on internal seminar presentation).

DE-2* *(through SWAYAM / NPTEL /MOOC)*		
S. No.	**Course Code**	**Course Name**
1.		

Mode of Learning					Mode of Examination					Total Credits
Theory		Lab		NEC	Theory			Lab	NEC	
Face to Face	Online	Mentoring	Experiential	Interactive	PP	MCQ	OB	SO	SO	
12	3	2	2	1	12	3		4	1	20
60%	15%	10%	10%	5%	60%	15%		20%	5%	Credits %

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M. E. III Semester *(Construction Technology & Management)*

(for batch admitted in academic session 2025-26)

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted						Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode of Major Evaluation	Duration of Major Evaluation
				Theory Block				Practical Block									
				Continuous Evaluation			Major Evaluation	Continuous Evaluation	Major Evaluation		L	T	P				
				Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment		Lab Work & Sessional									
1.	51252101	DLC	**Preliminary Dissertation** *(Literature Review/ Problem Foundation/ Synopsis/ survey paper, etc.)*	-	-	-	-	175	75	250	-	-	28	**14**	Interactive	SO	-
Total				-	-	-	-	**175**	**75**	**250**	-	-	**28**	**14**	-	-	-

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Scheme of Evaluation

M. E. IV Semester *(Construction Technology & Management)*

(for batch admitted in academic session 2025-26)

S. No.	Course Code	Category Code	Course Name	Maximum Marks Allotted						Total Marks	Contact Hours per week			Total Credits	Mode of Learning	Mode of Major Evaluation	Duration of Major Evaluation
				Theory Block				Practical Block									
				Continuous Evaluation			Major Evaluation	Continuous Evaluation	Major Evaluation		L	T	P				
				Minor Evaluation I	Minor Evaluation II	Quiz/ Assignment		Lab Work & Sessional									
1.	51252201	DLC	Dissertation	-	-	-	-	350	150	500	-	-	32	16	Interactive	SO	-
Total				-	-	-	-	**350**	**150**	**500**	-	-	**32**	**16**	-	-	-

Course Code: 51251101

Course Name: Computational Techniques

L	T	P	Credit
3	0	0	3

Course Objectives:

- To know about the formulation of L.P.P. & its solution
- To explore the Non linear programming problem and dynamic programming
- To describe Probability and random Process
- To describe random sampling and hypothetical test
- To perceive the Z-transform techniques

SYLLABUS

Unit 1:

Concept of LPP, LPP formulation, Graphical method for solving LPP with two variables, Simplex method, Duality theory, Transportation and Assignment problems. Non Linear Programming Problems (NLPP): Introduction of NLPP, constraints and non-constraint problems of maxima and minima, constraints in the form of equations.

Unit 2:

Introduction to game theory, competitive games, finite and infinite games, two person zero sum game, pure and mixed strategies, saddle point, maximin and minimax principle, solution of a rectangular game in terms of mixed strategies, Graphical method of (2xm) and (nx2) games.

Dynamic Programming: Basic concepts, Bellman's optimality principle, dynamic programming approach in decision making problems, optimal subdivision problems.

Unit 3:

Theory of Probability: Concept of probability, Random variable, discrete probability distributions, Continuous probability distributions, Moment generating function, Probability density function, some special distributions, bi-variate distribution, Random variable, conditional distribution function, Joint probability distribution function, Marginal probability distribution, cumulative probability distribution.

Unit 4:

Testing of Hypothesis, Basic concept of estimation, concept of theory of sampling, chi-square (χ^2) distribution, t-distribution, Fisher's Z-distribution. Analysis of variance, one way and two-way classification.

Unit 5:

Z-transform and their properties, inverse Z-transform, convolution theorem, solution of difference equations by Z-transform. Basic concept of Bessel's function, Hankel transform and their properties, Parseval's theorem.

Course Outcomes:

Upon completion of the course, a student will be able to

CO1: **Determine** the solution of Linear and Non Linear Programming Problems

CO2: **Evaluate** the problems related to game theory& dynamic progamming.

CO3: **Acquire** the knowledge of Probability theory and Random Variable.

CO4: **Analyze** the test of hypothesis and Analysis of Variance.

CO5: **Apply** transforms for engineering applications.

Recommended Books

1. Griva, S. G. Nash and A. Sofer: Linear and Non Linear Optimization, Society for Industrial & Applied, U. S. Mathematics, 2012.
2. F. B. Hildebrand: Methods of Applied Mathematics, Prentaince Hall, 1992.
3. H. K. Dass: Advance Engineering Mathematics, S. Chand, 2018.
4. P. R. Thie and G. E. Keough: An Introduction to Linear Programming & Game Theory, Wiley India Private limited, 2008.
5. Introduction to Probability Models: S. M. Rose, Elsevier India Pvt Limited, 10th Edition 2011.

Course Code: 51251102
Course Name: Construction Project Management

L	T	P	Credit
2	1	0	3

Course Objective:

To learn estimating, specifications, rate analysis, valuation, claims & arbitration, laws related to construction labour, conditions of contract and construction contracts in infrastructure projects.

SYLLABUS

Unit-I

Schedule Planning: Work breakdown structure, Activity and project planning, Level of details, Development of various charts for project planning, Gantts and other charts, Networks and its development.

Unit-II

Work Study Techniques: Introduction, Method study and work of measurement techniques, Different types and techniques method study and work measurements. Work Sampling, delay measurements, determinate and probabilistic activity durations.

Unit-III

Productivity in Construction: Definition of productivity, Productivity measurement, Qualitative and quantitative measurements, Productivity of production components, Labour, Equipment, Material and capital productivity, Productivity planning, designing and execution processes, System productivity

Unit-IV

Critical Path Method/PERT: Overview of CPM basic scheduling computations, Forward and backwards pass, concepts of early start, Early finish, late start and late finish time for activities and events. Different types of slacks, PERT system of three time estimates, PERT scheduling computations.

Unit-V

Precedence Network, LOB and other techniques: line of balance techniques, Modified LOB and EnPERT scheduling techniques

Resource Scheduling: Activity time-cost and time-resource functions, Time-cost trade-off functions, Linear, Non linear and discrete time cost/ resource functions, crashing of projects, different methods.

Resource loading and leveling, different methods, unconstrained & constrained resource scheduling, relative effectiveness & use of heuristics in scheduling.

Reference books

1. Project Management with CPM and P ERT by Joseph J . Moder, Cecil R . Phillips, Van Nostrand Reinhold Company
2. A Management Guide to PERT/CPM With GERT/PDM/DCPM and Other networks by Jerome D. Wiest, Ferdinand K. Levy, Prentice Hall.
3. PERT & CPM Principles and Applications by L.S. Srinath, Affiliated EWP Pvt. Ltd.
4. Project Management Scheduling PERT and CPM by Dr. B.C. Punmia, K.K. Khandelawal

Course Outcomes:

Upon completion of the course, a student will be able to

CO1: Apply project planning techniques effectively.

CO2: Apply the principles and applications of work study and work measurement in industrial and service operations.

CO3: Analyze the productivity of key production components including labor, equipment, materials, and capital.

CO4: Execute CPM & PERT-based scheduling computations to analyze probabilistic activity durations and project timelines.

CO5: Apply project crashing methods to optimize project duration and cost under different constraints.

Course Code: 51251103
Course Name: Construction Materials, Machines & Techniques

L	T	P	Credit
2	1	0	3

Course Objective:

To impart knowledge about the details of normal and special concretes; construction equipments; and modern construction techniques.

SYLLABUS

Unit-I

Ingredients of concrete including mineral admixtures and chemical admixtures; Proportioning of ingredients; Stages in production of concrete i.e. Batching, Mixing, Transporting, Placing compacting and curing. Design of high strength concrete; Production of Ready mix concrete.

Unit-II

Polymer concrete, Light weight concrete, Heavy weight concrete, Concrete for radiation shielding, No-Fines concrete, Pervious concrete; Ferro cement; Fiber reinforced concrete, Dry lean concrete and Pavement quality concrete; Self compacting concrete.

Unit-III

Characteristics, Operation and selection of different types of construction equipments viz. Power shovels, Draglines, Scrapper, Bulldozer, Tractor, Rippers, Motor graders; Equipments for aggregate processing plant; Ready Mix Concrete Plant; and Hot Mix plant.

Unit-IV

Construction of piles, Well foundations, Coffer dams and diaphragms; Drilling and blasting, Underpinning, Shoring and shuttering; Different types of form works, Stationary and slip form work techniques, Scaffolding; Application of Geosynthetics.

Unit-V

Application of prefabrication in construction, Modular coordination and standardization; Prestressing methods; Materials; Loss of prestress; equipments for industrial production of prestressed components; Production of Railway Sleepers, Poles and Tanks; Pre-engineered buildings; Erection of steel structures like bridges, and trusses.

Reference Books

1. D. G. Gransberg, C. M. Popescu and R. C. Ryan, Construction Equipment Management for Engineers, Estimators, and Owners, Taylor & Francis, New York.
2. R. L. Peurifoy, C. J. Schexnayder, A.Shapira and R. Schmitt, Construction planning, equipment, and methods, McGraw Hill, New York
3. A. R. Santha Kumar, Concrete Technology, Oxford University press.
4. Soil Mechanics by Gopal Ranjan, New Age Publishers.
5. Foundation Design Manual by Narayan V. Nayak, Dhanpat Rai Publications
6. Mahesh Verma, Construction Equipment, its planning & Application, Metropolitan Book Co.(P)Ltd.

7. Prestressed Concrete by T. Y. Lin and N. H. Burns, Wiley Publishers
8. Highway Engg by Justo and Khanna, Publisher: Nem Chand and Brothers

Courses Outcomes:

Upon completion of the course, a student will be able to

CO1: Design normal and high strength concretes.

CO2: Explain the details of various types of special concrete.

CO3: Analyse the suitability of various equipments for construction sites.

CO4: Describe the details of deep foundations; form works and geosynthetics.

CO 5: Apply modern construction practices for concrete and steel structures.

Course Code: 51251104
Course Name: Management Theory

L	T	P	Credit
3	0	0	3

Course Objective:

To learn and understand the Special Features of Construction Industry, Management principles and functions, behavior of individual & group behavior and motivational theories, different theories of organization construction management and SWOT analysis.

SYLLABUS

Unit I

Special Features of Construction Industry: Significance and importance of construction VIS AVIS other industry Importance of construction industry in National economy. Recognition of construction as industry. Significant differences between construction & other manufacturing. Production and process industry with special reference to planning. Execution finance and other aspects.

Unit-II

Management Principles: Concepts and theory. Historical developments. Management functions: Forecasting, Planning, Organizing, directing, coordinating, motivating, controlling and evaluating. Problems of construction industry influencing management process.

Unit-III

Behavioral Sciences: Principles. Historical development. Individual and group behavior. Group dynamics, Motivational theories, Leadership interaction.

Unit-IV

Organization Theory: Introduction. Historical development, Growth and various models. Type of construction organization. Design of organization. Organization systems. Goals, Culture & environment. Developing self learning organizations.

Unit-V

Construction Management and Different Management Requirements: Principles of sales. Purchase. Marketing. Stores and site management on construction projects. Entrepreneurship. Business policy. Corporate planning, SWOT analysis.

Reference Books

1. Construction Project Management Theory and Practice by K.N. Jha, 3rd Edition, Pearson Education India

2. Construction Company Management by Abid Hasan, Asheem Shrestha, K. N. Jha, 1st Edition, Routledge Publishers, 2025.

3. Organizational Behavior in Construction, Anthony Walker, Willey Blackwell

4. Principles and Practice of Management by L. M. Prasad, S. Chand & Sons

5. Human Resource Management: Text and Cases by K. Aswathappa, Himalaya Publishing.

6. Entrepreneurial Development" by S.S. Khanka, S. Chand & Sons

Courses Outcomes:

Upon completion of the course, a student will be able to

CO1: Differentiate between construction and other manufacturing industry regarding various aspects like planning, execution and finance.

CO2: Apply key management functions including forecasting, planning, organizing, directing, coordinating, motivating, controlling, and evaluating.

CO3: Apply motivational theories to enhance individual and team productivity.

CO4: Evaluate organizational systems in relation to their goals, culture, and external environment.

CO5: Apply key principles of construction management, including sales, marketing and corporate planning tools like SWOT analysis to effectively manage construction projects.

Course Code: 51251107
Course Name: Maintenance Management

L	T	P	Credit
3	0	0	3

Course Objective:

To learn about the various building services & their planning and service management required in a building.

SYLLABUS

Unit I

Introduction: Introduction to primary services in a building, Type of services required to keep facility usable, planning of services. Organization structures of services management. Role and administrative functions of supervisors. Outline of the concept of carbon trading and self sustainable zero carbon building. Importance

Unit II

Fire Fighting: Standard fire, fire resistance, classification of buildings. Basic requirement of the works for fighting system, various components of the fire fighting system. Maintenance required of the system, fire fighting in high-rise buildings, commercial/industrial complexes. Public buildings, checklist for fire safety. Provision of NBC.

Unit III

Lifts/Elevators, Escalators: Legal formalities for elevators, various types of lifts, working mechanisms of lift and escalators. Indian standard codes for planning & installations of elevator, inspection & maintenance of lifts.

Unit IV

Plumbing Services Water Supply System: Basics of Plumbing systems. Requirement of Plumbing works, Agency, Activity flow chart for plumbing work. Quality checking of materials. Water supply and distribution system is high-rise building & other complexes, pumps and pumping mechanisms. Operation & maintenance of fittings & fixtures of water supply & sanitary. Do's & Don'ts for water pipe networks.

Unit V

Maintenance and management of services: Telecommunication network, computer network LAN, Electrical network & appliances. Basics of single phase & three phase electrification, precautions and safety measures during electrification. Indian standard codes for electrical appliances & wiring operations & maintenance of network & appliances. Landscaping & Horticulture. Building maintenance management, applications of computer in service management. Flowcharts of air conditioning & heating. Centralised systems, monitoring and working of the equipments, Checklist of inspection, Performance testing. Water proofing. Damp proofing & Termite proofing. Working procedure & stages of work of water proofing for W.C., Bathrooms, Terrace, sloping roof, Basements, tanks. Use of chemicals for water proofing treatment.

Reference Books

1. Building services Design and Management by Jakie Partman, Willey Blackwell 2014.
2. Building Services Engineering by David V .Chadderton, Routledge 2013.

Courses Outcomes:

Upon completion of the course, a student will be able to

CO1: Explain the basic building services, their management structure, the role of supervisors, and the concepts of carbon trading and zero-carbon buildings.

CO2: **Carry** out planning of firefighting system for a building.

CO3: Apply relevant Indian Standard codes to plan, evaluate, and ensure the safe installation, operation, and maintenance of various types of lifts and escalators.

CO4: **Apply** plumbing and water supply system principles to design, install, and maintain systems in buildings, ensuring quality and efficiency.

CO5: **Apply** essential concepts of service management and maintenance for telecommunication, computer networks, electrical systems, and building maintenance, while demonstrating an understanding of safety precautions

Course Code: 51251108

Course Name: Infrastructure Development

L	T	P	Credit
3	0	0	3

Course Objective:

To provide the knowledge to students so that they can plan, operate, maintain, and ensure the sustainability of infrastructure systems by considering risk management, disaster preparedness and applying IT tools.

SYLLABUS

Unit-1 Infrastructure and economic development: Energy needs, sources and management. Different types of build infrastructure systems, challenges and opportunities.

Unit –II Strategic issues in Infrastructure development: Planning, Design and Construction of Infrastructure. Quality control in Infrastructure development. Role of Public PPP in Infrastructure development.

Unit-III Performance monitoring: Maintenance, Rehabilitation and Renovation of Infrastructure. Life cycle cost analysis of Infrastructure.

Unit-IV Risk management in Infrastructure projects: Basic components of risk, components of risk management – risk assessment, risk acceptance, treatment, monitoring and communication.

Unit – V Management of Infrastructure: Application of IT tools in various phases of Infrastructure development.

Reference Books:

1. Risk Management in Civil Infrastructure by Mohammed M. Ettouney, Shreenivas Alampalli. Publisher CRC Press Taylor and Francis group.2017.

2. Infrastructure Management: Integrating Design, Construction, Maintenance, Rehabilitation and Renovation by W. Ronald Mudson, Ralph Haas, Publisher Mc Graw- Hill.1997

3. Disaster Resillence Management of Infrastructure System: Computational modeling and Geospatial Technologies by W Waheed Uddin Publisher CRC Press LLC.

Courses Outcomes:

Upon completion of the course, a student will be able to

CO 1: **Describe** the relationship between infrastructure and economic growth, explain energy management, and identify infrastructure challenges and opportunities.

CO2: Analyze strategic issues in infrastructure development, focusing on planning, design, construction, and the role of Public-Private partnerships

CO3: Apply performance techniques in infrastructure development.

CO4: Analyze risks in infrastructure projects.

CO5: Apply I. T. Tools in various phases of infrastructure system.

Course Code: 51251109
Course Name: Formwork for Concrete Structures

L	T	P	Credit
3	0	0	3

Course Objective:

To equip students with the knowledge and skills needed to design, construct, and manage formwork systems for concrete structures efficiently and safely.

SYLLABUS

Unit-1 Introduction: Introduction to Sheeting, Shuttering, Centering, Staging, Formwork, Scaffolding and False work, Mould. Formwork as a temporary structure. Requirements for a formwork. Classification (Types) of Formwork. Formwork Materials.

Unit-2 Formwork for building components: Formwork for raft foundation, pile foundation, footings, RCC columns, beams, slabs and wall. Formwork area calculation. Various loads and moments on formwork. Slip form and their types.

Unit-3 Formwork for special structure: Formwork for Highways. Formwork for Bridge structures. Formwork for Multi-Story Building Construction. Formwork for precast concrete. Formwork for pre-stressed concrete. Flying formwork and their advantages, disadvantages and limitations.

Unit-4 MIVAN Formwork: Introduction, materials used in MIVAN formwork, parts of MIVAN formwork, Procedure of MIVAN formwork construction, pin and wedge system in MIVAN formwork, Work cycle of MIVAN formwork, Comparison between MIVAN and traditional formwork, Technical specification of MIVAN formwork, advantages and disadvantages of MIVAN formwork

Unit-5 Issues and failure of Formwork: Causes of Formwork Failure. Common deficiency in design leading to formwork failure. A case study on formwork failure. Avoiding formwork failure. Pre-Award and Post –award Formwork Management Issues.

Reference Books:

1. Jha, K.N., Formwork and Scaffold Engineering, Second Edition, Pearson Publishers, 2023
2. Austin, C.K., Formwork for concrete, Cleaver - Hume Press Ltd., London, 1996
3. Michael P. Hurst, Construction Press, London and New York. 2003

Courses Outcomes:

Upon completion of the course, a student will be able to

CO1: Explain the concept of formworks.

CO2: **Analyze** various formwork systems for building components.

CO3: Analyze various formwork systems for special structures.

CO4: Explain the components, construction procedure, and technical aspects of MIVAN formwork.

CO5: **Assess** the failure issues in formworks.

Course Code: 51251105
Course Name: Materials Lab

L	T	P	Credit
0	0	4	2

Course Objective:

This lab course is aimed to be familiar with methods used for characterization of building material; mix design and quality checking of concrete; characterization of soils and highway materials.

List of Experiments:

1. Mix Design of Concrete
2. Permeability Test of Concrete
3. Creep Test of Concrete
4. Measurement of concrete Strength determination by NDT techniques.
5. Unconfined Compression Test
6. Direct Shear Test
7. Static Cone Penetration Test
8. Triaxial Shear Test (Unconsolidated Undrained, Consolidated Undrained, Consolidated Drained)
9. Vane Shear Test
10. C.B.R Test
11. Consolidation Test
12. SPT Test (Demonstration)
13. Marshall stability test of bitumen

Course Outcomes:

Upon completion of the course, a student will be able to

CO1: Determine different properties of concrete.

CO2: Determine different properties of soil

CO3: Determine different properties of highway materials

CO4: Apply various non-destructive testing methods on concrete

CO5: Design different types of concrete mixes

Reference Books:

1. Mehta P.K and Monteiro P.J.M, "Concrete: Microstructure, Properties and Materials, Third Edition, Tata McGraw-Hill Publishing company Limited, New Delhi, 2017
2. Shetty M. S., "Concrete Technology, Theory and Practice", Revised Edition, S. Chand & company Ltd., New Delhi, 2019

3. Neville. A. M., "Properties of Concrete", 5th Edition Pearson Publisher, 2012
4. Soil Mech. & Found. Engg., Dr. K. R. Arora, Std. Publishers Delhi, 7th edition 2014
5. Soil Mech. & Foundation, Dr. B. C. Punmia, Laxmi Publications,Delhi,16th edition 2017
6. Soil Mech. & Found Engg., S. K. Garg, Khanna Publishers, Delhi, 1st edition, 2003
7. Soil Testing for Engg., T. W. Lambe, John Wiley & Sons. Inc., 1969

Course Code: 51251106

Course Name: Seminar / Presentation

L	T	P	Credit
0	0	4	2

Course Objective:

To enhance students' understanding of Construction Technology & Management by encouraging the study of diverse literature, fostering lifelong learning, and developing the soft skills necessary for effective presentation.

Syllabus

Any relevant topic related to Construction Technology & Management from within or beyond the syllabus through Swayam / NPTEL/MOOC.

Course Outcomes:

Upon completion of the course, the students will be able to:

CO 1: Analyze contemporary issues in Construction management & its allied areas.

CO 2: Demonstrate good oral communication skills.

CO 3: Develop poster and power point presentations for effective communication.