

M. Tech. I Semester II

Subject Name: Design of Formwork

Subject Code: MTST14201

Type of course: PE-III

Prerequisite: Building Construction, Design of Structures

Rationale: The formworks are the temporary structures which are constructed by contractors as primary structures for building up the main structures. This includes form work, scaffolding, excavation supporting systems, and equipment for hoisting materials, personnel, and erecting structures.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	150
3	0	2	4	60	25	15	30	20	

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests) **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CA3:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1.	Introduction: Requirements and Selection of Formwork. Timber, Plywood, Steel, Aluminum, Plastic, and Accessories. Horizontal and Vertical Formwork Supports. Formwork and false work, Temporary work systems, Construction planning and site constraints, Materials and construction of the common formwork and false work systems, Special and proprietary forms.	09	20%
2.	Formwork Design: Concepts, Formwork Systems and Design for Foundations, Walls, Columns, Slab and Beams.	12	25%
3.	Formwork Design for Special Structures: Shells, Domes, Overhead Water Tanks, Bridges, Types of beam, decking and column formwork, Design of decking, False work design,	12	25%
4.	Flying Formwork: Table Form, Tunnel Form, Slip Form, and Formwork for Precast Concrete, Uses and applications of special forms.	04	10%

PE-III: Programme Elective-III

5.	Formwork Failures: Causes and Case studies in Formwork Failure, Formwork Issues in Multi-Story Building Construction	04	10%
6.	Construction Sequence and Safety in use of Formwork: Sequence of construction, Safety use of formwork and false work.	04	10%

Suggested Specification table with Marks (Theory/Practical):

% Distribution of Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	20	30	15	15	10

Legends: R: Remembrance, **U:** Understanding; **A:** Application, **N:** Analyze, **E:** Evaluate **C:** Create and above Levels (**Revised Bloom's Taxonomy**)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Text Books:

Sr. No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1.	Formwork for Concrete Structures	Peurify,	Tata McGraw Hill Education ISBN-10 : 9339221923 ISBN-13 : 978-9339221928	2015	4 th Indian Edition
2.	Formwork for Concrete Structures	Kumar NeerajJha.	Tata McGraw Hill Education ISBN-10 : 1259007332 ISBN-13 : 978-1259007330	2017	1 st
3.	Formwork for Concrete,	Austin, C.K.,	Longman ISBN-10 : 0711436029 ISBN-13 : 978-0711436022	1978	3 rd
5.	Formwork for Concrete,	Hurd, M.K.,	Special Publication No.4, American Concrete Institute, Detroit ISBN-10 : 0685850986 ISBN-13 : 978-0685850985	1995	5 th
6.	Formwork For Concrete Structures	Robert L. Peurifoy and Garold D. Oberlender,	McGraw-Hill Education ISBN-10 : 0071639179 ISBN-13 : 978-0071639170	2010	4 th

Technical Monograph for Formwork,2002, Indian Concrete Institute.
IS 14687: 1999, false work for Concrete Structures Guidelines, BIS.

PE-III: Programme Elective-III

Course Outcome:

Sr. No.	CO Statement After learning this subject, students will be able to	Marks weightage
CO-1	Select proper formwork, accessories and material. <i>(R, U, C...cognitive level)</i>	15%
CO-2	Carry out detailed planning of framework, design of form work with different materials for various structural elements and erection of form work. <i>(R, U, A, N, E ...cognitive level)</i>	30%
CO-3	Design the form work for Special Structures. <i>(R, U, A, N, E, C...cognitive level)</i>	30%
CO-4	Understand the working of flying formwork. <i>(R, U, A ...cognitive level)</i>	10%
CO-5	Judge the formwork failures through case studies and design ensuring the safety of structure. <i>(R, U, A, N ...cognitive level)</i>	15%

LIST OF PRACTICALS:

Group of Students have to prepare presentation based on topics of subject as well as individually students have to solve assignments

List of Open Source/learning website:

- <https://www.civilsutras.com/civil-videos-concrete-formwork/>
 - Type of Formwork