22CEPE30	FORMWORK FOR CONCRETE STRUCTURES	Semester			VII
PREREQUISITES	Category	PE	Credit		3
Concrete Technology, Construction Practices	Hours/Week	L	T	P	TH
		3	0	0	3

Course Learning Objectives

1	To acquire knowledge on formwork requirements and formwork materials
2	To understand the construction of formworks for structural elements
3	To impart knowledge in formwork for special structures
4	To improve the proficiency in slipform and scaffolds
5	To acquire knowledge on scaffold materials and formwork failures

Unit I	FORMWORK MATERIALS AND ACCESSORIES	9	0	0	9

Different types of temporary structures –Requirements for formwork –Selection criteria of formwork– Traditional Classification of formwork – Formwork materials – Timber, plywood, steel, aluminium, plastic formworks with requirements and permissible stresses.

Unit II	FORMWORK FOR STRUCTURAL ELEMENTS	9	0	0	9

Formwork for isolated, wall, steeped and raft footings – Formwork for walls - climbing formwork –Conventional column formwork –Traditional slab and beam formwork- achieving economy in column formwork, slab and beam formwork

Unit III	FORMWORK FOR SPECIAL STRUCTURES	9	0	0	9

Formwork for shells, Formwork for domes–Formwork for cast in situ folded plates – Formwork for precast folded plates – Formwork for tunnels – Formwork for Lift shafts- Formwork for caissons – Formwork for piers – Formwork for bridge railings – Formwork for Tunnels

Unit IV	FLYING FORMWORK AND SLIPFORM	9	0	0	9

Flying Formwork cycles – Advantages and disadvantages of Flying Forms –Vertical Slipform – Horizontal Slipform – Types of Slipform– Components of Slipform, Assembly, Sliding and Dismantling of Slipform – Safety operations during Slipform erections.

Unit V	SCAFFOLD AND FORMWORK FAILURE	9	0	0	9

Classification of Scaffolds- Timber, Metal, Galvanized, Scaffolds.–Scaffolds for High clearance Structures –Possible collapses in Scaffolds –Causes of Formwork failure – Precautions for avoiding Formwork failures.

Total= 45 Periods

Text Books:

1	Robert L. Peurifoy ,GaroldD. Oberlender, , Formwork for Concrete Structures, McGraw Hill Education., 2010.
2	Kumar NeerajJha, Formwork for Concrete Structures, McGraw Hill Publications Education., 2019

Reference Books:

1	Hanna, A.S, Concrete Formwork systems, CRC, 2009
2	Hurst, M.P, Formwork for Concrete, American Concrete Institute, 2005.

Course Outcomes: Upon completion of this course, the students will be able to:		**Bloom's Taxonomy Mapped**
CO1	Select the types of formwork materials for different requirements	Understand
CO2	Know about the building of formwork for various structural elements	Understand
CO3	Explaining the formwork requirements for special structures	Understand
CO4	Justifying the requirements of slipform and its advantages	Analysis
CO5	Planning the safety requirements in Formwork construction	Apply

COURSE ARTICULATION MATRIX

COs/ POs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	**1**	**1**	**3**	**1**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**
CO2	**1**	**1**	**3**	**1**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**
CO3	**1**	**2**	**3**	**1**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**
CO4	**2**	**2**	**3**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**
CO5	**2**	**1**	**3**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**
Avg	**1.4**	**1.4**	**3**	**1.4**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**
3/2/1 – indicates strength of **correlation (3- High, 2- Medium, 1- Low)**															