

Lesson Planning (Theory)

Branch : Civil Engineering

Semester : 5th

Subject : Precast And Pre-Stressed Concrete Session : August-December 2026

Teacher: Er. Harish kumar

Class Room : A-201

S.No.	No. of WEEKS	Chapter/ Unit Description	Detail of Contents	Reference Resources	Remarks
1	3 WEEKS	Unit-I Precast concrete Elements	- Advantages and disadvantages of precast concrete members - Non-structural Precast elements-Paver blocks, Fencing Poles, Transmission Poles, Manhole Covers, Hollow and Solid Blocks, kerb stones as per relevant BIS specifications - Structural Precast elements –tunnel linings, Canal lining, Box culvert, bridge panels, foundation, sheet piles	R1,R2	
2	3 WEEKS	Unit-II Prefabricate d building	- Precast Structural Building components such as slab panels, beams, columns, footings, walls, lintels and chajjas, staircase elements, - Prefabricated building using precast load bearing and non-load bearing wall panels, floor systems-Material characteristics, Plans & Standard specifications - Prefab systems and structural schemes and their classification - Joints–requirements of structural joints - Manufacturing, storage, curing, transportation and erection of above elements, equipment needed	R1,R2	
3	3 WEEKS	Unit-III Introduction to Pre-Stressed Concrete Unit-IV Methods and systems of pre-stressing	- Principles of pre-stressed concrete and basic terminology. - Applications, advantages and disadvantages of pre stressed concrete - Materials used and their properties, Necessity of high-grade materials - Types of Pre-stressing steel-Wire, Cable, tendon, Merits-demerits and applications - Methods of pre-stressing–Internal and External pre-stressing, Pre and Post tensioning applications - Systems for pre tensioning– process, applications, merits and demerits-Hoyer system	R1,R2	
4	3 WEEKS	Unit-IV Methods and systems of pre-stressing	- Systems for post-tensioning – process, applications, merits and demerits – Freyssinet system, Magnel Blaton system, Gifford Udall system. - Loss of pre-stress occurring subsequently: losses due to	R1,R2	

		Unit–V Analysis and design of pre-stressed rectangular beam section	shrinkage of concrete, creep of concrete, elastic shortening, and creep in steel, (Simple Numerical problems to determine loss of pre-stress). • BIS recommendations for percentage loss in case of Pre and Post tensioning. • Basic assumptions in analysis of pre-stressed concrete beams. • Cable Profile in simply supported rectangular beam section—concentric, eccentric straight and parabolic		
5	2 WEEKS	Unit–V Analysis and design of pre-stressed rectangular beam section	• Effect of cable profile on maximum stresses at mid span and at support. • Numerical problems on determination of maximum stresses at mid spans with linear (con-centric and eccentric) cable profiles only. • Simple steps involved in Design of simply supported rectangular beam section (No numerical problems)	R1,R2	

REFERENCE RESOURCES

- Krishna Raju, N., Pre-stressed Concrete, Tata McGraw Hill, New Delhi.
- Shrikant B. Vanakudre, Pre-stressed Concrete, Khanna Publishing House, New Delhi.

Signature of Teacher

Signature of H.O.D/OIC