DEPARTMENT OF CIVIL ENGINEERING

GOVERNMENT POLYTECHNIC SUNDERNAGAR

LESSON PLAN FOR Precast and Pre-stressed Concrete (SEMESTER-5TH)SESSION: (Aug-Dec 2025)				
S.No.	**MONTH**	**WEEK**	**CONTENTS**	**REMARKS**
1	August	Week 2	Advantages and disadvantages of precast concrete members	
		Week 3	Non-structural Precast elements-Paver blocks, Fencing Poles, Transmission Poles, Manhole Covers, Hollow and Solid Blocks, kerb stones as per relevant BIS specifications	
		Week 4	Structural Precast elements –tunnel linings, Canal lining, Box culvert, bridge panels, foundation, sheet piles	
		Week 5	Precast Structural Building components such as slab panels, beams, columns, footings, walls, lintels and chajjas, staircase elements	
2	September	Week 1	Prefabricated building using precast load bearing and non-load bearing wall panels, floor systems-Material characteristics, Plans & Standard specifications	
		Week 2	Prefab systems and structural schemes and their classification **Class Test -1 Will be held this week.**	
		Week 3	Joints–requirements of structural joints	
		Week 4	**Manufacturing, storage, curing, transportation and erection of above elements, equipment needed**	
		Week 5	Principles of pre-stressed concrete and basic terminology Applications, advantages and disadvantages of pre stressed concrete	
3	October	Week 1	Materials used and their properties, Necessity of high-grade materials Types of Pre-stressing steel-Wire, Cable, tendon, Merits-demerits and applications	
		Week 2	Methods of pre-stressing–Internal and External pre-stressing, Pre and Post tensioning applications	
		Week 3	**Class Test -2 Will be held this week.**	
		Week 4	Systems for pre tensioning– process, applications, merits and demerits-Hoyer system	
		Week 5	Systems for post-tensioning – process, applications, merits and demerits – Freyssinet system, Magnel Blaton system, Gifford Udall system	

4	November	Week 1	Loss of pre-stress occurring subsequently: losses due to shrinkage of concrete, creep of concrete, elastic shortening, and creep in steel, (Simple Numerical problems to determine loss of pre-stress)	
		Week 2	**House Test will be held this week**	
4	November	Week 3	BIS recommendations for percentage loss in case of Pre and Post tensioning. Basic assumptions in analysis of pre-stressed concrete beams.	
		Week 4	Cable Profile in simply supported rectangular beam section–concentric, eccentric straight and parabolic Effect of cable profile on maximum stresses at mid span and at support.	
		Week 5	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)	

Signature of Teacher
(Er.Vibhor Sharma)

Signature of H.O.D