

**Gopal Krishna college of engineering and technology**  
**Goura Hari vihar, po: raniput, jeypore-764005**  
**Lesson plan(2025-2026)**

Name of the subject : Prestressed Concrete

Name of the faculty: **Er .Umarani Pujari**

Semester: 7<sup>th</sup>

Semester from: July to November

Branch: Civil Engg.

No.of week:12<sup>th</sup>

week	Class day	Theory/practical
<b>Module1(week-1-3)</b>		
1 <sup>st</sup>	1 <sup>st</sup>	Introduction to Prestressed Concrete and Basic Concepts
	2 <sup>nd</sup>	Advantages, Applications and Need for High Strength Concrete and Steel
	3 <sup>rd</sup>	Prestressing Systems and Materials
2 <sup>nd</sup>	1 <sup>st</sup>	Pre-tensioning System
	2 <sup>nd</sup>	Post-tensioning System
	3 <sup>rd</sup>	Losses of Prestress
3 <sup>rd</sup>	1 <sup>st</sup>	Analysis of Prestress
	2 <sup>nd</sup>	Bending Stresses in Prestressed Members
	3 <sup>rd</sup>	IS Codes and Provisions for Prestressed Concrete
<b>Module 2(week4-6)</b>		
4 <sup>th</sup>	1 <sup>st</sup>	Analysis and Design of Sections for Bending
	2 <sup>nd</sup>	Design of Sections for Shear
	3 <sup>rd</sup>	Pressure Line and Kern Zone Concept
5 <sup>th</sup>	1 <sup>st</sup>	Concept of Load Balancing
	2 <sup>nd</sup>	Cracking Moment in Prestressed Concrete
	3 <sup>rd</sup>	Bending of Cables
6 <sup>th</sup>	1 <sup>st</sup>	Limit State Analysis of Prestressed Sections
	2 <sup>nd</sup>	Anchorage Zone Stresses
	3 <sup>rd</sup>	Design of End Block and Applications to Bridges
<b>Module 3(week 7-10)</b>		
7 <sup>th</sup>	1 <sup>st</sup>	Selection of Prestressed Concrete Members
	2 <sup>nd</sup>	Short Term Deflection of Uncracked Members
	3 <sup>rd</sup>	Long Term Deflection of Uncracked Members
8 <sup>th</sup>	1 <sup>st</sup>	Factors Affecting Deflection
	2 <sup>nd</sup>	Deflection Control in Prestressed Members
	3 <sup>rd</sup>	Numerical Problems on Deflection
9 <sup>th</sup>	1 <sup>st</sup>	Flexural Strength of Prestressed Concrete Sections
	2 <sup>nd</sup>	Ultimate Load Carrying Capacity
	3 <sup>rd</sup>	Continuous Prestressed Concrete Beams
10 <sup>th</sup>	1 <sup>st</sup>	Concordancy of Cables
	2 <sup>nd</sup>	Secondary Moments and Secondary Stresses
	3 <sup>rd</sup>	Secondary Design Considerations
<b>Module 4(week11-12)</b>		
11 <sup>th</sup>	1 <sup>st</sup>	Design of Pre-tensioned Beam
	2 <sup>nd</sup>	Design Procedure for Pre-tensioned Beam
	3 <sup>rd</sup>	Numerical Problems on Pre-tensioned Beam
12 <sup>th</sup>	1 <sup>st</sup>	Design of Post-tensioned Beam
	2 <sup>nd</sup>	Design Procedure for Post-tensioned Beam
	3 <sup>rd</sup>	Numerical Problems and Revision

**Books**

1. N. Krishna Raju, *Prestressed Concrete*, Tata McGraw Hill Publication.
2. T. Y. Lin and Ned H. Burns, *Design of Prestressed Concrete Structures*, Wiley India.
3. P. Dayaratnam, *Prestressed Concrete Structures*, Oxford & IBH Publishing.
4. Ramamrutham, *Prestressed Concrete*, Dhanpat Rai Publications.
5. IS 1343: Code of Practice for Prestressed Concrete, Bureau of Indian Standards.

