

SE651: Advanced Pre-stressed Concrete

Teaching Scheme			Credits C	Marks Distribution				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE	CE	ESE	CE	
3	2	0	5	70	30	30	20	150

Course Content:

Sr. No	Topics	Teaching Hrs.
1	<p><u>Introduction:</u></p> <p>Principles of prestressing - types and systems of prestressing, need for High Strength materials, Loading stages, Determination of losses.</p>	05
2	<p><u>Behavior under flexure:</u></p> <p>IS codal provisions, ultimate strength, Design of flexural members including large span slabs and beams.</p>	05
3	<p><u>Design for Shear, bond and torsion. Design of End blocks:</u></p>	06
4	<p><u>Design of tension members:</u></p> <p>Application in the design of prestressed pipes and prestressed concrete cylindrical water tanks.</p>	05
5	<p><u>Design of compression members with and without flexure:</u></p> <p>Its application in the design piles, flag masts and similar structures the design piles, flag masts and similar structures</p>	04
6	<p><u>Composite beams - analysis and design:</u></p> <p>Composite beams, ultimate strength - their applications. Partial prestressing - its advantages and applications.</p>	05
7	<p><u>Application of prestressing in continuous beams, concept of linear transformation, Concordant cable profile and cap cables:</u></p>	06

8	<u>Introduction to the special prestressed structures like prestressed folded plates, Prestressed cylindrical shells, prestressed concrete poles:</u>	06
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Total Hrs.	42
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Reference Books:

1. Krishnaraju N, “*Prestressed concrete*”, Tata McGraw-Hill Private Limited, New Delhi
2. T.Y.Lin, “*Design of Prestressed Concrete Structures*”, John Wiley and Sons, Inc.
3. N.C.Sinha, S.K.Roy, “*Fundamentals of Prestressed Concrete*”, John Wiley and Sons, Inc.
4. Leonhardt F., Wilhelm Ernst and Shon, Berlin, “*Prestressed Concrete-Design and Construction*”, CBS Publishers, New Delhi.
5. Freyssinet, “*Prestressed Concrete*”, Tata McGraw-Hill Private Limited, New Delhi.
6. Evans, R.H. and Bennett, E.W., Chapman and Hall, “*Prestressed Concrete*”, Chapman and Hall, London.
7. Rajgopalan, “*Prestressed Concrete*”, Asia Publishing House, Bombay.
8. IS: 1343-Code for Practice for Prestressed Concrete, BIS India.
9. IS: 3370-3 (1967): Code of Practice Concrete structures for the storage of liquids, Part 3: Prestressed concrete structures, BIS India.