

Year & Sem:	Course Code: CE3502	Course Name: Pre-stressed Concrete	No. of Credits: 4	L	T&PS	P
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UNIT I: Introduction&Methods of Prestressing:

Historic development, General principles of prestressing, pretensioning and post tensioning, Advantages and limitations of prestressed concrete, Materials, High strength concrete and high tensile steel their characteristics, Methods and Systems of Prestressing, Pre-tensioning and post tensioning methods, Different systems of prestressing like Hoyer System, Magnel System Freyssinet system and Gifford – Udall System

UNIT – II: Losses Of Prestress:-

Loss of prestress in pre-tensioned and post-tensioned members due to various causes like elastic shortening of concrete, shrinkage of concrete, creep of concrete, Relaxation of stress in steel, slip in anchorage ,bending of member and wobble frictional losses

UNIT – III: Analysis And Design Of Sections For Flexure;-

Elastic analysis of concrete beams prestressed with straight, concentric, eccentric, bent and parabolic tendons, Allowable stress, Design criteria as per I.S Code, Elastic design of simple rectangular and I-section for flexure – Kern – lines, cable profile

UNIT – IV: Analysis And Design Of Section For Shear :

Shear and Principal Stresses, Design for Shear in beams

UNIT – V: Composite Section:

Introduction – Analysis of stress – Differential shrinkage – General designs considerations

UNIT – VI: Deflections OfPrestressed Concrete Beams:

Importance of control of deflections, factors influencing deflections, short term deflections of uncracked member's prediction of long term deflections.

References/Text Books:

1. Krishna Raju, “Prestressed Concrete”, Tata McGraw Hill Publishing Co, 2000.
2. Sinha.N.C.and.Roy.S.K, “Fundamentals of Prestressed Concrete”, S.Chand and Co., 1998.
3. IS: 1343-1980, “ Code of practice for Prestressed concrete”, Bureau of Indian standards, New Delhi

Lecture Plan: Unit-I & -II syllabus for MID-I, Unit-III & -IV syllabus for MID-II and Unit-V & -VI syllabus for MID-III examinations.

Video Lectures (Web Links):

1. <http://nptel.ac.in/courses/105106117/>