# PRESTRESSED CONCRETE DESIGN
**(Professional Core)**

| **Course Code: 19CE2206** | **L** | **P** | **C** |
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**Course Outcomes**:
At the end of the course the student will be able to
CO1: Discuss various pre-stressing methods and related basic issues.
CO2: Analyse and design the beams for a given pre-stressing force.
CO3: Apply the principles to design beams for shear, bond and bearing.
CO4: Compute deflection in pre-stressed concrete beams.
CO5**:** Apply the concepts underlying design principles of various miscellaneous PSC structural members.

**UNIT-I** **(10-Lectures)**
**PRE-STRESSING SYSTEMS:**
Materials, Pre-stressing Systems and methods, End anchorages, analysis of determinate PSC beams, Losses of Pre-stress.
**LO 1**: Discuss about the materials used for Pre-stressing concrete.
**LO 2:** Discuss the pre-stressed systems and methods.

**UNIT-II** **(10-Lectures)**
**FLEXURE DESIGN:**
Design of Sections for Flexure (simply supported beam and two span continuous beam)
**LO 1:** Analyse the concept of beam analysis.
**LO 2:** Design of sections for flexure.

**UNIT-III** **(10-Lectures)**
**DESIGN FOR SHEAR:**
Design for Shear, Bond and Bearing.
**LO 1:** Apply the concept of shear.
**LO 2:** Apply the concept of bond and bearing.

**UNIT-IV** **(10-Lectures)**
**DEFLECTIONS:**
Camber, Deflections and limits, Cable Layouts. Load-Balancing method.
**LO 1:**Compute the long term and short term deflections.
**LO 2:** Apply the concept of load balancing method.

**UNIT-V** **(10-Lectures)**

**SLABS:** design of one way slab

**CIRCULAR PRESTRESSING**:

Design of Circular Pre-stressing.

**LO 1:** Apply the concept of tension members.

**LO 2:** Apply the concept of compression members.

## Text Books


1. Krishnam Raju N, *"Design of Prestressed Concrete Structures",* 6th Edition, TMH, 2004.

2. Lin.,T.Y., *"Designof Prestressed ConcreteStructures",* 2nd Edition, John Wiley & Sons, 1999.


## References


1. Edward G.Nawy, *"PrestressedConcreteFundamentalApproach",* 1st Edition, Prentice Hall, 2002.

2. Rajagopalan. N, *"Prestressed Concrete"*, 2nd Edition, Narosa publications, 2006.