

**K L UNIVERSITY**  
**PRESTRESSED CONCRETE (11 - CE 430)**

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3	0	0	3

**Pre – requisite: 11-CE204, 11-CE301, 11-CE305**

**SYLLABUS**

**Basic terminology and concepts of prestressing;** Need for High strength steel and high strength concrete; Advantages of prestressed concrete. **Prestressing Systems:** pretensioning; Post tensioning ; Thermo– electric prestressing; chemical prestressing. **Analysis of Prestress and Bending Stresses:** Resultant stresses; Pressure (Thrust) line and internal resisting couple; Concept of Load balancing; Stresses in tendons; Cracking moment. **Losses of Prestress:** due: to elastic deformation , shrinkage , creep of concrete, relaxation of stress in steel, friction and anchorage slip; Total losses allowed for in design. **Deflections;** Factors influencing deflections; Short term deflections of un-cracked members; Effect of tendon profile on deflections. Ultimate flexural strength of simple sections using simplified IS code Recommendations. **Shear and principal stresses;** IS Code recommendations: Ultimate shear resistance . Design of shear reinforcement. Design of reinforcements for torsion, shear and bending. **Design of end blocks:** Transmission of prestress in pretensioned members; Transmission Length; Anchorage stress in post tensioned members; Bearing stress and bursting tensile force stresses in end blocks-Methods. IS-Code provision for the design of end block reinforcement.

**TEXTBOOKS:**

1. Prestressed Concrete by N. Krishna Raju; Tata Mc.Graw - Hill Publishing Company Limited, New Delhi.
2. Pre-stressed Concrete- P. Dayarathnam: Oxford and IBH Publishing Co.
3. Indian standard code of practice for prestressed concrete (IS -1343-1980): Bureau of Indian standards New Delhi

**REFERENCE BOOKS:**

1. Prestressed concrete by N. Rajagopalan; Narosa Publishing House.
2. Design of pre-stressed concrete structures- T.Y. Lin and Ned H. Burns - John Wiley & Sons, New York.
3. Fundamental of pre-stressed concrete- N.C. Sinha & S.K. Roy