

**K L UNIVERSITY**  
**DESIGN OF CONCRETE STRUCTURES (11-CE305)**

**Pre – requisite: 11-ES201, 11-CE204, 11-CE301**

L	T	P	Cr
3	0	2	4

**SYLLABUS**

*Concept of working stress method, Code recommendations for Limit state design, Analysis at Ultimate Limit state, Assumptions in analysis, Design for flexure: Analysis and design of Singly, doubly reinforced rectangular sections and Flanged sections.*

**Design for Shear, Torsion, Bond and Deflection:** Shear stresses in rectangular beams, Shear failure modes, normal shear stress, design shear strength with and without shear reinforcement, Design for torsion of rectangular section. Design for bond, mechanism of bond resistance, Serviceability limit states: deflection and cracking, short term and Long term deflection. **Design of Slabs:** Design of Continuous One-way slab, Two-way slab: restrained slabs and unrestrained slabs, Introduction to Flat slabs. **Design of Compression Members:** Classification of columns, Design of Short columns under axial compression, compression with uniaxial and Biaxial bending, Design of slender columns. **Design of Foundations:** Types of footing, Depth of foundation, Design of Isolated footings, Design of combined footing. **Prestressed Concrete:** Basic concepts of prestressing; Historical development; Need for High strength steel and high strength concrete; Advantages of prestressed concrete. **Prestressing Systems & Analysis:** Tensioning devices; Hoyer's long line system of pretensioning; Post tensioning systems; Basic assumptions; Analysis of prestress; Resultant stresses at a section;

**TEXT BOOKS:**

1. Reinforced Concrete Design by S.Unnikrishna Pillai and Devdas Menon, Tata McGraw-Hill, Education Private Limited, New Delhi, Third Edition-2009.
2. Prestressed Concrete by N. Krishna Raju; Tata Mc Graw - Hill Publishing Company Limited Delhi.
3. Indian standard code of practice for Plain and Reinforced Concrete (IS: 456-2000): Bureau of Indian standards New Delhi

**REFERENCE BOOKS:**

1. Limit State theory & Design of reinforced concrete by V. L. Shah and Dr. S. R. Karve, Structures Publications, Pune, Fourth Edition-2003.
2. Design of concrete structures by Arther H. Nilson, Tata Mc Graw-Hill Publishing Co. Ltd, New Delhi.
3. Rajagopalan, N., Prestressed Concrete, Narosa Publishing House, 2005

**CE/BOS/CE 305/0513**

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**LIST OF EXPERIMENTS**

<b>L</b>	<b>T</b>	<b>P</b>	<b>Cr</b>
<b>3</b>	<b>0</b>	<b>2</b>	<b>4</b>

Students are required to design of the following structures using STRUDS

Software

1. Design of continuous beam.
2. Design of plane frame.
3. Design of space frame.
4. Design of G+4 Residential building : Creating model from the given drawing
5. Design of G+4 Residential building : Assigning Loads and Load Combinations
6. Design of G+4 Residential building : Slabs
7. Design of G+4 Residential building : Beams
8. Design of G+4 Residential building : Column
9. Design of G+4 Residential building : Footing
10. Design of G+4 Residential building : Preparation of Design Documents and detail drawing