

Year & Sem: E2S2	Course Code: CE2201	Course Name: Design of Reinforced Concrete Structures	No. of Credits: 4	L 2	T&PS 2	P 0
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UNIT-I: Working Stress Method & Introduction Limit State Method

Working stress method- design constants, singly reinforced beam, Introduction to ultimate load method. Introduction, Concepts of limit state design, Basic statistical principles, Characteristic loads, Characteristic strength, Partial load and safety factors, representative stress-strain curves for cold worked deformed bars and mild steel bars. Assumptions in limit state design, stress block parameters, limiting moment of Resistance

UNIT-II- Design of Beams:

Analysis at service and ultimate loads, Limit state design of singly and doubly reinforced rectangular and flanged sections- T and L.

UNIT-III-Design of Slabs:

One-way slabs for flexure at ultimate limit state as per IS 456; deflection control. Introduction of flat and ribbed slabs

UNIT-IV Design for Shear, Torsion and Bond:

Analysis and design with and without shear reinforcement at ultimate limit state as per IS 456, development length, splicing, curtailment, code requirements.

UNIT-V Design of Compression Members:

Short and Long columns – under axial loads, uniaxial bending and biaxial bending, Braced and un-braced columns, I S Code provisions, introduction to slender columns.

UNIT-VI: Design of Footings:

Types of footings, Design of isolated- square, rectangular and circular footings and combined footing.

References/Text Books:

1. Reinforced concrete design by S.UnnikrishnaPillai&DevdasMenon, Tata Mc.Graw Hill, New Delhi.
2. Limit state designed of reinforced concrete – P.C.Varghese, Printice Hall of India, New Delhi.
3. IS: 456-2000. “Guidelines for Reinforced concrete design” Bureau of Indian Standards, New Delhi
4. Design Reinforced concrete structures by N Subramanian, Oxford Publications, New Delhi.
5. Limit State Design by B.C.Punmia, Ashok Kumar Jain and Arun Kumar Jain, Laxmi, publications Pvt. Ltd., 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/105105105/>