

Objective

The course aims to impart knowledge about reinforced cement concrete and its applications in buildings. To equip students about the methods of designing various structural members using reinforced cement concrete and fundamentals of soil mechanics and foundations.

ISI CODE COMPLIANCE**Module 1**

INTRODUCTION TO RCC DESIGN

characteristics of RCC, nominal mix, Design mix.

Evolution of different design theory, principle of limit state analysis, load path in a building, Creating building frames and selecting sizes of structural elements based on thumb rules with guidelines of relevant codes.

Module 2

DESIGN OF BEAM

Design of singly reinforced beams for flexure, shear, torsion & bond. Concept of doubly reinforced beams and design.

Module 3

DESIGN OF SLAB

Concepts and design of different types of slabs, behaviour and design of simply supported slabs spanning in one direction, two directions, continuous slab, cantilevered slab, flat slab and inclined roof.

Module 4

DESIGN OF FOUNDATION AND COLUMN

Soil Mechanics: Soil formation and resulting soil deposits, different types of soils and their physical properties, classification as per Indian standard system.

Foundations: Types of foundations for RCC structures, Design of isolated column footing, retaining wall.

Design of short and long axially loaded RCC Columns, Principles of staircase design

Module 5

PRACTICAL

Laboratory: Soil testing, casting of cement concrete cubes, Compressive test of cement concrete cubes, Tensile strength of steel.

Visit to construction site for study of RCC structures.

Reference

1. Varghese, P. C. (2011). Limit state Design of Reinforced Concrete. PHI Learning.
2. Ramachandra, S. (2004). Limit State Design of Concrete Structures. Scientific publishers.
3. Ramamrutham, S. (2000). Design of RCC Structures. New Delhi : Tata McGraw Hill Education.
4. Ramamrutham .S and Narayanan .R, (1997), Reinforced Concrete Structures, Dhanpat Kai Publication, New Delhi.
5. Punmia, B. C. (2005). Soil Mechanics and Foundation Engineering. Delhi : Laxmi publications.
6. Swamisaran. (2010). Analysis and Design of Substructures. 2nd Ed. (LSD).
7. Punmia, B. C. (2007). Limit State Design of Reinforced Concrete. Delhi : Laxmi Publications
8. I S 456-2000
9. I S 875-1987
10. I S 800 -2007.
11. Explanatory Hand Book SP24 Design Aid SP 16,
12. Detailing of Reinforcement, SP 34