

CIPC3001 DESIGN OF RCC CTSRUCTURES (3-0-0)

Course objectives

- To learn the basic concepts of designing reinforced concrete elements
- To design beam, slab, columns, staircase following the guidelines of relevant IS codes.
- To familiar with designing of footings and retaining walls.
- To able to design underground and elevated water tanks.

Module-I: (08 Hrs.)

Properties of concrete and reinforcing steel, philosophy, concept and methods of reinforced concrete design, introduction to limit state method, limit state of collapse and limit state of serviceability, application of limit state method to rectangular beams for flexure, shear, bond and torsion, Design of doubly reinforced beams, design of T and L beams.

Module-II: (08 Hrs.)

Design of one way and two way slabs, design of staircases, design of short and long columns with axial and eccentric loadings.

Module-III: (08 Hrs.)

Design of isolated and combined column footings, retaining walls, various forces acting on retaining wall, stability requirement, design of cantilever and counterfort retaining walls.

Module-IV: (06 Hrs.)

Design of water tanks, design requirements, design of tanks on ground, underground and elevated water tanks.

Course outcomes

After successfully studying this course, students will able to:

- Analyze RCC rectangular, flanged beams for bending, shear and torsion
- Design RCC slabs and columns following IS codes.
- Solve practical problems in designing retaining walls and footings
- Estimate the different parameters for construction of underground and elevated water tanks

Books:

- N. Subramanian, Design of Reinforced Concrete Structure, Oxford University Press Illustrated edition.
- A.K. Jain, Reinforced Concrete: Limit State Design, Pearson Education, Eighth edition.
- S.N. Sinha, Reinforced Concrete Design, McGraw Hill Education; Third edition
- S. U. Pillai & D. Menon Reinforced Concrete Design, McGraw Hill Education, Fourth edition
- N. K. Raju, Design of Reinforced Concrete Structures, CBS Publications, Fourth edition
- PC Verghese, Limit State Design of Reinforced Concrete, PHI Publications, Second Edition