Course Type	Course Code	Name of Course	L	T	P	Credit
DC	CEC207	**Design of Concrete Structures**	3	0	0	9

Course Objective
This course deals with the contemporary professional aspects in the analysis, design and construction of Concrete Structures along with the basic understanding of fundamental concepts.
Learning Outcomes
After studying this course, students should be able to: • Understand the basic concept and behaviour of Concrete Structures. • Develop knowledge and skill to analyze and design various structural concrete members.

Unit No.	Topics to be Covered	Lectures	Learning Outcome
1	Introduction, Materials, Loadings, Structural forms, Structural Integrity, Design Methodologies: Working stress and Limit state methods, Design codes	**3**	Understand the fundamental principles of materials, loading and design methodologies.
2	RC members under flexure, Analysis and Design of singly and doubly reinforced sections; rectangular and flanged sections, Flexural ductility, Design for shear, torsion, bond and anchorage, Development length, Deflection and Crack Width	12	Acquire knowledge on design principles of flexural members, shear and torsion design, bond behaviour and serviceability limit states.
3	Types of slabs, One way and Two-way slabs, Type of Staircases, Design of Staircases	10	Familiar with various types of slabs and their design considerations, design of staircases.
4	Compression member: Short columns under axial compression, Short columns under axial compression with uni-axial bending, Short columns under axial compression with bi-axial bending, slender columns	**8**	In-depth knowledge in the design of short and slender columns subjected to axial load as well as combined axial load and bending moment.
5	Types of footings; Design of footings, combined footings, Retaining walls	**10**	Comprehend the design of footings and retaining walls.

Recommended Text Books:

1. Limit State Design of Reinforced Concrete; P.C. Varghese; PHI Learning Pvt. Ltd.
2. Reinforced Concrete Design; D. Menon and S. Pillai; Tata McGraw Hill

Recommended References:

1. Design of Reinforced Concrete Structures; N. Subramanian; Oxford University Press. 3. Reinforced Concrete Structures; R. Park and T. Paulay; John Wiley & Sons