

## Reinforced Concrete Design-II

<b>Course Code</b>	<b>Credit Hours</b>
<b>CE-325</b>	<b>3+1</b>

### Course Description

This course examines the design of basic reinforced concrete structural members, including continuous beams, short columns, slabs, footings supporting axial loads and uniaxial bending, combined footing, cantilever retaining walls, bond, anchorage and development length and Introduction to Precast and pre-stressed members within purview of the ACI 318 Standard Code practice and the ASCE 7.

### Text Book:

1. Design of Reinforced Concrete, 9<sup>th</sup> Edition, Jack C. McCormack
2. Properties of Concrete, 3rd ed. ELBS, by A.M.Neville.
3. Design of Concrete Structures (14th Edition), by Arthur H. Nilson, David Darwin, and Charles W. Dolan, McGraw-Hill, New York, NY 10020.
4. ACI Building Code Requirement for reinforce concrete structures 318-11.
5. Guidelines for design of simple reinforced concrete buildings ACI 314-11.

### Reference Book:

1. Advanced Concrete Technology by John Newman
2. Reinforced Concrete - Mechanics and Design (5th edn) by James K. Wright and James G. MacGregor, Pearson-Prentice Hall, Upper Saddle River New Jersey NJ 07458.
3. Design of Reinforced concrete by Jack C. McCormac and Russell H. Brown 9<sup>th</sup> edition.

### Prerequisites :

Reinforced Concrete Design-I.

### ASSESSMENT SYSTEM FOR THEORY

	<b>Without Project (%)</b>	<b>With Project/Complex Engineering Problems (%)</b>
Quizzes	15	10-15
Assignments	10	5-10
Mid Terms	25	25
Project	-	5-10

End Semester Exam	50	45-50
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### **ASSESSMENT SYSTEM FOR LAB**

Lab Work/ Psychomotor Assessment/ Lab Reports	70%
Lab Project/ Open Ended Lab Report/ Assignment/ Quiz	10%
Final Assessment/ Viva	20%

### **Teaching Plan**

<b>Week No</b>	<b>Topics/Learning Outcomes</b>
1-2	Introduction and Design of 2 Way Floor Systems using ACI <b>Direct Design Method</b> . Introduction to CEP.
3-6	Design of flat slabs, flat plates and two-way slab with interior beams for flexure due to gravity. Reinforcement detailing.
7	Design of flat slabs and flat plates for shear, openings in slab systems
8	Introduction to computer aided analysis and design
9	<b>Mid Semester Exams</b>
10	Design of Isolated Eccentric footings. Introduction to design of stairs and water tanks
11-13	Introduction and Design of gravity and cantilever Reinforced Concrete retaining walls
14	Introduction to Principles and Design philosophy of pre-stressing
15	Introduction to earthquake resistant design of structures.
16	CEP Presentations
17-18	<b>End Semester Exam</b>

### **Practical**

<b>Experim ent No</b>	<b>Description</b>
1	Manually design various structures and create structural drawings.
2	Model, Analyse and design various types of structures using FE based software.