



Course Descriptor CVEN301 Design of Concrete Structures I

Proposed Academic Year	2019/20	Last Reviewed Academic Year	2020/21
Course Code	CVEN301	Course Title	Design of Concrete Structures I
Credit hours	3	Level of study	Level 3
College / Centre	College of Engineering	Department	Civil Engineering
Co-requisites	None	Pre-requisites	CVEN301

1. COURSE OUTLINE

This course discusses Loads and load combinations acting on structures. Methods and codes for design of reinforced concrete elements and factors of safety.

2. AIMS

This course aims to equip students with the design knowledge and understanding of reinforced concrete beams, short columns, one-way and two-way slabs, and footings.

3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS

Learning Outcomes (Definitive)	Teaching and Learning methods (Indicative)	Assessment (Indicative)
Upon successful completion of this course, students will be able to:		
1. Understand the behavior of plain concrete and RC beams	Lecture, Presentation	<i>Assignment, Midterms, and Final Exam</i>
2. Know the design philosophy of ACI Design Building Code.	Lecture, Presentation	<i>Assignment, Midterms, and Final Exam</i>
3. Analyze RC rectangular and irregular cross-section beams	Lecture, Presentation	<i>Assignment, Midterms, and Final Exam</i>
4. Design the transverse reinforcement for shearing forces	Lecture, Presentation	<i>Assignment, Midterms, and Final Exam</i>
5. Perform serviceability checks in terms of crack and deflections	Lecture, Presentation	<i>Assignment, Midterms, and Final Exam</i>
6. Perform reinforcing bar cutoffs, splicing and bond capacity	Lecture, Presentation	<i>Assignment, case study report Midterms, and Final Exam</i>
7. Analyze RC beam-column subjected to axial loads and flexure	Lecture, Presentation	Assignment, Midterms, and Final Exam
8. Design beams, wall & column footings, & retaining	Lecture, Presentation	Assignment, case study report Midterms, and Final Exam



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4. ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Assignments	20%
Mid-term Examination	40%
Final Examination	40%
TOTAL	100%

5. ACHIEVING A PASS

Students will achieve 3 credit hours for this course by passing **ALL** of the course assessments [Assignment, Midterms, and Final Exam *] and achieving a **minimum overall score of 50%**
NB *Ensure that ALL learning outcomes are taken into account

6. COURSE CONTENT (Indicative)

1. Material properties, design philosophy, and ACI code	
2. Singly reinforced beams	
3. Doubly reinforced beams	
4. Flanged sections	
5. Irregular sections	
6. Shear analysis and design	
7. Serviceability and reinforcement detailing	
8. Axially loaded columns	
9. Eccentrically loaded columns	
10. Spread footings	
TOTAL HOURS	90
Plus RECOMMENDED INDEPENDENT STUDY HOURS	45
TOTAL COURSE HOURS	135

**Course Descriptor**
CVEN301 Design of Concrete Structures I**7. RECOMMENDED REFERENCES****Core text/s:**

1. McCormac, J. C. and Brown, R. H. (2008). Design of Reinforced Concrete, 8th Ed, ACI 318-08 Code Edition, John Wiley and Sons, Inc., New York, NY. (ISBN 978-0-470-27927-4)
2. American Concrete Institute (ACI) (2008). ACI 318-08 Building Code Requirements for Structural Concrete (ACI 318-08) and Commentary (ACI 318R-08), American Concrete Institute, Farmington Hills, MI. (ISBN 0-87031-171-9)

Other supplemental materials:

Standards codes of practice. British BS8110 or American Concrete Codes.

Library + online resources:**Open Educational Resources:**

<https://www.pdfdrive.com/handbook-of-concrete-engineering-e34318830.html>