

SYLLABUS: CIV_ENV 325

Reinforced Concrete Design

CIV_ENV 325
Winter Quarter 2017
10-10:50am MWF, Tech M177
2-3:20 Th, Tech LG52

Professor: David Corr
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Tech A224

Course	At the conclusion of the course, students will be able to:
Outcomes	<ul style="list-style-type: none">• Describe the material properties of steel and concrete that govern the mechanics of reinforced concrete behavior.• Complete multiple aspects of an individual element design (e.g. shear, bending, axial design of a single element)• Complete a limited reinforced concrete structural system design
Prerequisites	CIV_ENV 216 (Mechanics of Materials) & 221 (Theory of Structures I) or equivalent
Grading	<p>Homework 20% Weekly homework, due in class. HW solutions will be posted to Canvas after due date; no late HW will be accepted. Lowest HW score will be dropped from HW average.</p> <p>Lab Reports 20% Three written reports on lab assignments.</p> <p>Midterm 25% 80-minute midterm exam in lab session Thursday February 9.</p> <p>Final Exam 30% Two hour final exam scheduled for Thursday March 16, 3-5pm</p> <p>Participation & Teamwork 5% Evaluation of your positive contributions to the classroom environment and your team assignments.</p>
Textbook	<p>Required: <i>ACI 318-14 Building Code Requirements for Structural Concrete</i>. Become free student member of ACI at aci.org, then purchase ACI 318 at student rate of \$99.</p> <p>Optional: James K. Wight and James G. MacGregor, (2011); <i>Reinforced Concrete: Mechanics and Design</i>; 6th Edition; Pearson Prentice Hall, Inc.; <i>ASCE 7-10, Minimum Design Loads for Buildings and Other Structures</i>.</p>
Office Hours	Wednesdays 2-4pm in A224.

CIV_ENV 325: Course Outline

Week	Dates	Topics	Readings – Wight & McGregor
1	Jan 3-6 Jan 5 Lab	Introduction, Design Concepts Limit States, Loads, Factors of Safety Lab Session 1: exploratory concepts	Ch. 1 & 2
2	Jan 9-13 Jan 13 Lecture	Material Properties, Flexural Theory Lab report #1 due	Ch. 3, Ch. 4-1 to 4-8
3	Jan 16 Jan 19 Lab Jan 18-20	NO LECTURE - MLK DAY Lab Session 2: concrete mixing & casting Flexural Theory & Design	Ch. 5-1, 5-3-5-4
4	Jan 23-27	Flexural Theory & Design	
5	Jan 30-Feb 3 Feb 3 Lecture	Shear Design Lab Report #2 due	Ch. 6-1 to 6-5
6	Feb 6-8 Feb 9 Feb 10	Shear Design, Review MIDTERM EXAM Serviceability	Ch. 8-1 to 8-6
7	Feb 13-17 Feb 16	Serviceability, Development Lab Session 3: concrete testing	Ch. 9-1 to 9-5
8	Feb 20-24	Columns, Combined Axial & Flexure	Ch. 11, Ch. 12-1 to 12-2
9	Feb 27-Mar 3 Mar 1 Lecture Mar 2 Lab	Floor Systems, Foundations Lab Report #3 due Concrete test results discussion	Ch 15-1 to 15-5
10	Mar 6-10	Catch-up, Final Exam Review	

Thursday March 16, 3-5pm FINAL EXAM