University of Florida

M.E. RINKER, Sr. SCHOOL OF CONSTRUCTION MANAGEMENT

BCN 3431C Structures

SPRING 2026 | Syllabus

Instructor:	Eileen Pesantes-Tavares, Ph.D.
Email:	eileen.pesantes@ufl.edu (use Canvas email. See email policy below)
Office Location:	313 Rinker Hall
Office Hours:	M, W 9:35-10:30, T, R 10:40-11:30 and by appointment (Office hours may be conducted via Zoom)
Meeting Periods:	M,W 10:40-11:30, F 8:30-10:25 or 10:40-12:35
Location:	Rinker 110 (M, W) and Rinker 210 (F)
Credit:	3
Prerequisites:	Junior Status or Higher

COURSE DESCRIPTION: To familiarize the student with the material properties, design procedures, and code requirements for steel and concrete buildings.

INSTRUCTIONAL METHODS: Class lectures, In-Class Exercises, videos, tests, and a final project.

COURSE LEARNING OUTCOMES (CLOs):

Upon completion of the course, students will demonstrate the ability to:

1. Review ASTM standards for structural elements and recognize use of various structural steel shapes, metal decks, open-web bar joists, high strength steel bolts, welds and reinforcing steel. (PL 1, ACCE SLO 7, 8)
2. Use sections of Florida Building Code related to structural design and calculate code-required design loads; be aware of the existence of other local and national building codes. Understand different design methodologies such as allowable stress design and load and resistance factor design. (PL 1, ACCE SLO 8, 19).
3. Recognize different structural systems and their assembling methods, including pre-stressed concrete, precast concrete, cast-in place concrete, T-beams, doubly reinforced beams. (PL 1, ACCE SLO 7).
4. Analyze and design simple structural elements (beams, columns, trusses) made of steel and concrete for bending, shear, deflection, compression and tension as applicable, as well as connections between such elements using AISC manual and ACI codes. (PL 1, ACCE SLO 19).
5. Read, understand, and use structural drawings, shop drawings, and erection and placing drawings as well as specifications for structural members. (PL 1, ACCE SLO 7, 8, 15)
6. Understand fundamentals of structural design and be creative in proposing solutions to daily problems encountered in a construction project. (PL 1, ACCE SLO 8, 19).

REQUIRED TEXTBOOKS

1. Reinforced Concrete Design, George, F. Limbrunner and Abi O. Aghayere, Ninth Edition, 2018

SUPPLEMENTAL READINGS

1. Structural Steel Design: A Practice Oriented Approach by Abi O. AghayereLinks to an external site. and Jason VigilLinks to an external site., Third Edition, 2020, Mercury Learning and Information
2. Structural Steel Design, William T. Segui, Prentice Hall
3. 'Applied Statics and Strength of Materials' by Spiegel and Limbrunner.
4. Concrete Structures, Setareh and Darvis, 2007, Prentice Hall
5. 'Manual of Steel Construction', AISC, Thirteenth Edition (PDF on Canvas)

STUDENT REQUIREMENT Student grades will be based on tests, assignments, in-class exercises, and final project. There are **no make-ups** for missed tests, quizzes, assignments, or final project.

HOMEWORK POLICY: Assignments will be accepted up to the established time. Any Assignment turned in after the deadline will be graded at 50% of the original credit. Any assignment turned in more than 48 hours late will not be accepted, and the student will receive a 0 (zero) on the assignment. All work turned in for this course is expected to be of professional quality in content and presentation.

COURSE GRADING:

- Tests: 4 tests 60%
- Assignments: 7 assignments 15%
- Final Project: 15%
- In-class exercises/Discussions/Quizzes 10%

Total 100%

Grade Scale: Grades will be given according to the following scale.

Letter Grade	Numeric Grade	Letter Grade	Numeric Grade
A	≥ 93	C	≥ 73 AND < 77
A-	≥ 90 AND < 93	C-	≥ 70 AND < 73
B+	≥ 87 AND < 90	D+	≥ 67 AND < 70
B	≥ 83 AND < 87	D	≥ 63 AND < 67
B-	≥ 80 AND < 83	D-	≥ 60 AND < 63
C+	≥ 77 AND < 80	F	<60

ACCESSING UNIVERSITY ACADEMIC POLICIES AND CAMPUS RESOURCES: To support consistent and accessible communication of university-wide student resources, please use this link to academic policies and campus resources: https://go.ufl.edu/syllabuspolicies.

NETIQUETTE, COMMUNICATION COURTESY POLICY: All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats.

CELLPHONES. Cellphone use is not allowed in classrooms. Use of cellphones during class will discount attendance. Use of cellphones during an exam will result in failing the exam.

LAPTOPS & TABLETS. These devices should only be used to take notes related to lectures. Use of these devices for social media or any other unrelated purposes during class hours will result in a penalty of 10 points for every incident.

GETTING HELP WITH E-LEARNING WEBSITE: In the case you have technical difficulties with e-Learning in Canvas, please contact the UF Help Desk at: Learning-support@ufl.edu; (352) 392-HELP - select option 2; https://lss.at.ufl.edu/help.shtml Links to an external site.. If your technical difficulties will cause you to miss a due date/time, you MUST report the problem to the UF Help Desk **before** the due date/time.

COMMUNICATION

- Use the e-Learning in Canvas environment to send an email to the instructor. Please allow 36 hours for a response to your email. The instructor reserves the right not to respond to course inquiries on the weekend.
- You are responsible for addressing grades/omissions within one week of the grade being posted on e-Learning in Canvas. After one week, the grade/input stands for the class regardless of cause or circumstance.

Tentative Schedule

Class	**Topic**	**Assignments**
Week 1 (1/12)	Module 1: Introduction to Structures a. Review of Statics b. Basics of Structural design & analysis – modes of failure c. Introduction to beam, column, wall, and slabs	Assignment 1
Week 2 (1/19)	Module 2: Concrete Beams a. Beam Analysis b. Reinforced Beams Design and Details	Monday, Jan 19 is a holiday
Week 3 (1/26)	Module 2: Concrete Beams (cont.) a. Beam Analysis b. Reinforced Beams Design and Details	Assignment 2
Week 4 (2/2)	Module 3: Concrete Slabs a. Slab introduction b. One-way Slab Analysis c. One-way Slab Design & Details	Assignment 3
Week 5 (2/9)	**Review and Test 1**	
Week 6 (2/16)	Module 4: Concrete Columns a. Square and Circular Columns Design and Details	Assignment 4

Class	Topic	Assignments
Week 7 (2/23)	Module 5: Concrete footings a. Footings: Design and Details b. Rebar Shop Drawings	No class on 2/25 due to career fair
Week 8 (3/2)	Module 5: Concrete footings a. Footings: Design and Details b. Rebar Shop Drawings	Assignment 5
Week 9 (3/9)	**Review and Test 2**	
Week 10: Spring Break		
Week 11 (3/23)	Module 6 Introduction to Steel a. Structures Loads, Codes: FBC, IBC b. Basic Concepts in Steel Design c. Steel structures Design criteria – beams & Columns	
Week 12 (3/30)	Module 7: Steel Beams a. Design for Bending, Deflection, Camber b. Open Web Steel Joists	Assignment 6
Week 13 (4/6)	5. Module 8: Steel Columns a) Design for buckling	Assignment 7
Week 14 (4/13)	**Review and Test 3**	
Week 15	Final project questions	Classes end on Wednesday, April 22
Final Project due by end of the day on April 27, 2025		

Note from the instructor: *The syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected"*