

University of Florida
M.E. RINKER, Sr. SCHOOL OF CONSTRUCTION MANAGEMENT
BCN 3431C STRUCTURES
Fall 2024 | Syllabus

Honor Code: Students are expected to comply with the spirit and intent of the University of Florida Honor Code, which states, *“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”*

Instructor: Idris Jeelani, PhD
Office: Rinker 317
Email: Mail tool in e-Learning in Canvas (preferred method)
Website: UF e-Learning in Canvas
Office Hours: Mondays 11:30- 12:30 or by appointment
TA: Mohamad Hasnain (m.hasnain@ufl.edu)
TA office hours: TBD

COURSE DESCRIPTION: To study the material properties, design procedures, and code requirements for steel and concrete structures.

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.
- 2) Use sections of codes 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.
- 3) Recognize different structural systems and their assembling methods, including pre-stressed concrete, precast concrete, cast-in place concrete, T-beams, doubly reinforced beams.
- 4) Analyze and design simple structural elements (beams, columns, slabs) 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.
- 5) Read, understand, and use structural drawings, shop drawings, and erection and placing drawings as well as specifications for structural members.
- 6) Understand fundamentals of structural design and be creative in proposing solutions to daily problems encountered in a construction project.

Table 1: Assessment Strategy

Course Learning Outcomes (CLO)	Assignment	Student Learning Objectives (SLO)		Percent students passing with a 70 & or higher
		SACS	ACCE	
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)	Exam 1	1	8	80%
2. Use sections of codes 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).	Exam 1, 2, 3,4	1	8	80%
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).	Exam 2	1	8	80%
4. Analyze and design simple structural elements (beams, columns, slabs) 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).	Exam 1	1	9	80%
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)	Exam 4	1	-	80%
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).	Exam 3,4	1	-	80%
ACCE : American Council for Construction Education SACS : Southern Association of Colleges and Schools ACCE SLO 8 Analyze methods, materials, and equipment used to construct projects ACCE SLO 19 Understand the basic principles of structural behavior. <div style="text-align: right;"><i>Reinforce Direct Assessment</i></div>				
SACS 1 Apply knowledge of engineering, materials, methods, equipment, and processes to safely construct buildings and structures				

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. Aghayere](#)[Links to an external site.](#) and [Jason Vigil](#)[Links 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 REQUIREMENTS:

Attendance is Mandatory. Grades will be based on tests, assignments, in-class exercises, and the final project. No Make-ups for tests, quizzes, assignments, or the final project will be granted except for documented medical emergencies. Attendance at every class meeting is expected. If you miss class, you also miss the opportunity to earn credit for any exercise or exam held that day, regardless of whether it was previously announced or adjusted during the semester.

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	40%
▪ Assignments: 8 assignments	25%
▪ Final Project:	15%
▪ In-class exercises /Discussions	20%
▪ <u>Total</u>	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

Tentative Schedule (Fall 2024)		
Class	Topic	Assignments
Aug 21- Aug 29	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 Due Sep 5
Sep 3 – Sep 12	Module 2: Concrete Beams a) Reinforced Beams Design and Details b) Beam Analysis	Assignment 2 – Due on Sep 16
Sep 15 – Sep 19	Module 3: Concrete Slabs & Shear Design a) Slab introduction b) One-way Slab Analysis c) One-way Slab Design & Details	Assignment 3 – Due on Sep 23
Sep 22	Module 3: Concrete Slabs & Shear Design a) Shear Design b) Serviceability	
Sep 24	Exam 1 Review	
Test 1: Sep 26		
Sep 29 – Oct 3	Module 4: Concrete Wall, Columns, and Footings a) Columns Design and Details b) Reinforced Walls	Assignment 4 – Due on Oct 7
Oct 06 - Oct 10	Module 4: Concrete Wall, Columns, and Footings c) Footings d) Rebar Shop Drawings	Assignment 5 – Due on Oct 14
Oct 13 - Oct 20	Module 5: Pre-stressed Concrete and Concrete Masonry a) Design Approach & Basic Concepts b) Stress Patterns in Pre-stressed Concrete c) Pre-stressed Concrete Materials d) Concrete masonry	Assignment 6 – Due on Oct 21
Oct 22	Exam 2 Review	
Test 2: Oct 24		
Oct 27	Module 6 Introduction to Steel Structures a) Loads, Codes: FBC, IBC b) Basic Concepts in Steel Design c) Steel structures Design criteria – beams & Columns	
Oct 28-Nov 3	Module 7: Steel Beams a) Design for Bending, Deflection, Camber b) Open Web Steel Joists	Assignment 7 – Due on Nov 6
Nov 5 Nov 10	Module 8: Steel Columns a) Column Analysis and Design b) Built-up Column	Assignment 8 – Due on Nov 11
Nov 12	Exam 3 Review	
Test 3: Nov 14		
Nov 17- Nov 21	Module 9: Connections in Steel Structures a) Bolted Connections and Details b) Welded Connections	
Nov1	Module 9: Connections in Steel Structures a) Steel Shop Drawings	
Dec 1	Exam 4 Review	
Final Project due Dec 8th		
Test 4: 12/10/2025 @ 0:00 AM - 12:00 PM		

UNIVERSITY POLICY ON ACCOMMODATING STUDENTS WITH DISABILITIES:

Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments (discussion, term paper, extra credit) or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

UNIVERSITY POLICY ON ACADEMIC MISCONDUCT:

Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <http://www.dso.ufl.edu/students.php>. The Honor Code will be applied in the class. We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. On all work submitted for credit by students at the university, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

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. Detailed guide is available at <http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

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> . 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.

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.

Communication: Use the e-Learning in Canvas environment to send an email to the instructor and teaching assistant. Do not e-mail the course instructor and teaching assistant outside of the e-Learning in Canvas system because emails received outside of e-Learning will not receive a response. Please allow 36 hours for a response to your email. The instructor and teaching assistant reserve the right not to respond to course inquiries on the weekend.

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.*