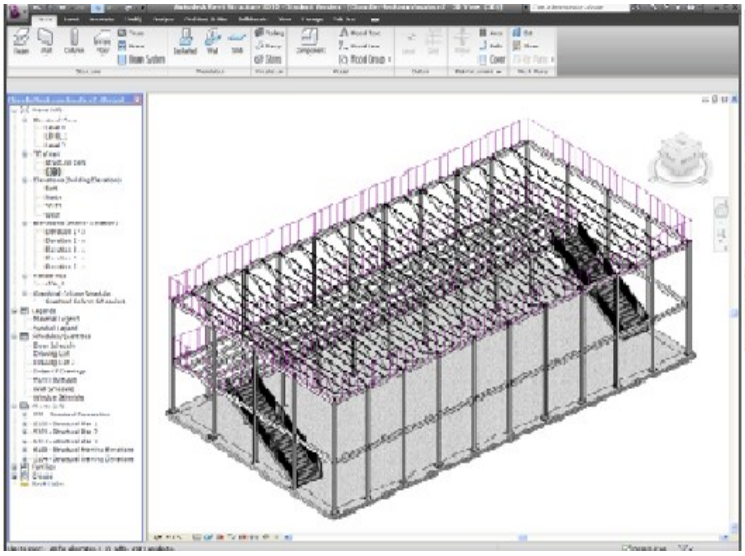

STRUCTURES

Steel, Wood, & Concrete

N. Nawari, Ph.D., P.E., F.ASCE

University of Florida
School of Architecture

University of Florida
School of Architecture
Fall-2025

SYLLABUS

1. Course: STRUCTURS WOOD STEEL CONCRETE (3 credits) Steel and Wood and Concrete Structural Systems.

2. Class Textbooks and Software

a. **Building Structures**. Nawari O. Nawari & M. Kuenstle, University Readers, Inc. & Cognella Academic Publishing, **ISBN**: 978-1-60927-673-7. (**Recommended**).
b. Structural Systems, David M.Berg, Robert Marks & Lester Wertheimer, Kaplan AEC Education, 2010 OR 2009, ISBN-13: 978-1-4277-7037-0. (**Recommended**)
c. Unified Design of Steel Structures, Louis F. Geschwinder, Wiley, 2007, ISBN 978-0-471-47558-3 (**Recommended**)
d. Design of Wood Structures ASD/LRFD, 6th Edition, Donald E. Breyer, Kenneth J. Fridley, Kelly Cobeen, David G Pollock, Jr., ISBN-10: 0071455396 (**Recommended**)
e. Manual of Steel Construction, 14th Edition, American Institute of Steel Construction, 2005, American Institute of Steel Construction (AISC). (**Recommended**)
f. NDS: National Design Specification for wood construction, American Forest & Paper Association, AWC (**Recommended**)
g. The Architects Studio Companion by Allen, Edward, Wiley. (**Recommended**)

Software:

i- **Revit 2019** (Free download from Autodesk Student Community website: http://students6.autodesk.com/)

3. Materials and Equipment

1. Standard drafting equipment as used in other courses (scale, protractor, etc.).
2. Engineering Paper (green with grid lines or similar) is to be used for numerical homework and quizzes.
3. Three-inch ring binder for homework and classworks. The binder with all the homework is to be handed in at the end of the semester for evaluation of your work and final grade.
4. Laptop Computer.
5. Scientific Calculator.

4. Instructor:

N. Nawari, Ph.D, P.E., F.ASCE
Class Hours: M W F
Office Hours: W F 3:00 pm.-5:00 pm or by appointment
Building: Zoom

5. Prerequisites ARC3503 Introduction to Architectural Structures

6. General Requirements

1- The class is to be handled and conducted in a professional manner. Student attitude and participation are required if the course is to be conceded successfully.
2- The student is required to attend all course lectures. The **student is responsible** for knowing the lecture material, homework assignments, and announcements that are made in class. The student should be aware that there is a strong correlation between student performance and class attendance.
3- The student is required to read the material in the text, which follows the class lectures. See the table for reading assignments.
4- The student is required to complete the homework, quizzes, projects, midterms, and final described below for his/her grade. **Exam attendance is mandatory.** If you have a good reason for missing an exam, you are responsible for notifying me and scheduling a make-up **before the exam is given**. Unexcused absences will be given a zero score.

7. Course Description

This course introduces the fundamentals of steel, wood and concrete building systems. This course investigates the effect of gravity and lateral loads on wood, steel, and reinforced concrete building structural systems. It focuses on building structural analysis and design for architects. The course also develops the understanding of structural modeling and approximate systems analysis and design for concrete and masonry buildings. Students will learn how to efficiently organize, coordinate and communicate information in order to convey data necessary for structural analysis and design. Incorporated is an applied project and field sketches related to building design and detailing.

8. Course abstract and objectives

To provide fundamental understanding of the behavior of steel, wood and concrete structural systems and develop technical competence in the design of building structures. The coursework and lectures address the fundamental principal of steel, wood and concrete structures and their design implications. Special emphasis is placed on the practical design process of steel and wood buildings. The main topics addressed include:

A. Properties of steel, wood and concrete members.
B. Steel, Wood and Concrete framing systems.
C. Loads cases and combinations.
D. Understanding the relationship between materials and systems.
E. Understanding Building Code requirements.
F. AISC, NDS and ACI design philosophy.
G. Design of tension, compression members and Steel Plate Design.
H. Design of flooring systems.
I. Design of lateral stability elements.
J. Design of flexural members
K. Be able to analyze and design connections subjected to combined load actions.
L. Understand the behavior of steel and wood structures, and be able to design for flexure, shear, axial forces, combined flexure and axial forces, and in-plane shear forces.
M. Learn the methods of construction and detailing practices, particularly with respect to the prescriptive wind and seismic requirements.
N. Building Information Modeling.
O. Architectural case studies to examine conceptual development, structural design, building process and the selection of structural materials and systems.

At the completion of this course, the student should have a sound understanding of these concepts and be able to utilize them in analyzing and designing steel, wood and concrete buildings.

POLICIES

9. Homework and Assignments

Homework assignments must be worked out on engineering paper, or submitted as produced by the printer. All homework assignments are due at the beginning of the class on the assigned due date. Use one problem per page, i.e. one side of the page only. All solutions sheets must be properly collated and stapled in the upper left hand corner. Do not use crimped edges or paper clips. Homework assignments turned in after the beginning of class will lose 20 % of the total points possible for each day it is late. No credit will be given for an assignment turned in later than 5 days after the date

it is due. The students are responsible for materials presented and discussed in class, lab period and in assigned readings. Exams, projects and exercises are written with the assumption that individual students are keeping up with the reading assignments and attending all the lecture and lab sessions. The following table summarizes the instructions for homework and assignments

Paper	Use grid "Engineer's Computation Pad" available in the UF Bookstore or similar for analytical problems. Computer printout is also accepted. For Drawing assignments use standard A4 or A3 sizes.
Header & Margin	Each sheet should have a header with your name, ARC 6505, Homework #?, date due, Page No. The problem number goes in the right hand margin alongside the problem. Do not write in the right hand margin otherwise.
Problem Solution	Each problem should have three headers - Given, Required (or Find), and Solution.
Given	List all the given information. Draw a diagram of the problem. This should be neat and legible, and show all the appropriate dimensions. Use a ruler unless you can freehand neatly.
Required	List the information for which you are required to solve. If the problem is divided into sections (a, b, c, etc.) list each as listed in text.
Solution	Present a legible, organized solution of the problem. Include any information, which is relevant to the solution. Organize the solution as listed in the required section. List all your assumptions. Draw a box around the final answers.
Collaboration	The instructor encourages you to exchange ideas with other students while you are doing your homework. This exchange can help you to understand the concepts and also to practice teamwork. Each student should make a goal of developing problem solving procedures that will be useful for all the problem types offered by the class. Exams and quizzes are for assessing individual problem solving skills. Copying solutions from other students on exams or quizzes is cheating and will not be tolerated.
Other Ways of Cheating	The object of this class is for the students to learn how to solve structural systems problems of building and demonstrate their knowledge to the instructor. Students found to be shortcutting this objective (and shortchanging themselves) will be dealt with in an appropriate manner to be determined by the instructor.
Communication Skills	It is important to be able to communicate your ideas and participate in this class (and other classes too). Your final scores will depend on your ability to communicate solutions to the instructor and participate in class work. Use the homework to practice these skills.
Neatness	Work that is not neat and clearly legible will be marked down and is subject to not being accepted. **Neatness implies accuracy.**

10. Attendance and Unexcused

Attendance is more than your physical presence during the scheduled class and lab periods. It requires active involvement during the class and laboratory periods by preparing the assigned readings and engaging in laboratory discussions.
Students are expected to attend all class meetings (lectures, lab periods, field trips and guest lectures, and discussions). A missed attendance should receive prior authorization from the instructor except under extenuating circumstances. It is the student's responsibility to obtain information pertaining to lecture notes, or handouts distributed during any missed session. Students who miss class without prior approval of their instructor will receive a grade of zero on the missed in class assignment.

Note that two or more absences may adversely affect your grade, and THREE absences will result in a failing grade and/or an automatic drop from the course.

11. University Excused

Authorized absences must be approved by your instructor in advance of the absence, unless you have an emergency or illness. Make-up work must be completed outside of normal class hours within ONE WEEK following an excused absence. IT IS YOUR RESPONSIBILITY to see your teacher and make arrangements for make-up work.

12. Class

M W F 10:40 am.-12:35 am. Including lectures, lab exercises, exams, etc, It is required that each student attends and works in all class and lab sessions. Excused absences must have written confirmation.

13. Student with Disabilities

In accordance with University policy, if you have a documented disability and require accommodation to obtain equal access in this course, please contact the instructor at the beginning of the semester or when given an assignment for which an accommodation is required. Students with disabilities must verify their eligibility through the Disability Resource center in the Dean of Student office located in 0001 Building 0020 (Reid Hall), Te1. 352-392-8565, fax. 352-392-8570, e-mail at accessuf@dso.ufl.edu. Upon verification, the DRC staff member will present you with "accommodation letters", to give to your instructors.

14. Building Hours

Students are required to comply with the university established building hours of operation.

15. School Policy

As a reminder, the class rooms, studio, offices and hallways are **non smoking** areas. Smokers using the building entrance areas are expected to dispose of their refuse in an appropriate manner**.** The use of cell phones etc, is prohibited during scheduled class meeting times. Students are expected **to turn off in-coming cell phone** ringers so that they do not disturb class proceedings. In summary, students are required to maintain the studio, computer lab and class areas in conformance with fire, safety, and health regulations and codes and to maintain a "professional working environment' Miscellaneous damage from activities such as cutting directly on desk tops will not be tolerated. The use of pressurized spray paint or spray fixative is not allowed in the studio / classrooms hall and stair towers.

16. Evaluation

No assignment, interim or final**,** will be accepted without a valid excuse after the date and time due. Incomplete projects must be submitted on the assigned time and dates. Time due is at the beginning of Class unless otherwise stated. Homework assignments are due prior to the beginning of faculty lectures. No assignments/Submissions will be accepted or graded subsequent to the beginning of daily lectures. Homework assignments will be graded periodically during the semester. Quizzes will be announced

and missed quizzes can not be made-up. Quizzes will be counted as a **"0"** without a valid excused absence. Grades will be the assessment of a student's performance in the homework problems, lab computer problems, projects, quizzes, and exams given throughout the semester session including skills and participation in all class activities.

Students are expected to be present and prepared for all class sessions, group discussions reviews and field trips. Each instructor will outline the specific criteria to be used in evaluating projects. The School uses the University's standard grading system, a letter grade that is translated into points of course credit as follows:

Grade Values for Conversion May 11, 2009 and After												
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E, I, NG, S-U, WF
Grade Points	4.0	3.67	3.33	3.00	2.67	2.33	2.00	1.67	1.33	1.00	.67	0.00

Please note that The University requires that a graduate student maintain a 3.0 (B) average to remain in good academic standing. Every possible effort is made to counsel students in academic difficulty to determine the cause and possible solution so that the student can continue and complete their studies in the University. The graduate design studio and support courses are in required sequences that must be taken in order.

An incomplete ("I") grade for any graduate or undergraduate architecture design studio prerequisite course must be resolved with a grade change form completed before the first day of class of the following semester in order to enroll in the next course of the studio sequence. Faculty that issue incomplete grades must be available to work with their student and complete the grade change form prior to the first day of classes the following semester. Special circumstances can be addressed through an official appeals process with the SoA Director and the approval of the course instructor.

Note
If you need classroom accommodation for a disability, you must first register with the Dean of Students Office. The Dean of Students Office will provide documentation for you to give to the Instructor when requesting accommodation.

18. Grading

HW, Quizzes, Clasworks	35 %
Project I	15 %
Project II	15 %
Project III	25 %
Participation	10%
Attendance	**- 10%** of grade
TOTAL	100 %

19. Grading Scale

A	92 and above
A-	87% – 91%
B+	84% - 86%
B	80% - 83%
B-	77% - 79%
C+	74% - 76%
C	70% - 73%
C-	67% - 69%
D +	64% - 66%

D	60% - 63%
D-	59% - 50%
F	**49%** and below.

20. Spray Painting Policy

Spray painting, or the use of any other sort of aerosol spray, is not allowed in the Architecture Building, Rinker Hall and in Fine Arts C, except within the spray booth found in Room 211 of Fine Arts C. Students found in violation of this policy will be referred to the Dean of Students for disciplinary action.

21. Honor Code

All students are expected to follow the honor code- submit only their original work. Students are expected to work individually on their assignments. Students may discuss the assignment, interpretation of the results, procedure to be used, etc… in groups to enhance understanding and analyze alternative approaches.

***All work is to be legible & presented in a professional manner.**

21. Tentative Schedule

Class	DATE	TOPICS	READING	ASSIGN. PROBS.	SUPPL. PROBS (***)
1		Organization, Introduction Structural Systems	Chap.1		
2		stress, strain, beams and columns	Ch.9 - 10		
3		stress, strain, beams and columns	Ch.9 - 10		
4		stress, strain, beams and columns	Chap.11 - 12		
5		stress, strain, beams and columns	Chap.4 - 5		
6		**Project**			
7		**No Class**			
8		Lateral Resisting Systems	Chap.4- 5		
9		**Project**	Assigned in class		
10		Introduction to Steel Structures/ Loads, Factors and combinations	Assigned in class		
11		Tension & Compression members	Assigned in class		
12		**Project**			
13		**Quiz 1/** Compression members	Assigned in class		
14		Bending members	Assigned in class		
15		Bending members	Assigned in class		
16		Bending members	Assigned in class		
17		Bending members	Assigned in class		
18		Connections			
19		**Quiz 2 /** Connections	Assigned in class		
20		**Review/ Project 2 Assignment**			
21		**Project**			
22					
23		Intro To wood Structures	Assigned in class		
24		Project			
28		Wood Beams-Glulams	Assigned in class		
29		Wood Beams and Joists	Assigned in class		
30		Project			
31		Wood Columns	Assigned in class		
32		Wood Columns			
33		Project			
34		/Wood Columns / Wood Connections	Assigned in class		
35		Wood Connections			
31		Project			
32		Introduction to Concrete	Assigned in class		
33		Flexural Analysis of Beams	Assigned in class		
34		Project			
35		Rectangular Beams and one-Way Slabs	Assigned in class		
36		Design of Short Columns	Assigned in class		
37		Project			

38 M		Columns/ Footing Design	Assigned in class		
39 W		**Project III**			
40 F					
41 M					
42 W					
43 M					