CET 331 – STRUCTURAL SYSTEMS

Fall 2025

COURSE NUMBER	CET 331
COURSE DESCRIPTION	STRUCTURAL SYSTEMS
COURSE STRUCTURE	(2-2-3) (lecture hr/wk - lab hr/wk – course credits)
COURSE DESCRIPTION	Study of types and behavior of modern wood structures using both analytical and intuitive techniques. Examples include beam, column, and lateral force resisting systems.
PREREQUISITE(S)	Prerequisite: Strength of materials and basic course in steel and concrete design; CET 317 construction computing.
COREQUISITE(S)	None
REQUIRED MATERIALS	Structural Wood Design: ASD/LFRD, 2nd Edition Abi Aghayere and Jason Vigil – Taylor & Francis/CRC Press, 2017 ISBN-13: 978-0-367-87562-6 National Design Specification (NDS) and NDS Supplement: 2018 Edition American Wood Council - Discounted student pricing at: https://www.abdi-ecommerce10.com/AWC/c-72-electronic-publications.aspx
SUPPLEMENTARY MATERIAL	None
COURSE OBJECTIVES	By the end of the course students should be able to: 1. Selecting appropriate construction materials and practices 2. Applying basic technical concepts to the solution of construction problems involving structures 3. Performing standard analysis and design in at least one recognized technical specialty appropriate to the goals of the program
CLASS TOPICS	Structural Analysis and Strength of Materials Review, Design of various loads, Design of various wood components in a system, **Collaborative lab workshops for design and analysis exercises.**
OUTCOMES	The Course Learning Outcomes support the achievement of the following CET Program Outcomes and TAC of ABET Criterion 3 requirements Outcome 1 An appropriate mastery of the knowledge , techniques skills and modern tools of the construction industry Outcome 2 An ability to apply current construction knowledge, adapt emerging applications of mathematics, science, engineering and technology Outcome 6 An ability to identify, analyze, and solve technical problems Outcome 7 An ability to communicate effectively

GRADING POLICY

Homework	10%
Quizzes	10%
Design Project	10%
Midterm Exam	30%
Final Exam	30%
Attendance/Participation	10%

Notes:

1. **Attendance to all classes is expected and mandatory. Attendance constitutes a graded portion of the final course grade.**
2. **Class materials will be posted on Canvas. It is solely the student's responsibility to access the materials and retain them.**
3. **Assignments are due by the deadline posted. Late assignments will not receive credit.**
4. **There will be no makeups for in-class quizzes.**
5. **Midterm and Final Exams – You cannot pass the course if you have not taken BOTH the midterm and the final exam.**
6. **There will be no makeup tests except in extraordinary circumstances.**
7. **It is the responsibility of the student to acquire and possess the required materials.**

CLASS STRUCTURE

At the discretion of the instructor, class time will be allocated towards lectures and lab workshops:

- Lectures will introduce the principals of new topics and reinforce previous concepts discussed.
- Lab workshops will focus on interactive or collaborative experience and activities (i.e. design examples, semester project development, etc.)

ACADEMIC INTEGRITY

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. ***Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.*** *If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at* dos@njit.edu*"*

STUDENT BEHAVIOR

- Cellular phones must be turned off during class hours – if you are expecting an emergency call, leave it on vibrate.
- Active participation is highly recommended (see attendance notes above). You should be part of the discussion.
- Conduct and behavior is expected to be professional and respectful of others. Anything less will not be tolerated.
- Students are expected to maintain compliance with the current University health policies.

MODIFICATION TO COURSE

The Course Outline may be modified at the discretion of the Instructor. Students will be notified of any changes to the Course.

PREPARED BY

Zachary A. Porcello, P.E., R.A., AIA, LEED AP

	zap3@njit.edu (preferred contact) Note that this instructor does not have an office on campus. The instructor will be available after regularly scheduled classes. Additional arrangements can be made to accommodate both parties if questions/issues cannot be resolved via email or Canvas.
PROGRAM COORDINATOR	Prof. John Wiggins, P.E., P.P., Esq., F.ASCE

CLASS HOURS

Thursday	6:00 PM – 10:05 PM	GITC XXXXX

Week	Class Date	Topic(s)	Lecture Textbook Chapter(s)	Lab Textbook Chapter(s)	Quiz Chapter
1	9/8/2025	Class Introduction	-	-	-
		Introduction: Wood Properties, Species, Grades	1	1	-
2	9/15/2025	Structural Design Loads	2	2	-
3	9/22/2025	Structural Design Loads	2	2	-
4	9/29/2025	Design Method for Sawn Lumber and Glued-Laminated Lumber	3	3	**1 & 2**
5	10/6/2025	Design Method for Sawn Lumber and Glued-Laminated Lumber	3	3	-
6	10/13/2025	Design and Analysis of Beams and Girders	4	4	-
7	10/20/2025	Design and Analysis of Beams and Girders	4	4	**3**
		Review for Midterm Exam			-
8	10/27/2025	**MIDTERM EXAM (Chapters 1-4)**			-
9	11/3/2025	Wood Members Under Axial and Bending Loads	5	5	-
10	11/10/2025	Wood Members Under Axial and Bending Loads	5	5	-
11	11/17/2025	Roof and Floor Sheathing Under Vertical and Lateral Loads	6	6	**5**
12	11/24/2025	Roof and Floor Sheathing Under Vertical and Lateral Loads	6	6	-
13	12/1/2025	Connections	8	8	-
14	12/8/2025	Practical Considerations in the Design of Wood Buildings	9	9	**6 & 8**
		Review for Final Exam			-
	TBD	**FINAL EXAM (Chapters 5, 6, 8, 9)**			-

Important Dates

	11/10/2024	**Last Day to Withdraw**			
	12/11/2024	Last Day of Classes			
	12/14/2024	Final Exams Begin			
	12/20/2024	Final Exams End			
	12/22/2024	Grades Due			

As of 8/28/25