

CET 331 – STRUCTURAL SYSTEMS

COURSE NUMBER	CET 331
COURSE DESCRIPTION	STRUCTURAL SYSTEMS
COURSE STRUCTURE	(3-0-3) (lecture hr/wk - lab hr/wk – course credits)
COURSE DESCRIPTION	Study of types and behavior of modern structures using both analytical and intuitive techniques. Examples include beam and column, one- and two-way slab systems, wood and masonry systems.
PREREQUISITE(S)	Prerequisite: Strength of materials and basic course in steel and concrete design; CET 317 construction computing.
COREQUISITE(S)	None
REQUIRED MATERIALS	Design of Wood Structures ASD/LRFD By Donald E. Breyer, Kenneth J. Fridley, et.al. (Latest Edition) National Design Specification -call NDS for current cost for students: (1-800-890-7732) Software: 1.MDSOLIDS from website - http://www.mdsolids.com 2.See instructor for other related softwares
MANDATORY FIELD TRIP	TBA
COURSE OBJECTIVES	By the end of the course students should be able to: <ol style="list-style-type: none">1. Selecting appropriate construction materials and practices2. Applying basic technical concepts to the solution of construction problems involving structures3. 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, Design of various masonry components in a system
OUTCOMES	The Course Learning Outcomes support the achievement of the following CET Program Outcomes and TAC of ABET Criterion 9 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

Note: Grading Policy may be modified by Instructor for each Section in the Course)

Presentation/Papers/Projects/Field Trip	25%
Homework, Sample problems and Quizzes	20 %
Tests	25 %
Final Exam	30 %

Note: Cannot pass course if you having failing grades on tests and final exam

Makeup examinations will not be given. Therefore, if any student has a valid reason for missing an exam, they should discuss with the instructor an alternate method of weighing the final grade.

The student is responsible for those materials covered in class and any materials assigned as readings as noted by instructor. A student who misses a class is still responsible for submitting materials in on time or they can give adequate notice of any late submittals to the professor before the due date.

All exams are cumulative unless otherwise noted by the instructor. All exams are closed book and closed notes. A formula sheet written by the student will be accepted in accordance with the instructor's limitations.

The final letter grade will be determined by the total number of points received during the course. Any variations to any of the above requirements are at sole discretion of the instructor.

HOMEWORKS:

All homeworks are due one week after it has been assigned. No homework will be accepted one week after its due date or after it has been reviewed in class. All homeworks will be graded on the basis of the student attempt to understand the concept presented in the text or class. Projects must follow the outline or format as directed in class. ABET course guidelines are in effect. Copy all of your work before submitting!!

Homework is **due the week following the date they are assigned (see syllabus), and must be given to the instructor.** The homework must show how you derived the answers – they will be graded either with a check, or a double check (exceptional). They will not count towards your final grade if **they are turned in more than one week late.** Homework must be handed in individually through moodle.

ATTENDANCE:

The student is responsible for those materials covered in class and any materials assigned as readings as noted by instructor. A student who misses a class is still responsible for submitting materials in on time or they can give adequate notice of any late submittals to the professor before the due date.

ACADEMIC INTEGRITY

NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. In the cases the Honor Code violations are detected, the punishments range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT with notations on students' permanent record. Avoid situations where honorable behavior could be misinterpreted. For more information on the honor code, go to <http://www.njit.edu/academics/honorcode.php>

STUDENT BEHAVIOR

- No eating or drinking is allowed at the lectures, recitations, workshops, and laboratories.
- Cellular phones must be turned off during the class hours – if you are expecting an emergency call, leave it on vibrate.
- No headphones can be worn in class.
- Unless the professor allows the use during lecture, laptops should be closed during lecture.
- During laboratory, if you are finished earlier, you must show the professor your work before you leave class
- Class time should be participative. You should try to be part of a discussion

MODIFICATION TO COURSE

The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course outline.

PREPARED BY

Dr. D. Washington

PROGRAM COORDINATOR

Prof. John Wiggins

COURSE OUTLINE

Week	Date	Textbook	Assignment	Topics
1.	9-4,6	Read Chapter 1	Homework assignment in Moodle for week 1	Course Outline and Overview
2.	9-11,13			
3.	9-18,20		Homework assignment in Moodle for week 3	Strength of Materials and Structural Analysis Review
4.	9-25,27	Read Chapter 2		Design Loads
5.	10-2,4			Test #1 Design Loads (Review of Codes)
6.	10-9,11	Read Chapt. 4	Homework assignment in Moodle for week 6	Design Loads
7.	10-16,18			Design of Wood Structures
8.	10-23,25	Read Chapt. 5	Optional Homework assignment in Moodle for week 8	Test #2 Design of Wood Structures
9.	10-30,11-1			Design of Wood Structures
10.	11-6,8		Optional Homework assignment in Moodle for week 10	Design of Wood Structures
11.	11-13,15			Design of Wood Structures
12.	11-20,22			Masonry Design
13.	11-27			Test #3 Masonry Design
14.	12-4,6			Miscellaneous Topics
15.	12-11			Class Presentation of Term Project

CLASS HOURS

TUES, THURS

10:00 AM – 11:25 AM KUPF 208

OFFICE HOURS (GITC 2504)

Monday 9:00 AM – 10:00 AM

Or by appointment: (973) 642-7915 or washd@njit.edu

HOME PAGE: [HTTP://WEB.NJIT.EDU/~WASHD/](http://web.njit.edu/~washd/)

PRESENTATIONS

During the last period, on week 15, you will be asked as a group, to give a 5-10 minute discussion on one of the topics listed below. A minimum of **5** pages **MUST** be submitted through turnitin.cm at the posted deadline. The paper will be double space with 1 inch margins. The powerpoint should be given to the professor through moodle after the class.

The report should include an introduction, description of the topic and relevant topics. It must also include at least five references, two of which is either a journal paper or a textbook. The written report should not be in overhead style (i.e. bulleted) but must be written as a regular report. The presentation must be in PowerPoint.

You will need to tell me what topic will be chosen at the posted time in moodle. While this is a group presentation, each person must participate in the presentation.

I. GROUP PROJECT SUMMARY (Groups)

a. Literature Search

Go to the library and find at least **one** reference relating to the design of a building structure and write a brief synopsis about the design of this building.

(i.e. Find a building of a wood or masonry frame structure in a magazine, periodical or book and mention some interesting facts about this structure)

Design a 2 story building following these guidelines:

b. Roof System (Truss or Ridge Beam) -

Design for Snow Loads or Roof Live Load

c. Masonry Walls- Design for Wind or Seismic

d. Floor Framing System (Joists and Girders)

Using IBC

e. Column

Using Floor Loads

Format:

Table of Contents

Introduction or Overview

Various Sections of Design Calculations

Conclusion (Tabulations of all selected sections names, dimensions, and loads)

Bibliography and References

Appendix

Or

II. INDIVIDUAL PROJECT SUMMARY (Extra Credit for individual students)

[NOTE: This option includes a presentation as well.]

a. Literature Search

Go to the library and find at least **three** references relating to the design of a building structure and/or building technologies.

(i.e. Find a topic relating to wood or masonry frame structure in a magazine, periodical or book and mention some interesting facts about this structure)

b. Write a paper about this topic (Paper should be a minimum of five pages of type written text).

Format:

Table of Contents

Introduction or Overview

Body of Various Headings

Conclusion

Bibliography or Reference