

# FOEN-6230

## Engineered Wood Structure Design

### FALL 2002

**INSTRUCTOR:** Dr. Steven E. Taylor, P.E. (Room 214, Tom Corley Bldg.)  
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**COURSE INFO:** <http://www.eng.auburn.edu/users/staylor/FOEN6230.html>

**CLASS TIMES:** T, Th 8:00-8:50, W 15:00-17:50 (Room 307, Tom Corley Bldg.)

**PREREQUISITES:** ENGR-2070

**OFFICE HOURS:** I will try to set aside Tuesdays and Thursdays from 9:00 to 11:00 for office hours. However, my door is open to you generally anytime except the two hours before I have a class scheduled. It will be safer for you to call me or e-mail me before you drop by just to make sure I will be in my office.

**REQUIRED TEXTS:**

American Forest and Paper Association (AFPA). 2001. Allowable Stress Design Manual. American Forest and Paper Association, Washington, D.C.

**ADDITIONAL MATERIAL:**

I will provide additional material throughout the course in the form of class notes and other handouts from the wood construction industry.

**COURSE GOALS:**

The goal of this course is to provide you with a basic understanding of wood construction and advanced-level knowledge of engineering procedures used in designing timber structures. The course will also provide an introduction to structural loads and deflection criteria. I want to challenge each of you to use this course to significantly improve your competency in structural design.

**GENERAL CLASS POLICIES:**

1. Class will begin and end on time.
2. The classroom environment will be informal; feel free to ask questions and make comments whenever appropriate.
3. You are responsible for attending class and obtaining all handouts and assignments. Once handouts or homework assignments are given out in class, most of them may be obtained from my web page.
4. The Wednesday labs will be used for laboratory exercises, field trips, computer-aided design sessions, and extended lectures.
5. We will have brief quizzes every two weeks. These will be short answer quizzes and will cover highlights of the lecture periods.
6. NO use of tobacco products will be allowed during the lecture or laboratory periods.
7. Students are expected to be familiar with and abide by the Student Academic Honesty Code.

**SECRETS TO SUCCESS IN THIS COURSE:**

1. Come to class.
2. Read the text (the design specification)
3. Do the homework yourself

## TENTATIVE COURSE OUTLINE

DATE	TOPIC
Aug. 20	Introduction
<u>Aug. 21</u>	Load and Deflection Criteria, Snow Loads
Aug. 22	Snow loads
Aug. 27	Wind loads
<u>Aug. 28</u>	Wind loads
Aug. 29	Wind loads
Sept. 03	Seismic loads
<u>Sept. 04</u>	Deflection Criteria, Engineering Characteristics of Wood
Sept. 05	Engineering Characteristics of Wood
Sept. 10	Structural Lumber Properties, Grades & Sizes
<u>Sept. 11</u>	<b><i>Structural Lumber – Field Trip to Lumber Manufacturing Plant</i></b>
Sept. 12	Structural Composite Lumber
Sept. 17	Structural Composite Lumber
<u>Sept. 18</u>	<b><i>No Class</i></b>
Sept. 19	No Class
Sept. 24	No Class
<u>Sept. 25</u>	Panel Products, Lumber Testing
Sept. 26	Preservative Treatment of Wood Products
Oct. 01	Overview of the NDS, Design Values for Structural Members
<u>Oct. 02</u>	Design Values for Structural Members
Oct. 03	Design of Wood Tension Members, Members in Bearing
Oct. 08	Design of Wood Compression Members
Oct. 09	<b>Mid-Term Exam</b>
<u>Oct. 10</u>	<b><i>ALL DAY FIELD TRIP: Engineered Lumber Mfg. Plants</i></b>
Oct. 15	Design of Wood Compression Members
<u>Oct. 16</u>	Computer-Aided Design of Compression Members, Design of Wood Bending Members
Oct. 17	Design of Wood Bending Members
Oct. 22	Design of Wood Bending Members
<u>Oct. 23</u>	<b><i>AFTERNOON FIELD TRIP: Timber Bridge Design</i></b>
Oct. 24	Computer-Aided Design of Wood Bending Members
Oct. 29	Design of Wood Bending Members
<u>Oct. 30</u>	Designing Members under Combined Stresses
Oct. 31	Introduction to Wood Mechanical Connector Design, Bolted Connections
Nov. 05	Bolted Connections
<u>Nov. 06</u>	Bolted Connections
Nov. 07	Lag Screw Connections
Nov. 12	Nailed Connections
<u>Nov. 13</u>	Nailed Connections
Nov. 14	Shear Walls and Diaphragms

## TENTATIVE COURSE OUTLINE

DATE	TOPIC
Nov. 19	Designing Trusses and Frames
Nov. 20	Designing Trusses and Frames
Nov. 21	Designing Trusses and Frames
Nov. 26	Thanksgiving Holiday
<u>Nov. 27</u>	Thanksgiving Holiday
Nov. 28	Thanksgiving Holiday
Dec. 03	Post-Frame Construction
<u>Dec. 04</u>	<b>AFTERNOON FIELD TRIP:</b> You will like it!
Dec. 05	Review for Final Exam
Dec. 11	<b>FINAL EXAM 2:00 - 4:30 PM</b>
Dec. 16	<b>COMMENCEMENT</b>

**NOTE:** Class days that are underlined have scheduled labs. Some of the lab activities will involve field trips that may go past the scheduled class times.

### GRADING:

Homework	45 %
Mid-term EXAM	15 %
Quizzes	5 %
Design Project	15 %
Final EXAM	20 %

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TOTAL	100 %
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Final Grades : A = 90 - 100 % B = 80 - 89.9 % C = 70 - 79.9 % D = 60 - 69.9 % F = below 60 %

### HOMEWORK:

Homework will be given out about once each week. A due date will be given when the assignment is made. Unexcused late homework will be accepted with a 10% reduction in value for one day late and 20% reduction in value for two days late. I will not be accepting homework that is more than two days late. Also, after graded homework is returned to the class, no other late assignments will be accepted. Completed homework assignments should have professional quality content and appearance (i.e., **it must be neat and organized**). A format guide for homework will be passed out with the first assignment. **Homework will not be graded that does not follow this format.** Assumptions, calculations and recommendations given in homework should be justified with appropriate references. Feel free to discuss homework problems and the project with other students and the instructor; however, **the work that you turn in should be your own**. We will be using computer-aided structural analyses for parts of the course. In addition, you are strongly encouraged to use any other available computer resources (e.g. Word, Excel, Autocad, etc.) for all parts of the course.

### DESIGN PROJECT:

A term design project will be assigned in the course. I will provide at least two projects that you can choose from. This is a chance for you to take a small project from start to finish. You will have to develop your own functional criteria, design loads, and member sizes. You will also have to develop engineering drawings and specifications for the contractor. I am going to try to make parts of the design project count for the homework assignments.

### COURSE PORTFOLIO:

I encourage you to create a portfolio for this course. This will serve as a detailed synopsis of what you have gained from this course and will highlight the term design project. My primary reason for doing this is for you to have a professional quality portfolio that you can use in job interviews to show your potential employers what you can do for them. I will bring an example of a portfolio and will give details on how it should be assembled.