

CE-464 (CRN 14935) Spring-2018

TIMBER DESIGN

MWF 12:00--12:50, Room MRB-E 205

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[\(please use only the above e-mail ID for communication\)](#)

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Office: 611 C ESB, Telephone Number: 304-293-9985

Office Hours: MW 1.00-2 PM (may change) or by appointment

TEXTS (Required)

Design of Wood Structures — ASD/LRFD, 2015, Breyer D.E., Cobeen K.E., Fridley K.J., and Pollock Jr. D.G., 7th Ed., McGraw-Hill (ISBN-13: 978-0071745604 & ISBN-10: 0071745602)

National Design Specification for Wood Construction (2015) and Supplement (2015), American Forest & Paper Association — American Wood Council

COURSE OBJECTIVES

The primary objective is to develop a sound understanding of wood as a structural material with a firm foundation of design principles. The design methodology will include determination of loads, structural planning, member design and connector details, and the design of wood structures.

Course Outcome Description	ABET Program Outcome*
(1) Learn about wood as a structural material	(a), (c), (e)
(2) Learn about analysis and design of structural wood under bending, shear, tension, compression, bearing, and various other forces with due regard to size, temperature, moisture, wood species, grain orientation, seasoning, defects etc.	(a), (c), (e), (j)
(3) Learn about analysis and design of wood for various structural applications with the help of American Wood Council (NDS) design codes	(a), (c), (e), (j), (k)

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(a) Apply knowledge of math, science, and engineering
(c) Design civil engineering projects and components of projects
(e) Identify, form, and solve civil engineering projects
(j) Need/ability to engage in lifelong learning (contemporary issues)
(k) Use techniques, skills, and modern engineering tools

POLICY AND GUIDELINES

Academic Honesty:

You are bound by the University honor code; it is your responsibility to know the code and the risks of violations (See *The Mountie*, WVU Student Handbook).

CELL-PHONES

No cell-phone usage in the class including as a calculator. If you have a special need, discuss with the instructor.

GRADING

(1) Quizzes -15% (2) Exams 20% (3) Finals (in-class) and Project- 30% (4) Homeworks-35%. Late assignments may incur a penalty. Quizzes: quizzes will be approximately 15 minutes each; an unexcused absence counts as a zero. Instructor reserves the right to curve up the grade.

ATTENDANCE

Students are expected to attend all class periods.

HOMEWORK

It doesn't matter how you acquire your knowledge. You may discuss or seek help from anyone. However, **the final work has to be yours. Don't Copy!** Generally, late homework will not be accepted. Homework due dates will be specified on each assignment; typically, you will have one week for each assignment. *Design students are expected to submit work that is reasonably neat; complete yet concise; orderly and well organized in format.* Sketches should be used to illustrate and summarize the design.

INCLUSIVITY STATEMENT

The WVU community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services (304-293-6700). For more information on WVU's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.

TOPICS

1. Wood Structure and Properties (Ch. 4)
2. Production and Grading of Sawn Lumber (Ch. 4)
3. Beams and Columns (Ch. 5, 6 & 7)
4. Building Codes, Loads, and Allowable Stresses (Ch. 2 & 3)
5. Glued Laminated Members (Ch. 5)
6. Timber Connectors and Special Assemblies (Ch. 11 & 13)
7. Plywood and Panel Products & Diaphragm Action and Design (Ch. 8 and 9)
8. Special topics

REFERENCES

1 Textbooks:

- Structural Wood Design — A practice-Oriented Approach Using the ASD Method, Abi Aghayere and Jason Vigil, 2007, John Wiley & Sons Inc, Hoboken, NJ.
- Structural Design in Wood, Stalnaker J.J. and Harris E.C., 1997, 2nd Edition, Chapman & Hall, New York, NY.
- Wood Engineering, Gurfinkel, G., 1981, Kendall/Hunt Publishing Co. [Out of print.]

2. Wood Mechanics:

- Mechanics of Wood and Wood Composites, Bodig, J. and Jayne, B.A., 1982, Van Nostrand Reinhold

3. Reference Books:

- Timber Construction Manual, 4th Ed., 1994, *American Institute of Timber Construction (AITC)*, Englewood, CO.
- Wood Engineering and Construction Hand Book, 1989, Faherty, K.F., and Williamson, T.G., editors, McGraw Hill, Inc.
- Forest Laboratory Publications, <http://www.fpl.fs.fed.us/products/publications>