

Carleton University Department of Civil and Environmental Engineering
CIVE 4202A / ARCC4202A: WOOD ENGINEERING
Course Syllabus – Winter 2019

COURSE INSTRUCTOR

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COURSE SCHEDULE

Lectures: Mon. 2:35pm-5:25pm in TB208
Tutorials: ODD WEEKS ONLY
Wed. 11:35am-2:25pm in TB210

COURSE WEBSITE AND COMMUNICATION

All course information and online quizzes will be available through cuLearn. All students are responsible for ensuring that they are correctly registered through cuLearn and that they are receiving messages properly through their official university email address. Students are responsible for checking the cuLearn course management site and their official email account frequently.

COURSE DESCRIPTION AND OBJECTIVES

Calendar Description: Structural design in timber. Properties, anatomy of wood, wood products, factors affecting strength and behaviour, strength evaluation and testing. Design of columns, beams and beam-columns. Design of trusses, frames, glulam structures, plywood components, formwork, foundations, connections and connectors. Inspection, maintenance and repair.

In CIVE4202, students will learn how to design wood/timber structures and will learn about the behaviour, deterioration and protection of wood as a structural material.

By the end of the course, successful students will be able to:

- Explain the behaviour of wood as a structural material, including shrinkage, creep and the effects of moisture and treatment.
- Identify and describe maintenance and repair problems for wood structures.
- Apply National Building Code of Canada (NBCC) loads and load combinations for the design of wood structures.
- Design sawn lumber and glulam structural elements including beams, columns, beam-columns, and shearwalls.
- Design connections for wood elements using nails, screws, bolts

- Create and annotate drawings of timber structures and connections.
- Summarize and explain the fire protection measures for wood structures
- Describe the use of wood structures as concrete formwork

TEXTBOOK

It is necessary that all students own a copy of the 2017 Wood Design Manual. All assessment will be open book using this design manual only. It is not available at the university bookstore. You must get a copy on your own from the Canadian Wood Council (CWC). Here are the instructions to do so:

1. Register to create an account or Sign in at webstore.cwc.ca
2. Place your order online and choose “Pick up at 99 Bank Street, Suite 400, Ottawa” option
3. Enter Promo Code "Student" in the Promotion field
4. Finalize your order
5. Email an image of the front and back of your student card to orders@cwcc.ca – your order will be on hold until they receive the ID
6. The first email you receive will be an automated order confirmation.
7. The second email you receive will be entitled "Order Ready for Pick up" and confirms that your order is now ready.
8. Bring the “Order Ready for Pick up” email to 99 Bank Street, Suite 400, Ottawa (print or electronic) during our business hours.
9. The Front Desk staff will have the item for you.

To pick up your order, you only need your “Order Ready for Pick up” email in printed format or electronically. Someone else can pick up your order for you as long as they have a copy of your “Order Ready for Pick up” email (print or electronic).

It is recommended (but not mandatory) that students also buy a copy of *Introduction to Wood Design (2011 Edition)* which is also available from the CWC, although it may not fully reflect all changes in the new code.

COURSE OUTLINE (SUBJECT TO CHANGE)

WEEK		DATE	TOPIC
1	Lect. #1	Jan. 7	Introduction to wood engineering and construction
	Tut. #1	Jan. 9	Wood properties and grading
2	Lect. #2	Jan. 14	Loads, load combinations and deflection limits
3	Lect. #3	Jan. 21	Design for tension
	Tut. #2	Jan. 23	TEST #1 , Design for compression parallel to grain and design of built-up columns
4	Lect. #4	Jan. 28	Design for compression perpendicular to grain (bearing)
5	Lect. #5	Feb. 4	Design of bending members and design for deflection
	Tut. #3	Feb. 6	TEST #2 , Design Examples
6	Lect. #6	Feb. 11	Design for shear
WINTER BREAK FEBRUARY 18 TO 22			
7	Lect. #7	Feb. 25	Design for combined compression and bending (beam-columns)
	Tut. #4	Feb. 27	TEST #3 , Design Examples
8	Lect. #8	Mar. 4	Introduction to Connections. Connection design guidelines.
9	Lect. #9	Mar. 11	Design of nailed connections
	Tut #5	Mar. 13	TEST #4 , Connection Examples
10	Lect. #10	Mar. 18	Design of nailed and bolted connections
11	Lect. #11	Mar. 25	Design of bolted connections
	Tut #6	Mar. 27	TEST #5 , Connection Examples
12	Lect. #12	Apr. 1	Connection Examples
13	Lect. #13	Apr. 8	Introduction to lateral load design and design of concrete formwork. Introduction to cross-laminated timber (CLT) walls. Exam Review

COURSE WORK AND ASSESSMENT

- Pre-Lecture Quizzes** 10%
- Biweekly Tests** 40% (8% each)
- Final Exam**..... 50%

Pre-Lecture Quizzes

Before each week of lectures, each student is expected to read the relevant section of the notes, watch the relevant videos for the next week (relevant sections and videos will be announced in advance on cuLearn), complete the assigned practice problems and then complete the pre-lecture quiz on cuLearn **prior to 11:59pm on Sunday** (typically). Each question on these quizzes will be given a mark out of two.

Questions pertaining to the readings will be given a mark for effort and completion according to the following rubric:

- (0/2) Questions are left blank or incomplete,
- (1/2) All questions are answered but do not include any significant reasoning (regardless of correctness),

(2/2) All questions are answered and include reasoning (regardless of correctness).

Responses to these reading questions should be short and do not necessarily have to be correct to receive full marks. Their goal is to ensure that students read the material ahead of time and to provide the instructor with information about which concepts students had the most difficulty with. It is vital that students come to class prepared because this will allow the lecture time to be used to explore the course concepts in detail using active learning and worked examples and to eliminate stumbling blocks to understanding.

Questions on the pre-lecture quiz pertaining to the assigned practice problems will be given a grade out of two dependent on the relative correctness of the response.

Students are responsible for all of the material covered in the readings, whether or not the material was discussed explicitly during the lectures.

On each pre-lecture quiz, students must also answer two additional questions related to the content from the previous and upcoming weeks. These questions are mandatory and will be assessed in the same way as the reading questions described above. These questions will help the instructor to address conceptual difficulties that students are experiencing. They are:

“What is one specific question that you have about the lecture from this past week? If no questions arose for you, what part did you find most interesting?”

“What is one specific question that you have about the pre-lecture material for this week? If no questions arose for you, what part of the material did you find most interesting?”

To avoid the need for extensive accommodations for sickness or other obligations, the two pre-lecture quizzes with the lowest marks will be dropped from the final mark. Any additional accommodations require *exceptional* circumstances and supporting documentation.

In-Lecture Assignments

Occasionally, short active learning assignments will be conducted during lectures. Not every lecture will necessarily have an in-lecture assignment. These assignments are not for credit.

Bi-Weekly Tests

There will be a total of 5 bi-weekly tests. The tests will be delivered in the tutorial.

Each week, example homework questions will be assigned which will not be graded. Each test will consist of (a) questions that are similar to one of the homework questions and/or (b) one or more conceptual short answer questions. Students will be permitted to use the wood design manual and a non-programmable calculator during the quizzes. Remaining time in the tutorial will be used to get

assistance from the TAs and Instructor and to complete sample problems. Only circumstances which are truly outside of a student's control will be accepted as valid reasons to miss the tests.

Students are required to submit a Declaration of Absence form within 48 hours of any absence. The instructor will determine if the absence is reasonable. Failure to submit the Declaration of Absence form by the deadline will result in a grade of zero which will be counted towards the final mark.

Make up tests or projects may also be assigned at the instructor's discretion for students who miss a test due to a valid reason. If a make-up test or project is not assigned, the total biweekly test grade will be calculated using an average of the remaining biweekly tests.

Final Exam

The final exam has not yet been scheduled. Students will be permitted to use the wood design manual and a non-programmable calculator during the final exam.

A minimum mark of 50% on the final exam is required to pass the course.

Appeals

All appeals of marks assigned in this course must be made within 10 days of the posting date.

COURSE POLICIES

Academic Integrity:

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensure that a degree from Carleton University is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. Carleton University's Policy on Academic Integrity (<http://www.carleton.ca/studentaffairs/academic-integrity>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. It is your responsibility to be familiar with these policies. Any students who do not act with academic integrity will face severe consequences including immediate referral to Associate Dean of Student Affairs.

Professional Behaviour in Class

In order to ensure that all classes are carried out in a quiet and respectful environment that allows all students to learn effectively, please adhere to the following expectations. Failure to meet behavioural expectations may result in a request to leave the lecture hall.

- Be on time for class. Plan for the possibility of transport delays. If you are late, minimize disruption to both the instructor and other students by being quiet and finding a seat quickly.

- Do not speak to your colleagues during the lectures (except for times when the instructor asks you to). If you have a question about the material, please raise your hand at any time to ask the instructor. If you are confused, it is very likely that other people will be confused as well and your question will help everyone's learning process.
- Laptops and mobile devices are permitted in lecture to facilitate active learning; however, please ensure that mobile devices are set to silent mode to avoid disrupting the class. Also, please do not use electronic devices to access games, facebook, twitter or other non-course-related material because it is a distraction to other students.
- If you feel affected by the behaviour of other students, please let the instructor know your concerns as soon as possible so that he can address the problem.

Email Policy

The instructor is more than happy to answer questions related to course content or administration via email. Effort will be made to reply to emails as soon as possible, but please expect a possible delay of up to 48 hours for a response. In addition, complex technical questions should be addressed in tutorial, during office hours, or by appointment. Emails must come from official Carleton University email addresses or through cuLearn. The instructor will not respond to emails from outside addresses.

Extensions and Rewrites

In the interest of fairness for all students, requests for rewrites will only be granted for situations that are truly out of a student's control.

Course Material Copyright

Classroom teaching and learning activities, including lectures, discussions, presentations, etc., are copy protected and remain the intellectual property of the instructor. All course materials, including PowerPoint presentations, outlines, and other materials, are also protected by copyright and remain the intellectual property of the instructor.

Students registered in the course may take notes and make copies of course materials for their own educational use only. Students are not permitted to reproduce or distribute lecture notes and course materials publicly for commercial or non-commercial purposes without express written consent from the copyright holder(s). Students are not permitted to upload these copyrighted course materials to any online repositories.

Academic Accommodation

Students with diverse learning styles and needs are welcome in this course.

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www2.carleton.ca/equity/>

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www2.carleton.ca/equity/>

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your **Letter of Accommodation** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). **Requests made within two weeks will be reviewed on a case-by-case basis.** After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (if applicable).

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at <http://www2.carleton.ca/equity/>