CIVE 5616 – Wood Structures and Fire
Course Information
Fall Term 2021

Instructor

Dr. Sabah Ali, PhD, P.Eng, PMP
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Lectures

Monday 6:05 pm to 8:55 pm (online)

Course Description

This course introduces the fire safe design of wood buildings. The course includes a brief review of wood products and wood design as this needed to calculate the structure's response to fire. The current prescriptive code requirements for wood structures will be reviewed as a starting point for alternative designs. Determination of fire-resistance of wood structures through testing, the course will cover the calculation methods and heat transfer/structural models in detail.

The course will be online/ live BBB or zoom classes. The classes will be recorded and posted on Culearn. Please note the recording might not work sometimes. Therefore, I do not recommend that the student rely on the video that may or may not post on Culearn. It is highly recommended that the students attend live classes.

Textbooks

Wood Design Manual (2015) Canadian Wood Council (required)

Structural Design for Fire Safety; 2nd edition (2017) Buchanan (required) Wiley; ISBN-13: 978-0470972892

Students may acquire the Wood Design Manual directly from the Canadian Wood Council at These can be purchased online with 40% discount for students For more information, visit www.cwc.ca

Other References

1) Wood and Fire Safety. Fire safety requirements for building construction. Canadian Wood Council 1996). (ISBN 0-921628-43-9)
2) The SFPE Handbook of Fire Protection Engineering, Fourth Edition. 2008. Published by the National Fire Protection Association, Quincy, MA.
3) National Building Code of Canada. 2005. Canadian Commission on Building and Fire Codes, National Research Council of Canada, Ottawa, ON
4) Dr. Steven Craft – lectures –2010.

Student Evaluation

Problem Sets. Selected problems assigned. A professional level of performance (clarity, legibility, presentation, neatness) is expected in all students' submissions.	60%
Final Project. Projects involves develop of spread sheet for design of wood members in fire as per Canadian and Euro codes.	40%

Lectures (May be modified during term)

Week	Date	Lectures
1	September 13	- Course overview - Introduction to wood
2	September 20	- Introduction to wood as a building material - Introduction to wood product - Connection type And Geometry
3	September 27	- Material properties of wood at elevated temperature - Construction methods (light-frame vs. heavy timber) - Wood design (bending, compression, tension)
4	October 04	- Loads, load factors - Wood member design –swan and glulam - Tensile, Compressive , Bending and combined Stresses
5	**October 11**	**Thanksgiving**
6	October 18	- Review of NBCC prescriptive allowances for wood buildings
7	**October 25**	**Oct 25 – 29 Fall Break**
8	November 01	- Timber connections - Bolted connections
9	November 08	- Standard fire tests for fire resistance and flammability - Engineering models to predict fire-resistance ratings
10	November 15	- Engineering models to predict fire-resistance ratings (T.T. Lie, NDSTR10) - Engineering models to predict fire-resistance ratings (Eurocode)
11	November 22	- Fire resistance of light-frame wood assemblies
12	November 29	- Fire resistance of cross-laminated timber
13	December 06	- Fire resistance of connections - Computer models used to predict fire resistance
14	December 10	- Final assessment TBD

Problem Sets

There will be four problems sets which must be submitted for completion of the course.

Assignment 1	Issued: September 27	Due: October 18
Assignment 2	Issued: October 18	Due: November 08
Assignment 3	Issued: November 08	Due: November 29
Project	Issued: November 15	Due: December 10

Please note that the dates are tentative and sequence of lectures and assignments might change

Special Accommodation

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://www.carleton.ca/equity/accommodation/student_guide.htm

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Students with disabilities requiring academic accommodations :
"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*). "

Appeals

All appeals of marks assigned in this course must be made within 10 days of the posting date. Excused absences due to illness, compassionate reasons or personal emergencies must be supported by a doctor's certificate or by discussion with the instructor. Students will not have access to the final examination paper after it has been marked at the end of term.