Syllabus IENG 723-3 (NRES 798)

Wood Design II

Instructor: Dr. Thomas Tannert; thomas.tannert@unbc.ca

Guest lecturers: Mr. Adam Robertson; Dr. Freddy Pina, Mr. Lucas Epp, Dr. Asif Iqbal

Course dates: June 17 – July 5 2019

Course description:

This course focuses on the design of wooden floor and lateral load resisting systems.

Office hours:

I maintain an "open door" policy; you can also book appointments.

Course objectives

The objectives of the course are:

i) to help you understand the behavior of lateral load resisting systems;

ii) to help you understand the behavior of floor systems; and

iii) to help you gain team-working and problem-solving skills.

More specifically, by the end of this course, you will be able to:

- Design light-frame shearwalls, diaphragms and floors according to CSA-086;
- Design mass-timber walls and floors according to CSA-086;
- Design timber-concrete composite floors according to EN1995;
- Apply seismic design concepts;
- Understand the parametric design process.

Course materials:

All course material will be posted on the course e-learning platform.

Academic Student Conduct:

Guidelines for Academic Student Conduct are detailed in the Graduate Academic Calendar which can be found in the printed and on-line versions. The course is governed by these regulations and policies. Please ensure that you are aware of and understand the procedures.

Team-Based-Learning

The course will be partially delivered in the Team-Based-Learning (TBL) format. Numerous studies show that students retain much more of the content presented and develop higher skills in a TBL course than a conventional lecture-based course. TBL makes better use of the student and instructor time by switching where the learning activities take place:

- Initial exposure to material is gained out of class through reading assignments;
- Key points are reinforced by the instructor using lectures, and then exercises and active learning take place in the classroom;
- Realistic, challenging problems are completed by students in and out of class, and conclude with debriefings and discussions by the instructor in class.

These activities ensure that you see the course material multiple times and in different ways.

Team structure

You are assigned to a team with three members:

Team 1:

Team 2:

Team 3:

Required textbook

"Wood Design Manual 2017"

Additional resources

- National Building Code of Canada 2015: http://www.nrc-cnrc.gc.ca
- APEGBC Technical and Practice Bulletin Structural, Structural, Fire Protection and Building Envelope Professional Engineering Services for 5- and 6-Storey Wood Frame Residential Building Projects: https://www.egbc.ca
- CLT Handbook - Canadian Edition: https://fpinnovations.ca
- Engineering Guide for Wood Frame Construction: http://www.cwc.ca/
- WoodWorks® software: http://www.cwc.ca/
- WoodWorks® software guide: http://www.cwc.ca/software

Course schedule (subject to change)

Class	Day	Date	Class activity	Out of class activity
1	Mo	June 17	Cross-laminated timber floors	
2	Tue	June 18	Timber-concrete composite floors	
3	Wed	June 19	Lateral load resisting systems (LLRS)	
4	Thu	June 20	Light-frame LLRS	Assignment 1
5	Fri	June 21	Light-frame LLRS	
6	Mo	June 24	Cross-laminated timber LLRS	Design Task 1
7	Tue	June 25	Other LLRS	
8	Wed	June 26	Floor vibrations	
9	Thu	June 27	Seismic design	Assignment 1
10	Fri	June 28	Seismic design	
11	Tue	July 2	Student presentations and Review	
12	Wed	July 3	Exam	Design Task 2
13	Thu	July 4	Parametric Design	
14	Fri	July 5	Parametric Design	Quiz

Note: schedule subject to adjustments during course

Grading structure and rules

Item	weight
Individual assignments	20%
Team Design Tasks*	20%
Quiz	10%
Final exam	50%

***Team tasks.**

- Late submissions of deliverables will NOT be accepted. The final exam is open book.
- The presentation of computations in a concise and readable manner, providing relevant assumption and equations to show how you arrived at the – clearly identified – answer is part of the marking criteria for design tasks and final exam.
- In order to pass the course, UNBC graduate programs require that both final exam as well as the overall grade must be at least 70%.
- To pass the course as audit, full participation in all class and team activities is required.