ARCH 260: Principles of Structures

University of Waterloo School of Architecture
Fall 2018

SYLLABUS

Instructor
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Lectures
Fridays 2pm-5pm
Room 1101 (Laptop Classroom)

Tutorials
Wednesdays 6:30pm-8:30pm
Room 1101 (Laptop Classroom)
6:30pm: Review homework from previous week (optional)
7:30pm: Quiz

Course Description
Fundamental concepts of mechanics and structures, as related to architectural design, study of loading conditions, forces, moments, systems of forces, conditions of equilibrium for two and three dimensional structures, centre of gravity of loads and areas, bar forces in trusses, simple frame analysis, moment of inertia. Concepts of simple stress and strain; shear and bending moments in simple beams; shear and moment diagrams, qualitative deflected shapes, flexural and shearing stresses, deflection calculations; compression members; Euler's formula.

Course Policies
Each student is requested to bring a hand calculator to every class meeting. All other electronic devices, such as computers, cell phones, tablets, etc., are prohibited from use in class at all times. The exception to this rule is any device necessary for the accommodation of a student with special needs.

Text Books
Ronald E. Shaeffer, Elementary Structures for Architects and Builders, 5th edition. Prentice Hall, 2007.
M. Salvadori, Why Buildings Stand Up
J.E. Gordon, Structures or Why Things Don't Fall Down, Da Capo Press, 2003.

Grading
Final marks will be calculated on the following basis:

Quizzes	30%
Midterm Exam	30%
Final Exam	40%

Homework
Each week suggested homework problems will be assigned, covering the material taught in the lecture. This work is not evaluated, but is crutial to your understanding of the material. You will be given opportunities to practise what you have learned and ask questions in tutorials before writing each quiz.

Quizzes
Quizzes are administered during tutorial sessions, and are the only mandatory portion of the Wednesday class. Each quiz will be a short (often single-question) problem reflecting the material taught in the previous lecture, and the associated homework problems.
Each quiz is graded out of five. There are eight quizzes. At the end of the term, your bottom two quizzes will be discarded and only the top six grades will be counted towards your final. This affords you some forgiveness for absence, illness, and poor performance. Re-writing quizzes for any reason is not an option. Students registered with accessibility services will be accommodated.

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Exams

Both the Midterm and the Final exam will be closed-book exams. Students will be responsible for all material covered in the course, both in-class and in-textbook. You may bring in one personal formula sheet on an 8.5x11" paper, hand-written, double-sided, with whatever information you wish to have on it (i.e. examples, formulae, diagrams, inspirational notes, etc.).

Avoidance of Academic Offenses

Academic Integrity

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. Refer to the Academic Integrity website (https://uwaterloo.ca/academic-integrity/) for details.

Grievance

A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, (https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70). When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline

A student is expected to know what constitutes academic integrity to avoid committing an academic offense, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71 (https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71) Student Discipline. For typical penalties check Guidelines for the Assessment of Penalties, (https://uwaterloo.ca/secretariat/policies-procedures-guidelines/guidelines/guidelines-assessment-penalties).

Appeals

A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm .

Note for Students with Disabilities

AccessAbility Services (http://uwaterloo.ca/disability-services/), located in the new addition to Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for with students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the office at the beginning of each academic term.

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SCHEDULE

Friday, Sept. 7	introduction, concurrent forces, equilibrium, moment, and reactions
Wednesday, Sept. 12	quiz
Friday, Sept. 14	two-force members, pinned frames
Wednesday, Sept. 19	quiz
Friday, Sept. 21	cables, trusses by method of joints, gables
Wednesday, Sept. 26	tutorial only: no quiz
Friday, Sept. 28	determinacy, section properties, moment of inertia
Wednesday, Oct. 3	quiz
Friday, Oct. 5	load, shear, and moment diagrams, beam tables, and superposition
Friday, Oct. 12	(evening tutorial time slot) quiz, midterm review
Wednesday, Oct. 17	midterm review tutorial: no quiz
Friday, Oct. 19	midterm exam
Wednesday, Oct. 24	quiz
Friday, Oct. 26	Toronto Co-op Day. No Lecture.
Wednesday, Oct. 31	take up midterm; no quiz
Friday, Nov. 2	trusses by method of sections
Wednesday, Nov. 7	quiz
Friday, Nov. 9	axial stress, bending stress, shear stress and indeterminacy
Wednesday, Nov. 14	quiz
Friday, Nov. 16	limit states design, beam design
Wednesday, Nov. 21	quiz
Friday, Nov. 23	column design, slenderness, buckling
Wed. Nov. 28	final review tutorial
Friday, Nov. 30	10am-1pm LOFT review
Dec. 14	final exam