

University of Waterloo School of Architecture
ARCH 260: Principles of Structures
Fall 2022

Syllabus

Instructor

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Teaching Assistant

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Lectures

Tuesdays, 09:30-12:30 (EDT), ARC 1101

Tutorials

Fridays, 11:30-13:30 (EDT), ARC 1101

Territorial Acknowledgement

We acknowledge that the School of Architecture is located on the traditional territory of the Neutral, Anishinaabeg and Haudenosaunee peoples. The University is situated on the Haldimand Tract, the land promised to the Six Nations that includes 10 kilometres on each side of the Grand River. Please see:

<https://uwaterloo.ca/engineering/about/territorial-acknowledgement>

Course Description

Study of forces and their effect on structures, namely: classification of loads, structural analysis, determination of support reactions, identification of load paths, and calculating stress within structural members. The structural aspects of the National Building Code of Canada are introduced and contextualized by this study.

Learning Objectives

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

- Determine the resultants and support reactions from a system of forces
- Distinguish between external and internal forces, and use internal forces to determine the stress present in structural members
- Identify and class loads applied to a typical building structure, differentiate between ultimate and service loads
- Identify load paths and differentiate between gravity system types

Required Texts

ARCH 260 Course Notes Posted to LEARN

Grade Distribution

Quizzes (8@1.5%)	12%
Assignments (4@7%)	28%
Midterm Exam	30%
Final Exam	30%

Instructional Plan

13 September 2022 (Tuesday)	Introduction
	1 Forces & Moments
20 September 2022 (Tuesday)	2 Equilibrium, Reactions, Determinacy
	3 Linear Systems, Superposition
27 September 2022 (Tuesday), 09:30 EDT	Assignment 1 Due
27 September 2022 (Tuesday)	4 Two Force Members, Trusses
4 October 2022 (Tuesday)	5 Shear Force and Bending Moment Diagrams
Reading Week	
18 October 2022 (Tuesday)	6 Section Properties
18 October 2022 (Tuesday), 09:30 EDT	Assignment 2 Due
25 October 2022 (Tuesday)	7 Stress and Strain
1 November 2022 (Tuesday)	Midterm Exam
8 November 2022 (Tuesday)	8 Limit States Design
15 November 2022 (Tuesday), 09:30 EDT	Assignment 3 Due
15 November 2022 (Tuesday)	9 Load Paths, Tributary Area
22 November 2022 (Tuesday)	10 Flexural Design
29 November 2022 (Tuesday), 09:30 EDT	Assignment 4 Due
29 November 2022 (Tuesday)	11 Compression Buckling
13 December 2022 (Tuesday)	Final Exam

Course Delivery & Time Zone

Course Delivery & Communication

It is strongly recommended that you create a physical course binder. Course notes in PDF format will be posted to LEARN and should be printed off. These notes will be annotated, and the examples completed, during the contact period. Example solutions and other memos can be interleaved with the notes as necessary. The notes are created in the hope that can serve as a valuable reference throughout your careers.

The course will be delivered via weekly lectures on campus (in person). It is strongly recommended that you attend all lectures: the course notes alone will not ensure your success. Grid paper and a calculator will be required during each lecture for examples.

All course communication will be delivered via announcements on LEARN. Please check the course shell often for updates. Where necessary, video calls will be conducted via Microsoft Teams.

Course Time Zone

All dates and times communicated in the document are expressed in Eastern Daylight Time (EDT, UTC-04:00).

COVID-19 Special Statement

Given the continuously evolving situation around COVID-19, students are to refer to the University of Waterloo's developing information resource page (<https://uwaterloo.ca/coronavirus/>) for up-to-date information on academic updates, health services, important dates, co-op, accommodation rules and other university level responses to COVID-19.

Should we pivot to remote teaching this term, instructors may need to record lectures. In this case, the course's official Notice of Recording document will be found on the course's LEARN site. This document outlines shared responsibilities for instructors and students around issues of privacy and security. Each student is responsible for reviewing this document.

Fair Contingencies for Emergency Remote Teaching

We are facing unusual and challenging times. The course outline presents the instructor's intentions for course assessments, their weights, and due dates in Fall 2022. As best as possible, we will keep to the specified assessments, weights, and dates. To provide contingency for unforeseen circumstances, the instructor reserves the right to modify course topics and/or assessments and/or weight and/or deadlines with due and fair notice to students. In the event of such challenges, the instructor will work with the Department/Faculty to find reasonable and fair solutions that respect rights and workloads of students, staff, and faculty.

Course Supports

Accommodations

AccessAbility Services (<https://uwaterloo.ca/disability-services>), located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for with students with disabilities. If you require academic accommodations, please register with the office at the beginning of each academic term and contact the course instructor.

Mental Health Support

All of us need a support system. We encourage you to seek out mental health supports when they are needed. Please reach out to Campus Wellness (<https://uwaterloo.ca/campus-wellness/>) and Counselling Services (<https://uwaterloo.ca/campus-wellness/counselling-services>).

We understand that these circumstances can be troubling, and you may need to speak with someone for emotional support. Good2Talk (<https://good2talk.ca/>) is a post-secondary student helpline based in Ontario, Canada that is available to all students.

Equity, Diversity and Inclusion Commitment

The School of Architecture is committed to foster and support equity, diversity and inclusion. If you experience discrimination, micro-aggression, or other forms of racism, sexism, discrimination against 2SLGBTQ+, or disability, there are several pathways available for addressing this:

- A) If you feel comfortable bringing this up directly with the faculty, staff or student who has said or done something offensive, we invite you, or a friend, to speak directly with this person. People make mistakes and dealing them directly in the present may be the most effective means of addressing the issue.
- B) You can reach out to either the [Undergraduate office](#), [Graduate office](#), or Director ([Anne Bordeleau](#)). If you contact any of these people in confidence, they are bound to preserve your anonymity and follow up on your report.
- C) You can choose to report centrally to the Equity Office. The Equity Office can be reached by emailing equity@uwaterloo.ca. More information on the functions and services of the equity office can be found here: <https://uwaterloo.ca/human-rights-equity-inclusion/about/equity-office>.
- D) [Racial Advocacy for Inclusion, Solidarity and Equity \(RAISE\)](#) is a student-led Waterloo Undergraduate Student Association (WUSA) service. RAISE serves to address racism and xenophobia on the University of Waterloo campus with initiatives reflective of RAISE's three pillars of Education and Advocacy, Peer-to-Peer Support, and Community Building. The initiatives include but are not limited to: formal means to report and confront racism, accessible and considerate peer-support, and organization of social events to cultivate both an uplifting and united community. You can report an incident using their [online form](#).

Course Policies

Assignment Policies & Late Work

The assignments will be posted to LEARN with clear instructions for their submission. Refer to the instructional plan herein for due dates. The assignments are to be completed individually. Assignments that are handed in late will receive 0%. No late work will be accepted. **Late Pass:** Students are allocated one late pass for the term. This allows students to make one submission up to 24 hours after the stated deadline without penalty and without any request for accommodation. A late pass can not be used on the midterm or final exams.

Test Policies

The midterm will be conducted in-person and will be open-textbook. Students will be responsible for the entirety of the course notes and the entirety of the corresponding chapters in the textbook. It is recommended that you provide tabs for important pages within both. Tests are to be completed individually.

Passing Grades

The standard minimum passing grade in each ARCH course (except for studio courses) is 50%. Grades below the specified passing grade result in a course failure.

CACB Student Performance Criteria

The BAS/MArch program enables students to achieve the accreditation standards set by the Canadian Architectural Certification Board as described [here](#). This course addresses the CACB criteria and standards that are noted on the Accreditation page of the School of Architecture [website](#).

Institutional Policies

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. [Check [the Office of Academic Integrity](#) for more information.]

Grievance (Policy 70)

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](#). When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline (Policy 71)

A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. [Check [the Office of Academic Integrity](#) for more information.] A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (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, Student Discipline](#). For typical penalties, check [Guidelines for the Assessment of Penalties](#).

Appeals (Policy 72)

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.