

CIVE 2700: Civil Engineering Materials

Faculty of Engineering and Design, Carleton University
Course Syllabus - Fall 2021

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When emailing the instructor/teaching assistants type “*CIVE2700- query*” as your subject header and use your Carleton university account only. Only emails following this procedure will be given responses. Course feedback at any time is welcomed.

The implemented changes to adapt to the **COVID-19** era are as follow:

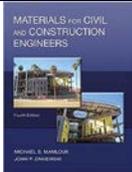
1. The **asynchronous** approach is chosen for the delivery of lectures in CIVE2700. That means the lectures will be recorded and posted in Brightspace and can be watched at your convenience.
2. The guest lectures (3 professional engineers in various fields) might be live depending upon the preference of the guest lecturer. The date and time likely and the delivery method of guest lectures will be posted in Brightspace.
3. This course has a considerable number of lab components that would normally require students to attend laboratory sessions and observe the fabrication or the testing procedure of materials. To deliver the lab components and provide a near-real experience, videos were created and will be posted as we move forward.
4. The assessment items will be accessible on Brightspace and students will submit their work in Brightspace. Some parts of the assignments will multiple-choice or short-answer questions that will be automatically graded; this requires students to be careful in choosing the right answer and be concise in entering the short answers in the provided filed. There might be a few questions that need to be answered on a paper and the scans must be uploaded to Brightspace. The timetable of assessment items will be posted on Brightspace.

1 Course Overview:

The basic engineering properties, micro/macrostructure, behaviour and applications of various civil engineering materials will be studied including materials used in structural engineering, geotechnical engineering, and environmental engineering. This will include steel, concrete, timber, polymers, composites, and soil. Interaction between materials will be examined. Laboratory experiments are included in the course to demonstrate material behaviour.

2 Textbook:

The teaching materials in this course are derived from the three textbooks. The books are listed below according to their importance in this course:

1	Materials for Civil and Construction Engineers, 4 th Edition, Pearson.	
2	Design and Control of Concrete Mixtures (Canadian version); 8th Edition	
3	Materials Science and Engineering: An Introduction, Callister and Rethwisch, 10th Edition	

3 Tentative Lecture Schedule:

It is expected that class topics will follow the schedule below, but adjustments will be made during the term as needed. Students are urged to read the sections of the textbook before the lecture. In Table 1, the topics that will be covered in each corresponding lecture are summarized. The chapters of the selected books that are used in the respective lecture are shown in the last columns of the tables.

Table 1. Lectures

Lec #	Topic	Reading sources *
1	Intro: Course Introduction	
2	Intro: Mechanical properties of Materials	Ref. 1: Section 1.2
3	Concrete: Aggregates	Ref. 1: Chapter 5
4	Concrete: Portland Cement	Ref. 1: Sections 6.1 to 6.9
5	Concrete: Admixtures for concrete	Ref. 1: Section 6.11
6	Concrete: Concrete mix design	Ref. 2: Chapter 12
7	Concrete: Concrete mix in the laboratory	Ref. 2: Chapter 12
8	Concrete: Properties of Hardened Concrete	Ref. 1: Sections 7.3 to 7.5
9	Metals: Steel Microstructure & Alloys	Ref. 1: Section 2.2 and 3.2 to 3.4
10	Metals: Steel production	Ref. 1: Section 3.1
11	Metals: Grades of structural steel	Ref. 1: Sections 3.5 to 3.7 and 3.9
12	Metals: Mechanical testing of steel	Ref. 1: Section 3.8
13	Metals: Stainless Steel & Aluminum	Ref. 1: Section 3.5 and 3.10
14	Metals: Welding of metals	Ref. 1: Section 3.10
15	Wood- Structure	Ref. 1: Section 10.1 to 10.6
16	Wood- Properties	Ref. 1: Sections 10.7 to 10.13
17	Masonry	Ref. 1: Chapter 8
18	Bituminous Materials	Ref. 1: Chapter 9
19	Soil- Introduction	Only course notes
20	Soil: Physical properties	Only course notes
21	Polymers- Composite FRP and strengthening	Ref. 1: Sections 11.1 to 11.3
22	Polymers- Properties	Ref. 1: Sec. 2.4 & Ref. 3: Chapter 14
23	Polymers- Applications in Civil engineering	Ref. 3: Chapter 15&16
24	Exam review	

- * (1) Materials for Civil and Construction Engineers, 4th Edition, Pearson
 (2) Design and Control of Concrete Mixtures (Canadian version); 8th Edition
 (3) Materials Science and Engineering: An Introduction, Callister and Rethwisch, 10th Edition

4 Assessment:

The final grade for the course will comprise assignments, quizzes, a report, and a final exam as summarized in Table 2. If you miss a quiz and present acceptable documentation, the weight of the missed component will be reweighted among the other quizzes. Please note that there will be no deferred quizzes. For assignments, however, no reasons will be accepted for missing them. If you miss an assignment for any reason, the mark for the missed assignment will be zero.

Table 2. Assessment breakdown

#	sections	Description	Weights
1	Assignments	Four homework assignments administered via Brightspace	10 %
2	Quizzes	Three quizzes are administered via Brightspace. The dates will be announced later.	30 %
3	Concrete lab report	Groups of 5 students (groups will be made using self-selection groups in Brightspace)	10 %
4	Final Exam	Around three hours, closed book, and calculators are allowed	50 %

4.1 Deferral Exam:

In addition to university policies on granting a deferral final exam, a satisfactory performance in the course assessment items (excluding the final exam) throughout the semester is necessary to grant a deferral final exam. To be eligible for a deferred exam, students must have earned at least 25% in quizzes and assignments. Participation in the concrete mix design report is mandatory.

5 Course Policies:

5.1 Classroom Behaviour:

Students are required to observe standards of behaviour expected in a university environment. Excessive talking among students, texting, watching movies, etc. during lectures is disruptive of the learning atmosphere, and is a distraction for the instructor and the other students. Please maintain a quiet, attentive and engaging classroom environment.

5.2 Communications:

Course materials will be distributed through the course's Brightspace page. Students are responsible for ensuring they are correctly registered through Brightspace, and for checking the Brightspace course management site regularly. Lecture slides will be made available before class. Professionalism is expected in all course communications; messages with informal language or improper grammar and spelling will not be replied to.

5.3 Attendance and Absences:

Please note that attendance in quizzes and examinations is mandatory and you will lose the designated mark to the quiz or the exam that you have missed. In case of emergency (e.g. serious illness), proper communication with your instructor is mandatory. Acceptable documentation is required to justify your absence within three days of the date of the quiz or midterm. You must obtain approval before the test/quiz/exam if you cannot write at the scheduled time (except in cases of unexpected emergencies).

5.4 Appeals:

All grade appeals in this course must be made within **seven days** of the posting or return of the graded component (quiz, project deliverable, etc). Appeals are to be addressed to the marking TA first. The final exam is for evaluation purposes only, and the paper will not be returned or made available to students by the instructors after it is marked. You will be able to make arrangements with the instructor or with the department office to see your marked final examination after the grades have been made available.

6 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 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/registrar/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 the Associate Dean of Student Affairs.

7 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. For more information, please consult: <http://students.carleton.ca/course-outline>

7.1 Pregnancy Obligation

Please contact the instructor 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, please consult: <http://students.carleton.ca/course-outline>

7.2 Religious Obligation

Please contact the instructor 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, please consult: <http://students.carleton.ca/course-outline>

7.3 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 (<http://www.carleton.ca/pmc>) for the deadline to request accommodations for the formally scheduled exam (if applicable).

7.4 Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working, and living environment where sexual violence will not be tolerated, and survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, please visit: <http://www.carleton.ca/sexual-violence-support>

7.5 Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact the instructor 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 information, please consult: <http://students.carleton.ca/course-outline>

8 Copyright on Materials

The materials created for this course (including the course outline and any slides, posted notes, labs, project, assignments, quizzes, exams and solutions) are intended for personal use and may not be reproduced, redistributed, or posted on any website without prior written permission from the author(s).