CARLETON UNIVERSITY
Department of Civil and Environmental Engineering

CIVE 3205 A – Design of Structural Steel Components Winter 2022

Lecture: Monday/Wednesday: 13:00–14:30 Online
PA: Friday :11:30-14:30 (Alternate Week) AT 101/Online
Instructor: Khoo, H.A. Room 3364 ME
Phone 520-2600 Ext. 5798 heng.khoo@carleton.ca
Office Hour: To be determined.

Objectives and Learning Outcomes:
Upon successful completion of this course, students will acquire knowledge on the design of simple steel structural members and different types of connections commonly used in the construction of steel structures. The knowledge and skills gained in this course are essential for students to understand the advanced steel design concepts introduced in other courses.

Graduate Attributes:
This course will evaluate graduate attributes on
1. Design solution(s) : Details of the design are clearly specified and verified.
2. Alternate solution(s) definition : Solution concepts and ideas are developed, and review of design solutions.
3. Evaluation based on engineering principles: Design is appraised and reviewed based on engineering principles and on relevant economic, social, environmental and ethical issues.

Course Delivery:
The lectures will be taught synchronously through Zoom with synchronous session being recorded. The PA sessions will also be via Zoom, and with the first part of the PA session (presentation) recorded. Both the recorded lectures and PA sessions will be made available to students for a duration of 3 weeks from the time of scheduled lecture or PA. Students should attend the PA session. The links for the Zoom Sessions will be posted on Brightspace. PA/Assignments will be made available via the course page for completion during PA and outside of class time.

Course Webpage: Brightspace (Check course webpage at least once a week.)

Course Outline

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<tr>
<th>Week</th>
<th>Topic</th>
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<tr>
<td>1</td>
<td>Introduction; Material Properties; Steel Sections</td>
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<tr>
<td>1-3</td>
<td>Tension members; Behaviour and analysis of strength. Design types of section, net area, proportioning.</td>
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<tr>
<td>8-10</td>
<td>Beam-Columns: Ultimate capacity of section. Local buckling. Moment-curvature-</td>
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axial load relationship. Overall member strength, equivalent moment factor, overall member strength, lateral-torsional buckling strength.

10-12 Connections: Rivets and bolts; high strength bolts; installation of bolts. Strength of bolts and bolted connections. Connection design; double angle beam connections. Welding process; weld classification; welding symbols. Design of welded joints; Strength of welds; Eccentrically loaded connections.


Marking:
- PA and Homework: 20%
- Mid-Term Exam (Mar. 4): 30%
- Final Exam: 50%

Textbooks:

Both textbooks can be obtained with student discounts. See details in course website.

Reference Texts:

Notes:
1. The notes supplied on the website are intended to serve as complement and not replacement to regular/online class attendance. The author does not guarantee these notes to be 100% error free. Every effort will be made to identify the error and correct it during class.
2. Student or professor materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s).
3. The schedule of the topic covered may not be exactly as shown in the course outline. The instructor may alter the course outline and schedule slightly during the term.
4. Lectures and part of the PAs will be recorded, and will be available for viewing for 3 weeks from the time of scheduled lecture or PA.
5. Mid-term examination is scheduled for Mar. 4 during the PA period.
6. You may discuss with others, but you are required to submit your own work for PA/Homework. You shall not complete the submitted work collaboratively. See the institutional policy on the academic integrity (https://carleton.ca/registrar/academic-integrity).
7. PA/Assignment due date is strict.
8. Cell phones and pagers must be turned off for in person class.
9. All email correspondence has to originate from the Carleton email account. I will only response to the Carleton email account.
10. Course web page will be used to post notes, assignments, announcements and etc.
11. Final examination is for evaluation purposes only and will not be returned to the student.
12. Students will be assigned the grade F (Failure) if the term work of at least 40% [20 out of 50], and PA and Assignment of at least 50% [10 out of 20] have not been achieved.
13. A minimum mark of 40% (20 out of 50) in the final exam is required to pass the course.
14. Both mid-term and final exams are open book. No electronic device other than the calculator is allowed.
15. Academic Accommodation
You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

**Pregnancy obligation**
Please contact your 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, visit the Equity Services website: students.carleton.ca/course-outline

**Religious obligation**
Please contact your 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, visit the Equity Services website: students.carleton.ca/course-outline

**Academic 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 (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (if applicable).

**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, visit: carleton.ca/sexual-violence-support

**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 your 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. students.carleton.ca/course-outline

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline