

CARLETON UNIVERSITY
Department of Civil and Environmental Engineering
CIVE2101 - Engineering Mechanics (Winter 2024)

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Teaching Assistants: TBA
Web: Brightspace

Some course materials, announcements, etc. may be posted on the course web page in Brightspace. It is highly recommended that students visit this page as often as possible for the latest updates.

Textbook (Required):
Engineering Mechanics – Statics and Dynamics, 14th Edition, R.C. Hibbeler.

Tentative Lecture Schedule

Week	Lecture	Topic
1	1	Force Systems, Equilibrium: Particles & Bodies
	2	Friction: Introduction & Basic Problems
2	3	Friction: Wedges
	4	Friction: Threads/Screws
3	5	Friction: Bearings/Clutches
	6	Friction: Belt Friction
4	7	Virtual Work: Particles & Rigid Body
	8	Virtual Work & Potential energy
5	9	Review: Particle Kinematics
	10	Review: Particle Kinetics
6	11	Review: Energy & Momentum
	12	Planar Kinematics: Translation & Rotation
7	13	General motion: Velocities
	14	Instantaneous centre
8	15	General motion: Acceleration
	16	Sliding contacts (Absolute motion analysis)
9	17	Moving Reference Frames (Rotating Axes)
	18	Moment of Inertia
10	19	Planar Kinetics: Equations of motion
	20	Planar Kinetics: Rotation about a fixed axis
11	21	Planar Kinetics: General Plane motion
	22	Work & Energy
12	23	Impulse and Momentum
	24	Impacts

Student Learning Outcomes:

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

- Understand and solve basic problems in friction.
- Understand and solve problems in wedges, threads, clutches and belt friction.
- Apply the principle of virtual work and potential energy in solving problems in statics.
- Understand and solve problems in kinematics of rigid bodies in two dimensions.

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Marking Scheme:

Mid-term Exam (35%): Closed book. A formula sheet will be provided in the exam. All topics covered until the end of the week before the exam will be included. Missing mid-term exam will automatically result in a mark of zero for that component unless acceptable documentation is presented to justify your absence within three days of the date of the mid-term exam. The instructor will decide what documentations are acceptable. You must obtain approval prior to the mid-term exam if you cannot write the mid-term exam at the scheduled time (except in cases of unexpected emergencies). If unsure of what would be proper documentation for the given circumstances, please consult with your instructor. If you miss the mid-term exam and present acceptable documentations, there will be only one make-up mid-term exam, time and place to be announced. *Tentative* Schedule: 16 February; Locations: the mid-term exam will be conducted during your PA session at your PA session class room.

Final Exam (65%): Maximum 3 hours. Date and time determined by the university. A minimum mark of 30% in term-work (Mid-term exam), 30% in the final exam, and 50% of the total mark (Mid-term exam + final exam) is required to pass this course.

Notes:

- * Use of e-Proctoring system: This course has timed written assessments, which may consist of tests, midterms and/or final examinations. The Carleton University e-Proctoring system may be used in your assessments, and requires the use of webcams, microphones, and smart phones.
- * The instructor may modify the outline during the term as the course progresses.
- * Attendance to all tests/exams and PA/Labs are mandatory.
- * 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.
- * All grade appeals in this course must be made within seven days of the posting or return of the graded component. Appeals are to be addressed to the marking TA first.
- * Academic integrity is essential to the pursuit of learning and scholarship in a university. 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 Associate Dean of Student Affairs.
- * Students will be assigned a grade of Failure if they failed to achieve a mark of less than 30% on the term work, regardless of the mark on the final exam.
- * **Graduate Attributes:** The Canadian Engineering Accreditation Board (CEAB) requires the faculty to collect data on graduate attributes and use that data to improve our program. The aggregate data is used for accreditation purposes and to guide program improvements **only**, and have no impact on individual student progression or evaluation. Data is collected in many courses across the faculty.
- * **Copyright on Materials:** The materials created for this course are intended for personal use and may not be reproduced, redistributed, or posted on any website without prior written permission from the author(s).
- * **Academic Accommodation:** 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: <https://students.carleton.ca/course-outline/>.

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, please review the Student Guide to Academic Accommodation (<https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf>).

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, please review the Student Guide to Academic Accommodation (<https://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf>).

Accommodations for Students with Disabilities: If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or for a formal evaluation or contact your PMC coordinator to send your instructor your **Letter of Accommodation** at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the Paul Menton Centre website (<http://carleton.ca/pmc>).

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 where 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 the Equity and Inclusive Communities website (<https://carleton.ca/equity/focus/sexual-violence-prevention-survivor-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. For more details, see the Senate Policy on Accommodation for Student Activities (<https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>).

Academic Consideration for Short-term Incapacitation: "Short-term incapacitation" is illness, injury, or other extenuating circumstances beyond your control that can disrupt your ability to meet your academic obligations for five or fewer days. Depending on the circumstances, you may need to temporarily step away from your studies in order to take proper care of yourself. If you are missing coursework or midterm work due to short-term incapacitation, you can contact your instructor(s) directly to request academic consideration. You are not required to submit a medical note if your absence lasts five or fewer days. If your instructor(s) requests that you provide supporting documentation, complete the self-declaration form (<https://carleton.ca/registrar/wp-content/uploads/self-declaration.pdf>). Instructors have the right to determine appropriate consideration at their discretion.

Scheduling and Examination Support: Scheduling and Examination Services provides various supports for both in-term and end-of-term tests and exams. Details can be found on the Exam Support website (<https://carleton.ca/ses/exam-support>).