

## Course Objectives

Learning Mechanics will provide you with important problem-solving concepts and skills that are transferable to many subjects in your program of study. In this course you will learn the basic applications of the science of physics to the profession of engineering. Mathematics also plays an important role in this course and here you will use basic concepts and skills in algebra, trigonometry, vectors, calculus, etc., to solve engineering mechanics problems. To develop the skills required for this course you have to practice and participate in lectures, tutorials and other course elements.

## Learning Outcomes

Students shall be able to

1. Apply the correct units, notation, significant digits and conversion factors when solving engineering problems.
2. Apply a vector formulation when solving Mechanics problems.
3. Calculate the coordinates of the centroid or center of gravity of 2D and 3D objects.
4. Calculate the effect of forces and moments on 2D and 3D rigid objects.
5. Analyze the equilibrium conditions of particles and rigid bodies in 2D and 3D space.
6. Calculate kinematic variables in the motion of particles and rigid bodies (modelled as particles) under the action of forces and moments in 2D and 3D space.

Instructors			
Section B	Section C	Section D	Section E
Abhijit Sarkar Office: MC3076 abhijit.sarkar@ Office Hour: Tue 3:30-4:30p	Ehab Zalok Office: ME3370 ehab.zalok@carleton.ca Office Hour: Thu 2:30-3:30 P	Jack Vandenberg Office: MC3054 jack.vandenberg@ Office Hour: Thur 5:30-6:30p	Jack Vandenberg Office: MC3054 jack.vandenberg@ Office Hour: Thur 5:30-6:30p

## Text (Required):

R. C. Hibbeler, Engineering Mechanics: Carleton University Edition, Prentice Hall. (ISBN 978-1-256-97305-8)

## Student Evaluation

In class quiz	Up to 8 quizzes during P/A class; These quizzes will take between 30 and 60 minutes of class time, and may involve both independent and group activities. They may be held any time after the first hour of the P/A class, and you must be present during the entire quiz to receive credit. (Further details will be announced in class)	20 %
Mid-term	Mid-term test. Closed book. Tentative date: TBA	30%
Final Exam	3 hours, closed book, place/time/date TBA by the University A minimum mark of 30% in term-work (quizzes + Mid-term), 30% in the final exam, and 50% of the total mark (quizzes + Mid-term + Final exam) is required to pass this course.	50%

**Any appeals regarding the marking must be made within one week from the posting or return of quiz and mid-term results.** The final examination is for evaluation purposes only, and the paper will not be returned or made available to students by the instructors after it is marked. Instructors may modify the outline during the term as the course progresses.

### **Learning Tools**

In addition to the officially scheduled lectures (3 hr/wk) and Problem Analysis sessions (3 hr/wk) the following opportunities are provided for students to become proficient with the course material.

ECOR 1101 Help Room/Office Hours. Location & Time: TBA

Peer Assisted Study Sessions (PASS). Facilitator: TBA

### **Attendance & Absences**

This course follows the topics required by the curriculum at a very fast pace. Every lecture presents a new topic which is based on the previous lectures; If you are absent from *class* due to illness or a personal/family emergency, it is recommended that you review the material missed as soon as possible; consult with your fellow students and with your TA; attend office hours and the PASS Sessions and try to “catch-up”. Attendance to all lectures, tutorials, and examinations is mandatory. Attendance to office hours and PASS Sessions is encouraged, but is optional.

**Missing any quiz or midterm** will automatically result in a mark of zero for that component unless acceptable documentation is presented to justify your absence within one week from the date of the quiz or midterm. In case of illness, a note will be required from a doctor (See <http://www2.carleton.ca/health/doctors-notes/> for details). You must obtain approval prior to the test if you cannot write a test 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. All quiz marks will be included in the evaluation of the final grade. There are no make-up exams. If you miss a quiz or midterm and present acceptable documentation, then the weight of the missed component will be added to that of the final examination.

### **Class behaviour and expectations**

Students are required to observe standards of behaviour expected in a university environment and in the profession of engineering. Excessive talking among students 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 class environment.

### **Academic Integrity**

All work submitted for evaluation must be the result of the students’ individual effort, unless it is a group assignment. Cheating of any kind will constitute a serious instructional offense subject to sanctions that may include failure in the course, suspension from your degree program, and potentially expulsion from the university. Please consult the university undergraduate calendar for definitions and penalties at <http://www2.carleton.ca/studentaffairs/academic-integrity/>

## **Academic Accommodations**

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

**Pregnancy obligation:** write to me 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: <http://www.carleton.ca/equity/>

**Religious obligation:** write to me 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: <http://www.carleton.ca/equity/>

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