2011 Winter Semester
ENGG*1210: ENGINEERING MECHANICS I

Instructor:	Karen Gordon	Room 220, Ext. 52435, Email: kgordon@uoguelph.ca Office Hours: TBA
GTAs:	Alamgir Khan alamgir@uoguelph.ca	Room, Office Hours:. TBA Tutorial Section: TBA
	Matthew Brunsting mbrunsti@uoguelph.ca	Room: Office Hours: TBA Tutorial Section:TBA
	Bryan Ho-Yan bhoyan@uoguelph.ca	Room Office Hours: TBA Tutorial Section:TBA
	Kishokumar Panjabi kpanjabi@uoguelph.ca	Room : Office Hours: TBA Tutorial Section :TBA
	William Trenouth wtrenout@uoguelph.ca	Room: Office Hours:TBA Tutorial Section:TBA

Lectures: Room: ROZ 103
Time: Tuesday and Thursday 11:30AM to 12:50 PM

Tutorials:
Section 0101: Monday 9:30AM - 10:20AM, MACK 304
Section 0102: Tuesday 10:00AM - 10:50AM, MACK 305
Section 0103: Thursday 10:00AM - 10:50AM, MACK 307
Section 0104: Monday 4:30PM - 5:20PM, MACK 315
Section 0105: Tuesday 4:30PM - 5:20PM, MACK 315
Section 0106: Wednesday 4:30PM - 5:20PM, MACK 315
Section 0107: Thursday 4:30PM - 5:20PM, MACK 315

TEXTBOOK

Ferdinand P. Beer, E. Russell Johnston, David F. Mazurek, Phillip J. Cornwell, Vector Mechanics for Engineers Statics and Dynamics, Ninth Edition (SI Units) McGraw Hill (2010).

Notes to accompany lectures will be posted on the course website (CourseLink) throughout the semester. You will be granted access to the website when you register for the course. These lecture notes are not complete and it is still highly recommended that you attend lectures to fill in the blank sections. A number of standard engineering mechanics books are also available in the library which may be consulted.

COURSE OBJECTIVES

This course is to introduce the basic principles of engineering mechanics with emphasis on their analysis and application to practical engineering problems. After taking this course, you should have the ability to:

1) Solve for the resultants of any force systems;
2) Determine equivalent force systems;
3)Determine the internal forces in plane frames, simple span trusses and beams;
4) Solve the mechanics problems associated with friction forces;
5) Obtain the centroid, first moment and second moment of an area;
6)Describe the motion of a particle in terms of its position, velocity and acceleration in different frames of reference;
7) Analyze the forces causing the motion of a particle;
8) Use the equation of motion to describe the accelerated motion of a particle; 9) Apply work, energy, impulse and momentum relationships for a particle in motion;
10) Describe the motion of a rigid body in different frames of reference.

TENTATIVE SYLLABUS

Date	Lectures	Topic	Chapters
Jan. 11	1	**Introduction** Course orientation Units, definitions and basic principles	1
Jan. 13-18	2	**Force Vectors** Basic vector calculations; Force resolution and combination	2
Jan. 20	1	**Equilibrium of a Particles** Free body and force diagrams; Equilibrium of a particle	2
Jan. 25-27	2	**Rigid Body Force Systems** Moment of a force about a point; Moment of a force about an axis; Couples; Reduction of force and couple systems	3
Feb. 1	1	**Equilibrium of a Rigid Body** Internal and external forces Equilibrium of a rigid body	4
Feb. 3	2	**First Moments and Centroids** Determination by integration Centroids of a composite line or area	5
Feb. 8-10	2	**Analysis of Structures** Trusses: method of joints Trusses: method of sections Forces in frames and beams	6

Feb. 15-17	2	**Forces in Beams** Internal Forces, shear, bending and moment diagrams	7
Feb. 17	1	**Friction** Law of friction; Angles of friction	8
Feb. 21-28 March 1		**Reading Week** **MIDTERM EXAM**	
March 3-8	1.5	**Moments of Inertia** Moments of inertia by integration Polar moment of inertia; Radius of gyration; Parallel axis theorem; Composite areas	9
March 8-10	1.5	**Particle Kinematics** Review: rectilinear motion Curvilinear motions; Relative motion; Absolute dependent motion	11
March 15	1	**Kinetics of a Particle: Force & Acceleration** Newton's second law: General Rectangular coordinates	12
March 17-22	2	**Kinetics of a Particle: Work & Energy** Work of a force Principles of work and energy Conservative forces and potential energy Power and efficiency	13
March 24-29	1.5	**Kinetics of a Particle: Impulse & Momentum** Principle of linear impulse and momentum Impact Angular momentum	14
March 31 -April 5	2	**Planar Kinematics of a Rigid Body** Translation and rotation Relative motion analysis	15
April 7	1	**Review**	
April 14		**FINAL EXAM (8:30-10:30 AM)**	

Course topics will be covered by both lectures and tutorials. The main purposes of the tutorials are twofold:

1) Provide additional informal discussion and sample problems compatible with the lecture materials, and
2) In-tutorial quizzes based closely upon weekly assignments.

MARK DISTRIBUTION

Assignments (approximately 9): 0 %
In tutorial Quizzes (8, best 7): 15%
In class tests (2): 15 %
Midterm: 30 %
Final Exam: 40 %

There will be approximately 9 unmarked assignments, consisting of questions from the required text. These will be posted on the course website. There will be approximately 8 in-tutorial quizzes, closely based on the assignment questions. Quizzes need to be written in the student's assigned section in order for the quiz mark to count. Only in extenuating circumstances, when accompanied by appropriate documentation and timely instructor notification, will students be allowed to write a quiz in a section other that the one that they have been assigned to. The in-class tests will be held during lecture period, and will be announced at least one week in advance.

Please note that other university policies specified in University Undergraduate Calendar apply. Please see the following website for details.
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

Disclaimer

The instructor reserves the right to change any or all of the above in the event of appropriate circumstances, subject to the University of Guelph Academic Regulations.