2012 Winter Semester
ENGG*1210: ENGINEERING MECHANICS I

Instructor: Karen Gordon — THRN Room 1406, Ext. 52435, Email: kgordon@uoguelph.ca
Office Hours: M, Th 1:30-2:30 pm

GTAs:

Kishorkumar Panjabi — Room : VMI 130
kpanjabi@uoguelph.ca — Office Hours: Friday 1:00-3:00 pm
Tutorial Sections: 0103, 0108

Matthew Zaverl — Room:
mzaverl@uoguelph.ca — Office Hours: Monday 2:00-4:00 pm
Tutorial Sections: 0101, 0104

Farshid Sabouri — Room: VMI 130
fsabouri@uoguelph.ca — Office Hours: Thursday 2:00-4:00 pm
Tutorial Sections: 0106, 0107

Mohammad Kayer — Room: VMI 104a
mkhayer@uoguelph.ca — Office Hours: Tuesday 11:30-12:30
Tutorial Section: 0102

Jamie Miller — Room:
jmille11@uoguelph.ca — Office Hours: Tuesday 5:00-6:00
Tutorial Section: 0105

NOTE: ALL TA OFFICE HOURS WILL BE HELD IN THORN 1425.

Lectures: Room: THRN 1200
Time: Tuesday and Thursday 11:30AM to 12:50 PM

Tutorials:
Section 0101: Monday 10:30 - 11:20AM, MACK 304
Section 0102: Tuesday 10:30AM - 11:20AM, MACK 304
Section 0103: Thursday 10:30AM - 11:20AM, MACK 304
Section 0104: Monday 4:30PM - 5:20PM, MACK 304
Section 0105: Tuesday 4:00PM - 4:50PM, MACK 305
Section 0106: Wednesday 4:30PM - 5:20PM, MACK 305
Section 0107: Thursday 4:00PM - 4:50PM, MACK 315
Section 0108: Friday 10:30PM - 11:20PM, MACK 306

TEXTBOOK: Engineering Mechanics: Combined Statics & Dynamics, 12th Edition, By Russell C. Hibbeler.
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. 10	1	**Introduction** Course orientation Units, definitions and basic principles	1
Jan. 12-17	2	**Force Vectors** Basic vector calculations; Force resolution and combination	2
Jan. 19	1	**Equilibrium of a Particles** Free body and force diagrams; Equilibrium of a particle	3
Jan. 24-26	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	4
Jan 31	1	**Equilibrium of a Rigid Body** Internal and external forces Equilibrium of a rigid body	5
Feb. 2	2	**First Moments and Centroids** Determination by integration Centroids of a composite line or area	9

Feb. 7-9	2	**Analysis of Structures** Trusses: method of joints Trusses: method of sections Forces in frames and beams	6
Feb. 14	2	**Forces in Beams** Internal Forces, shear, bending and moment diagrams	7
Feb. 16		**Midterm Exam**	
Feb. 20-24		**Reading Week**	
Feb. 28-Mar.1	1.5	**Moments of Inertia** Moments of inertia by integration Parallel axis theorem; Composite areas	10
March 6-8	1.5	**Particle Kinematics** Review: rectilinear motion Curvilinear motions; Relative motion; Absolute dependent motion	12
March 13	1	**Kinetics of a Particle: Force & Acceleration** Newton's second law: General Rectangular coordinates	13
March 15-20	2	**Kinetics of a Particle: Work & Energy** Work of a force Principles of work and energy Conservative forces and potential energy Power and efficiency	14
March 22-27	1.5	**Kinetics of a Particle: Impulse & Momentum** Principle of linear impulse and momentum Impact Angular momentum	15
March 29 -April 3	2	**Planar Kinematics of a Rigid Body** Translation and rotation Relative motion analysis	
April 5	1	**Review**	
April 13		**FINAL EXAM (8:30-10:30 AM)**	

MARK DISTRIBUTION

Assignments (approximately 9): 0 %
In tutorial Quizzes (8, best 7): 15%
In class tests (2): 15 %

Midterm: 30 %
Final Exam: 40 %

Assignments: There will be approximately 9 unmarked assignments, consisting of questions from the required text. These will be posted on the course website. These assignments are for practice and are not worth any marks.

In Tutorial Quizzes: There will be approximately 8 in-tutorial quizzes, closely based on the assignment questions. Quizzes must be written in the students' assigned tutorial section. 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.

In-class tests: The in-class tests will be held during lecture period, and will be announced at least one week in advance.

Makeup/deferred exams and quizzes: No makeup/deferred exams or quizzes will be offered. If acceptable justification was provided for the missed exam/quiz the next exam/quiz will serve as the replacement.

Mark adjustments Requests for mark adjustments must be put forward within one week of the documents being returned to the students. Any paper that is re-marked will be re-marked entirely. Therefore, it is strongly suggested that you thoroughly review your entire document BEFORE making a re-marking request. Pencil-written works will not be remarked.

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.