School of Engineering, University of Guelph
ENGG*1210 - Engineering Mechanics I, Fall 2010
(Course Outline)

Instructor:	Fantahun M. Defersha, PhD
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Telephone:	(519) 824-4120 Ext. 56512
Lecture:	MAC, Room 149, **Tues and Thur** 11:30 am – 12: 50 pm
Office Hours:	THRN, Room 226, **Tues and Thur** 2:30 pm – 4: 00 pm

Brief Course Description (Undergraduate Calendar 2010 - 2011)

Fundamental principles of Newtonian mechanics; statics of particles in 2-D space; equilibrium of rigid bodies in 2-D; distributed forces; friction, linear and angular momentum of rigid bodies; conservation of energy; principles of impulse and momentum; and plane motion of rigid bodies.

Course Objectives

After successfully completing the course, the student should be able to:

1. Solve for the resultant of any force system
2. Determine equivalent force systems,
3. Solve for the internal forces in the members of any plane frame, beams and trusses,
4. Solve mechanics problems that involve friction force
5. Determine 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. Describe the forces causing the motion of a particle
8. Obtain the equation of motion of a particle,
9. Obtain work, energy, impulse and momentum relationships for a particle in motion
10. Analyze the kinematics of plane motion of rigid bodies

Topics

Statics

1. Introduction
2. Statics of Particles

3. Rigid Bodies: Equivalent System of Forces
4. Equilibrium of Rigid Bodies
5. Distributed Forces – Centroids and Center of Gravity
6. Analysis of Structures
7. Forces in Beams

Dynamics

8. Kinematics of Particles
9. Kinetics of Particles: Newton's Second Law
10. Kinetics of Particles: Energy and Momentum Methods
11. Kinematics of Rigid Body (Optional)

Text Book

Vector Mechanics for Engineers – Statics and Dynamics by F. P. Beer, E.R. Johnston and E.R. Eisenberg; McGraw-Hill (8Ed in SI Unit)

Instructional Methods

Instructional methods include lectures, and problem solving/tutorial periods. The tutorial problems will include problems compatible with the lecture topics to enhance understanding of the subject matters. The best leaning experience will be achieved if you ***attend lecture and tutorial regularly***. Problems will been assigned for homework and solving these assignment problems is highly essential to reach the learning objective. The solving of problems allows you to practice the application of the theory. Assignments should be submitted strictly before or at their due dates. Late submission of an assignment is not allowed.

Class Participation

Students are encouraged and expected to actively participate in class. You can use laptop or tablets in class, but only for following along in the class notes — please, no web surfing, e-mailing, instant-messaging, etc., as such is very distracting to those around you, and obviously to you. Turn-off all cell phones, iphones, blackberries, etc. during class ... putting on vibrate mode may not be enough. Out of respect to your classmates please keep your private discussions outside the classroom.

Grading Scheme:

Assignments	10%
Mid-term Exam (Statics)	40%
Final Exam (Statics and Dynamics)	50%

Note: Schedule for Mid-term exam will be announced.

Students must contact the instructor if academic considerations are to be requested for the mid-term exam. Appropriate documentation must be provided for academic considerations based on medical, physiological or compassionate grounds.

GTAs:

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