School of Engineering
University of Guelph

ENGG*1210*0101-0105 ENGINEERING MECHANICS I
Course Outline Winter 2010

Instructor: S. Negi
Email: snegi@uoguelph.ca

Office Hours: Tuesdays 9:30 am – 10:30 am in Rm THRN 207
Thursdays 9:30 am – 10:30 am in Rm THRN 207

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 forces,
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 equations of motion of a particle,
9. obtain work, energy, impulse and momentum relationship for a particle in motion.

Topics:

1. Systems of Forces and Moments……1.25 weeks
2. Objects in Equilibrium……0.75 weeks
3. Distributed Forces - Centroids……..0.75 weeks
4. Analysis of Structures
   i. Trusses: Method of Joints, Method of Sections……..0.75 weeks
   ii. Beams: Shear and Bending Moment Diagrams……..0.75 weeks
   iii. Frames and Machines……0.75 weeks
5. Friction……..0.75 weeks
6. Second Moment of Area……...0.50 weeks
7. Kinematics of Particles……...1.50 weeks
8. Kinetics of Particles
   i. Force and Acceleration……...1.50 weeks
   ii. Work and Energy……...1.00 weeks
   iii. Impulse and Momentum……...1.00 weeks
9. Systems of Particles……...0.75 weeks

Text:

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

Grading Scheme:

Assignments	20%
Mid-term Exam (Statics)	40%
Final Exam (Dynamics)	40%

Note: Mid-term exam is scheduled for **Thursday, March 4, 2010** from **11:30 am** to **12:50 pm** in rooms to be announced on **listserv.**

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

Method of Presentation:

Lectures and problem solving/tutorial periods (3-1). The tutorial periods will Include problems compatible with the lecture topics to enhance understanding of the subject matter. The best learning experience will be achieved if you **attend lectures and tutorials regularly.**

Problems have been assigned for homework and solving these assignment problems is a proven method of reaching the learning objectives if carried out under your own steam or in small teams. Groups of 2 or 3 have been proven to work best. The solving of problems allows you to practice the application of the theory, will quickly indicate where your understanding of the theory is lacking, and will provide you with an indication of the degree of mastery of the subject.

GTAs:

Andrew Fedoruk afedoruk@uoguelph.ca	Room: THRN 312 Office Hours: WED 11:30 – 12:30
Alamgir Khan alamgir@uoguelph.ca	Room: THRN 301 Office Hours: THU 12:00 – 1:00
Vahid Taleban vtaleban@uoguelph.ca	Room: THRN 323 Office Hours: FRI 11:00 – 12:00
Andrew Brunskill andrew.brunskill@gmail.com	Room: THRN 317 Office Hours: TUE 11:30 – 12:30
Joanna Weber joanna@uoguelph.ca	Room: THRN 320 Office Hours: MON 1:30 – 2:30

ENGG*1210*0101-0105
ENGINEERING MECHANICS I

PROBLEM ASSIGNMENTS

1.	2.37	2.68	2.91	3.4	3.21	3.45	Jan 22
2.	3.75	3.125	4.108	4.155	5.12	5.73	Jan 29
3.	5.75	6.4	6.50	6.137	6.163	7.29	Feb 12
4.	7.78	8.16	8.25	8.46	9.36	9.50	Feb 26
5.	11.7	11.16	11.38	11.45	11.53	11.112	Mar 19
6.	11.116	11.145	11.157	11.163	12.20	12.48	Mar 26
7.	12.52	12.91	12.125	12.130	13.5	13.16	Apr 01
8.	13.49	13.59	13.137	13.145	13.158	13.191	Apr 09

Problems assigned from 'Vector Mechanics for Engineers – Statics & Dynamics' by F.P. Beer, E.R. Johnston and E.R. Eisenberg, Eighth Edition in SI Units, McGraw-Hill

Assignments to be submitted on the dates indicated above. You may appeal any mark within one week after the assignment has been returned you. Solutions of assignment problems will be posted on one of the bulletin boards located in the front corridor of the engineering building.

Assignments 1 and **5** will be marked by **Alamgir Khan**
Assignments 2 and **6** will be marked by **Andrew Brunskill**
Assignments 3 and **7** will be marked by **Andrew Fedoruk**
Assignments 4 and **8** will be marked by **Vahid Taleban**

ENGG*1210 ENGINEERING MECHANICS I
TUTORIALS

Week	Dates	Instructor	Topics
1.	11 Jan - 15 Jan	Andrew Fedoruk	Forces in a Plane
2.	18 Jan - 22 Jan	Alamgir Khan	Forces in Space
3.	25 Jan - 29 Jan	Andrew Brunskill	Distributed Forces: Centroids
4.	01 Feb - 05 Feb	Vahid Taleban	Trusses: Method of Joints & Method of Sections
5.	08 Feb - 12 Feb	Andrew Fedoruk	Beams: Shear & Bending Moment Diagrams
6.	22 Feb - 26 Feb	Alamgir Khan	Friction
7.	01 Mar - 05 Mar	Andrew Brunskill	Moments of Inertia of Areas
8.	08 Mar - 12 Mar	Vahid Taleban	Rectilinear Motion
9.	15 Mar - 19 Mar	Andrew Fedoruk	Curvilinear Motion
10.	22 Mar - 26 Mar	Alamgir Khan	Equations of Motion, Angular Momentum
11.	29 Mar - 01 Apr	Andrew Brunskill	Work and Energy, Power
12.	05 Apr - 09 Apr	Vahid Taleban	Conservation of Energy, Impulse and Momentum

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Sections 101 & 201: MON 9:30 – 10:20 AM, MACK Room 315
Sections 102 & 202: TUE 1:30 – 2:20 PM, MACK Room 315
Sections 103 & 203: WED 9:30 – 10:20 AM, MACK Room 315
Sections 104 & 204: THU 1:30 – 2:20 PM, MACK Room **316**
Sections 105 & 205: FRI 9:30 – 10:20 AM, MACK Room 315
