DEPARTMENT OF SCIENCE

COURSE OUTLINE – FALL 2019

EG1300 – ENGINEERING MECHANICS – 4.0(3-0-2) UT (75 Hours Over 15 Weeks)

INSTRUCTOR: Tanvir Sadiq, Ph.D. P. Eng. **PHONE:** 780.539.2865

OFFICE: J 209 **E-MAIL:** Tsadiq at gprc dot ab dot ca

OFFICE HOURS: TBD or by Appointment

COREQUISITE: MA 1000

REQUIRED TEXT/RESOURCE MATERIALS: Hibbeler, R. C. - *Engineering Mechanics: Statics and Dynamics*. 14th Edition. Prentice Hall/Pearson. Available in different formats

CALENDAR DESCRIPTION: 'The course covers the equilibrium of planar systems. Analysis of statically determinate trusses and frames, friction, centroids and centres of gravity, forces and moments in beams, second moments of area are included.'

DELIVERY MODE(S): Lecture, Lab

EVALUATIONS:

Assignments	7%	Online / paper
Labs*	15%	**(Attendance Required)**
Midterm*	35%	(24 Oct 2019)
Final Exam	43%	(Cumulative, Time & Location TBA by Student Services)

* Late labs will not be accepted.

MIDTERM EXAMINATION MISSED FOR ANY REASON WILL NOT BE RESCHEDULED. Students not writing the midterm exam, with a valid excuse (as defined by College policy) will have the midterm weight added to the final exam. This is not automatic, and if you miss the midterm, you should follow all College guidelines and contact your instructor as soon as possible.

Students are expected to attend all classes. If you miss a class, make arrangements to copy the notes from your class fellows. If you are using older edition of the textbook, you are responsible for matching page numbers, topics, figures, and problems with the editions being used in the class. You are encouraged to ask questions, but do not monopolize the class time.

The work is presented in the order covered in the text. All of Chapters 2, 5, 6, 7, 8 and 10 are not covered in this course.
Your final course grades will be announced by the Student Services. Grades/Marks will NOT be disclosed by email or telephone.

COURSE OBJECTIVES: The Instructor will provide an understanding of Cartesian 2-D vector representation tools for the calculation of forces and moments and will demonstrate the use of Free Body Diagrams as the main method of analysis for 2-D trusses and frames. Also methods to evaluate the internal forces and moments of trusses and frames will be presented. Simply distributed loads will also be show to be valid loading conditions using their centroids for calculating simply loaded structures in equilibrium.

LEARNING OUTCOMES: Students will have the knowledge to be able to analyze and calculate the forces and moments acting on members of 2-D and 3-D planar structures in equilibrium such as trusses and frames. They will be able to include various 1-D and 2-D distributed loading configurations using centroids and centers of gravity.

TRANSFERABILITY: This is a University of Alberta Engineering Course. A Grade of D or D+ may not be acceptable for transfer to UA or other post-secondary institutions.

NOTES: All written assignments must be neat and hand written on **Engineering Paper**; use pencil; staple all pages and use the assignment solution format provided. (Template attached.)

All work submitted must be your own. See "Code of Student Behaviour" in the College Calendar.

GRADING CRITERIA:

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	90-100		C+	2.3	67-69
A	4.0	85-89		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

STATEMENT ON PLAGIARISM AND CHEATING:

Refer to the Student Conduct section of the College Admission Guide at http://www.gprc.ab.ca/programs/calendar/ or the College Policy on Student Misconduct: Plagiarism and Cheating at www.gprc.ab.ca/about/administration/policies/**

Note: All Academic and Administrative policies are available on the same page.

EG 1300, Engineering Mechanics: Fall 2018, Tentative Schedule

No.	Topics	Textbook Sections	Homework Problems (On Mastering Engineering)	Theme
1	Review of the basics Scalars and vectors Vector addition Cartesian vector notation	1.1-1.6 2.1-2.5		Vectors
2	Addition of Cartesian vectors Position of vectors Force directed along a line Dot product	2.6-2.9		Vectors
3	Particle equilibrium Free body diagrams Co-planar and three dimensional force systems	3.1-3.4		Particle Equilibrium
4	Vector cross product Moment of a force	4.1-4.5		Moments & Couples
5	Moment of a couple Reduction of a force and couple systems Reduction of simple distributed loads	4.6-4.9		Force - Couple Systems
6	Equilibrium in two dimensions Two-force members Equilibrium in three dimensions	5.1-5.5		Rigid Body Equilibrium
7	Plane trusses Method of joints Method of sections	6.1-6.4		Trusses
8	Frames and machines Internal forces in members	6.6, 7.1		Frames & Machines
9	Shear force and bending moment (equations and diagrams) Relationships between distributed load, shear force, and bending moment	7.2, 7.3		Internal Forces; SFD & BMD
10	Dry friction, wedges	8.1		Friction
11	Center of gravity, centroids, Centroids by integration and composite bodies	9.1-9.2, 9.4		Centroids & Center Mass
12	Moments of inertia for areas Parallel axis theorem Moments of inertia by integration	10.1-10.2		Moments of Inertia
13	Moments of inertia of composite areas Course Review	10.4		

Mastering Engineering Information:

Website: www.pearson.com/mastering

Course ID: sadiq25878