OREGON INSTITUTE OF TECHNOLOGY

Renewable Energy Engineering

- Engineering Mechanics: Statics -

Credit Hours: (4)

Prerequisites: Calculus

Instructor: Joey Mohr, B.S., J.D. **Email:** joey@mohriplaw.com **Phone:** 503-336-1214

Office Hours: By appointment or by phone.

Objectives: This course introduces students to the engineering mechanics principles involved with systems in static equilibrium. Theoretical and practical applications of static equilibrium analysis techniques are investigated. Methods to graphically represent bodies subject to static forces are developed and employed to solve problems.

Textbook: R.C. Hibbeler, "Engineering Mechanics: Statics," 11th ed., Pearson Prentice Hall, 2007.

Grading:

Midterm Exam	35%	90-100% = A
Final Exam	35%	80- 89% = B
Homework	20%	70- 79% = C
Design Project	10%	60- 69% = D
Extra Credit	5%	<60% = F

Late homework will be penalized 25% and will be accepted for only one week after its due date. This policy will be strictly enforced. Your completed assignments must be turned in at the beginning of class on the days that they are due.

Note: I am a firm believer that exam questions should be of similar scope and difficulty as the homework problems assigned throughout the semester. Accordingly, the time and effort applied towards completing and understanding the homework will undoubtedly translate into higher scores on my exams.

Student Disability:

If there is any student with a disability in this class who requires accommodations, please feel free to discuss your needs with me during my office hours or after class. Information will be kept confidential.

Goals/Objectives:

Upon completion of this course, students should be able to competently analyze and solve problems involving the following topics explored in this course:

Force vectors
Equilibrium of particles (2-D and 3-D)
Force system resultants
Equilibrium of rigid bodies (2-D and 3-D)
Structural analysis (trusses and frames)
Internal forces
Shear forces and bending moment diagrams
Friction
Center of gravity and centroids

Oral and written communication requirements:

This course includes a Bridge Design Project that will be completed throughout the course in small teams. Each team will be responsible for turning in a 2-page Design Proposal and a 2-page Force Analysis Report and giving a 5-minute Design Presentation to the class. The Bridge Design Project represents 10% of the total points for the course.

Further, each student will be given the opportunity to earn up to 5% of the total points as extra credit for turning in a brief summary of a current event in renewable energy that interests to you. The brief summary will be posted online as part of a blog directed to renewable energy. The summary should be 3-4 paragraphs long and include an image or diagram relevant to your chosen topic.

Punctuation, grammar, and writing style will play a significant role in the points afforded for all written submissions because being a professional engineer requires more than proficiency in math and science.

TENTATIVE COURSE SCHEDULE

DATE	CHAPTERS	TOPIC
10/1	1.1-1.6 2.1-2.6	Newton's Laws of Motion Force Vectors & Cartesian Vectors
10/8	2.7-2.9 3.1-3.4	Position Vectors Equilibrium of a Particle 2D and 3D
10/15	4.1-4.6 In-Class Project Time	Rotational Equilibrium/Moments/Couples Design Session
10/22	4.7-4.10 5.1-5.4	Equivalent Systems/Distributed Loads 2D Rigid Body Equilibrium ****Design Proposal Due****
10/29	5.5-5.7 In-Class Project Time	3D Rigid Body Equilibrium Force Analysis Session
11/5	Exam	**MIDTERM EXAM (Chapters 1.1-5.7)**
11/12	6.1-6.4, 6.6	Trusses/Frames and Machines
11/19	7.1 and 7.2 8.1-8.3 In-Class Project Time	Internal Forces/Shear Forces and Bending Moments Frictional Forces Design Construction & Preparing Presentation Session ****Force Analysis Due****
11/26	*No Class*	*Thanksgiving Break*
12/3	8.4 & 8.5 9.1-9.3 In-Class Project Time	Frictional Forces applicable to Screws & Flat Belts Center of Mass/Centroids/Composite Bodies Bridge Design Presentations & Load Test

FINAL EXAMINATION: Thursday, December 10, 5:30 – 7:30 p.m.