

ENGINEERING STATICS - ENGR 210 - Spring 2018

TIME AND PLACE:	12:30 P.M. - 1:20 P.M. MWF TLC 022
INSTRUCTOR:	Richard Nielsen, Ph. D., P.E. Associate Professor, Civil Engineering BEL 106 Phone: 208 885-8961 E-mail: nielsen@uidaho.edu
OFFICE HOURS:	TBA
TA OFFICE HOURS:	TBA
REQUIRED TEXT:	R.C. HIBBELER, Engineering Mechanics - Statics (14 th Ed)
WEB LINK:	bblearn.uidaho.edu

COURSE CONTEXT, ORGANIZATION, and GOALS/OBJECTIVES: The Engineering Statics course provides the basic concepts and skills that form the foundation for structural and mechanical design. The class is a problem-focused engineering science class that helps engineering students develop the ability to understand and analyze static forces on a variety of structures and engineering applications. The class also introduces engineering students to the fundamentals of critical thinking and problem solving.

The course begins with an introduction that covers the fundamental concepts and principles of Statics. The equilibrium of particles is then introduced along with the rules of adding and subtracting of force vectors. The course then proceeds to cover the equilibrium of rigid bodies in two and three dimensions and the analysis of different types of structures and machines. The final part of the course will cover frictional forces and the structural properties of areas and masses. By the end of this course you should be able to:

- Analyze, and develop free-body diagrams for any system of forces in two and three dimensions.
- Analyze the equilibrium of rigid bodies under any system of forces.
- Analyze trusses, beams, frames, and machines.
- Apply friction forces and analyze their different applications.
- Calculate the moments of inertia for areas and masses.

COURSE REQUIREMENTS, GRADING, and MISC OTHER:

Grading: Each student's final grade will be based on his/her scores on homework and five examinations.

Examinations: There are five examinations: four mid-term exams and a final exam. The mid-term exams are 50-minute in length and will be given during class regular time. While these exams will be cumulative in nature, the emphasis of the exams will be on the material since the previous examination. The final exam will be a comprehensive two-hour exam at the end of the semester. Examination material will include any/all material covered in class, any/all material from the assigned readings, and material pertaining to the homework.

Homework: There will be a set of homework problems on each lecture. Homework will be collected at the beginning of the class on the due date. Late homework will **NOT** be accepted. Three homework sets will be automatically excused. Homework solutions will be made available on BBLearn.

Class Attendance and Participation: Students will give brief in-class presentations on assigned topics from the readings. Some of the material covered/discussed during lectures will not be in your text or

readings, although you will be responsible for it whether you choose to come to class or not. **Class attendance and participation should be one of your higher priorities this term.**

GRADE SUMMARY, PENALTIES, AND CHANGES:

15%	Exam 1
15%	Exam 2
15%	Exam 3
15%	Exam 4
10%	Homework
5%	Class Participation
25%	Final Exam

- The penalty for cheating is failure of the course.
- Penalty for missing an exam without prior approval - 0.0.

See: <http://www.uidaho.edu/student-affairs/dean-of-students/student-conduct/academic-integrity>

GRADING SCALE:

$90\% \leq A$
$80\% \leq B < 90\%$
$70\% \leq C < 80\%$
$60\% \leq D < 70\%$
$F < 60\%$

Disability Support Services Reasonable Accommodations Statement:

Reasonable accommodations are available for students who have documented temporary or permanent disabilities. All accommodations must be approved through Disability Support Services, located in the Idaho Commons Building, Room 306, in order to notify your instructor(s) as soon as possible regarding accommodation(s) needed for the course. Contact DSS at 208-885-6307, email dss@uidaho.edu, or www.uidaho.edu/dss

PRELIMINARY COURSE SYLLABUS AND TENTATIVE HOMEWORK ASSIGNMENTS

Session	Day	Date	Subject	Text Sections	Homework Due
1	W	1/10	Introduction/Resolution & Addition of Forces	Ch. 1 & 2.1-2.3	
2	F	1/12	Addition of Forces	2.4	2-2,10,19
	M	1/15	NO CLASS – Human Rights Day		
3	W	1/17	Forces in Space	2.5, 2.6	2-38,42,43
4	F	1/19	Position Vectors, 3-D Force Vectors, Dot Product	2.7-2.9	2-62,76,83
5	M	1/22	2-D Particle Equilibrium	3.1-3.3 & 3.4	2-90,94,113
6	W	1/24	3-D Particle Equilibrium	3.1-3.3 & 3.4	3-6,9,12
7	F	1/26	3-D Particle Equilibrium	3.1-3.3 & 3.4	3-19,21,43
8	M	1/29	2-D & 3-D Moments about a Point	4.1-4.4	3-58,64,67
	W	1/31	Exam No. 1	Ch. 1, 2, 3	
9	F	2/2	2-D & 3-D Moments about a Point	4.1-4.4	4-5,11,12
10	M	2/5	Moment about a Line; Couples	4.5, 4.6	4-57,64,66
11	W	2/7	Force-Couple Systems	4.7-4.8	4-67,69,82
12	F	2/9	Simple Distributed Loads	4.9	4-101,110,114
13	M	2/12	2-D & 3-D Equilibrium on Rigid Bodies	5.1-5.7	4-131,138,144
14	W	2/14	2-D & 3-D Equilibrium on Rigid Bodies	5.1-5.7	5.1,2,3
15	F	2/16	2-D & 3-D Equilibrium on Rigid Bodies	5.1-5.7	5.14,17,21
	M	2/19	NO CLASS – Presidents' Day		
16	W	2/21	2-D & 3-D Equilibrium on Rigid Bodies	5.1-5.7	5.28,38,41
	F	2/23	NO CLASS – Jazz Festival		
17	M	2/26	2-D & 3-D Equilibrium on Rigid Bodies	5.1-5.7	5.45,53,57
18	W	2/28	Trusses - Method of Joints/Zero Force Members	6.1-6.3	5.67,73,74
	F	3/2	Exam No. 2	Ch. 4, 5	
19	M	3/5	Trusses - Method of Sections	6.4	6.2,7,26
20	W	3/7	Frames	6.6	6.30,39,45
21	F	3/9	Machines	6.6	6.63,65,68
	M	3/12	Spring Recess		
	W	3/14	Spring Recess		
	F	3/16	Spring Recess		
22	M	3/19	Dry Friction	8.1, 8.2	6.85,87,91
23	W	3/21	Wedges	8.3	8.1,14,50
24	F	3/23	Screws	8.4	8.58,60,66
25	M	3/26	Belt Friction	8.5	8.70,76,78
26	W	3/28	Internal Forces	7.1	8.85,88,97
	F	3/30	Exam No. 3	Ch. 6, 8	
27	M	4/2	Shear & Bending Moment Diagrams	7.2, 7.3	7.2,8,23
28	W	4/4	Shear & Bending Moment Diagrams	7.2, 7.3	7.70,74,78
29	F	4/6	Centroids - Integration	9.1	7.85,88,89
30	M	4/9	Centroids - Composite Shapes	9.2	9.2,29,47
31	W	4/11	Surface Areas & Volumes	9.3	9.51,60,80
32	F	4/13	Distributed Load	9.4	9.94,105,107
33	M	4/16	Fluid Pressure	9.5	9.115,118
34	W	4/18	Moments of Inertia – Integration	10.1-10.4	9.120,123,130
	F	4/20	Exam No. 4	Ch. 7, 9	
35	M	4/23	Moments of Inertia – Composite Shapes	10.5	10.3,4,23
36	W	4/25	Product of Inertia	10.6	10.28,33,44
37	F	4/27	Maximum/Minimum Moment of Inertia	10.7	10.55,62,66
38	M	4/30	Mohr's Circle	10.8	10.72,74,78
39	W	5/2	Mohr's Circle	10.8	10.75,79,81
40	F	5/4	REVIEW		
	M	5/7	Final Exam Week		
	W	5/9		12:30-2:30 P.M.	Final Exam
	F	5/11			