UNIVERSITY OF PORTLAND
Donald P. Shiley School of Engineering
EGR 211 - Statics, Fall 2017

***"Find the gift God gave you. Sharpen, hone, and train it**. And, then go use it. Go!"*
-Donald P. Shiley '51

Course Description: Quantitative description of forces, moments, and couples acting upon engineering structures. The free-body diagram is used to understand the equilibrium of a whole physical system through isolation of each component particle or body.

Number of Credits: 3

Class Schedule: Section B: 11:20-12:45 TR, SH124

Course Instructor: Kenneth E. Lulay, Ph.D., P.E.
Shiley Hall 236. Ph: 943-7432. e-mail: lulay@up.edu
Web pages: http://faculty.up.edu/lulay/

Office Hours: Available any time if I'm in my office. I'll try to be in my office:

Monday	9:30-10:10
Tuesday	9:30-11:00
Wednesday	1:45-3:00
Thursday	1:00-3:00
Friday	none scheduled

Prerequisites: Prerequisites: MTH 201 with C- or better and PHY 204.

Post-requisites: A grade of C- or better is required in this course (EGR211) for advancing to EGR212/214 and EGR322.

Textbook: *Engineering Mechanics: Statics, 14th Edition.* Hibbeler. Pearson. ISBN 978-0-13-391542-6. Students may purchase a combined Statics/Dynamics text or Statics only (however, the dynamics book will be used in EGR212/214).

Required Supplies: Engineering paper, scientific calculator*, straight edge
Recommended Supplies: three ring notebook, pocket stapler, three-hole punch
*Only calculators allowed for the CollegeBoard AP exams are permitted for use during in class assessments such as quizzes and exams. https://apstudent.collegeboard.org/takingtheexam/exam-policies/calculator-policy. Please refer to the section titled "Unacceptable Calculators" for specific functionalities that are not permitted. Also, note that the NCEES has a more restrictive calculator policy for the FE and PE exams: http://ncees.org/exams/calculator/ Use of a calculator approved by the NCEES is encouraged.

Course Objectives and Student Outcomes
The student shall be able to demonstrate basic analytical and problem solving skills in the area of engineering statics. Student outcomes:

- Develop appropriate engineering problem solving and presentation skills
- Create appropriate free body diagrams
- Determine equilibrium conditions for particles and rigid bodies
- Apply concepts of forces and moments to analyze structures including trusses, frames and

machines

- Understand the effects of friction, center of gravity, and moments on static structures

Course Topics / Tentative Schedule

Week 1	Introduction to Engineering Mechanics and Statics. Chapter 1: Newton's Laws, Gravitation, Measurement (units, unit conversion, significant figures). *Most of these topics should be review.*	**Week 9**	Chapter 6 (6.1-6.5): Truss Analysis
Week 2	Chapter 2: Vectors (force & position), vector representation	**Week 10**	Chapter 6 (6.6): Frames & Machines
Week 3	Chapter 2: vector operations	**Week 11**	Frames & Machines (con't) **Midterm #2**
Week 4	Chapter 3: Particle Equilibrium	**Week 12**	Chapter 8: Friction
Week 5	Particle Equilibrium (con't) **Midterm #1.**	**Week 13**	Chapter 8: Friction *Thursday = Happy Thanksgiving! No classes.*
Week 6	Chapter 4: Moments & Equivalent Force Systems	**Week 14**	Chapter 9: Center of Gravity and Centroid
Week 7	Chapter 5: Rigid Body Equilibrium	**Week 15**	Chapter 10: Moments of Inertia
Week 8	*Fall Break*		

Grading:		
	Professionalism/ICA's/OCA's	5%
	Homework	15%
	Quizzes	15%
	Midterm Exam, lowest score	15%
	Midterm Exam, highest score	20%
	Final Examination	30%

Better than 90%	A: Demonstrate deep understanding – could teach others
Better than 80%	B: Demonstrate good understanding of most concepts
Better than 70%	C: Demonstrates understanding of most concepts
Better than 60%	D: Not demonstrate understanding of many concepts
0%-60%	F: Not demonstrate understanding of most concepts

Professionalism/ICA's/OCA's: Part of being a professional is "showing up" and effectively participating. Several elements will comprise the *Professionalism* score. There will be weekly in-class activities (ICA's) and outside of class activities (OCA's). Periodically, students will be asked to participate with in class activities (ICAs). Additionally, students may be periodically required to view short (typically < 15 min) videos, or complete online reading and activities prior to a class session, these are out of class activities (OCAs). ICAs/OCAs may or may not be graded and/or awarded points. When scored, these activities receive nominal points in order to encourage engagement and participation, typically less than one quarter of one weekly homework assignment. Points are awarded based on correctness and full participation. Make up points for missed ICAs/OCAs will not be allowed for any reason. However, your lowest two ICA/OCA scores will be dropped from your grade calculation.

Homework

Homework will often be challenging – this is good, this is how people learn. The homework assigned in this course is meant to be the *minimum* sufficient to help you judge your depth of knowledge. Some concepts will be difficult to understand sufficiently well to succeed as an engineer, so some topics will require you working additional problems before ***you*** **can honestly be convinced that** you do understand the material deeply.

Homework will be assigned weekly and is required to learn the material. Homework assignments will be due at the beginning of class on the date indicated. Work submitted more than 5 minutes into the class period, or that has been worked on after the beginning of the class period is late. Late work is accepted up to one week late (through the beginning of class the following week), with a 50% penalty. Except in the case of a free pass (see below), the 50% penalty is applied to ALL late work. ***All homework is assumed to be the individual work of the student submitting the assignment.*** Copying from another student, the solution manual, or other sources is not acceptable and will result in a score of zero for all students involved. Additionally, I am required to report all instances of academic dishonesty to the Dean for appropriate follow up by the university. Please refer to the section on Group and Individual Work below for further information.

Not all assigned homework problems will be graded.

FREE PASS: You receive one free pass for a late homework assignment. No assignments are accepted over one week late. However, you may turn in **one** homework assignment up to one week late that will receive no late penalty. To have your free pass applied to a late assignment, write FREE PASS clearly at the top of the assignment when you turn it in. You have only ONE free pass to use, and it is your decision on when to apply it. If you do not write FREE PASS on the assignment before turning it in, a free pass will not be applied, and a free pass will not be retroactively applied. The purpose of the free pass is to accommodate unexpected life events such as illness, oversleeping, emotional distress, etc. However, you have **one** to use and may use it at any time, for any reason you choose.

I cannot accept piecemeal assignments, so you will be graded on only the first portion you turn in. Late work may not be graded in a timely fashion. Please make a copy if you will need your homework to study for an exam.

You are required to use the **Homework Format** posted online. The purpose of this is to help you develop important engineering documentation skills that you will need in your career. All homework shall be submitted on engineering paper, one side only (except for computer printouts). Engineering paper is available from the bookstore or can be purchased online. It is a required item and thus qualifies for financial reimbursement like a textbook. Your work must be completed in pencil. Your assignment must be stapled (I recommend purchase of a pocket stapler). **Homework that does not comply to the Homework Format may be penalized or even not accepted.**

Quizzes: will be given periodically to test your understanding of the material presented in class or covered on homework. Missed quizzes cannot be made up for any reason. Your lowest quiz score will be dropped. You must complete your quiz in pencil only. Straight edges are highly encouraged (ID card works well). **No calculators** or any other electronic device will be allowed on some quizzes, other quizzes may allow approved calculators (see first page of syllabus). All electronic devices (cell phones, calculators, etc.) must be kept in a back pack, pocket, or left with the instructor for the duration of the quiz.

Exams

You must complete your exam in pencil only. Straight edges are highly encouraged (ID card works well). Some exams will allow **no calculators** or any other electronic device, other exams may allow approved calculators only (see first page of syllabus). You will be notified in advance about calculator use. All non-approved electronic devices (cell phones, etc.) must be kept in a back pack, pocket, or left with the instructor for the duration of the exam.

If you miss an exam for a *valid emergency (medical emergency, death in the family)*, please let me know, BEFORE the regularly scheduled exam start time (email or phone). At my discretion, in the case of a valid emergency, missed exams may be made up within one week of the regularly scheduled exam. Documentation of the emergency will be required. The instructor must be notified of valid non-emergency exam absences at least TWO WEEKS prior to the scheduled exam date to receive a make-up exam. All missed exams must be made up within one week of the regularly scheduled exam, and will consist of an alternate exam which is generally more difficult than the regular exam. If you are uncertain about your circumstances meeting the above requirements, come talk to me.

There may be multiple versions of each exam.

Unclear methodology on exams, regardless of the answer may result in a significantly reduced grade, depending upon instructor's judgment. Engineering work must always be clear.

If you wish to dispute an exam grade, you must submit a written explanation describing your dispute. This is due within one week after the exam is returned.

Attendance: You are expected to attend and actively participate in every class session. You must attend the section for which you are registered.

Group and Individual Work:

Individual Work: When you submit your work with your name on it, you are attesting that the work you are submitting is your own. To take credit for work that is not your own is a serious breach of all professional codes of ethics. As a practicing engineer, this could have very serious repercussions including losing the ability to continue to practice as an engineer! Students are encouraged to form study groups and discuss assignment parameters and "sticky points" of assignments. However, the actual work must be completed by the individual student.

Authorized aid on individual work includes:

- *discussing the interpretation of the assignment statement;*
- *sharing ideas or approaches for completing the assignment/solving the problem; and,*
- *explaining concepts involved in the assignment/problem.*

*The following are examples of practices that are **not allowed**:*

- *Watching another student complete a problem, then copying/repeating the work, or using solutions obtained from on-line, previous students, or other such "resource."*
- *More than one student working on one homework assignment for all or part of an assignment, then copying and submitting the problems as individual work*
- *Submitting the work of another as your own*

***Group Work**: Assignments and projects may be assigned as group work. When all or part of an assignment is assigned as group work, that assignment, or portion of the assignment, to be completed by a group will specified. Whenever group work is submitted, names of all contributors must appear on the submitted assignment. Credit will not be awarded to students whose names do not appear. It will also be assumed that no additional students contributed to the submitted work.*

Class Policies

I encourage students to work together on all homework assignments (see section *on Group and Individual Work* above). However, you must not offer anyone assistance during an examination. Please be aware that I have zero tolerance for cheating. If I detect any evidence of this during an exam or while grading, you will receive no credit.

Website: Assignments will be posted on the course website, and solutions will be posted after the assignment is due. http://faculty.up.edu/lulay/EGR211

Communication: The number one consistent message we here from employers is that they seek individuals with good communication skills. Listening and staying informed is a critical element of effective communication. Therefore, students are responsible for regularly checking and acting upon messages sent to their University e-mail. Each student is also expected to follow the standard homework format at all times. And also, being present and listening (attending and paying attention in class) is part of communication.

Solutions: Homework is assigned to help you learn – therefore, don't just "do the work", ***understand*** it. Attending class and simply doing homework is usually insufficient to do well on exams. Real/deep learning will mainly occur by "getting your hands dirty" (doing the work). After each assignment has been submitted the solutions will be posted on the course web page. Students are **HIGHLY** encouraged to review all problems and to *understand the correct methodology*.

Professional Responsibility: I do consider all students to be **practicing professionals right now**, and therefore, expect professional behavior: always do your best, work through and **understand 100% of the assigned work**, do your own work and work on teams appropriately, show respect to peers and the instructor, arrive on time (before class begins) and be ready to participate as soon as class begins.

I do understand that cell phones are ubiquitous in the professional world, but not at all times and all circumstances. Electronic devices are distracting to me, so please, out of professional courtesy, no cell phones or similar devices in class. Besides, you are paying big bucks per hour to be in class, so please make the most of your investment during the 15-18 hours per week that you are in class. That should leave sufficient time outside of class for you to decide to use your cell phone, or not.

Ask Questions! It is your responsibility to ask questions when you are confused, need further explanations, etc. Ideally, the instructor's responsibility is NOT to answer the question for you, but rather to help guide you to answer it for yourself. So please do not get frustrated when I do not answer your question as directly as you may have hoped.

School of Engineering's Lab/Shop Access and Safety Policy: No one is allowed to work in the shops or labs without appropriate training from the shop technician and without instructor permission.

University Policies and Resources

University of Portland's Code of Academic Integrity: Academic integrity is openness and honesty in all scholarly endeavors. The University of Portland is a scholarly community dedicated to the discovery, investigation, and dissemination of truth, and to the development of the whole person. Membership in this community is a privilege, requiring each person to practice academic integrity at its highest level, while expecting and promoting the same in others. Breaches of academic integrity will not be tolerated and will be addressed by the community with all due gravity.

Assessment Disclosure Statement: Student work products for this course may be used by the University for educational quality assurance purposes.

Accessibility Statement: The University of Portland endeavors to make its courses and services fully accessible to all students. Students are encouraged to discuss with their instructors what might be most helpful in enabling them to meet the learning goals of the course. Students who experience a disability are also encouraged to use the services of the Office for Accessible Education Services [AES], located in the Shepherd Academic Resource Center (503-943-8985). If you have an AES Accommodation Plan, you should make an appointment to meet with your faculty member to discuss how to implement your plan in this class. Requests for alternate location for exams and/or extended exam time should, where possible, be made two weeks in advance of an exam, and must be made at least one week in advance of an exam. Also, you should meet with your faculty member to discuss emergency medical information or how best to ensure your safe evacuation from the building in case of fire or other emergency.

Mental Health Statement: As a college student, you may sometimes experience problems with your mental health that interfere with academic experiences and negatively impact daily life. If you or someone you know experiences mental health challenges at UP, please contact the University of Portland Health and Counseling Center in Orrico Hall (down the hill from Franz Hall and Mehling Hall) at http://www.up.edu/healthcenter/ or at 503-943-7134. Their services are free and confidential, and if necessary they can provide same day appointments. In addition, they make after-hours phone counseling available if you call 503-943-7134 and press 3 outside of business hours. Also know that the University of Portland Public Safety Department (503-943-4444) has personnel trained to respond sensitively to mental health emergencies at all hours. Remember that getting help is a smart and courageous thing to do – for yourself, for those you care about, and for those who care about you.

The Learning Commons: The Learning Commons, located in the Shepard Academic Resource Center, houses the Writing Center, Math Resource Lab, Speech Resource Center, and the International Language Lab.

Writing: Go to www.up.edu/lrc/writing. You will need to register as a user the first time you go there. If you cannot make any of the posted office hours, you can arrange an appointment by emailing writing@up.edu.

Math: Math assistants are available on a walk-in basis. Please go to www.up.edu/lrc/math for a current schedule of hours math assistants are available.

Speech: Speech assistants are available to help with public presentations on a walk-in basis. Please go to www.up.edu/lrc/speech for a current schedule of hours speech assistants are available.

Group Process: Group process tutors are available on a walk-in basis. Please go to www.up.edu/lrc/groupprocess for a current schedule of hours group process assistants are available.

International Languages: Go to www.up.edu/lrc/languages/signup. You will need to register as a user the first time you go there.

The Learning Assistance Counselor: He or she teaches learning strategies and skills that enable students to become more successful in their studies and future professions. The Counselor provides strategies to assist students with reading and comprehension, note-taking and study, time management, test-taking, and learning and remembering.