Department of Physics and Engineering, Point Loma Nazarene University
EGR 2014 – Engineering Mechanics: Statics
4 Units (3 units lecture + 1 unit lab)
Spring 2021

Professor: Dr. Michelle Chen
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Office Phone: 619-849-2960
Office Hours: by appointment on Zoom

Lecture: MWF 7:25 – 8:20 am, (RS 365)
Lab: T 12:30 – 2:25 pm; (RS 295)
Final Exam: 7:30 – 10:00 am, Monday June 7, 2021

PLNU Mission

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Department Mission

The Physics and Engineering Department at PLNU provides strong programs of study in the fields of Physics and Engineering. Our students are well prepared for graduate studies and careers in scientific and engineering fields. We emphasize a collaborative learning environment which allows students to thrive academically, build personal confidence, and develop interpersonal skills. We provide a Christian environment for students to learn values and judgment, and pursue integration of modern scientific knowledge and Christian faith.

COURSE DESCRIPTION

Statics of particles and rigid bodies as applied to engineering design. Topics include vector algebra, forces, moments and couples, conditions of equilibrium, friction, and virtual work.

COURSE LEARNING OUTCOMES

This course supports the overall learning objectives of the physics and engineering programs in building your ability: (1) to develop an understanding of the fundamental principles of physics and of engineering (LO1), (2) to apply physical principles, mathematical reasoning, and computational techniques to solve real-world problems (LO2), (3) to design and conduct experiments or complete an engineering design project as well as analyze and interpret data (LO3), and (4) to effectively collaborate in teams (LO6).

REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES

Engineering Mechanics: Statics, 14th Edition, by Russell C. Hibbeler, Pearson 2016.

COURSE CREDIT HOUR INFORMATION

In the interest of providing sufficient time to accomplish the stated Course Learning Outcomes, this class meets the PLNU credit hour policy for a 4 unit class delivered over fifteen weeks. Specific details about how the class meets the credit hour requirement can be provided upon request. (Based on 37.5 hours of student engagement per credit hour.)

Distribution of Student Learning Hours

Category	Time Expectation in Hours
Labs	42
Reading/Online Video Assignments	39
Homework Assignments	54
Other Assignments & Learning Activities	11
Exams	4
Total Hours	150

ASSESSMENT AND GRADING

One should complete weekly reading assignments and attend all of the synchronous meetings and labs.

Graded Components

- **Homework**: Online homework will be on "MyLab & Mastering Pearson", which can accessed on CANVA. No late homework will be accepted without prior consent of instructor.
- **Lab**: Weekly lab meetings will provide you the opportunity for hands-on experience of topics from class meetings, improve lab technique, and data analysis. Labs will be performed in small groups, but each individual is responsible for submitting their own results. Lab grade is 20% of overall course grade, therefore the lecture and the lab will have the same grade on your transcript. You must pass the lab portion of the class to pass the class. Lab reports will be submitted on CANVAS. No make-up labs or late lab reports without prior consent of the instructor.

- **Tests and the Final Examination**. You must take all exams in order to pass the class. Examinations will include problems and questions over material assigned in the text, readings and handouts, as well as material presented in class. No examination shall be missed without prior consent or a well-documented emergency beyond your control. A score of zero will be assigned for an examination that is missed without prior consent or a well-documented emergency beyond your control. The final exam will be in the form of a research project that demonstrates your comprehensive knowledge of the course, and requires writing and presentation. The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. This schedule can be found on the university website and in the course calendar. No requests for early examinations will be approved. Only in the case that a student is required to take three exams during the same day of finals week, is an instructor authorized to consider changing the exam date and time for that particular student.

Component	Weight
Homework	20 %
Labs	20 %
Tests	40 %
Final Exam	20 %

Grading Scale

Standard Grade Scale Based on Percentages					
	A	**B**	**C**	**D**	**F**
+		87.5- 90	77.5-80	67.5-70	
	92.5 -100	82.5-87.5	72.5-77.5	62.5 -67.5	0-60
_	90-92.5	80-82.5	70-72.5	60-62.5	

STATE AUTHORIZATION

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on State Authorization to view which states allow online (distance education) outside of California.

INCOMPLETES AND LATE ASSIGNMENTS

All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. Incompletes will only be assigned in extremely unusual circumstances.

CLASS ENROLLMENT

It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

PLNU COPYRIGHT POLICY

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU ACADEMIC HONESTY POLICY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See Academic PoliciesLinks to an external site. for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. (DRC@pointloma.edu or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

PLNU ATTENDANCE AND PARTICIPATION POLICY

When classes meet online:

Students taking online courses are expected to attend each week of the course. Attendance is defined as participating in an academic activity within the online classroom which includes posting in a graded activity in the course. (Note: Logging into the course does not qualify as participation and will not be counted as meeting the attendance requirement.)

Students who do not attend at least once in any 3 consecutive days will be issued an attendance warning. Students who do not attend at least once in any 7 consecutive days will be dropped from the course retroactive to the last date of recorded attendance.

When classes meet face-to-face

Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See Academic PoliciesLinks to an external site. for further information about class attendance.

SPIRITUAL CARE

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith. If students have questions, a desire to meet with the chaplain or have prayer requests you can contact the Office of Spiritual Development Links to an external site.

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(Tentative Syllabus, Subject to Updates)

Week	Date	Topic	Chapter
1	03/01 - 03/05	Welcome; Force Vectors	2
2	03/08 - 03/12	Force Vectors	2
3	03/14 - 03/19	Equilibrium of a Particle	3
4	03/22 - 03/26	Force System Resultants	4
5	03/29 - 04/02	Force System Resultants	4
		Wednesday March 31: No Class	
6	04/05 - 04/09	Equilibrium of a Rigid Body	5
		Test 1: Tuesday 12:30 pm	
7	04/12 - 04/16	Equilibrium of a Rigid Body; Structural Analysis	5, 6
8	04/19 - 04/23	Structural Analysis	6
9	04/26 - 04/30	Internal Forces	7
10	05/03 - 05/07	Friction	8
	W5/5 no class	Wednesday May 5: No Class	
11	05/10 - 05/14	Friction; Center of Gravity and Centroid	8,9
12	05/17 - 05/21	Center of Gravity and Centroid	9
13	05/24 - 05/28	Moment of Inertia	10
		Test 2: Tuesday 12:30 pm	
14	05/31 - 06/04	Virtual Work	11
15	06/07 - 06/11	**Final Exam (7:30 - 10:00 am) Monday June 7th**	