Statics

ENGS 206 - Fall 2023

3 Credits

Instructor Info

Masoud Masoumi

Office Hrs:
Tuesdays, 12:15-1:15pm
Fridays, 10-11am

Office: RLC 204

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Course Info

Prereq:
MATH 186 (or MATH 104) & PHYS 101

Tuesdays and Fridays

10:00-12:15pm (Tuesday)
11:00-12:15pm (Fri)

LEO 242

Overview

Vector quantities, forces, and moments; resultants of force systems; free body diagrams and static equilibrium; analysis of truss, frame, and machines in static equilibrium; dry friction; belt friction; first and second moments. Three lectures. Fall and Spring. Must receive a minimum grade of C. Students may only repeat the course two times, after which they are subject to dismissal from the engineering program.

Learning Objectives

- Understand statics of particles, equilibrium system of forces and rigid bodies
- Analysis of frames, trusses, and machines
- Understand Distributed forces, centroids and Moments of inertia

Material

Required Text

Vector Mechanics for Engineers: Statics, Beer, Johnston, Mazurek, Cornwell, Self, 12^{th} Edition, McGraw Hill (2019) https://www.mheducation.com/highered/product/vector-mechanics-engineers-statics-beer-johnston/M9781259977268.html# (Connect version)

NOTE: DO NOT BUY the hard copy of the textbook. Please watch this video: http://video.mhhe.com/watch/emfZPHN3VfSH4UFQLyNUYg?. We will further discuss how to purchase the access to textbook in our first day of class.

Grading Scheme

15%	Homework	A	Grade $\geq$ 93%
		A$^-$	90% $\leq$ Grade $<$ 93%
5%	Activities	B$^+$	87% $\leq$ Grade $<$ 90%
		B	83% $\leq$ Grade $<$ 87%
15%	Quizzes (every other Friday)	B$^-$	80% $\leq$ Grade $<$ 83%
		C$^+$	77% $\leq$ Grade $<$ 80%
40%	Exam I & II (20% each exam)	C	73% $\leq$ Grade $<$ 77%
		C$^-$	70% $\leq$ Grade $<$ 73%
25%	Final Exam	D$^+$	65% $\leq$ Grade $<$ 70%
		D	60% $\leq$ Grade $<$ 65%
5%	Recitation Class (Extra Credit)	F	Grade $<$ 60%

ABET Outcomes

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

Activities & Homework

Homework will be assigned upon the completion of each topic. All assignments, including homework and activities, will be posted on Moodle and completed through the McGraw Hill website. It is crucial to carefully follow the steps outlined by the instructor to "register" on McGraw Hill website for the course in order to gain access to the textbook and the necessary materials. The specific deadlines for activities and homework assignments are outlined on Moodle and/or the McGraw Hill website. Please note that no extensions can be granted for activities. However, there might be a possibility of a one- or two-day extension for homework assignments, accompanied by a grade reduction of 2-5% for each hour of late submission.

FAQs

What if my schedule does not allow me to attend office hours?

You are more than welcome to make an appointment whenever you have a question or concern by contacting me via email.

Do you drop any quiz or homework assignment?

I will drop the lowest quiz and lowest homework grade. The reason is to compensate for any possible missing homework deadline or quiz. This means that there will be no makeup quiz or guaranteed extended deadline for homework assignment.

What is your advice for performing well in this course?

Be an active listener, take good notes, and read all assigned materials. Don't just read the solutions to the problems and examples, solve them! Be organized and manage your time appropriately.

Class Policy & Attendance

Due to the nature of the materials covered in this course, regular attendance is highly recommended. Students are required to fulfill all course requirements as detailed in the course syllabi for their registered courses. Implicit in these requirements is completion of all course assignments and attendance in all classes. Also, if I believe that a student's failure to attend class is substantially affecting his/her course grade, I am obligated to report the situation to the dean of the school in which the student is matriculated. The dean will address the situation with the student. In case you miss a class, it is your responsibility to keep up with the class work and be informed of all announcements in class such as homework assignments, quizzes, etc. Cell phones and all other forms of electronic communication devices, if carried into the classroom, must be turned off. The use of computers and other electronic devices during class is restricted to classroom activities and course applications.

Academic Integrity

The college Community Standards & Student Code of Conduct is central to the ideals of this course. Students are expected to be independently familiar with the code and to recognize that their work in the course is to be their own original work that truthfully represents the time and effort applied. Violations of the Academic Policies of the Community Standards & Student Code of Conduct are most serious and will be handled in a manner that fully represents the extent of the Code and that befits the seriousness of its violation. See the code here https://inside.manhattan.edu/student-life/dean-of-students/code-conduct.php#academicintegrity for more information.

Diversity and Inclusivity

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, gender identities, national origins, religious affiliations, sexual orientations, ability, and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Accommodations for Students with Special Needs

If you are a student with learning needs that require special accommodation, contact the Accommodation Administrator in Specialized Resource Center (SRC) located in Thomas Hall, Room 3.15 as soon as possible to make an appointment to discuss your special needs. Once your Academic Adjustment/ Auxiliary Form is approved, please meet with me during my office hours and bring the form. You can find more information about SRC and the procedure on their website https://inside.manhattan.edu/academic-resources/specialized-resource-center/index.php.

Academic Assistance

The Center for Academic Success (CAS) has two locations - the Learning Commons & the Leo Learning Center. These offices, conveniently spread across campus, will provide students with a quiet space to study with a peer tutor, or engage in small group study sessions. The services offered include individual peer tutoring in most 100-200 level and select 300-600 level courses. All services are free of charge. Appointments are preferred but drop-ins are also welcome. To make an appointment contact the CAS at (718) 862-7414, email success@manhattan.edu or visit Thomas Hall, 3^{rd} floor. For more information please visit their website at https://inside.manhattan.edu/academic-resources/center-for-academic-success/index.php

Class Schedule

The course will tentatively follow this schedule :

Week	Topic	Textbook Section	Dates
Week 1	Intro, Concepts, and Unit Conversion	1.1-1.5	Aug 29^{th}, Sep 1^{st}
Week 2	Vectors in 2D, Equilibrium in 2D	2.1-2.3	Sep 5^{th}, Sep 8^{th}
Week 3	Vectors in 3D, Equilibrium in 3D	2.4-2.5	Sep 12^{th}, Sep 15^{th}
Week 4	Moments	3.1-3.2	Sep 19^{th}, Sep 22^{nd}
Week 5	Moments	3.3-3.4	Sep 26^{th}, Sep 29^{th}
Week 6	Exam I		
	Equilibrium of Rigid Bodies in 2D	4.1-4.2	Oct 3^{rd}, Oct 6^{th}
Week 7[B]	Equilibrium of Rigid Bodies in 2D	4.1-4.2	Oct 13^{th}
Week 8	Analysis of Trusses	6.1	Oct 17^{th}, Oct 20^{th}
Week 9	Analysis of Trusses	6.1	Oct 24^{th}, Oct 27^{th}
Week 10	Analysis of Frames and Machines	6.3-6.4	Oct 31^{st}, Nov 3^{rd}
Week 11	Exam II		
	Friction	8.1-8.2, 8.4	Nov 7^{th}, Nov 10^{th}
Week 12	Friction	8.1-8.2, 8.4	
	Center of Gravity and Mass, Centroid	5.1-5.4	Nov 14^{th}, Nov 17^{th}
Week 13[T]	Center of Gravity and Mass, Centroid	5.1-5.4	Nov 21^{st}
Week 14	Moments of Inertia	9.1-9.2, 9.5	Nov 28^{th}, Dec 1^{st}
Week 15	Moments of Inertia	9.1-9.2, 9.5	Dec 5^{th}, Dec 8^{th}
Week 16	Final Exam		TBD

[B] Tuesday, Oct 10^{th} is Monday schedule and there is no class.
[T] Friday (Nov 24^{th}) is Thanksgiving Holiday and there is no class.