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BMEN 2320 Course Syllabus – Fall 2025

Course Information

Course Number & Section:	BMEN 2320.002
Course Title:	Statics
Term:	Fall 2025
Meeting Times:	Monday & Wednesday, 4:00 PM – 5:15 PM in FO 2.702

Contact Information

Professor	Christian Rivera, PhD
Office Phone	972-883-4482
Email Address	cprivera@utdallas.edu
Office Location	ECSN 2.226 or via MS Teams
Office Hours	Fridays 1PM-2PM
Other Information	Always glad to meet with students in-person or virtually. Additional office hours can be scheduled via email.
Teaching Assistant	Anthony Reyes
Email Address	aar170002@utdallas.edu
Office Location	MS Teams
Office Hours	Tuesday 1PM-2PM
Other Information	Additional office hours can be scheduled via email.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Pre-requisites: PHYS 2325 and PHYS 2125
Pre-requisite or Co-requisite: MATH 2415 or MATH 2419 or equivalent

If you have not mastered or forgotten these concepts, please visit me or the TA and we will provide resources that can help you learn and review the material which should prepare you for this course.

Course Description

Statics introduces students to the basic concepts of rigid body mechanics. This lecture and problem-solving-based class will cover vector representations of forces and moments, free body diagrams, equilibrium of particles, centroids, distributed load systems, equivalent force systems, equilibrium of rigid bodies, trusses, frames and machines, internal forces in structural members, shear forces and bending moments in beams, friction, area and mass moments of inertia, the principle of virtual work. This class will incorporate some biomechanical examples of Statics.

Student Learning Objectives/Outcomes

1. Acquire the ability to represent and manipulate forces and moments through vector operations. (SO1)
2. Use free-body diagrams to write and solve equations regarding the static equilibrium of rigid bodies. (SO1)
3. Apply equilibrium concepts to represent the internal forces acting on elementary mechanical and biomechanical systems under static loads. (SO1)

Required Textbooks and Materials

Required Materials: Computer with internet, webcam, and audio

- Computer with internet, webcam, and audio
- Pearson Mastering Engineering subscription

Recommended Textbooks:

- R.C. Hibbeler, Engineering Mechanics: Statics, 15th ed., Pearson Prentice Hall, ISBN13: 978-0134814971

Assignments & Grading Policy

The final course grade will be determined based on the following assessments:

- Homework (10%) with the 2 lowest homework grades dropped
- Quizzes (10%), with the 2 lowest quiz grades dropped
- Project (10%)
- Exam 1 (20%)
- Exam 2 (20%)
- Final Exam (30%)

From the percentage points, letter grades will be assigned according to the following table:

Letter Grade	Numerical Grade	Letter Grade	Numerical Grade	Letter Grade	Numerical Grade	Letter Grade	Numerical Grade
A+	97%+	B+	87.0-89.9%	C+	77.0-79.9%	D+	67.0-69.9%
A	93.0-96.9%	B	83.0-86.9%	C	73.0-76.9%	D	63.0-66.9%
A-	90.0-92.9%	B-	80.0-82.9%	C-	70.0-72.9%	D-	60.0-62.9%
						F	≤59.9%

(Normal rounding rules apply to the hundredth of a point. Grades are based on the percent earned for each assignment, not total points in an assignment.)

A reflects excellent performance, B good, C fair, and D poor.

Homework (10%):
Homework is intended to help students practice problems before quizzes. Homework will be assigned weekly through Pearson's Mastering Engineering subscription. This consists of, on average, seven to ten problems per topic. Due dates are posted on Pearsons. Your lowest 2 homework grades will be dropped, and you may work on homework assignments with your peers. Some homework assignments may contain extra credit problems; however, you cannot score higher than 10.5% (~105%) in this category.

Quizzes (10%):
Quizzes are intended to help students practice more complex problems similar to what they will see on an exam. It is meant to assess your understanding of concepts and to determine if we need to review any difficult topics. **Quizzes will be given weekly in class**. Quizzes must be completed individually; however, you may use your class notes. Your lowest 2 quiz grades will be dropped.

Project (10%):
A key activity of a Biomedical Engineer is to analyze real biomechanical systems under static equilibrium. For this reason, students will form teams of up to four (4) members and choose a biomechanical system to be analyzed as part of their term project. Upon receiving the instructor's approval, students will analyze the static equilibrium of the biomechanical structure of interest, measure or approximate the anatomical parameters of interest, state the assumptions that allow the problem to be tractable, and solve for internal forces in one member of interest.

Exams (70%):
Exams are intended to demonstrate understanding and mastery of material. There will be two mid-term exams, each covering approximately 1/3 of the material covered during the semester. Exams 1 and 2 will be 20% each, and the Final Exam will count as 30%. The final exam instead will be cumulative. **Exams are held in the evening outside of class.** All exams will be closed book; however, you may use TWO 8.5 x 11" sheets of paper (double-sided) for the exam, which will be turned in along with the exam.

Grading Errors:
If you think we have made an error in grading, please email the original assignment to the instructor and TA within one week of receiving the grade. Please note what you perceive to be the error, problem, or discrepancy. Changes to grades will be posted on eLearning. All questions regarding grades should be handled in office hours or via UTD email.

Academic Calendar

Week/Date	Topic	Relevant Chapters	Assessment	Due Date
Week 1 8/25 - 8/30	- Class Intro & Syllabus - General Principles - Force Vectors	Chapters 1 & 2	HW 1 Quiz 1	9/2 9/3
Week 2 8/31 - 9/6	*Labor Day (9/1) – No Class - Vector Operations	Chapter 2 & 3	HW 2 Quiz 2	9/9 9/10
Week 3 9/7 - 9/13	- Equilibrium of a Particle	Chapter 3	HW 3 Quiz 3	9/16 9/17
Week 4 9/14 - 9/20	- Moments - Couples - Force Systems	Chapter 4	HW 4 Quiz 4	9/23 9/24
Week 5 9/21 - 9/27	- Force Moment Systems	Chapter 4	HW 5 Quiz 5	9/30 10/1
	- Distributed Loads			
Week 6 9/28 - 10/4	- Distributed Loads - Equilibrium of Rigid Bodies	Chapters 4 & 5	HW 6 Quiz 6	10/14 10/15
Week 7 10/5 - 10/11	**Review and Exam 1 (7PM at ECSS 2.306)** **BMES Conference*	**(Chapters 1 - 4)**	**Exam 1**	**10/9**
Week 8 10/12 - 10/18	- Trusses	Chapters 6	HW 7 Quiz 7	10/21 10/22
Week 9 10/19 - 10/25	- Frames and Machines	Chapter 6	HW 8 Quiz 8	10/28 10/29
Week 10 10/26 - 11/1	- Internal Forces (Shear and Bending)	Chapter 7	HW 9 Quiz 9 **Project: Problem Description**	10/11 10/12 **11/15**
Week 11 11/2 - 11/8	**Review and Exam 2 (7PM at ECSS 2.306)**	**(Chapters 4 - 6)**	**Exam 2**	**11/6**

Week 12 11/9 - 11/15	- Internal Forces (Shear and Bending) - Shear and Moment Diagrams	Chapters 7	HW 10 Quiz 10	11/18 11/19
Week 13 11/16 - 11/22	- Shear and Moment Diagrams - Friction	Chapters 8	HW 11 Quiz 11	12/2 12/3
Week 14 11/23 - 11/29	**Thanksgiving Break**			
Week 15 11/30 - 12/6	- Friction - Center of Gravity and Centroid	Chapters 9 & 10	HW 12 Quiz 12	12/9 TBD
Week 16 12/7 - 12/9	- Final Exam Review		**Project**	**TBD during Finals week**
12/10	**Reading Day**			
12/11 - 12/16	**Final Exam (Cumulative) - TBD**			

Sep 10 - Last day to drop without a “W”
Oct 18 - Midterm Grades
Nov 10 - Withdrawal period ends
Dec 19 – Final Grades

Please note the dates of the exams. The schedule is subject to change, based on the pace of the course, inclement weather, etc. Changes will be announced in class, via email, and on eLearning. The final exam date will be scheduled by the university, please check Coursebook for these details.

Course & Instructor Policies

Life Policy:
Life happens and personal situations can introduce complications. Please talk to the instructor if you need assistance regarding class. The instructor wants you to succeed and early communication is key. Allowances for exceptional documented circumstances will be accepted with **prior** consent of the instructor. In such circumstances, late work will be dealt with on a case-by-case basis. Contact the instructor and TA by email as soon as practical if these circumstances may apply to you. The email reply documenting acceptance of reason and documentation for late work will set a new deadline.

Make-up exams:
Missed exams without advanced notice or documented reason will receive a zero.
Requests to delay an exam must be made within 1-week of the exam the exam date. Missed exams without prior notification of absence must provide documented reasons (e.g., illness with doctor’s note, police report, etc.) for a make-up exam to be provided. The email reply documenting acceptance of reason for missing or rescheduling an exam will set the time and nature of make-up exam.

Late Work:
Unless otherwise specified in class or on eLearning, all assignments are due 11:59 p.m. on the indicated night. Assignments turned in after the due date and time will be assessed a penalty of 25% per 24 hours. Email the assignment to the instructor directly if you experience or expect an error submitting an assignment on eLearning.

Email Policy and Privacy:
All official student email correspondence will be sent only to a student's UT Dallas email address and UT Dallas will only consider email requests originating from an official UT Dallas student email account. At some points in the term, my inbox gets quite full, but I do want to hear from you. If you email me, please wait 1 business day for all email responses. If you do not receive an email within that time period, please send a follow-up email or reach out in-person. I will appreciate the gentle reminder.

UTD takes your privacy very seriously. The instructor is unable to email grades or discuss grades by email. Grades will be posted on eLearning and all questions regarding grades should be handled in office hours.

Classroom Citizenship:
Please always be respectful of your peers.

AI Policy:
The use of A.I. tools such as ChatGPT is allowed in this course under some circumstances. For homework Pearson's Mastering Engineering may provide an A.I. help tool for select problems. You are free to use that tool and other A.I. tools to help you set up the problems. For projects, you must clearly indicate any use of A.I. tools and provide appropriate citations or references for any A.I.-generated content or results produced. This should include full documentation of exactly how the tool was used. A.I. should not replace your individual effort or original work but rather, should be used as supplemental resources to support your own analysis, critical thinking, and problem-solving. For quizzes and exams, use of any external resource (A.I., Google, other students, etc.) is strictly prohibited. Any misuse or violation of the policy, including unauthorized or excessive use of A.I., will be considered a breach of academic integrity and subject to disciplinary actions as per the institution's policies and procedures on academic misconduct. *(UTD Generative AI Use in Academic Work)*

Acceptable uses:

- Using AI to help brainstorm ideas and organize thoughts.
- Using AI image generators to create visuals.
- Using AI to help with grammar and spelling checks.
- Using AI to explain confusing concepts in simple language.
- Using AI to translate text from one language to another.

Unacceptable uses:

- Using AI to generate content for assignments.
- Using AI to plagiarize content from other sources.
- Using AI to answer exam or quiz questions.
- Using AI to automate the completion of assignments.

Academic Dishonesty:
Academic dishonesty can occur in relation to any type of work submitted for academic credit or as a requirement for a class. It can include individual work or a group project. Academic dishonesty includes plagiarism, cheating, fabrication, and collaboration/ collusion. In order to avoid academic dishonesty, it is important for students to fully understand the expectations of their professors. This is best accomplished through asking clarifying questions if an individual does not completely understand the requirements of an assignment.

UT Dallas has a no-tolerance policy for plagiarism, copyright infringement, or scholastic dishonesty. Plagiarism is using another's work as your own without appropriate credit or attribution. Do not cheat. Do not copy assignments, do not post assignments or make answers public, do not work on assignments as a group unless instructed to, do not plagiarize, do not use the internet or outside sources when you are not allowed to, do not discuss assignments with those who are not done, or do anything else that would be construed as academic dishonesty. If the instructor suspects academic dishonesty, they will follow UTD procedures with the Office of Community Standards and Conduct (OCSC) from which point forward the instructor will no longer be involved in the investigation or results. The instructor will not notify a student of a report to OCSC, nor will they discuss pending investigations with the student. Do not cheat.

Additional information related to academic dishonesty and tips on how to avoid dishonesty may be found here: https://conduct.utdallas.edu/dishonesty

You should cite any sources you reference, providing in-text citation and references, both in your written work and in your online postings. If you are uncertain about how to cite sources, the following references are useful resources to guide you." (Adapted from Dr. Bill Hefley)

Guidance on citations and references:

- https://libguides.utdallas.edu/citation-resources-guide
- https://www.utdallas.edu/library/researchinstruction/websites/#citations
- https://owl.purdue.edu/owl/avoiding_plagiarism/index.html
- https://owl.purdue.edu/owl/research_and_citation/using_research/quoting_paraphrasing_and_summarizing/index.html
- https://owl.purdue.edu/owl/research_and_citation/resources.html

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Course Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Attendance and Participation

Regular and punctual class attendance is expected regardless of modality. Students who fail to attend class regularly are inviting scholastic difficulty.

This course involves extensive problem solving. Successful mastery of the material requires focused effort and practice throughout the semester. Contact the instructor if you need additional help or some aspect of the course is not working well for you.

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Exceptional performance in these regards will be given extra credit (up to 0.5%) toward the final grade.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Resources

Student Success Center: Provides Peer Tutoring for students in BMEN 2320.

Academic Support Resources: The information contained in the following link lists the University's academic support resources for all students.

Student Resources: A variety of resources are available to help students to obtain counseling, health care, and academic support.

Student Services & Support: UTD services to support students in and out of the classroom.

Resources for Study and Campus Life: Additional list of resources at UTD.

Accommodations for Students with Disabilities

The University of Texas at Dallas is committed to providing reasonable accommodations for all persons with disabilities. The syllabus is available in alternate formats upon request. If you are seeking classroom accommodations under the Americans with Disabilities Act (2008), you are required to register with the AccessAbility Resource Center (ARC), located in the Administration Building, Suite 2.224. Their phone number is 972-883-2098, email: studentaccess@utdallas.edu and the website is https://accessability.utdallas.edu/. To receive academic accommodations for this class, please register and request services by completing the Request for Services form with the proper documentation and meet with the Director of ARC at the beginning of the semester.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please review the catalog sections regarding the credit/no credit or pass/fail grading option and withdrawal from class.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.