

# **MME 2434 - Mechanics of Materials CRN: 21483 Spring 2023**

## **INSTRUCTIONAL TEAM**

Dr. Brian E. Schuster, PhD  
Associate Professor of Metallurgical, Materials and Biomedical Engineering  
[bschuster@utep.edu](mailto:bschuster@utep.edu), (915) 747-6929

Hernandez Amaya, Mariana  
Teaching Assistant and Grader  
Undergraduate Student in Metallurgical and Materials Engineering  
[mhernandez123@miners.utep.edu](mailto:mhernandez123@miners.utep.edu)

Emilio Loera  
Teaching Assistant (Primary Assignment in Laboratory)  
Doctoral Student in Materials Science and Engineering  
[esloera@utep.edu](mailto:esloera@utep.edu)

## **COURSE DESCRIPTION**

MME 2434 (Mechanics of Materials) is a required 4-credit course (3 hours of lecture and 3 lab hours). The course will begin with a short introduction to mathematical concepts used in statics and mechanics of materials. Three broad topics will be covered in this class: 1) statics, 2) stress and strain (and transformations) and 3) mechanics of materials. In the Statics curriculum, Newtonian mechanics, vectors properties and concurrent vector systems will be introduced. This will progress into applications to concentrated force systems and principles of rigid body equilibrium that are eventually applied to structural systems including trusses, frames and machines. Moving from rigid body systems, stress and strain will be introduced followed by introductory concepts in stress and strain transformations. Finally, concepts in mechanics of materials will be introduced and will be applied to problems in axial load, torsion, bending and shear loading (time permitting).

# MME 2434 - Mechanics of Materials CRN: 21483 Spring 2023

## DAILY SCHEDULE

Day	Time	Description
Mon	11:59 pm	Complete reading assignment and brief assessment on Mastering Engineering
Tues	9:00 am	10-15 minute in class quiz to review concepts and definitions from the prior week
Wed	9:30 am	Instructor Office Hours (2 hours) M302 or virtually on: <a href="#">Zoom Link</a> Alternative times can be scheduled on a case by case basis.
	11:59 pm	Complete reading assignment and brief assessment on Mastering Engineering
Th	1:30 pm	In class problem assignment on Mastering Engineering
	3:00 pm	"Exit Ticket" problem assignment
	4:00 pm	Students dismissed with satisfactory completion of the exit ticket problem. Otherwise, remain in lab for additional review.
Mon	11:59 pm	Weekly Homework assignment is due on Blackboard

## REQUIRED MATERIALS

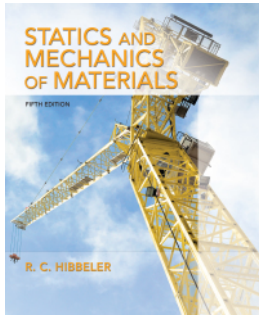
To register for MME 2434 Mechanics of Materials CRN 21483:

1. Go to <https://mlm.pearson.com/enrollment/schuster11050>.
2. Sign in with your Pearson student account or create your account. For Instructors creating a Student account, do not use your instructor credentials.
3. Select any available access option, if asked.
  - Enter a prepaid access code that came with your textbook or from the bookstore.
  - Buy instant access using a credit card or PayPal.
  - **Select Get temporary access without payment for 14 days.**
4. Select Go to my course.
5. Select MME 2434 Mechanics of Materials CRN 21483 from My Courses.

If you contact Pearson Support, give them the course ID: schuster11050

# MME 2434 - Mechanics of Materials CRN: 21483 Spring 2023

## REQUIRED MATERIALS



-TEXTBOOK

**Mastering Engineering Subscription**  
Statics and Mechanics of Materials (5<sup>th</sup> Edition)  
By: Russell C. Hibbeler

Print ISBN: 9780134382593, 0134382595  
eText ISBN: 9780134382869, 0134382862

## ENGINEERING OR GRAPHING PAPER

<https://www.walmart.com/ip/Oxford-Filler-Paper-8-1-2-x-11-4-x-4-Graph-Rule-3-Hole-Punched-Loose-Leaf-Paper-for-3-Ring-Binders-400-Sheets-Per-Pack-62360/944735459>

This particular paper is not required but this is the most cost-effective solution that I have found.

Alternatively, digital engineering paper can be used on a tablet device for homework submission.

## CALCULATORS

This course requires one of the same calculators that are currently being allowed in the Fundamental of Engineering (FE) and Professional Engineering (PE) exams (<https://ncees.org/exams/calculator/>) or a graphing calculator.

# MME 2434 - Mechanics of Materials CRN: 21483 Spring 2023

## COURSE OUTLINE\*

Topic	Chapters	Description
Mathematical Foundations in Statics and Mechanics	1,2,3	Unit Conversions Trigonometry Scalar and Vector Operations Dot Product Cross Product Centroids (Center of Gravity and Distributed Loads) Force Vectors Force System Resultants (Principle of Moments)
<b>Midterm 1: Thursday February 9th, 2023 1:30 pm – 4:20 pm</b> <b>Fundamentals of Vectors, Forces and Moments</b>		

Statics	2 3 4 5	Force Vectors Force System Resultants Equilibrium of a Rigid Body Structural Analysis
<b>Midterm 2: Thursday March 9, 2023 1:30 pm – 4:20 pm</b> <b>Comprehensive Midterm During the Laboratory Session</b>		

Spring Break March 13-17, 2023  
Spring Drop/Withdrawal Deadline: Thursday March 30, 2023

Stress and Strain	6 7  14	Centroid and Moment of Inertia Stress and Strain  Stress and Strain Transformations
<b>Midterm 3: Thursday April 6, 2023 1:30 pm – 4:20 pm</b> <b>Stress, Strain and Transformations</b>		

Mechanics of Materials	8  9 10 11 12	Mechanical Properties of Materials  Axial Load Torsion Beam Bending Transverse Shear
<b>Midterm 4: Thursday May 4, 2023 1:30 pm – 4:20 pm</b> <b>Mechanics of Materials</b>		

**Dead Day Friday May 5, 2023**  
**Comprehensive Final Exam: Tuesday May 9, 2023 10:00 am – 12:45 pm**

\*Midterm Dates are approximate and subject to change. Students will be notified at least one week prior with an in-class announcement.

# MME 2434 - Mechanics of Materials CRN: 21483 Spring 2023

## GRADING

Description	Percentage
Reading Assessments	5%
Laboratory Assignments	5%
Homework	10%
Quizzes	10%
Midterm 1	10%
Midterm 2	15%
Midterm 3	10%
Midterm 4	15%
Final	20%

### Rule of 2!

I will drop the 2 lowest grades on your reading assignments, laboratory assignments, homework and quizzes.

You will lose 50% of the credit for late assignments. If the grade on a particular assignment is the lowest, it will be dropped but no other exceptions will be made. Once a particular assignment has been graded, late submissions will receive a zero.

### GRADED ASSIGNMENTS

The homework will be submitted as a single \*.pdf file with the following name structure:

Lastname\_Firstname\_HW#X\_DUE\_DATE.pdf

The DATE should be in the following format:  
YEAR MONTH DAY of the submission date

Example: Schuster\_Brian\_HW#1\_20210201.pdf

- All homework assignments will be completed on engineering or graphing paper (digital is acceptable)
- You must clearly state what is given in the problem and the unknown variables that you will solve for. You need to appropriately indicate if these are vector or scalar values.
- You must include a drawing of the free body diagram for the problem and indicate the sense of the vectors in your system
- You will include the system or systems of equations used to solve the problem
- You need to clearly highlight or outline your final answer in significant digits.

## **MME 2434 - Mechanics of Materials CRN: 21483 Spring 2023**

- Written homework assignments must be submitted through high quality digital scans. Poor quality/resolution scans will be rejected.
- Homework completed on a tablet (digitally) will use 8.5" x 11" graphing paper formatting.

# MME 2434 - Mechanics of Materials CRN: 21483 Spring 2023

## TECHNOLOGY REQUIREMENTS

Homework, reading assessments and laboratory assignments will be submitted using the Blackboard learning management system. Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Please test your preferred internet browser to ensure full compatibility with Blackboard and Blackboard Collaboration Ultra. Please reach out to the UTEP Helpdesk and Instructional Team early in first week of the semester if you have any technical difficulties.

You will need to have access to a computer/laptop, scanner, a webcam, and a microphone. IF YOU DO NOT HAVE A SCANNER, YOU CAN OPT FOR APPS LIKE CAMSCANNER TO SCAN YOUR WORK. You will require access to Adobe Acrobat Reader and Microsoft Office or [Microsoft Office 365](#). Check that your computer hardware and software are up-to-date and able to access all parts of the course.

IMPORTANT: If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP [Help Desk](#) as they are trained specifically in assisting with technological needs of students. Please do not contact me for this type of assistance. The Help Desk is much better equipped than your Instructional Team!

## EXCUSED ABSENCES AND/OR COURSE DROP POLICY

According to UTEP Curriculum and Classroom Policies, “When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor may drop the student from the class with a grade of “W” before the course drop deadline and with a grade of “F” after the course drop deadline.” See academic regulations in the UTEP Undergraduate Catalog for a list of excuse absences. Therefore, if I find that, due to non-performance in the course, you are at risk of failing, I will drop you from the course. I will provide 24 hours advance notice via email.

OR

I will not drop you from the course. However, if you feel that you are unable to complete the course successfully, please let me know and then contact the [Registrar's Office](#) to initiate the drop process. If you do not, you are at risk of receiving an “F” for the course.

## DEADLINES, LATE WORK, AND ABSENCE POLICY

See the weekly announcements on Blackboard for the due date and time for your homework assignments, quizzes and other coursework.

Make-up work will be given *only* in the case of a *documented* emergency. Note that make-up work may be in a different format than the original work, may require more intensive preparation, and may be graded with penalty points. If you miss an assignment and the reason is not considered excusable, you will receive a zero. You will lose 50% off of late assignments. Once these the assignments for the rest of the class have been graded, then you will be assigned a zero for that assignment. It is therefore important to reach out to me—in advance if at all possible—and explain with proper documentation why you missed a given course requirement.

# **MME 2434 - Mechanics of Materials CRN: 21483 Spring 2023**

Once a deadline has been established for make-up work, no further extensions or exceptions will be granted.

Give yourself plenty of time to submit your coursework to avoid technical issues near deadlines.

## **INCOMPLETE GRADE POLICY**

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

## **ACCOMMODATIONS POLICY**

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services](#) (CASS).

Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at [cass@utep.edu](mailto:cass@utep.edu), or apply for accommodations online via the [CASS portal](#).

## **SCHOLASTIC INTEGRITY**

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#) for possible disciplinary action. To learn more, please visit [HOOP: Student Conduct and Discipline](#).

## **CLASS RECORDINGS**

In the event that virtual courses are used in this class (not presently planned but could be exercised depending upon the course of the pandemic), the use of recordings will enable you to have access to class lectures, group discussions, and so on in the event you miss a synchronous or in-person class meeting due to illness or other extenuating circumstance. Our use of such technology is governed by the Federal Educational Rights and Privacy Act (FERPA) and UTEP's acceptable-use policy. A recording of class sessions will be kept and stored by UTEP, in accordance with FERPA and UTEP policies. Your instructor will not share the recordings of your class activities outside of course participants, which include your fellow students, teaching



# MME 2434 - Mechanics of Materials CRN: 21483 Spring 2023

assistants, or graduate assistants, and any guest faculty or community-based learning partners with whom we may engage during a class session. **You may not share recordings outside of this course.** Doing so may result in disciplinary action.

## COPYRIGHT STATEMENT FOR COURSE MATERIALS

All materials used in this course are protected by copyright law. The course materials are only for the use of students currently enrolled in this course and only for the purpose of this course. They may not be further disseminated.

## COVID-19 ACCOMMODATIONS

Students are not permitted on campus when they have a positive COVID-19 test, exposure or symptoms. If you are not permitted on campus, you should contact me as soon as possible so we can arrange necessary and appropriate accommodations.

**(classes with on-campus meetings)** Students who are considered high risk according to CDC guidelines and/or those who live with individuals who are considered high risk may contact [Center for Accommodations and Support Services](#) (CASS) to discuss temporary accommodations for on-campus courses and activities.

## COVID-19 PRECAUTIONS

You must STAY AT HOME and REPORT if you (1) have been diagnosed with COVID-19, (2) are experiencing COVID-19 symptoms, or (3) have had recent contact with a person who has received a positive coronavirus test. Reports should be made at [screening.utep.edu](#). If you know of anyone who should report any of these three criteria, you should encourage them to report. If the individual cannot report, you can report on their behalf by sending an email to [COVIDaction@utep.edu](mailto:COVIDaction@utep.edu).

For each day that you attend campus—for any reason—you must complete the questions on the UTEP screening website ([screening.utep.edu](#)) prior to arriving on campus. The website will verify if you are permitted to come to campus. Under no circumstances should anyone come to class when feeling ill or exhibiting any of the known COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, and alternative instruction will be provided. Students are advised to minimize the number of encounters with others to avoid infection.

Wear face coverings when in common areas of campus or when others are present. You must wear a face covering over your nose and mouth at all times in this class. If you choose not to wear a face covering, you may not enter the classroom. If you remove your face covering, you will be asked to put it on or leave the classroom. Students who refuse to wear a face covering and follow preventive COVID-19 guidelines will be dismissed from the class and will be subject to disciplinary action according to Section 1.2.3 *Health and Safety* and Section 1.2.2.5 Disruptions in the UTEP Handbook of Operating Procedures.