

THE UNIVERSITY OF TEXAS RIO GRANDE VALLEY
College of Engineering and Computer Science
Department of Mechanical Engineering

MECE 2140: Materials Laboratory – Fall 2019

Room: ENGR 1.412/1.420

Section	Day - Time	Instructor	Instructor Email	Office
03	Wednesday 2:00 PM–4:40 PM	Marcos Villarreal, MSE	marcos.villarreal02@utrgv.edu	EPOB 1.103b
01R	Thursday 2:00 PM–4:40 PM	Marcos Villarreal, MSE	marcos.villarreal02@utrgv.edu	EPOB 1.103b
04	Friday 7:50 AM–10:30 AM	Misael Martinez, MSE	misael.e.martinez01@utrgv.edu	EPOB 1.103d
05	Friday 10:40 AM–1:20 PM	Misael Martinez, MSE	misael.e.martinez01@utrgv.edu	EPOB 1.103d
06	Friday 1:30 PM–4:10 PM	Lawrence Cano, MSE	lawrence.cano@utrgv.edu	EENGR 3.247

Pre/Co-requisites: “C” or better in CHEM 1309 **and** 1109 (Chemistry for Engineers & lab)
Credit for or enrolled in MECE 2340

Catalog Description: This course will give you an exposure of a typical industrial experience as faced by an engineer on a daily basis. It will develop your skills to solve engineering problems using typical equipment an engineer uses on a daily basis. Communication, teamwork, application of scientific principles, and familiarity with industrial standards are key concepts an engineer must build as early as possible. This course will help you build these strengths. To help you improve these skills in these areas, this class will require you to participate, record, and present the results of several engineering experiments with specific focus on materials. You will understand the differences between various metals, plastics, ceramics, and composites and their applicability in various design environments. You will familiarize yourself with various tools to characterize these varied materials and means to improve their characteristics to suit a specific engineering need.

Course Outcomes and Assessment: The student should be able to

1. Understand the basis for common material behaviors.
2. Perform and utilize general techniques of measurement.
3. Perform basic statistical analysis.
4. Write technical memos or technical laboratory reports.
5. Read, interpret, and apply industrial or voluntary standards.
6. Function in a single or multi-disciplinary team.
7. Adhere to basic laboratory safety guidelines.
8. Record information in a technical laboratory notebook.

Text: Laboratory procedures printout

References: Appropriate references will be identified as needed.

Equipment: Permanently bound lab notebook with gridded pages
Safety glasses
Appropriate lab clothing

Grades:

Written Reports	50%
Final Project	25%
Lab Notebook	15%
Quizzes	10%

- Written Reports
 - Written reports and memos that follow the given formats on pages 6-11 of the Materials Lab Laboratory Procedures will be graded using the rubrics found at <http://faculty.utrgv.edu/samantha.ramirez/MECE2140.htm>.
 - You will submit written reports or memos in Blackboard by the due dates given in the course calendar. Written reports submitted after the due date will have the score reduced by 20 points per day. Lab reports submitted more than 5 weekdays late will not be accepted for credit. You will receive a 0 for that written report. **NO EXCEPTIONS.**
- Final Project
 - You will have a final **group PowerPoint presentation** of a research project approved by your professor on **Thursday, December 5, 2019.**
 - You will submit a project proposal to your instructor the **week of October 28, 2019.**
 - See Unit 5 of Materials Lab Laboratory Procedures.
- Lab Notebook
 - You are required to get your daily lab notebook signed by your instructor after the completion of each lab. If you forget your notebook, you will not receive credit for that week.
- Quizzes
 - You will be taking a quiz for each rotation before the rotation begins. See Blackboard for due dates and times.

Attendance

- Attendance will be taken every time the class meets. Any student arriving to class after roll call will be counted as absent. Students will be allowed a maximum of 1 absence for the whole semester. Any student with more than 1 absence will be dropped from the class.
- Absences must be cleared with your instructor prior to missing class. Exceptions are only for extreme emergencies.
- If you are absent **and** it is excused, you must make up the lab you missed. Labs will not be performed again once the rotation has finished. No exceptions.
- If you arrive to class after roll has been called, you will lose 5 points on your lab notebook entry for the day. FYI: daily lab notebook entries are only worth 10 points.

- Students **will not** be permitted to leave the classroom during lab except for **extreme emergencies** or permission from the instructor.
- Students will remain with their group and at their lab experiment station at all times.

Course Calendar

Unit 1: Introduction	Friday 09/06/2019 11:59 PM
Introduction Laboratory	Group Lab Report
General Safety Practices	

Unit 2: Engineering Characterization of Metals	Friday 10/04/2019 11:59 PM
Part A: Determining Case Depth	Memo
Part B: Tensile Properties of Metals	Graphs
Part C: Analysis of Failing Steel Bolts	Memo
Part D: Identifying the Impact Transition Temperature	Memo

Unit 3: Thermal Analysis of Materials	Friday, 11/01/2019 11:59PM
Part A: Cure Optimization of Thermosetting Adhesives	Memo
Part B: Jominy Test for Comparing the Heat Treatability of Steel	Memo
Part C: Creep Testing of Polymers	Memo
Part D: Construction of a Phase Diagram	Memo

Unit 4: Engineering Characterization of Polymers	Friday, 11/15/2019 11:59PM
Part A: Rate Dependence of Thermoplastic Polymers	Combined Lab Report
Part B: Impact Testing of Thermoplastic Polymers	

Unit 5: Final Research Project & Presentation	Thursday, 12/05/2019 9AM-4PM
	Presentation Slides
	Lab Report in Blackboard*

*Your instructor will determine whether you will need to submit a lab report or technical memo for the final project.

Note:

- There will be teams with 3 – 5 students in each group.
- Units 1 will be done simultaneously by all groups.
- Units 2, 3, & 4 will be rotated among various groups.
- Final research project will be decided by each team with the approval of the professor
 - Students are allowed to come to the lab with prior arrangements with the professor and/or lab assistant.

Scholastic Integrity:

As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism, and collusion; submission for credit of any work or materials that are attributable

in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

Drop Policy:

Students can withdraw from a course through the *Office of the Registrar* on or prior to:

- September 11, 2019, Wednesday: Last day to drop a class before it appears on the transcript and counts toward the “6-drop” limit.
- November 13, 2019, Wednesday: Drop/Withdrawal Deadline; last day for students to drop the course and receive a “DR” grade. After this date, students will be assigned a letter grade for the course that will count on the GPA.

Course Drops:

According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the “3-peat rule” and the “6-drop” rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.

Students with Disabilities:

If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. **Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at accessibility@utrgv.edu. **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at accessibility@utrgv.edu.

Sexual Harassment, Discrimination, and Violence:

In accordance with UT System regulations, your instructor is a “responsible employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which

she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free from sexual misconduct and discrimination.

Course Evaluation:

Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (<http://my.utrgv.edu>); you will be contacted through email with further instructions. Online evaluations will be available November 14, 2019 – December 4, 2019. Students who complete their evaluations will have priority access to their grades.