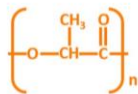
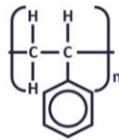
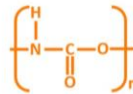
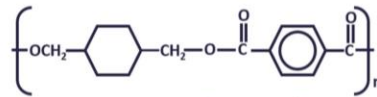
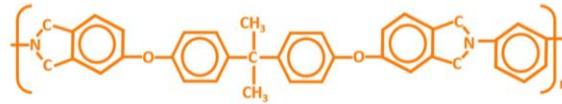


# MME 4310/5390 Polymer Engineering (ONLINE)

CRN: 18698/17052

Fall 2020



**Instructor: David A. Roberson, Ph.D., [droberson@utep.edu](mailto:droberson@utep.edu)**

**Virtual Office Hours: TBD**

**T.A.: Truman Word, [tjword@miners.utep.edu](mailto:tjword@miners.utep.edu)**

**Diego Bermudez, [dbermudez2@miners.utep.edu](mailto:dbermudez2@miners.utep.edu)**

## **COURSE DESCRIPTION**

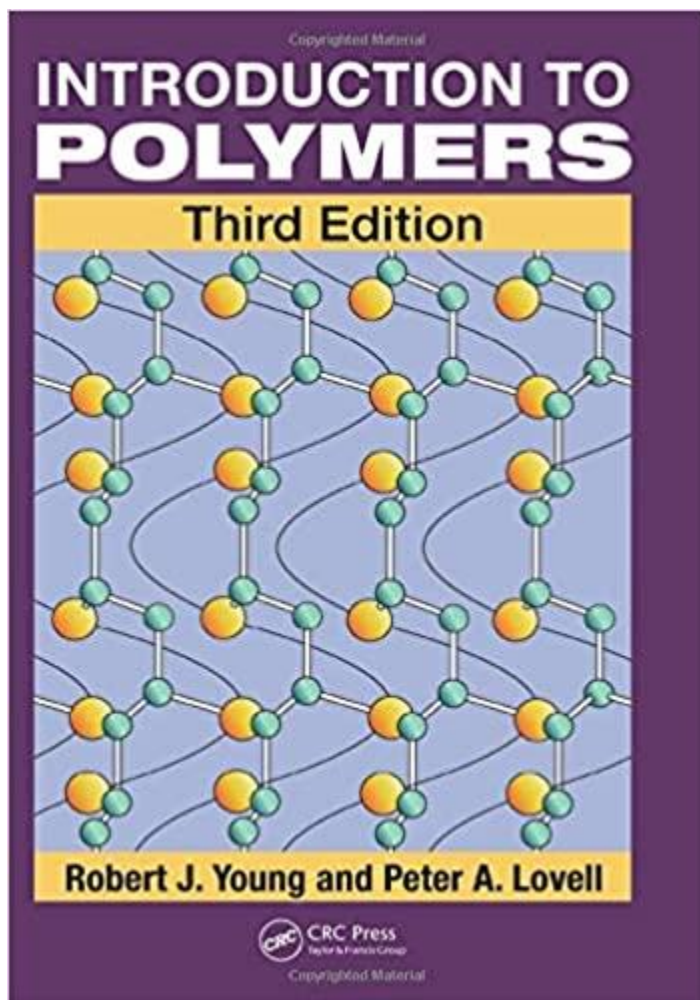
MME 4310 is an elective course for the MME program. This course is intended to provide students with a general overview of the use of polymeric materials by our society. There will be a strong focus on thermoplastics as this is the category of polymers most commonly used. We will also touch upon additional topics such as shape memory polymers, polymer failure analysis, and polymer degradation.

## **COURSE OBJECTIVES OR EXPECTED LEARNING OUTCOMES**

After completing this course, students will be able to:

- Explain the differences between polymer types
- Associate polymer structure with mechanical properties
- Define the types of polymer processing methods
- Understand the concept of crystallinity in polymers
- Interpret polymer property data from characterization equipment such as dynamic mechanical analysis
- Articulate the meaning of polymer fracture surface features

**RECOMMENDED TEXT:**



ISBN-13: 978-0849339295

[SEE THIS BOOK ON AMAZON](#)

You will also need regular access to a computer, stable, consistent internet, Blackboard, a UTEP VPN connection and your UTEP email account.

Several articles will also be used in this class. They should be accessible through UTEP VPN.

**COURSE ASSIGNMENTS AND GRADING**

Assignments for this course are assessed according to a designated Grading Rubric with crucial information that could affect your grade for each activity. You can find these rubrics by clicking on the appropriate assignment link in Blackboard and choosing to “View Rubric” from the button beneath the Points Possible for the assignment.

### Grade Distribution:

100-90 = A      89-80 = B      79-70 = C      69-60 = D      59 and Below = F

○ Discussion Board	10%
○ Group Activities	20%
○ Quizzes	20%
○ Tests	20%
○ Final Project	20%

### DISTRIBUTION OF COURSE MATERIALS

This course is intended to be handled in an asynchronous and online format. Materials other than those found in the textbook will be distributed Tuesday and Thursday of each week. Materials will be distributed through Blackboard.

### COURSE CALENDAR

A detailed calendar for this course is provided as a separate document on Blackboard titled “**MME 4310 Course Calendar.**” A brief outline is below:

#### Tentative course outline:

1. Introduction to polymers
2. Organic Chemistry Basics
3. **The Basics:** Nomenclature, basic polymeric structure
4. Polymerization
  - a. Crosslinking example
5. Polymer bending
  - a. Examples of thermoplastic blending
6. Polymer rheology
  - a. Melt Flow Index example
7. Thermoplastic composites
  - a. Sustainable composite example
8. Polymer Processing
9. Polymer Additive Manufacturing Processes
  - a. Melt Extrusion
  - b. Stereolithography
  - c. Selective Laser Sintering
10. Mechanical properties
  - a. Rubber toughening example
  - b. Crystallinity example
11. Failure analysis
  - a. Characteristics of static load
  - b. Characteristics of cyclic load
  - c. Differences from metallic failure
12. Shape memory polymers
  - a. Shape memory polymer example
13. Environmental Impact of Polymers

## **Discussion Board**

Participation: for this online course, students will be required to participate in weekly discussion boards – both an initial post and responses to your peers. Initial posts must be no less than 100 words while responses can be no less than 50 words. Proper internet etiquette (NETIQUETTE) must be adhered to at all times. Failure to follow netiquette will result in at minimum not receiving credit for that week’s discussion board. Further details pertaining to netiquette are found in the aptly titled section below. Participation in the discussion board will account for 10% of your total grade.

## **ATTENDANCE POLICY**

Due to the fact that this is an online course, attendance is determined by class participation online. Participation is determined by completion of the following activities:

- Reading/Viewing all course materials to ensure understanding of assignment requirements
- Participating in engaging discussion with your peers on the Discussion Boards (grading rubric provided in the “grading information” area of each forum)
- Completing all Module Activities (assignments, quizzes, etc.)
- Completing all Major Assignments

## **TECHNOLOGY REQUIREMENTS**

Content for this course is delivered via the Internet through the Blackboard learning management system (LMS). Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Mozilla Firefox and Google Chrome are the most supported browsers for Blackboard; other browsers may cause complications with the LMS. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

You will need to have or have access to a computer/laptop. You will need to download or update the following software: Microsoft Office, Adobe, Flashplayer, Windows Media Player, QuickTime, and Java. Check that your computer hardware and software are up-to-date and able to access all parts of the course.

If you encounter technical difficulties beyond your scope of troubleshooting, please contact the [Help Desk](#) as they are trained specifically in assisting with technological needs of students.

## **NETIQUETTE**

- Always consider the audience. Remember that members of the class and the instructor will be reading any postings.

- Respect and courtesy must be provided to classmates and to instructor at all times. **No harassment or inappropriate postings will be tolerated.** Instances of harassment may be subject to referral to the Dean of Students.
- When reacting to someone else’s message, address the ideas, not the person. Post only what anyone would comfortably state in a face to face situation.
- The subject matter of the posts and responses should pertain only to the assigned topic. Please use technical and appropriate language. Do not use slang or curse words in your posts. Write as if you were an engineer in a professional setting.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space. If students wish to do so, they have the ethical obligation to first request the permission of the writer(s).

## **LATE WORK POLICY**

### Discussion Board

- Discussion Board assignments will be due on Sundays at midnight (11:59 PM). No late work will be accepted.

### Group Assignments

- Group assignments will be due at Midnight the day indicated on the assignment. No late work will be accepted.

## **DROP POLICY**

In order to drop this class, please contact the [Registrar’s Office](#) to initiate the drop process. If you cannot complete this course for whatever reason, please contact me. If you do not, you are at risk of receiving an “F” for the course. **The drop deadline for the Fall 2020 semester is October 30.**

## **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](#).

## **SCHOLASTIC INTEGRITY**

***Cheating, Plagiarism, Scholastic Dishonesty, and Student Discipline***

Students who engage in scholastic dishonesty will be subject to disciplinary action as stated in the UTEP-HoOP:

“Scholastic dishonesty (which includes the attempt of any student to present the work of another as his or her own, or any work which s(he) has not honestly performed, or attempting to pass any examination by improper means) is a serious offense and will subject the student to disciplinary action. The aiding and abetting of a student in any dishonesty is held to be an equally serious offense. All alleged acts of scholastic dishonesty should be reported to the Dean of Students for disposition. It is the Dean of Students’ responsibility to investigate each allegation, dismiss the allegation, or proceed with disciplinary action in a manner which provides the accused student his or her rights of due process.”

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 [HOOP: Student Conduct and Discipline](#).

## STUDENT RESOURCES

UTEP provides a variety of student services and support:

- [UTEP Library](#): Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- [Help Desk](#): Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.
- [University Writing Center \(UWC\)](#): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
- [Math Tutoring Center \(MaRCS\)](#): Ask a tutor for help and explore other available math resources.
- [History Tutoring Center \(HTC\)](#): Receive assistance with writing history papers, get help from a tutor and explore other history resources.
- [Military Student Success Center](#): UTEP welcomes military-affiliated students to its degree programs, and the Military Student Success Center and its dedicated staff (many of whom are veterans and students themselves) are here to help personnel in any branch of service to reach their educational goals.
- [RefWorks](#): A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide.