



CHM 5450

Polymer Chemistry

Fall 2016 Syllabus

Instructor: Dr. Mohammed Daoudi

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Office hours: Tu: 4:30 - 5:30 p.m.
We+Th 10:00 - 11:30 a.m.

Course: CHM 5450 #91720 SecC001 3 Units

Lecture: Thursday 6:00 - 8:50 p.m. BA1 0213

Textbook: *Polymer Chemistry, An introduction, 3rd Edition, Malcom P. Stevens*, Oxford University Press, ISBN: 0-19-512444-6

Reference Books

- Principles of Polymer Chemistry, P. J. Flory, Cornell Univ. Press, 1953.
- An Introduction to Polymer Science, H. G. Elias, Wiley 1996.
- Contemporary Polymer Chemistry, 2nd edition, H. R. Allcock and F. W. Lampe, Prentice Hall, 1990.
- Introduction to Polymers, 2nd edition, by R. J. Young and P. A. Lovell, Chapman and Hall (1991).
- Textbook of Polymer Science, 3rd ed, F. W. Billmeyer, Interscience, 1984.
- Principles of Polymerization, 3rd ed, G. Odian, Wiley, 1991.
- Polymer Chemistry, B. Vollmert, Springer-Verlag, 1973.
- Introduction to Polymer Chemistry, J. K. Stille, Wiley, 1962.
- Fundamental Principles of Polymeric Materials, 2nd ed, S. L. Rosen, Wiley, 1993.
- Polymer Chemistry: An Introduction, C. E. Carraher and R. B. Seymour, Marcel Dekker, 1987.
- Polymer Chemistry - The Basic Concepts, P. C. Hiemenz, Marcel Dekker, 1984.
- Principles of Polymer Chemistry, A. Ravve, Plenum, 1995.
- Encyclopedia of Polymer Science, Wiley, 1987.
- Polymer Handbook, 3rd ed, J. Brandrup and E. H. Immergut, eds, Wiley, 1989.

Polymer Journals

- Macromolecules
- Journal of Polymer Science
 - Polymer Chemistry Edition
 - Polymer Letters
 - Macromolecular Reviews
 - Polymer Symposia
- Journal of Macromolecular Science
 - Chemistry
 - Reviews in Macromolecular Chemistry
- Polymer International
- International Polymer Journal
- Polymer
- Polymer Communications
- Polymer Bulletin
- Journal of Applied Polymer Science
- Chemtracts: Polymer Science
- Trends in Polymer Science
- Advances in Polymer Science

Course Description

This course introduces you to polymer chemistry. The main focus will be on basic polymer chemistry concepts. It covers polymerization reactions (step growth, free radical, ionic, coordination), kinetics and thermodynamics of polymerization, and techniques of polymerization. Polymer structure/property relationship, polymer characterization, and polymer application will be emphasized.

Prerequisites

CHM 2211 or equivalent and graduate status or senior standing.

Objectives

By the end of this course, you should be able to:

- Identify different types of polymers in your surroundings.
- Explain the difference between the kinetics of chain growth polymerization and step growth polymerization
- Develop an understanding of how to control polymer properties with polymer structure and morphology
- Obtain knowledge of the relationships between polymer structure and physical properties.
- Discuss and predict physical properties of polymers.
- Understand the fundamental concepts of basic modern techniques used to characterize the chemical and physical properties of polymers.
- Learn the mechanisms of polymer synthesis and its effect on configuration, molecular weight, and properties.

Evaluation and Grading

Your final grade for this course will be computed using the following data:

Midterm Exam	25%
Class Participation	10%
Presentation	25%
Final exam	30%
Homework	10%
Total	100%

I will adopt the following grading scale:

A: 93-100 % A-: 90-92 % B+: 85-89 % B: 80-84 %
C+: 75 -79% C: 70 -74% D: 60-70% F: ≤ 59 %

Grades for this course will be posted on WebCourses@UCF. You may access your scores at any time through <https://webcourses.ucf.edu>.

Student Presentation

A part of this course is to write a report about a common polymer (ie. PE) and give a PowerPoint presentation to the class at the end of the semester. This activity involves selecting a new paper (preferably 5 years old or less) from the above journals. In addition to the paper topic, the presentation should include information about the polymer's physical and chemical properties, applications, syntheses. The length of the presentation will be approximately 20 minutes. The presentation is followed by 10 minutes for questions from the audience. You need to choose a polymer to investigate before 10/16/16. I will prepare a schedule after receiving your topics.

Classroom Response System (i-clicker REEF Polling)

I'll be using i-clicker response system. i-clicker is a response system that allows you to respond to questions I pose during class. This technology is used to create an interactive learning environment, get feedback, and record class participation.

You will need online access to REEF (approximately \$10) which will allow you to create and access your REEF Polling account.

With the REEF system, you may use any i-clicker pad or any mobile devices (laptop, smartphone or tablet).

Instructions for REEF Polling by i>clicker

To create a REEF Polling by i>clicker account, visit appreef-education.com or download the app for [iOS](#). Creating an account automatically starts a free 14-day trial subscription. **Please use this trial period to make sure REEF Polling will work for all of your i>clicker classes before purchasing a subscription as it is not possible to receive a refund after your purchase a subscription.** Once you create your REEF Polling account, be sure that you've added your Student ID to your profile to complete the registration process.

At the end of your trial, should you decide to purchase REEF Polling, you can purchase access to REEF Polling in a variety of subscription lengths using your credit card online or through in-app purchase with your smartphone; this subscription includes an unlimited number of courses.

If you have more questions on i>clicker registration, please visit <http://supporticlicker.com> for FAQs and other resources.

Webcourses@UCF

CHM 5450 is a face-to-face course. I use Webcourses@UCF, <https://webcoursesucf.edu>, to enhance the face-to-face environment. Syllabus, announcements concerning the course, grades, links, etc. are posted on Webcourses@UCF.

Attendance Policy

You should make every effort to attend lecture classes and comply with the examination schedule outlined in this syllabus. You are expected to attend and participate in each session.

You are responsible for all announcements made during lectures and/or through electronic communications (i.e. Webcourses@UCF announcements, email)

Classroom Conduct

I want to promote an environment that allows everyone to benefit from this course. To attain this goal, each of us should respect the rights of everyone else. The following are some behaviors that are **not allowed** in this class.

- **No phone conversation, texting and/or messaging in classroom.**
- Laptops, tablets, and other mobile devices should be used *only for educational purpose*
- If you arrive late to class, be quiet as you enter the room.

Email Communication:

All class email should be done through Webcourses@ucf (Inbox) and use your Knights email

I usually check my email at least twice per day. However, allow 2-3 days to get your email answered.

Withdrawal

If you wish to withdraw from the course you must do so by **Monday, October 31, 2016, 11:59 pm** to receive a W. In case you do not withdraw from the class and do not show up, you will receive an F grade.

Disability Accommodations

If you need academic accommodations, such as private testing, interpreters, note takers, etc., please contact the Students Accessibility Services (SAS) in Room 132, ☎ 407-823-2371, <http://sdssdesucf.edu>. This office will then notify me, in writing, of the need for an accommodation. No accommodations will be provided until SAS notifies me.

Academic Integrity/Plagiarism

"Plagiarism and Cheating of any kind on an examination, quiz, or assignment will result at least in an "F" for that assignment (and may, depending on the severity of the case, lead to an "F" for the entire course) and may be subject to appropriate referral to the Office of Student Conduct for further action. See the UCF Golden Rule for further information. I will assume for this course that you will adhere to the academic creed of this University and will maintain the highest standards of academic integrity. In other words, don't cheat by giving answers to others or taking them from anyone else. I will also adhere to the highest standards of academic integrity, so please do not ask me to change (or expect me to change) your grade illegitimately or to bend or break rules for one person that will not apply to everyone".

Tentative Class Schedule

The following schedule is tentative and may not be followed exactly. You are expected to prepare for each lecture by reading the assigned material in advance.

Date	Testing/Activity	Lecture
08/25/16		Chapter 01: Basic Principles
09/01/16		Chapter 02: Molecular Weight
09/08/16		Chapter 03: Structure and Morphology
09/15/16		Chapter 04: Structure and Properties
09/22/16		Chapter 05: Characterization and Analysis
09/29/16		Chapter 06: Free Radical Polymerization
10/06/16	Midterm Exam	<i>Chapter 07: Ionic Polymerization</i>
10/13/16		Chapter 08: Coordination Polymerization
10/20/16		Chapter 09: Polymers Reactions
10/27/16		Chapter 10: Step-Reaction Polymerization
11/03/16	Students Presentation	
11/10/16	Students Presentation	
11/17/16	Students Presentation	
11/24/16		Thanksgiving (No Class)
12/01/16	Students Presentation	
12/08/2016	Final Exam	<i>7:00-9:50 pm</i>

The instructor reserves the right to modify the schedule, the testing procedure, and the grading basis if, in the professional judgment of instructor, such modification is in the best interest of fulfilling the course objectives and assuring the academic integrity of the course and the institution.