

Chem 562/Chem 466: Polymer Chemistry II: Polymer Synthesis (Winter, 2013-2014)

Course Description 562/466: Covers chain growth polymerization (free radical, ionic, coordination), kinetics of chain growth polymerization, thermodynamics of polymerization, techniques of polymerization, glass transition, viscoelastic behavior of polymers, time-temperature correspondence, rubber elasticity.

Restrictions for 466: May not be enrolled in one of the following Program Level(s):

Continuing Education, Freshman **Pre-Requisites:** CHEM 242 Minimum Grade: D; CHEM 252(1) Minimum Grades D.

Restrictions for 562: Must be enrolled in one of the following Program Level(s): Graduate Quarter

Required Textbook: Allcock/Lampe/Mark, "Contemporary Polymer Chemistry, 3rd Ed, Prentice-Hall, 2003.

Instructor: Prof. Lynn S. Penn, 223 Disque; 1-215-895-4970

Meeting Times/Locations: Thursday 6:00 -9:00 pm; Curtis 231

Course Objectives:

- (1) Be able to select from a large list those monomers that can be polymerized by a chain growth mechanism
- (2) Be able to explain in detail the qualitative difference between the kinetics of chain growth polymerization and step growth polymerization
- (3) Be able to name the conditions (solvents, catalysts, initiators, co-catalysts) applicable to free radical, cationic, anionic, and coordination polymerization modes.
- (4) Be able to evaluate, given data, which polymerizations will proceed and which will not.
- (5) Be able to solve problems using mathematical descriptions of physical models of polymers of different viscoelastic characters.
- (6) Be able to reason how to change the temperature to promote, and to delay, polymer relaxation, respectively.

Grading Components: There will be two mid-term exams (dates to be announced) and a final exam. The midterms will be averaged together and will count 60% of the grade. The final will count 40% of the grade. There will be no make-up exams. A zero will be given for a missed exam, unless a valid and official excuse is provided (subpoena to appear in court, copy of arrest warrant, certification of military duty for date of exam, signed physician's note which will be verified by me, etc.). Anyone who misses a midterm *with* a valid excuse, the single midterm and the final will each count 50%. For anyone who misses a midterm, there will be no make-up, and the single midterm and the final will each count 50%. The final will be scheduled as per the university final exam calendar, which appears well after the term has started. There will be NO make-up final, so do not make any plans that could interfere with your taking the final. For graduate students, of whom more is required in the course, an additional course component will be announced. If deemed necessary for students' learning, instructor may add out-of-class assignments that will give extra credit to final grade. Note that attendance in class is not taken, but you are responsible for all the material presented or assigned. Classroom rules are as follows: **Texting and/or use of cell phones or listening devices of any kind is not permitted; cell phones must be off, and students cannot leave and re-enter the room to take calls. Five points will be deducted from the *final* grade of any student who violates these rules.**

Grading policy:

A+ = above 96, A = 92 to 96, A- = 88 to 92,
B+ = 84 to 88, B = 80 to 84, B- = 76 to 80,
C+ = 70 to 76, C = 64 to 70, C- = 58 to 64,
D+ = 54 to 58, D = 50 to 54,
F = below 50.

Academic policies:

Plagiarism, cheating, fabrication and other acts of academic misconduct will not be tolerated. Any cheating during an exam will result in a score of zero for the exam. This offense, as well as more serious or repeated offenses, may be reported to the University. For more information, see material in "academic dishonesty" under the "academic policies" tab at the following link: http://drexel.edu/studentaffairs/community_standards/studentHandbook/

Students with disabilities should see material under the "health and disability services" tab at the following link:

http://drexel.edu/studentaffairs/community_standards/studentHandbook/

Drop/withdraw is at the following link: http://www.drexel.edu/provost/policies/course_drop.asp