CHEM/CHBE/MSE 6757
Fall 2022

Molecular Sciences and Engineering 1224

Advanced Polymer Chemistry

Professor John R. Reynolds
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Fall 2022 T, Th 12:30 p.m. to 1:45 p.m.

Text: *Principles of Polymerization* by George Odian (4th Edition)

Lectures: This course will address advanced topics in synthetic polymerization methodology, polymer structure, and polymer properties in solution and the solid state. Based on prerequisites of a fundamental background in synthetic and physical polymer chemistry, concepts will be extended to recent scientific and application developments in the literature. Example topics include copolymerization and sequence control, living radical polymerizations, olefin polymerization, metal mediated coupling polymerizations, reactions on polymers, branched polymers, polymer nanocomposites, marine anti-fouling coatings, recycling and bio-degradation of polymers, photo- and electroactive polymers. Select topics will be presented by guest lecturers.

Pre-Requisites: Students should be familiar with the basic concepts of synthetic and physical polymer chemistry. Questions on this should be directed to the instructor.

Readings: Homework reading assignments made for reading specific portions of the text and material from outside sources will be "fair game" on exams.

Course Format: This course will feature in person lectures from the course instructor and a special set of contributing Georgia Tech faculty and contributing scientists. All course-related communication, including any changes, will be via Canvas. Attendance for scheduled in-person sessions is highly encouraged. Participation during lectures is an important component of the learning experience. Students should be prepared for in-class questions addressing pre-assigned readings and lecture concepts. All lectures will be recorded during class and made available via Canvas after the class period. Office hours will be held in MoSE 2120B and in open spaces as possible.

Grading: Grading will be based on a total point system with points accumulated from two mid-terms (in class) and one final exam (take home). The mid-terms will be closed notes and closed book. The final exam will be open notes, open book, and open internet. Students will work independently on these exams getting help from no other classmates or people. Approximate standing during the course can be obtained by private discussion with the instructor.

Exams: Exams will be worth 100 points each. Dates for the exams are:

Exam 1 – In class on Thursday, September 29.

Exam 2 - In class on Thursday, November 3.

Final Exam - Take home final exam delivered to students on Thursday, December 8. Due date is Monday, December 12 at 12:00 midnight.

(The final will be comprehensive but will still be worth 100 points.)

Important Note – A 10 point penalty (10 percent) will be levied for each 24 hours that the final exam is late.

Office Hours: Tuesdays, 3:00 p.m.- 4:00 p.m. in MoSE 2120B, and by appointment. Contact via e-mail at Reynolds@chemistry.gatech.edu (subject line – Advanced Polymer Chemistry 6757)

Disability Services: The Office of Disability Services is committed to providing guidance and resources for students with disabilities during this time. If you have a question about your accommodations or other accessibility matters, the office will be operating normal business hours. Virtual appointments are available. Contact the Office of Disability Services at 404-894-2563 and 404-894-1664 and https://disabilityservices.gatech.edu/

Academic Honesty: Students are expected to adhere to the Georgia Tech honor code during all aspects of this course (see https://osi.gatech.edu/students/honor-code for details). For more on Student-Faculty expectations, see http://catalog.gatech.edu/rules/22/