

## MSE404 – Polymer Synthesis

Fall 2017

### Course Description:

The main goals of the course are 1) to introduce and provide hands-on experience with the various lab techniques involved in polymer characterization, 2) to hone your scientific writing skills, and 3) to make connections between textbook learning and experiment.

### Instructor:

Dr. Nathan Gabrielson  
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Office: 209 Ceramics

### Teaching Assistant:

TBA  
Email: TBA

### Course Text:

There is no required textbook for the class. Instead, the lab experiments will be described on separate handouts. Electronic copies of readings and book chapters will be provided throughout the semester. Supplementary information can also be found online:

Saldivar-Guerra, E.; Vivaldo-Lima, E. Handbook of Polymer Synthesis, Characterization, and Processing. Wiley, 2013. (<http://onlinelibrary.wiley.com/book/10.1002/9781118480793>)

Sperling, L. H. Introduction to Physical Polymer Science. Wiley, 2005.  
(<http://onlinelibrary.wiley.com/book/10.1002/0471757128>)

Rudin, A.; Choi, P. The Elements of Polymer Science & Engineering. Academic Press, 2012.  
(<http://www.sciencedirect.com/science/book/9780123821782>)

### Website:

<http://compass2g.illinois.edu>

### Class Meetings:

Activity	Section	Time	Location
Laboratory	PS1	2:00 – 4:50 PM, Mon/Wed	123/124 Kiln House*
	PS2	2:00 – 4:50 PM, Tues/Thurs	123/124 Kiln House*
	PS3	8:00 – 10:50 AM, Tues/Thurs	123/124 Kiln House*
Office Hours	11:00-11:50 AM, Mon/Wed or by appointment		

\*A brief lecture will be given in 122 Kiln House prior to lab as needed

### Grading:

Lab Reports & Homework & Presentation: 70%  
Lab Quizzes: 15%  
Attendance/Participation: 15%

**Grading Notes:**

1. This course consists of 8 experiments to be completed in groups of 3-4 people. Generally, a lab report or homework assignment will be required for each experiment. Some reports encompass multiple experiments and some are based on just one experiment. Five reports are planned, one of which will be a presentation instead of written submission. It is also possible that one of the lab reports will be made into a homework assignment instead of a written report.
2. Lab reports will consist of the following sections: Abstract, Introduction, Materials and Methods, Results, Discussion, Conclusion, References and Appendix (if needed).
3. Lab reports are to be submitted online on the course website. Adobe PDF is the preferred format, but MS Word (or similar) will also be accepted. If you are uncomfortable with online submission, paper copies will also be accepted but you must coordinate a time with me to deliver the report.
4. Reports that are received late are docked 5 points each day until they are submitted. Reports that are not received with 20 days of the due date receive no points.
5. You are required to read the lab procedures before attending the lab session. A brief quiz will be given at the beginning of each lab session. The quiz is intended to focus on the fundamental concepts of each lab and not on minute experimental details.
6. Everyone is required to keep a lab notebook which will be inspected periodically.

**Grading Scale:**

98-100 = A+	92-97 = A	90-91 = A-
88-89 = B+	82-87 = B	80-81 = B
78-79 = C+	72-77 = C	70-71 = C-
68-69 = D+	62-67 = D	60-61 = D-
≤59 = F		

\*the lower number of the grading ranges may be lowered but not raised

**Safety and Lab Rules:**

This lab involves several potentially hazardous procedures. As in all labs, safety glasses/goggles must be worn at all times. The use of fume hoods will be necessary in several parts of the lab. Extreme care should be taken with the solvents that we will use, as in most cases they are toxic and flammable.

1. No food or beverages are allowed in the lab. Chewing gum is discouraged.
2. Long pants (covers the legs to the ankle) and closed-toed shoes are required for entry into the lab.
3. Avoid wearing your "best" clothes and consider purchasing/wearing a lab coat.
4. Confine long hair, loose clothing and dangling jewelry.
5. Cover any cuts or scrapes with a bandage before attending lab.
6. Safety glasses/goggles are available and must be worn at all times.
7. Wear disposable gloves at all times.
8. Never pipet by mouth.
9. Do not pick up broken glass with your hands, use a dust pan and broom.
10. Clean your lab space and equipment before departing.
11. Please exit the lab when making personal calls or sending texts or email messages. Abuse of this rule will result in cell phones being banned from the lab. Smartphones may be used during the lab exercises as references, calculators and other similar tools.
12. Thoroughly wash hands with soap prior to leaving the laboratory.



## General Emergency Response Recommendations

These recommendations are provided by the Office of Campus Emergency Planning. There are two basic methods to respond in emergencies that may affect persons on campus, and more specifically, individual buildings: Building Evacuation (**GET OUT**) and Shelter-In-Place (**STAY IN**).

**ONLY FOLLOW THESE ACTIONS IF SAFE TO DO SO.** When in doubt, follow your instincts - you are your best advocate!

**Building Evacuation (GET OUT)** — Action taken to leave an area for personal safety.

- Take the time to learn the different ways to leave your building **BEFORE** there is an emergency.
- Evacuations are mandatory for fire alarms and when directed by authorities! No exceptions!
- Evacuate immediately. Pull manual fire alarm to prompt a response for others to evacuate.
- Take critical personal items only (keys, purse, and outerwear) and close doors behind you.
- Assist those who need help, but carefully consider whether you may put yourself at risk.
- Look for **EXIT** signs indicating potential egress/escape routes.
- If you are not able to evacuate, go to an Area of Rescue Assistance, as indicated on the front page of this plan.
- Evacuate to Evacuation Assembly Area, as indicated on front page of this plan.
- Remain at Evacuation Assembly Area until additional instructions are given.
- Alert authorities to those who may need assistance.
- Do not re-enter building until informed by emergency response personnel that it is safe to return.

**Shelter-in-Place (STAY IN)** — Action taken to seek immediate shelter indoors when emergency conditions do not warrant or allow evacuation.

- Severe Weather
  - If you are outside, proceed to the nearest protective building.
  - If sheltering-in-place due to severe weather, proceed to the identified Storm Refuge Area or to the lowest, most interior area of the building away from windows or hazardous equipment or materials.
- Security Threat
  - If you cannot safely evacuate, find a secure area within your building to stay and await further information.
  - Assist those who need help, but carefully consider whether you may put yourself at risk.
  - Once within a safe place, attempt to secure the space (i.e.: lock doors, close windows/blinds).
  - If unable to lock the door, secure it by any means possible.
  - Remain quiet, unless making noise would be beneficial to your safety (i.e.: rescue recovery).
  - Without jeopardizing your safety, try to obtain additional clarifying information by all possible means, including the Illini-Alert Emergency Text Notification System.