MSE404 – Polymer Characterization Lab
Fall 2023

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
Phone: 217-300-3906
Email: gabrilsn@illinois.edu
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:
https://canvas.illinois.edu

Class Meetings:
Lectures and labs will meet in person with no room capacity limit. Lectures will be given in 122 Kiln House prior to most of the scheduled labs.

Activity	Section	Time	Location
Laboratory	PC1	2:00 – 4:50 PM, Mon/Wed	123/124 Kiln House
	PC2	2:00 – 4:50 PM, Tues/Thurs	123/124 Kiln House
	PC3	8:00 – 10:50 AM, Tues/Thurs	123/124 Kiln House
Office Hours	11:00-11:50 AM Mon & Tues or by appointment		209 Ceramics

Grading:

Lab Reports & Homework & Presentation:	70%
Lab Quizzes:	15%
Attendance/Participation	10%
Lab 1 Report	5%

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 lab reports are planned, one of which will be a presentation instead of written submission. In addition, one extra credit homework assignment is planned. Lab reports will be submitted individually and presentations will be prepared as a group.
2. Lab reports are to be submitted online via 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.
3. 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.
4. 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.
5. 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.

Other:

https://emails.illinois.edu/files/2056962258/gcoe_syllabusstatement_artf.pdf

Run > Hide > Fight

Emergencies can happen anywhere and at any time. It is important that we take a minute to prepare for a situation in which our safety or even our lives could depend on our ability to react quickly. When we're faced with almost any kind of emergency – like severe weather or if someone is trying to hurt you – we have three options: Run, hide or fight.

Run

Leaving the area quickly is the best option if it is safe to do so.

- Take time now to learn the different ways to leave your building.
- Leave personal items behind.
- Assist those who need help, but consider whether doing so puts yourself at risk.
- Alert authorities of the emergency when it is safe to do so.

Hide

When you can't or don't want to run, take shelter indoors.

- Take time now to learn different ways to seek shelter in your building.
- If severe weather is imminent, go to the nearest indoor storm refuge area.
- If someone is trying to hurt you and you can't evacuate, get to a place where you can't be seen, lock or barricade your area if possible, silence your phone, don't make any noise and don't come out until you receive an Illini-Alert indicating it is safe to do so.

Fight

As a last resort, you may need to fight to increase your chances of survival.

- Think about what kind of common items are in your area which you can use to defend yourself.
- Team up with others to fight if the situation allows.
- Mentally prepare yourself – you may be in a fight for your life.

Please be aware of people with disabilities who may need additional assistance in emergency situations.

Other resources

- **police.illinois.edu/safe** for more information on how to prepare for emergencies, including how to run, hide or fight and building floor plans that can show you safe areas.
- **emergency.illinois.edu** to sign up for Illini-Alert text messages.
- **Follow the University of Illinois Police Department** on Twitter and Facebook to get regular updates about campus safety.