

Chemistry 338 Section L001

Organic Chemistry Lab Fall 2019

Instructor: Prof. Timothy Hagen (thagen@niu.edu) **Office:** FR 350

TA: Chaitanya Kondam (ckondam@niu.edu)

Office: Faraday Hall 351

Lab Meeting Time: Thursday 6:00-8:50pm,

TA Office Hours: Thursday 11:00-12:00 pm

Textbook: Pavia, D.L.; Lampman, G.M.; Kriz, G.S.; Engel, R.G. *Introduction to Organic Laboratory Techniques; A Microscale Scale Approach*, 4th ed. ISBN-13: 9781305253926

Safety: Safety is the number one priority in the organic laboratory, since all chemicals are toxic to varying degrees. Wear appropriate clothing (NO shorts, NO open-toe shoes, NO exposed ankles, NO tank-tops). **ALL STUDENTS MUST WEAR EYE PROTECTION AND CLOSED-TOE SHOES AT ALL TIMES during the class.** Leg coverings are also required. **Goggles are available free of charge at the chemistry stockroom, and they must be the type approved by the Chemistry Department. No food or drinks are permitted in the laboratory.** Waste chemicals must be properly disposed. Notify TA of any glassware breakage, chemical spills, or emergencies immediately. Your lab area, lab equipment, etc. must be cleaned prior to leaving the lab. Refer to the textbook for a more comprehensive discussion of safety. The Department of Chemistry has a zero tolerance policy for safety violations, and points will be deducted for violating the safety rules (see the section on grading). Pregnant students should consult with their doctors regarding the risks of being enrolled in this and other laboratory-based classes.

Class Attendance and General Advice: Regular attendance is essential for a successful and pleasant experience in organic chemistry laboratory. Lab starts promptly at 1pm, so be on time. You must attend every lab session unless you have a university-sanctioned excuse, of which you have to inform your TA in advance. If for some unforeseen reason you will not be able to attend lab, please alert your TA and Dr. Hagen as soon as possible. **There will be no make-up labs,** and unexcused absence during a lab will result in a zero for that experiment. Also note that some labs require multiple periods; you must attend all sessions to receive credit for the experiment.

Pre-Lab Preparation: Read all the material in the textbook pertaining to the lab before showing up to class. Note for that for several early experiments you are also required to read the corresponding technique section in Part VI of the book (see schedule of experiments). There are no formal pre-lab questions to do for the laboratories, but there are post-lab questions, which you are supposed to answer after you have completed the experiment.

Laboratory and Reports: During the laboratory, your data should be recorded into a laboratory notebook (in ink), and the **data pages must be signed by the TA prior to your departure from lab.** Laboratory notebooks must be kept neat and must have duplicate, numbered pages. Regular paper notebook pages or composition notebooks are not acceptable. Lab reports should be in your own writing, and copied lab reports will receive a grade of zero. Even though you may conduct your experiments in pairs, the lab reports, including all calculations and answers to questions, should be prepared individually. The reports should be written neatly and legibly in black or blue ink. Pencils, white out, or colored pens (other than black or blue) are not permitted or acceptable for your notebooks. Lab reports are due at the beginning of the following lab period after an experiment is completed (multiple-period labs will be due the next lab period after completion) as

indicated in the schedule of experiments.

The following information should be included:

To be prepared before lab:

- . 1) Name, Date, and Experiment Title (e.g. "Recrystallization of Sulfanilamide").
- . 2) Purpose. A brief summary of what you are trying to accomplish and/or learn from this experiment, (not just a restatement of the title). List methods, etc.
- . 3) Data. Include all information pertinent to the experiment, including any and all safety hazards; MSDS sheets can be found at <http://www.hazard.com/msds/index.php>. For example, if you are recrystallizing sulfanilamide, you would want to draw the chemical structure, list important physical properties (such as melting point), and note any safety hazards associated with the compound. The mechanisms of reactions (if you are running a reaction) must be shown. Include equations and quantities of materials needed.

To be recorded in lab:

- . 4) Procedure. The procedure performed during the lab on that day and observations, such as color changes, formation or disappearance of a precipitate, evolution of heat or gas, etc.
- . 5) Results. Weights of the products, melting point ranges, etc. Theoretical and percent yields should be calculated if it pertains to the experiment. **Obtain TA's signature at this point.**

To be written after lab:

- . 6) Conclusions. A brief, but informative conclusion to the lab stating the results obtained and discussing the possible reasons for those results. Mention possible errors, and how they could be avoided in the future. This may improve your techniques for later experiments.
- . 7) Answers to post-lab questions. See schedule of experiments for the list of questions.

Quizzes:

Quizzes will include short question/answers related to

- theory (such as the definitions in the prelab reading)
- procedure (why you added acid to the water and not the other way around)
- reactions (you should be able to write down the reaction which was performed in the lab)
- calculations (percent yield)

There will be **four** pre-lab quizzes (see the schedule of experiments), each mainly about the experiments performed since the previous quiz. Tardiness to a quiz will result in a zero for that quiz. There will be no make-up quizzes. During the last class period, there will be a written final exam consisting of multiple choice and short answer questions.

Grading: Your grade in organic laboratory is largely based on the work done performing the assigned experiments and understanding the techniques/procedures. The lab reports will be graded based on the quality of your data, your presentation of the results, and your answers to post-lab questions. You must prepare your report individually, and violation of this rule will result in zero points for both laboratory partners.

Following safety rules is an important part of any laboratory work, thus points (in parentheses) may also be deducted for following safety violations:

Goggles/shoes not being worn (at all times except pre-lab discussion)	20 points
Chemical spill not cleaned (near balance, at your work area, in fume hoods)	10 points
Food/drink in lab	5 points
Improper waste disposal	10 points
Disposing of glass in waste basket (should use the "Glass Waste" container)	5 points

The course grade will be assigned based on your point totals from the lab experiments and reports, quizzes, and the final. The points total is as follows:

Lab Reports:	10 at 80 points each
Quizzes:	4 at 25 points each
Final Exam:	100 points
Total:	1000 points

Course Grading Scale (as 100%)

A: 92 – 100%	A-: 90 – 92%
B+: 87 – 89%	B: 80 – 86%
C+: 77 – 79%	C: 70 – 77%
D: 60 – 69%	F: 0 – 59%

Schedule of Experiments

Lab Date	Quiz	Experiment Number and Title	Post-Lab Questions
Thurs 08.29		Check In/Techniques 1-6 (be familiar)	
Thurs 09.05		Experiment 2B Recrystallization of Fluorene	1,2
Thurs 09.12		Experiment 3D/Technique 12 Extraction	8,10
Thurs 09.19	Q1	Experiment 5A/Technique 20 Thin-Layer Chromatography (TLC)	1a, 1b, 3a, 3b
Thurs 09.26		Experiment 5D Column Chromatography	2a, 2b
Thurs 10.03	Q2	Experiment 6/Technique 14,15 (1,2,4,5) Fractional Distillation	1,4,5,6
Thurs 10.10		Experiment 30A Resolution of (+)- α -phenylethylamine	2a, 2b, 3
Thurs 10.17	Q3	Experiment 19 Alkyl Halides	1,2,3,4
Thurs 10.24		Experiment 22 Dehydration	1,2a-d
Thurs 10.31		SN2 reaction the synthesis of 2-butoxynaphthalene: Handout	Handout
Thurs 11.07	Q4	Characterization: See Hand Out	Hand Out
Thurs 11.14		Check out and Final Exam	

Common Sense Conduct: No cell phones, ipads or similar electronic devices allowed. All cell phones must be put in silent/vibrate mode and left on for emergency alerts only. Do not talk, text, etc. during class. Be quiet and respectful of the other student's desire to learn. If repeated disturbances of my lecture occur, you will be required to leave class. During exams all electronic devices are prohibited.

Academic Dishonesty (cheating): Academic dishonesty includes (but is not limited to) looking at another student's exam during a testing session, allowing another student to copy your work, use of unauthorized materials (e.g., lecture notes, crib sheets, textbooks, prohibited electronic devices including smart phones, cell phones, I-pads or programmable calculators containing stored equations, formulas, or text) during exams. Violation of any of these terms will result in assignment of a score of zero for the exam, quiz or assignment in question. *Academic dishonesty in any form will not be tolerated and may result in failure of the entire course.*

Student Code of Conduct: <https://www.niu.edu/conduct/pdf/niu-scc-final.pdf>

Statement of Accessibility: If you need an accommodation for this class, please contact the Disability Resource Center as soon as possible. The DRC coordinates accommodations for students with disabilities. It is located on the 4th floor of the Health Services Building, and can be reached at 815-753- 1303 or drc@niu.edu.

Also, please contact me privately as soon as possible so we can discuss your accommodations. Please note that you will not be required to disclose your disability, only your accommodations. The sooner you let me know your needs, the sooner I can assist you in achieving your learning goals in this course.

Preferred Gender Pronoun Statement: This course affirms people of all gender expressions and gender identities. If you prefer to be called a different name than what is on the class roster, please let me know. Please also inform me and feel free to correct me and your classmates on your preferred gender pronouns. If you have any questions or concerns, please do not hesitate to speak with me in person, or email me. The Gender and Sexuality Resource Center also has a webpage designed to help support people of all genders as they navigate NIU's system: <http://niu.edu/gsrc/audience/trans.shtml>.

Multilingual Student Statement: I am committed to making course content accessible to all students. If English is not your first language and this causes you concern about the course, please speak with me.

Student Sexual Misconduct Policy: Title IX prohibits sex discrimination to include sexual misconduct: harassment, domestic and dating violence, sexual assault, and stalking. If you or someone you know has been harassed or assaulted, you can receive confidential support and advocacy at the Counseling & Consultation Service's Advocacy Services, which can be contacted on at 815-753-1206, or in Campus Life Building-room 200. Alleged violations can be reported non-confidentially to the Affirmative Action & Equity Compliance Office in Lowden Hall-room 101, at 815-753-1118, or online at <http://www.niu.edu/sexualmisconduct/help/form.shtml>. Reports to law enforcement can be made to NIU Police & Public Safety at 815-753-1212. For an emergency, call 911. For more information about Sexual Misconduct Prevention & Resources, visit <http://niu.edu/sexualmisconduct/index.shtml>. Note: As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility related to my role as an instructor and a faculty advisor to a student organization. I am required to share information regarding sexual misconduct or information about a crime that may have occurred on NIU's campus with the University. Students may speak to someone confidentially by contacting Counseling & Consultation Service's Advocacy Services at 815-753-1206, or in Campus Life Building-room 200. *See Northern Illinois University Catalog for all other policies and guideline