# CHEMISTRY 339: ORGANIC CHEMISTRY LAB II

*Spring 2018*

## COURSE INFORMATION

*Instructor* Dr. *Douglas Klumpp* (dklumpp@niu.edu)
*Teaching Assistant* Sean Kennedy (skennedy2@niu.edu)
*Lab Time, Location* Tuesday 6:00 pm - 8:50 pm, Faraday 307
*TA Office Hours* TBD
*Required Text* Pavia, D.L.; Lampman, G.M.; Kriz, G.S.; Engel, R.G. *A Small Scale Approach to Organic Laboratory Techniques*, 4rd ed.

## SAFETY

Safety is the number one priority in the organic laboratory, since all chemicals are toxic to varying degrees. **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.

## 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 .

## Accessibility Statement

Northern Illinois University is committed to providing an accessible educational environment in collaboration with the Disability Resource Center (DRC). Any student requiring an academic accommodation due to a disability should let his or her faculty member know as soon as possible. Students who need academic accommodations based on the impact of a disability will be encouraged to contact the DRC if they have not done so already. The DRC is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu.

## 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 athttp://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 guidelines.

## CLASS ATTENDANCE AND GENERAL ADVICE

Regular attendance is essential for a successful and pleasant experience in organic chemistry laboratory. Lab starts promptly at 6 pm, 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 ***before*** the planned absence. **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 (approximate points in parenthesis)

1) (5 pts) Name, Date, and Experiment Title (e.g. "Recrystallization of Sulfanilamide").
2) (5 pts) 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) (10 pts) 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 all chemicals

and solvents involved in the day's reaction, include: **molecular weight, density, boiling point, and melting point**, when applicable.

4) (10 pts) The chemical equation for the reaction and its mechanism. Also include the planned amounts for all materials in the day's reaction.

To be recorded in lab:

5) (15 pts) Procedure & Observations. The procedure performed during the lab and observations, such as color changes, formation or disappearance of a precipitate, evolution of heat or gas, etc. Mistakes made should be noted here.
6) (20 pts) Results. Mass of the products, melting point ranges, physical appearance, physical state. 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:

7) (5 pts) 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. If the reaction did not work, provide possible reasons why. This may improve your techniques for later experiments.
8) (10 pts) Answers to post-lab questions. See schedule of experiments for the list of questions.

## QUIZZES AND EXAMS

There will be five 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. Your lowest grade on a quiz will not factor into your final grade. 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 (shown) may be deducted for 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/glass disposal | (10 points) |

The points total is as follows:

| | | |
|---|---|---|
| Lab Reports (10x80) | = | 800 points |
| Quizzes (4x25) | = | 100 points |
| Final Exam | = | 100 points |
| Total Points | = | 1000 points |

Approximate Course Grading Scale:

| | |
|---|---|
| A | ≥ 90% |
| B | 80 – 89.99% |
| C | 70 – 79.99 % |
| D | 60 – 69.99 % |

SCHEDULE OF EXPERIMENTS

| *Lab Date* | *Quiz* | *Experiment Number and Title* | *Post-Lab Questions* |
|---|---|---|---|
| Tu 01.23 | | Check In/Techniques 1-6 (be familiar) | |
| Tu 01.30 | | Experiment 31 Oxidation of Borneol | 1,3 |
| Tu 02.06 | | Experiment 43 Nitration | 1,2,3,5 |
| Tu 02.13 | **#1** | Experiment 33 Grignard | 1,5 |
| Tu 02.20 | | Experiment 41 Wittig reaction | 2,3,5 |
| Tu 02.27 | **#2** | Experiment 9 Acetaminophen (Tylenol) | 1,2,3,5 |
| Tu 03.06 | | Experiment 8 Acetylsalicylic Acid (Aspirin) | 1,3,4,7 |
| Tu 03.13 | | NO CLASS | |
| Tu 03.20 | **#3** | Experiment 37 Aldol | 1,2 |
| Tu 03.27 | | Experiment 49 Diels-Alder of Cyclopentadiene & Maleic Anhydride | p. 420 (1,2,3) |
| Tu 04.03 | **#4** | Experiment 52 Luminol | none |
| Tu 04.10 | | Experiment 47B Nylon (Polymers) | none |
| Tu 04.17 | **#5** | Review/Check Out | |
| Tu 04.24 | | **FINAL EXAM** | |