Chemistry 338
Organic Chemistry Lab
Fall 2010

Instructor: **Dr. Douglas A. Klumpp (dklumpp@niu.edu)**
TA: **Rajasekhar Reddy Naredla**
Meeting: **MW 6-9 pm**
Office Location: **FR345 or La Tourette Hall 333**
Office Hours*:* **Appointments Possible**
Email: **z1602318@students.niu.edu**
Work phone: **210-416-3619**

TEXT: Pavia, D.L.; Lampman, G.M.; Kriz, G.S.; Engel, R.G., "Introduction to Organic Laboratory Techniques; A Small Scale Approach," 3rd ed.

SAFETY:

Safety is the number one priority in the organic laboratory, since many, if not all, organic chemicals are toxic. **ALL STUDENTS MUST WEAR EYE PROTECTION AND CLOSED-TOE SHOES AT ALL TIMES during the class. Long sleeves and leg coverings are also recommended.** 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 more comprehensive discussion of safety. The Department of Chemistry has a zero tolerance policy against the 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 classes.

Class Attendance and General Advice:

Regular attendance is essential for a successful and pleasant experience in organic chemistry laboratory. Lab starts promptly at 6:00 pm, so be on time. You have to 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 see me as soon as possible or let Dr. Klumpp know. **There will be no make-up labs**, and absence during a lab will result in a ZERO (0) for that experiment. Also note that some labs require multiple periods, so you have to attend all of them to receive credit for the experiment.

Prelab Preparation:

You should 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 required to read also the corresponding technique section in the part VI of the book (see schedule of experiments on p. 4).

There are no formal prelab 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 Notebooks:

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, colored pens (other than black or blue) are not permitted or acceptable for your notebooks. Lab reports are due the following lab period after an experiment is completed, and multiple period labs will be due the next lab period after completion, as indicated in the tentative schedule on page 4. The following information should be included, of which parts 1-5 should be done before coming to the lab, parts 6 should be completed in the lab, and parts 7 and 8 after the lab:

1) Name and Date

2) Experiment Title, e.g. "Recrysthallization of Sulfonylamine."

3) 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.

4) Data. You might want to include all the vital information that you should know prior to coming to lab. For example, if you are recrystallizing sulfonylamine, you would want to draw out the chemical structure, and list the important physical properties, such as the melting point. The mechanisms of reactions (if you are running a reaction) must be shown in the lab notebooks and can be obtained from the lab manual. Include equations and quantities of materials needed.

5) Procedure. You are expected to write out a general procedure that you performed during the lab on that day. Also you should record you observations, such as color changes, formation or disappearance of a precipitate, evolution of heat or gas, etc.

6) Results. This is the location where you would record 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**.

7) Conclusions. You should write a brief, but informative conclusion to the lab stating the results obtained and discussing the possible reasons for those results. You should mention possible errors, and how they could be avoided in the future. This may improve your techniques for later experiments.

8) Answers to post-lab questions. The list of questions is included in the tentative schedule on page 4.

Quizzes and exams:

There will be six pre-lab quizzes (see the tentative schedule on page 4) on the past material, mainly about the experiments performed since the previous quiz,. Lateness to a quiz will result in a zero for that quiz. There will be no make-up quizzes. There is no midterm exam, but, 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 perforing 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 have to prepare your report individually, and violation of this rule will result in zero points for both laboratory partners. Since an important part of any laboratory work involves following the laboratory safety rules, points might also be deducted for following safety violations of:

GOGGLES ARE NOT WORN AT ANY TIME (except pre-lab discussion)	Minus 20 points
CHEMICAL SPILL IS NOT CLEANED (at the balance, at your work area, in fume hoods)	Minus 10 points
FOOD/DRINKS IN LAB	Minus 5 points
IMPROPER WASTE DISPOSAL	Minus 10 points
DISPOSING GLASS IN WASTE BASKET (Use the “Glass Waste” container for broken glass)	Minus 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 (20 at 40 points each)	800 points
Quizzes (6 at 15 points each)	90 points
Final Exam	110 points
Total	1000 points

Approximate Grading Scale:	A 92 – 100%
	B 83 – 91%
	C 74 – 82%
	D 65 – 73%

Tentative Schedule of Experiments

Date		Experiment	Post-Lab Questions	Lab Due
Mon 8/23		Check In		
Wed 8/25		Expt. 2A/ Technique 11 Recrystallization of Sulfonylamine		
Mon 8/30		Expt. 2B Recrystallization of Fluorene	1,2	Wed 9/1
Wed 9/1		Expt. 3D/ Technique 12 Extraction	8,10 on p.708	Wed 9/8
Wed 9/8	**Quiz 1**	Expt. 10/ Technique 20 TLC	1,2,3,5	Mon 9/13
Mon 9/13		Expt. 9 Acetanilide	1,2,3,5	Wed 9/15
Wed 9/15		Expt. 8 Aspirin	1,3,6,7	Mon 9/20
Mon 9/20		Expt. 5/ Techn. 14, 15 (1,2,4,5) Distillation	1,4,5,6 on p. 729	Wed 9/22
Wed 9/22	**Quiz 2**	Expt. 58A Clove Oil	2,3	Mon 9/27
Mon 9/27		Expt. 12 Banana Oil		
Wed 9/29		Expt. 12 Banana Oil (cont.)	1,2,3,4	Mon 10/4
Mon 10/4		Expt. 30A, Techn. 23 Resolution of enantiomers		
Wed 10/6		Expt. 30A Resolution of enantiomers (cont.)	3,6,7	Mon 10/11
Mon 10/11	**Quiz 3**	Expt. 21A *n*-Butyl bromide	2,3,4,6 (*n*-butyl)	Wed 10/13
Wed 10/13		Expt. 21B *t*-Pentyl chloride	1,3,5 (*t*-pentyl chloride)	Mon 10/18
Mon 10/18		Expt. 33 Grignard		
Wed 10/20		Expt. 33 Grignard (cont.)	1,2	Mon 10/25
Mon 10/25		Expt. 19 Alkyl Halides	1,2,3,4	Wed 10/27
Wed 10/27	**Quiz 4**	Expt. 22 Dehydration	1,2a-d	Mon 11/1
Mon 11/1		Expt. 31 Oxidation of Borneol	5,6	Wed 11/3
Wed 11/3		Expt. 38 Aldol	1,2	Mon 11/8
Mon 11/8	**Quiz 5**	Expt. 41 Wittig reaction	1,2,3	Wed 11/10
Wed 11/10		Expt. 43 Nitration	1,2,3,5	Mon 11/15
Mon 11/15		Expt. 48C Polymers	1,2,5,7	Wed 11/17
Wed 11/17	**Quiz 6**	Expt. 52 Luminol	NONE	Mon 11/29
Mon 11/22		NO CLASS		
Wed 11/24		THANKSGIVING		
Mon 11/29		Check out		
Wed 12/1		FINAL EXAM		