

Syllabus
Organic Chemistry I Lab
CHE 310L-011

Fall 2007
M 2:00 – 5:00
SC-461

Instructor Information

J.H.Niewahner SC-448, X6363

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Office Hours: M 9:00 – 9:50, T 1:40 – 2:55, W 2:00 – 2:50, R 9:25 – 10:40, F 10:00-10:50

Others by appointment

Faculty Website: <http://www.nku.edu/~niewahnerj/>

Course Information

Prerequisite: C or better in General Chemistry II Lab and General Chemistry II Lecture

Co requisite: Organic Chemistry I Lecture

If for any reason you need to withdraw from the
laboratory, CHE 310L, you must also with draw from the lecture, CHE 310 and
vice versa.

Required Text: Techniques in Organic Chemistry, second edition,
Mohrig, J.R.; Hammond, C. N.; Schatz, P. F. W. H. Freeman and Company,
NY, 2006

Other Required Material:

- 1) Lab Record Book, Hayden McNeil Publishing
- 2) Safety Goggles
- 3) Paper Towels or Sponge or Towel

Organic Website: http://www.nku.edu/%7Echemistry/che310l_052.html

Web Access: This course requires students to access and use various internet resources such as email, Blackboard, and other on-line resources.

Calculators: Programmable and graphics calculators are not permitted during tests. In no case may calculators be passed from one student to another during a test. The lack of an operable calculator will not excuse a student from having to solve a problem

Blackboard: Students will be expected to use Blackboard to keep track of their grades and receive information from their instructor. To access Blackboard go to <http://learnonline.nku.edu> and then to Student Support Site and How to Log In.

Preparation: Students are expected to come to lab with a thorough understanding of the principles involved in the experiment, the goals of the

experiment, and the procedures to be followed. Whenever appropriate, the student should also know what data and observations are anticipated. This requires the student to read the experiment ahead of time and read all recommended reading materials.

Learning Objectives

1. Use standard laboratory techniques and equipment to synthesize, purify, and characterize organic compounds.
2. Discuss the mechanisms whereby organic reactions occur, predict the outcomes of specific reactions, and interpret data to explain reactions.
3. Use the chemical literature as reference material.
4. Maintain laboratory records and write laboratory reports using standard techniques and formats.

Lab Record Book

The Lab Record Book (Hayden McNeil Publishing) is required for all experiments. The record for each experiment will be divided into the following eight sections: **Title; Objectives; Protocol; Materials; Procedure, Data and Observations; Results and Calculations; Equipment; and Conclusion**. These headings are to be used in separating the sections in the lab record book. Each experiment is to start on a new page and begin with the **Title** of the experiment, then **Objectives** or purposes, followed by the **Protocol**, and then a **Materials** section. *The Title, Objectives, Protocol, and Materials must be written in the Lab Record Book before coming to the lab.* All entries must be made in ink. No entries should be recorded on scrap or loose leaf paper but directly in the record book. **Protocol** is the set of experimental steps one expects to follow. Steps in the Protocol should be numbered and should be written across both columns of the record book. The copy pages of the Title, Objectives, Protocol, and Materials are to be handed in to your instructor **at the beginning** of the lab period, namely, 2:00 P.M. Students who either do not have the Title, Objectives, Protocol, and Materials written ahead of time or who submit them after the class has begun will be penalized up to 10% for the experiment. The **Procedure, Data and Observations** section is started on the next new page. Procedure is the set of steps one has actually carried out. Entries should be in the past tense. The impersonal tone is required. For example: Benzoic acid (1.6 g) was added to 50 mL of 5% aqueous sodium bicarbonate. NEVER, "I added 1.0 g ...". The narrative should be entered as close to the time as possible to the procedure being performed, not at the end of the lab and definitely not after the record book has left the lab. Procedural steps are to be numbered sequentially. Sometimes there are some differences between Protocol and Procedure due to changes that are made just prior to carrying out an experiment or changes required during the course of the experiment. Sometimes a step in the Procedure will include data such as the mass of some material. In such cases it is convenient to write the procedure in the left column of the record book and the data in the right column. (Note: this is different from writing the Protocol). One must be careful when writing the Procedure not to simply copy the Protocol, as there is the risk of not writing what you actually did. The key to writing a proper and complete record is to make sure that someone else could carry out the experiment based on what you have written in

your Procedure, Data, and Observations section. Data must be recorded to the proper number of significant figures, have the correct labels, and be clearly identified. Include information that would help you repeat the experiment and let you know if you are getting similar or different results. If you generate material that does not fit readily into the narrative (e.g., spectra, chromatographs), these should be referenced in the notebook and attached by staple. There should be no erasures. Corrections should be made by drawing a single line through the mistake, then writing the correction. The next section is **Results and Calculations** section which is where you give a description of your findings, including IR and NMR data, as well as calculations of theoretical and percent yields for experiments in which a compound was synthesized. The **Equipment** section includes the make and model of major pieces of equipment that were used. This would include equipment such as IR, UV-VIS, NMR, etc. but not small pieces of equipment, such as hot plate - stirrers, melting point apparatus, balances, etc. The **Conclusion** is a reasonable conclusion based on your experiment. It is placed at the end of the write-up. Copy pages of Procedures, Data and Observations, Results and Calculations, Equipment, and Conclusion are to be handed in at the end of the period.

Samples

All samples that are prepared are to be placed in a vial, labeled with your name and the name of the compound and handed in to the instructor at the end of the lab period

Lab Report

For most experiments the Lab Report consists of completing the "Data Sheet" section along with the questions. Pages must be placed in order and stapled together. Sloppy reports will be penalized. For some experiments a formal report using the format of the American Chemical Society will be required.

Due Dates

Unless otherwise informed, reports are due at the **beginning** (2:00 P.M.) of the lab period following the completion of the experiment. Reports that are handed in after this time will be considered late and will be penalized 10 points per day. Reports will not be accepted if they are submitted more than 1 week after the scheduled completion of the experiment and students will receive a maximum of 30 points for those experiments.

Safety

All safety rules must be obeyed. Repeated violation of these rules will result in dismissal from the lab and a grade of zero for that experiment. Habitual violation of Safety Rules during the semester will result in dismissal from the course and a grade of F for the course.

Tests

There will be one test given on October 2 and another on December 4. These tests will consist of both a practical portion and a written portion. The practical portion will be worth between 15 and 25% of the overall test score.

Grading

Most experiments will be graded on a 100 point basis except the experiments *Melting Point* and *Molecular Modeling* will be assigned 50 points each. Each test is worth 100 points.

Average Experiment Score	70% of overall score
Average Test Score	30% of overall score

<u>Grade</u>	<u>Overall Score</u>	<u>Letter</u>
A	90 – 100	
B	80 – 89	
C	70 – 79	
D	60 – 69	
F	0 – 59	

Tentative Schedule, Monday PM, Section 011, Fall 2007

Aug. 20	Check-in. Melting Points
Aug. 27	Recrystallization of Benzoic Acid
Sept. 3	Labor day. No Lab.
Sept. 10	Recrystallization and Identification of an Unknown
Sept. 17	Fractional Distillation of an Acetone-Toluene Mixture
Sept. 24	Extraction
Oct. 1	Thin Layer Chromatography (TLC) Analysis
Oct. 8	Column Chromatography
Oct. 15	Fall break. No lab.
Oct. 22	Molecular Modeling
Oct. 29	Test 1. Melting Points through Column Chromatography
Nov. 5	S _N 1 Reactions: Conversion of t-Amyl Alcohol to t-Amyl Chloride
Nov. 12	Stereochemistry: Addition of Bromine to Cinnamic Acid
Nov. 19	An Elimination Reaction with 2,3-Dibromo-3-phenylpropanoic Acid
Nov. 26	Carbocation Rearrangements
Dec. 3	Test 2. Molecular Modeling through Carbocation Rearrangements

General Policies

- All items on syllabi are subject to change by the instructor.
- Students are responsible for reading and understanding all items on the syllabi. Any items

not understood must be brought to the attention of the instructor within the first two weeks of class.

- The work you will do in any course is subject to the Student Honor Code. The Honor Code is a commitment to the highest degree of ethical integrity in academic conduct, a commitment that, individually and collectively, the students of Northern Kentucky University will not lie, cheat, or plagiarize to gain an academic advantage over fellow students or avoid academic requirements. The Honor Code can be accessed at http://www.nku.edu/~deanstudents/student_rights/honor_code/htm. Cheating will not be tolerated. In accordance with the Code of Student Rights and Responsibilities, faculty members have the right to determine actions to be taken when a student is caught cheating.
- Faculty members reserve the right to dismiss or to have removed a disruptive student from their classrooms.
- A grade of C or better is required in CHE 310 and CHE 310L to enter CHE 311 and CHE 311L.

Organic Chemistry Withdrawal Policy

Any student withdrawing from Organic Chemistry I (lecture) must also withdraw from Organic Chemistry Lab I. Failure to do so will result in the department withdrawing the student from both lecture and lab.

Attendance Policy

Students are expected to attend all lab periods at the time scheduled. If an emergency arises, and the student notifies the instructor within 24 hours of missing a lab, a make up lab may be allowed providing that the student can carry out the experiment in one of the other lab sections within one week of missing the scheduled lab. This must be approved by the make up lab instructor.

Cheating Policy

Students caught cheating or plagiarizing for the first time will receive a grade of zero for that test or assignment. Students caught cheating or plagiarizing a second time will receive an F for the course and will be reported to the Dean of Students.

Cell Phone Policy

Students are asked to turn off their cell phones during lab. If you expect an emergency call please notify your instructor. Under no circumstance will students be allowed to use their cell phones during a test. Using a cell phone during a test will be considered cheating.

Students with Disabilities

Students with disabilities who require accommodations (academic adjustments, auxiliary aids or services) for this course must register with the Disability Services Office. Please contact the Disability Service Office immediately in the University Center, Suite 320 or call 859-572-6373 for more information. Verification of your disability is required in the Disability Services Office for you to receive reasonable academic accommodations. Visit the Disability Services website at www.nku.edu/~disability/.

