

Syllabus
Organic Chemistry I Lab
CHE 310L-011

Spring 2007
T 9:25 – 12:25
SC-461

Instructor Information

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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 withdraw 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
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.

Lab Record Book (Notebook)

The Lab Record Book (Hayden McNeil Publishing) is required for all experiments. The record for each experiment is to be maintained as described on p. 31-33 of the text by Mohrig et.al. You are to use headings given in the text by Mohrig et.al. in the section "To Be Done Before You Come to the Laboratory". Use the precepts (rules/guidelines) listed in the document titled **The Laboratory Notebook** which is available on Blackboard™ for this course. Sections such as Purpose Statement or Procedure (properly called protocol) can be written straight across the notebook pages; ignoring the line down the center of the pages. Copies of these notebook pages are to be handed in to your instructor **at the beginning** of the lab period, namely, 9:25 A.M. Students who either do not have the notebook pages 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. This is described in Mohrig et.al. as "To Be Done During the laboratory Session(s)". Sometimes there are some differences between Protocol (what you planned on doing) 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 to your data sheets. There should be no erasures. Corrections should be made by drawing a single line through the mistake, then writing the correction. A **Calculations** section is to include calculation of percent yield if a synthesis was carried out, or a percent recovery if a recrystallization was performed. 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. Copy pages of **Procedures, Data and Observations**, and **Equipment** as well as spectra and chromatography strips 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 that appear with each experiment. Pages must be placed in order and stapled together. You are to attach to the report a **Conclusions and Summary** section as discussed in Mohrig et.al. p. 32. In this last section you are to give a description of your findings, including IR and NMR data, as well as report theoretical and percent yields for experiments in which a compound was synthesized. The theoretical and percent yields should have been calculated and recorded in the notebook. Sloppy reports will be penalized.

Formal Reports

A formal report will be required for three experiments: 1) *Recrystallization and Identification of an Unknown* 2) *S_N1 Reactions: Conversion of t-Amyl Alcohol to t-Amyl Chloride*, and 3) *Carbocation Rearrangements*. For these reports you are to use the format of an ACS (American Chemical Society) journal by using the template attached. An electronic version of the template is on the Blackboard for this course.

Due Dates

Unless otherwise informed, reports are due at the **beginning** (9:25 A.M.) of the lab period following the completion of the experiment. Reports that are handed in after this time will be considered late and may be penalized up to 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 February 27 and another on April 24. 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*, *NMR*, and *Molecular Modeling* will be assigned 50 points each. Each experiment will be graded on the basis of the Notebook (~30%), Conclusions/Summary (~15-20%), Calculations (~10-15%), Results (~15-20%), and Answers to Questions (~15-20%). Each test is worth 100 points.

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

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

Tentative Schedule, CHE 310L-011, Spring 2007

Jan. 9 Check-in. Melting Points

Jan.	16	Recrystallization of Benzoic Acid
Jan.	23	Recrystallization and Identification of an Unknown
Jan.	30	Fractional Distillation of an Acetone-Toluene Mixture
Feb.	6	Extraction
Feb.	13	Thin Layer Chromatography (TLC) Analysis
Feb.	20	Compound Identification by NMR
Feb.	27	Test 1. Melting Points through TLC
Mar.	6	Spring Break. No Lab
Mar.	13	Column Chromatography
Mar.	20	Molecular Modeling
Mar.	27	S _N 1 Reactions: Conversion of t-Amyl Alcohol to t-Amyl Chloride
Apr.	3	Stereochemistry: Addition of Bromine to Cinnamic Acid
Apr.	10	Carbocation Rearrangements
Apr.	17	An Elimination Reaction with 2,3-Dibromo-3-phenylpropanoic Acid
Apr.	24	Test 2. Column Chromatography through Carbocation Rearrangements

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 either Organic Chemistry I (lecture) or Organic Chemistry Lab I must also withdraw from the other. 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. Missed labs will normally result in a grade of zero. 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 the other lab section within one week of missing the scheduled lab. This must be approved by the make up lab instructor.

Cheating

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.

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/.

Cell Phones

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.