Organic Chemistry I Laboratory Syllabus
CHE313 (2 hours credit)

Professor: Dr. Trent Selby **Office**: Hederman 407
Phone: (601) 925-7665
E-mail: selby@mc.edu (please put "organic class" in the subject line).
Office Hours: Monday, Tuesday & Wednesday 10:00-11:30 (or by appointment)

Class: Monday Joint Laboratory Section: Pre-laboratory discussion: 1:30-2:20 p.m.
Tuesday, Wednesday & Thursday Laboratory Sections: 1:30-5:30 p.m.
(Plan to be here the entire period: DO NOT SCHEDULE WORK, PRACTICE, ETC. to conflict with these hours.)

Textbook: K. Williamson, "*Microscale and Macroscale Organic Experiments,*" Fifth edition. Companion: An Organic Laboratory Notebook which permits production of an original and a copy of laboratory work.

TENATIVE COURSE OUTLINE

Wk#	Experiment/Exercise	Reference
1	Introduction, Check-in, Lab Safety	Ch. 1-2
Techniques and Practices		
2	Separations by Extraction: Liquid/liquid	Ch. 7
3	Separations by Extraction: Acid/base (No Prep on Monday)	Ch. 7
4	Boiling Point & Separation by Simple Distillation	Ch. 5
5	Separation by Fractional Distillation	Ch. 5
6	Recrystallization & Melting Point Determination	Ch. 3
7	**Fall Break** (No Prep on Monday. Wed. & Thurs. finish M.P.'s	
8	Separation by Chromatography; Thin-layer chromatography	Ch. 10
9	**Laboratory Midterm Examination**	
Structure Determination		
9	Infrared Spectroscopy	Ch. 11
9	Proton Nuclear Magnetic Resonance Spectroscopy	Ch. 12
Synthesis and Analysis		
10	Dehydration of 2-methyl-2-butanol (analysis by GC, IR; see week 11)	Ch. 10,11
11	Analysis of Products (see week 10)	
12	Bromobutane from 1-butanol (analysis by NMR; see week 13)	Ch. 16,12
13	Analysis of Products (see week 12)	
14	**Thanksgiving Holiday** (Makeup analysis on Tues.)	
15	Oleyl Alcohol Hydrogenation	Ch. 25
16	Diels-Alder Reaction	Ch. 48
17	**Laboratory Final Examination**	

Most laboratory exercises will be discussed in advance on the Monday (1:30) class preceding the Tuesday, Wednesday and Thursday afternoon sessions. Read the relevant sections in the lab text for preparation.

Laboratory reports, using the appropriate form, are due not later than the 5:00 p.m. two days after the completion of the laboratory exercise. Place these in the box outside Dr. Selby's office, Hederman 407.

Laboratory notebook. At the conclusion of each laboratory exercise (each week), students will submit the copy (yellow) pages of their laboratory notebook. The student's name (and laboratory partner), and Lab section (Tues, Wed., or Thurs.) should be placed in the appropriate blocks on the first page. The report should be stapled in the upper left corner. Students retain the white, original copy. Attach any other relevant documents, like spectra, etc. needed.

Components of the Laboratory Writeup for each Experience (roughly, each week).
Section A. Introduction. (Composed before laboratory begins.) Use the headings recommended.
A1. **Title** of the Laboratory (also, your name, your lab partners name, day of week for your lab)
A2. **References** (Numbered list of explicit sources: books, handouts, notes; give title, chapter, etc.; be specific.) (Ephemeral/web-based resources: the web address [url], and what you searched for.)
A3. Brief prose statement of the **goals or objectives** of the experience. (100 words or less)
A4. **Materials, Safety and Disposal**. Table of materials used, CAS #, relevant properties, hazards (especially "contacts to be avoided", other hazards like flammability, corrosiveness, carcinogenicity, etc.), and disposal route.
A5. **Brief outline of activities** (write this section after the [Monday] pre-laboratory introduction.) Give enough detail so that another could follow your procedure and reproduce the lab.
If a reaction is performed, give the balanced chemical reaction with formulas, formula weights, masses, moles, etc. for the materials involved; compute the theoretical (100%) yield.

Section B. **Observations**, Discussions (Composed during the laboratory experience.)
B1. Full outline of activities and observations (chronologic or by lab activity)
B2. Relevant discussion or arguments about the observations, results, theories, practices, and/or objectives. Refer to the references as needed.

Section C. **Conclusions**. (Compose this after the laboratory has been concluded. Refer to your goals (A3) for closure.)
C1. Brief and concise prose statement of important findings and its evidence (100 words or less).

Grading: Laboratory Reports (30 points each, graded on completeness and accomplishment of goals/objectives, adherence to prescribed style, and on-time; and where products are submitted, materials are graded on amount, purity and adequate characterizations.)
(Lowest grade will be dropped)

Laboratory **Midterm Examination** (100 points); **Laboratory Final Examination** (100points)

General Laboratory Deportment, Adherence to Safety rules, Cleanliness, and Attitude (30points). (A class or section earns and may loose these points generally if irresponsible individuals leave the laboratory in a dirty, disorganized or unsafe condition.)

Grades: (as percentages of all points) 89.5-100 (A); 79.5-89.4 (B); 69.5-79.4 (C); 59.5-69.4 (D); below 59.4 (F).

Academic Integrity: Mississippi College students are expected to be completely honest in all aspects of the course. Dishonesty, such as cheating or plagiarism, will not be tolerated and will be dealt with according to the stated policies of the university. For details, see the current *Mississippi College Undergraduate Catalog*, the *Tomahawk*, and Policy 2.19.

Course description: This laboratory is writing intensive and includes a study of organic syntheses and reaction mechanisms. The lab also includes characterization of products by various analytical tools, such as, NMR and IR.

Rationale: This laboratory will provide a fundamental understanding of organic chemical reactions, purification and characterization of products.

Student Objectives: The objectives of this course are to provide the student with the necessary knowledge and experience to be able to:

1. conduct organic syntheses
2. purify organic products
3. characterize organic products via NMR and IR spectroscopy
4. learn to convey experimental results and conclusions in a scientific writing style

Methods of Instruction: Classes will consist of a brief pre-lab lecture and problem solving followed by laboratory exercises. The laboratory experiments will coincide with topics discussed in CHE304 lecture.

Students with disabilities: *This department believes in reasonably accommodating individuals with disabilities and complies with university policy established under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (1990) to provide for equal access and opportunity. Please communicate with your professor as to your specific needs so appropriate arrangements can be made through the department.*