

Organic Chemistry II Laboratory, Chem 310, Spring 2006

Instructors' Contact Information:

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Required Materials: Techniques in Organic Chemistry by Jerry R. Mohrig, et al; and an Organic Chemistry Laboratory Notebook, with self carbon pre-numbered pages, by Brooks/Cole. Safety glasses or goggles are required and must be supplied by the student; recommended styles are available from the BSU Bookstore. Contact wearers are strongly urged to wear goggles rather than safety glasses. The use of latex or rubber gloves are optional; however, they must be supplied by the student.

The online program Blackboard will be used in this course to post announcements and assignments, administer quizzes and exams, and track individual grades. Blackboard can be accessed at <http://blackboard.boisestate.edu>. You are expected to monitor Blackboard several times a week to check for new announcements or postings. Please make sure that your current, preferred email address is provided on Blackboard, as that address is the one that will be used if it is necessary for your instructor to contact you.

Academic Honesty: Students in this course are expected to demonstrate academic honesty in ALL work. This requires that you know and adhere to the Boise State University Student Code of Conduct, which can be found at <http://www2.boisestate.edu/studentconduct/studentcodeofconduct.htm>.

ALL work MUST be the original work of the individual submitting it. Copied or shared work, including pre-lab assignments and notebook preparation, will NOT be accepted from ALL collaborating students, and is grounds for dismissal from the course.

Lab Safety: You will be required to read, sign, and agree to abide by a department lab safety policy. You must also watch a departmental lab safety presentation and take its accompanying quiz BEFORE the start of lab the second week. This presentation and quiz are posted on Blackboard.

Pre-Laboratory Preparation and Quizzes: Come to the laboratory prepared and ON TIME. Specified reading assignments and notebook preparation MUST be completed prior to each lab, with a copy of the notebook materials ready for approval at the beginning of lab. Incomplete notebook preparation will result in a 10% loss of experiment credit, and you will not be allowed to begin the experiment until the pre-lab write up is complete, which may result in insufficient time to complete the experiment. There will be a pre-lab quiz each week that will cover details from the previous week's lab as well as concepts from the current week's lab. NO make-up quizzes will be allowed for late arrivals. A discussion period will precede each lab (after the quiz) that will be used to further explain details, calculations, and equipment use of that particular lab. It will be assumed that all reading assignments and practice problems have been completed prior to this discussion period.

Notebook Record Keeping: Your laboratory notebook is the primary and permanent record of your lab activities. All entries must be in ink, and all data must be recorded directly into the notebook. Scratch paper is not allowed. Your pre-lab write-up will consist of the following: the purpose of the experiment, MSDS information for the chemicals used (if specified), the reaction used with stoichiometry calculations, and an outline of the procedure to be followed. The Experimental Outline should be written only on the left side of the page, leaving the right side to record observations as each step is completed. **Your Experimental Outline MAY NOT be simply a verbatim**

copy of the given procedure. You must re-word (often with some abbreviation) the steps given in the procedure, to indicate that you understand what is to be done. Observations must be recorded consecutively, **with no blank lines** between data. The pre-lab write-up will be checked by the instructor at the beginning of lab, and the completed observations must be submitted before leaving lab (or initialed by the instructor if pages are to be kept). Each page must be signed and dated. A conclusion **MUST** be submitted (either one copy from the notebook pages, or via email) within 72 hours (3 days). All data referred to in the conclusion **MUST** be from the notebook. Information and data remembered *but not recorded* cannot be used. Late conclusions will result in a 10% loss of **experiment credit** for each 24 hour late period.

ONLY your notebook and the posted PC Master Table will be available for use during lab; no other materials (i.e. the Mohrig text or procedures printed from Blackboard) will be allowed, unless specified otherwise. Therefore, it is **CRITICAL** that you come to lab fully prepared!

Complete Lab Reports: There will be three typed, complete lab reports required for the semester, for the following experiments: Acylation of Ferrocene, Reduction of Vanillin, and Qualitative Analysis II. Guidelines for these reports will be posted on Blackboard.

Make-up Lab: Labs may NOT be made up by attending other sections. There will be ONE make-up lab available, worth 50 points, to be held during the week of the Final Exam. This lab may be used to replace a missed lab, or it can be used to replace a low-score lab, **up to a maximum of 50 points**. This lab will not be the same experiment as a lab missed. A quiz will also be required for the make-up lab. A second missed lab will result in a score of zero for that lab. Anyone missing more than two labs, without showing proof of extenuating circumstances (such as hospitalization) will receive an F in the course.

Exams: There will be two exams: one Mid-Term Exam, to be given March 14-17, and one Comprehensive Final Exam to be given May 2-5. Both exams will consist of multiple choice questions, and will be administered through Blackboard.

Course Grade: Each weekly experiment is worth 50 points. Multiple-week experiments are worth 50 points per week. The experiments themselves - including pre-lab preparation, notebook and conclusion evaluation, and product evaluation - make up 65% of the course grade. Quizzes are worth 10%, the Mid-Term Exam is worth 10%, and the Final Exam is worth 15% of the grade. The approximate grading scale for this course is: A = 100-90%; B = 89-80%; C = 79-70%; D = 69-60%; F = <60%.

Withdrawal from Lab: If you withdraw from lecture, or change from credit to audit in lecture, you must withdraw from lab. If you withdraw from lab, you are responsible for checking out of your locker, payment of any fines, and returning your keys. Any student whose lab account is not cleared with the stockroom will have a hold placed on their record with the registrar's office.

Learning Objectives: At the successful completion of this course, through lab experience, quizzes and exams, each student will have demonstrated the ability to:

1. carry out lab procedures in a safe manner.
2. use lab equipment and chemicals in an appropriate manner.
3. properly maintain a laboratory notebook, including Stoichiometry, an experimental outline, and the recording of experimental observations.
4. apply theory and experimental observations to solve problems, and to present a reasonable written conclusion.
5. write a complete laboratory report.
6. carry out simple and multiple-step syntheses reactions.
7. design and execute an experimental procedure to accomplish a stated objective.
8. continue to use and understand the laboratory procedures introduced in Organic Chemistry I Lab:
 - a. melting points
 - b. simple recrystallizations
 - c. boiling points and refractive indices
 - d. simple and fractional distillations

- e. reflux
 - f. solvent extractions
 - g. thin layer, column, and gas chromatography
 - h. IR spectroscopy
 - i. Mass spectroscopy
 - j. rotary evaporators
9. use and understand the following additional techniques:
- a. NMR Spectroscopy
 - b. steam distillations
 - c. concepts of qualitative organic analysis including the preparation and analysis of derivatives and use of spectroscopy
 - d. preparation and analysis of polymers