

CHEMISTRY 201L
ORGANIC CHEMISTRY LABORATORY
Spring 2007

Instructor: Dr. Ann Dickinson; e-mail – adickins@csusm.edu

Office Hours: Tuesday 11:00 am – 12:00 pm and Thursday 10:00 am – 11:00 am, SCI 2 Rm 351 or by appointment at a mutually acceptable time.

Required Text; "Microscale Organic Laboratory" 4th Edition, by Mayo, Pike, & Trumper.
"Notes and Outlines for Organic Chemistry Laboratory 201L" Fall 2006, by Welch.

Learning Objectives: This course is designed to introduce laboratory skills and techniques used to solve organic chemistry problems, and to learn how to successfully communicate the resulting experimental data, observations and analyses in the appropriate scientific format. The goal is for you to learn and apply traditional and modern laboratory techniques and strategies in the synthesis, purification, identification and quantification of organic compounds, and understand the basic physical phenomena and fundamental chemistry concepts employed by these procedures.

SAFETY: SAFETY GLASSES MUST BE WORN IN THE LABORATORY AT ALL TIMES. Gloves are available in the laboratory. Please use them as needed. The polypropylene gloves supplied are not a complete barrier to most organic solvents. When working with particularly nasty chemicals, use 2 pairs of gloves or keep a thicker pair of gloves in your drawer. Read the safety guidelines included in your book (pp. 5-13) and the handouts very carefully before coming to your 2nd lab period. Safety is everyone's responsibility!

Breakage and Key Cost: Each student will be held responsible for any lost or broken equipment, including glassware, electrical equipment, etc. Breakage charges will be totaled and billed at the end of the semester. Payment must be made at the Cashier's Office before checking out at the end of the semester. The penalties for non-payment include graduation and registration holds. Also, if you drop the lab, be sure to pay your breakage charge and then check out with your instructor or stockroom personnel. Failure to check-out results in a charge of \$20!

Attendance: The course consists of a pre-lab quiz and lecture followed by a 4-5 hour lab. Lectures will focus on the theoretical basis of the techniques employed in the lab and introduce new laboratory procedures. If you miss your lab section, you must notify me PRIOR to the start of the lab. Unfortunately, because we will be operating near student capacity, make up labs may not be possible. Provide me with a written excuse with a legitimate reason for your absence (illness, important appointments, childcare issue, etc.) and you may drop this zero as your lowest lab score. Otherwise, for an unexcused absence, the zero will be included with your grade. Attendance to pre-lab lecture and lab is mandatory, and you will be dropped if you miss 3 or more pre-lab lectures and labs during the semester.

Examination: No final exam will be given.

Quizzes: Weekly quizzes (50 points) will be given at the beginning of lecture, covering the pre-lab lecture, reading and procedure for the experiment to be performed. Focus on WHY we perform each task and the expected outcome. Quizzes missed for any reason cannot be made-up. A total of 10 quizzes will be given. The lowest quiz score will be dropped at the end of the semester.

Laboratory Notebooks / Reports: Lab notes must be kept in a bound, hardcover notebook with all entries in non-erasable ink. You must bring your notebook to every laboratory session. Pre-lab lecture notes may be kept in a separate notebook or folder. However, once an experiment begins, ALL notes should be kept in the laboratory notebook. Points will be deducted for the use of loose or scrap paper for any notes during the lab.

Lab grades will consist of your lab notebook write-up for each experiment (100 points) which includes an evaluation concerning your preparation, results, efficiency, safety, and cleanliness during the performance of the experiments. Evaluating your performance emphasizes your ability to demonstrate correct laboratory technique, successful experiment outcomes, safety, and your ability to effectively communicate your results in your laboratory notebook. Successful experiments usually are the result of preparing for class in advance; carefully following procedure instructions; understanding the logic behind each procedural step; asking thoughtful questions; and clean and safe laboratory practices.

Each experiment will be evaluated based on the information presented in your notebook, as well as my observations during class. Your notebook should follow the specific format discussed in class and given in the Notes and Outlines to be purchased from the bookstore. *Outlines for each experiment are available through the library e-reserves.* Before starting the experiment, your notebook is checked to confirm all pre-lab work is complete. Points will be deducted if it is incomplete.

During the experiment, you should record a detailed and complete account your experiment (all measurements, observations, problems, instrument settings, etc.). Following the experiment, you need to prepare an accurate interpretation of your results and discuss experiment uncertainties and errors which demonstrate an understanding of the physical and chemical properties of the substances studied as well as equipment and instruments employed.

Your notebooks should be turned in at the end of class when you leave lab. The reports will be graded and returned by 9 am Monday morning. There are a total of 12 lab reports and the lowest grade will be dropped at the end of semester. Each day late will cost 10 points. (Weekends will cost 20 pts.). Turn in a late notebook into my mailbox outside the chemistry department office in SCI 2. **Lab notebooks will not be returned at the end of the semester.**

Starting Material: If you lose your starting material or get no product, you may start over **only** if approved by me. In general, you will be allowed to restart during the first half of the lab with minimal penalty. If you have to begin again after this point, or you need additional starting material or unknown, you will be charged a minimum of 5 points and maximum of 20 points. If you get no product, write your lab report as usual, emphasizing what may have gone wrong. Maximum penalty will again be 20 points per lab.

Grading: The course will be graded based on the following criteria:

Lab Notebook	1100 points (71%)	11 experiments x 100 points each
Quizzes	450 points (29%)	9 quizzes x 50 points each
Total Possible	1550 points	

If you have any concerns about grading schemes or grading discrepancies, please see me as they occur - NOT at the very end of the semester when it is too late to address them. Points can only be regained (even those resulting from my mistake) within 2 weeks of the date the lab was graded and returned.

NO COOKBOOK CHEMISTS...

In order for this lab to be a worthwhile experience for both of us, you must prepare for each lab in advance. The important "take-away" lessons in this course are not the recipes you follow to do reactions, separations or analyses. The important points include learning the basic physical phenomena as applied in the techniques you learn. All laboratory research in organic chemistry (and many other fields) is based on how you apply and interpret these techniques in the solutions of chemical problems. **DO NOT BLINDLY FOLLOW STEP-BY-STEP "RECIPES" WITHOUT UNDERSTANDING WHAT OR WHY YOU ARE DOING EACH ONE! THIS ROAD MAY LEAD TO A VERY LOW GRADE!**

Specifics About Grading:

Guaranteed:	A	>90%
	B	>75%
	C	>60%
	D	>50%
	F	<50%

I reserve the right to adjust the point requirements downward (rarely more than 2%).

Date	Week	Experiment
Jan 25	1	Check-in pp. 1-32
Feb 1	2	I. Intro to Analysis of Products: Boiling & Melting Points Quiz 1 pp. 33-36, 40-43, 101-103
Feb 8	3	II. Computer Lab on Acidity and Charge Distribution Lecture Text (McMurry, 6 th edition) pp. 29-33, 48-54, 257-258 and READ THE ENTIRE ASSIGNMENT IN THE PACKET!
Feb 15	4	III. Structure of Organic Molecules McMurry, Ch. 1-4, pp. 176-177, 275-279, 317-318 and READ THE ENTIRE ASSIGNMENT IN THE PACKET!!
Feb 22	5	IV. Intro to Separation of Products: Preparative Gas Chromatography Quiz 2 pp. 44-49, 109
Mar 1	6	V. Distillation Quiz 3 pp. 50-55, 115-117
Mar 8	7	VI. Solvent Extraction Quiz 4 pp. 55-71, 129-132
Mar 15	8	VII. Thin Layer and Column Chromatography Quiz 5 pp. 77-85
Mar 22	9	VIII. Sublimation Quiz 6 pp. 96-98, 204-209
Mar 29		No Class. Spring Break!
Apr 5	10	IX. Crystallization Quiz 7 pp. 71-77, 148
Apr 12	11	Let the Reactions Begin! X. Electrophilic Addition (EAI) Quiz 8 pp. 441-446, McMurry pp. 184-186
Apr 19	12	XI. Elimination – Bimolecular (E-2) Quiz 9 pp. 446-449, McMurry pp. 248, 369-371
Apr 26	13	XII. Diels-Alder Cycloaddition Quiz 10 449-452, McMurry pp. 474-479
May 3	14	Check out.
May 10	15	No class.
		No final.