

**Organic Chemistry Laboratory**  
**Chem 301L Fall 2008**

**Instructor:** Mr. John P. Hatfield

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**Materials:** (required unless otherwise indicated)

Schoffstall, Gaddis, Druelinger *Microscale and Miniscale Organic Chemistry Laboratory Experiments* 2<sup>nd</sup> edition. (<http://www.mhhe.com/schoffstall2>); laboratory notebook (Bonded); safety goggles (full contact style) meeting ANSI Z87.1 code; molecular model set (optional).

**Projected Course Schedule:**

<u>Date</u>	<u>Experiment</u>
8/26/08	<i>no lab</i>
8/28/08	Introduction, Syllabus Overview, Check-In, Safety Review; Tech A - Glassware
9/02/08	Chemical Concepts Review
9/04/08	Exp 3.1A - Stoichiometry; Exp 3.1B - Chemical Reference Sources (Scavenger Hunt)
9/09/08	Tech Q - Conformational Analysis
9/11/08	Exp 3.2 - A,B - Identification of Organic Liquids by Physical Properties (Tech B, D, E)
9/16/08	Tech C - Melting Point and Mixed Melting Point
9/18/08	Exp 3.4 - A,B - Recrystallization (Tech C,F)
9/23/08	Tech J. 1-3 - Gas Chromatography
9/25/08	Exp 3.8 - A,B - Simple and Fractional Distillation - GC Analysis of Fractions (Tech G.1, H.2)
9/30/08	Tech M - IR Spectroscopy
10/02/08	Tech M - IR Spectroscopy (continued)
10/07/08	Midterm Review
10/09/08	<b>Lab Mid-Term Exam</b>
10/14/08	Tech N - NMR Spectroscopy
10/16/08	Tech N - NMR Spectroscopy (continued)
10/21/08	Tech K.1-2 - TLC and Column Chromatography
10/23/08	Exp 9.1-A - Diels-Alder Reaction
10/28/08	Exp 9.1-A - Diels-Alder Reaction (continued)
10/30/08	Exp 8.2A - Synthesis of 1-Bromobutane
11/04/08	Tech P.1 - Mass Spectrometry
11/06/08	Tech P.1 - Mass Spectrometry (continued)
11/11/08	Exp 5.1 - Dehydration of Alcohols
11/13/08	Exp 5.2 - Dehydrohalogenation
11/18/08	Exp 14.1-A - Grignard Synthesis of Triphenylmethanol
11/20/08	Exp 14.1-A - Grignard Synthesis of Triphenylmethanol (continued)
11/25/08	Thanksgiving Break
11/27/08	Thanksgiving Break
12/02/08	Check-Out and Final Review
12/04/08	<b>Lab Final Exam</b>

<b>Grading:</b>	Experiment Synopsis (15 @ 20 pts)	300	A	90-100%
	Exams (mid-term and final)	400	B	80-89%
	Technique	<u>300</u>	C	70-79%
	<b>Total Points</b>	<b>1000</b>	D	60-69%

**Experiments:** There are three basic types of experiments in this course. “*Investigative*” experiments (called Techniques) explore some laboratory technique or investigate some physical or chemical property of a substance. “*Preparative*” experiments involve the purification or isolation of an *existing substance* from a mixture. “*Synthetic*” experiments involve the synthesis, isolation, and characterization of some new chemical substance from specified starting materials.

**Exams:** Exams are scheduled in the 7<sup>th</sup> and 14<sup>th</sup> weeks. If you must miss an exam, please see me BEFORE the exam date to make other arrangements. Either exam may include a practical portion as well as a written portion.

**Lab Reports and Post-lab Questions:** For Investigative experiments, your lab report consists of your data page with all calculations and the assigned questions from the table below. For Preparative experiments, your lab report consists of a procedure, flowchart, data table with safety/hazard information, calculation of percent recovery, physical description and characterization of the isolated substance, and the pre-lab and post-lab questions assigned from the table below. For Synthetic experiments, your lab report consists of a procedure, balanced reaction equation with side reactions and mechanism, reagent data table, product data table, safety/hazard information, identification of limiting reactant with calculations and theoretical yield, mass and percent yield of product, physical description and characterization of product, and the pre-lab and post-lab questions assigned from the table below. The lab reports and questions will be hand written in the notebook. Keeping your notebook up to date is very important as it will be your “information center” from which you will refer to when writing your synopsis.

**Experiment Synopsis:** This is a one/two page typed summary of your lab report. They will be due one week from the experiment completion date. Selected post lab questions and answers are to be included.

Tech or Exp	Pre-lab / Post-lab questions
3.1-A,B	p. 187: quest 1-8; p. 188: quest <b>1-2</b>
Q	<i>Handout</i>
3.2-A,B	p. 190: prelab 2-3; p. 192: quest 1,2, <b>4,6</b>
C	p. 27: quest 1,2, <b>4,7</b>
3.4-A,B	p. 197: prelab 1-3; p. 200: quest <b>1,3,5,6,7,8</b>
J.1-3	p. 90: quest <b>3,4,5,6,7,8,9,10,11,12</b>
3.8-A,B	p. 217: prelab 3,5; p. 220: quest 1,3, <b>4,5,6</b>
M.1-3	p. 122: quest <b>1,2,3,4,5,6,7,8,10,11,14,15,16,17</b>
N.1-5	p. 152: quest <b>1,2,3,4,5,6,7,8,9</b>
K.1-2	p. 103: quest <b>1,3,4,6</b>
9.1-A	p. 279: quest 1, <b>2,3,5,6,7</b>
8.2-A	p. 270: quest 1,2,4, <b>6,8</b>
P.1	p. 173: quest 1- <b>5,7,8,9</b>
5.1-A	p. 230: prelab 1-3,5-6; p. 233: quest <b>2,3,4,5,6,8-9</b>
5.2	p. 236: quest <b>1,2,4</b>
14.1-A	p. 354: prelab 1-2; p. 359: quest <b>1,2,3,4,5,7,11</b>

**Misc:** If you are having difficulty with the material and can't meet during my scheduled office hours, please schedule a meeting time with me. The student computer laboratory (C-205) is a resource which you are strongly encouraged to use to aid in your studies. Chemistry tutors can be arranged through the Learning Assistance Center (PSYCH 232, x2901), Student Support Services (LW 230, x2111) and the Chemistry Department Office (C-111, 2574). Please note that the **last day to withdraw** from this class with a grade of “W” is **October 24**. If you are contemplating withdrawing from this course please see me before doing so.

Academic dishonesty (cheating) is strictly forbidden. Anyone using another person's work or an unauthorized source of information during exams or quizzes will receive a score of zero.

*This University abides by the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, which stipulates that no student shall be denied the benefits of an education "solely by reason of a handicap." If you have a documented physical, psychological, or learning disability that may impact your coursework and for which you may require accommodations, please contact your instructor as soon as possible to arrange accommodations. In order to receive accommodations, you must be registered with and provide documentation of your disability to: the Disability Resource Office, Psychology building suite 236, (719) 549-2663. The Disability Resource Office will collect the necessary documentation and will inform your instructor in writing of special needs.*