Organic Chemistry Lab for Chemical Sciences Majors
Course Information

Instructor: Professor Chris Pigge  Office: E557 CB
e-mail: chris-pigge@uiowa.edu

Office Hours: During scheduled laboratory sessions or by appointment

Prerequisite: Grade of ‘C’ or higher in 4:121 or 4:123.

Corequisite: 4:122 or 4:124

Lectures: Friday 2:30-3:20 PM W228 CB

Laboratory:  
Section 1  MW 1:30-4:20 PM E424 CB
Section 2  TTh 8:30-11:30 AM E424 CB
Section 3  TTh 1:30-4:20 PM E424 CB

Laboratories will begin promptly at the scheduled starting time. There will be no make-up labs. Reasonable accommodations will be made for students with disabilities, according to standard UI policy. Please identify yourself to the instructor the first day of class so that appropriate adjustments can be made.

Objectives: This course is intended to illustrate some important methods and reactions of organic chemistry, to highlight issues of stereochemistry, and to employ modern analytical instrumentation.


Equipment: Laboratory goggles or approved safety glasses are required. An approved laboratory notebook is required. Students must supply their own dish soap, paper towels, ruler, and pencil. Optional protective gear includes rubber gloves and a lab coat.

Exams:  
Exam I: Friday, March 12th 2:30 PM
Exam II: Friday, May 7th 2:30 PM

Exams will consist of problems and essay questions. Answers must be written in ink, but not in red ink. Reasonable accommodations will be made for students with disabilities, according to standard UI policy.
Grades:

- Two Exams (100 pts each) ........................................... 200 pts
- Four unannounced class quizzes (10 pts each)............. 40 pts
- Prelab flow charts (10 pts ea. excluding first & last exps) 110 pts
- Laboratory notebook entries (30 pts each) .................... 390 pts
- Formal laboratory report: Synthesis of 2-acetyl-cyclohexanone......................................................... 60 pts
- Formal laboratory report: Wittig reaction ....................... 60 pts
- Unknown report .......................................................... 140 pts
- General laboratory performance .................................. 200 pts

Reports:

Reports must be typed or printed legibly in blue or black ink. Reports not conforming to this format will be downgraded. Unless otherwise announced, reports are due at the beginning of the period one week following completion of the experiment. Late reports must be turned in to the instructor, and will be down-graded substantially. Reports will not be accepted more than 3 days after the due date. Reports must be done individually, and must reflect the experimental findings of the student.

Unannounced class quizzes will be composed of simple questions directly discussed in previous classes.

Regrades:

Reports and exams to be regraded should be given to the lab TA not later than 7 days after the initial date of return. Items for regrade must be written in ink, and have the point in question clearly marked on the front page. Items submitted for regrade will be considered in their entirety.

Laboratory Performance:

This portion of the grade reflects how the student functions in the lab. Are you prepared? Do you understand what you're doing? Do you work safely? Are your experiments completed in a timely fashion?

Attendance:

Students are expected to attend all lecture and laboratory sessions. Due to the complexity and schedule of the experiments, students in general may only attend the lab period for which they are registered. No make up experiments will be permitted. Handouts will be distributed during lectures. Class notes will not be distributed.

Chem Center:

Chemistry Learning Center: E225 CB. Phone: 335-1341. For students desiring additional assistance, the Chemistry Learning Center maintains a list of chemistry tutors.

Course Distractions: Cell phones, ipods, mp3 players, etc are not permitted in the laboratory. If you are carrying a cell phone, please turn it off when you enter the lab or lecture.
Safety: Students are required to pass a safety quiz.
1. Safety glasses must be worn at all times!
2. Wearing contact lenses in the lab is prohibited.
3. You may not wear open-toed shoes, sandals, flip-flops, etc
4. Report any injury to your TA.
5. Legs must be covered. Shorts, short skirts and short dresses are not acceptable. Tank tops and muscle shirts are not permitted.
6. Students are allowed in the labs only during the assigned times and with proper supervision. Do not enter the lab if your TA is not present!
7. Eating, drinking, and smoking are prohibited in the laboratory.
8. No open flames are permitted in the laboratory.
9. Solvents, solids, and sharps must be disposed of properly. If you are not sure how to dispose of something, ask your TA. Nothing goes down the drain!
10. Many organic chemicals pose potential hazards to the fetus or to young children. Women who are pregnant, nursing, or who suspect they may be pregnant are strongly advised to consult with their obstetrician, and if possible to take this course at a later time.
11. Come to lab prepared.

NMR Warning: NMR spectroscopy will be employed throughout this course, and the heart of the NMR spectrometer is a powerful magnet. Students with pacemakers or metallic implants must not approach this magnet. Please identify yourself to the instructor the first day of classes so that appropriate adjustments can be made.

Equipment: All glassware and other equipment checked out at the beginning of the semester to a student registered for a given course and assigned a drawer/locker is the responsibility of that student. On the day of check-in the student must insure that the glassware has no chips or cracks and that the equipment is in good working order. The Chemistry Department will replace any glassware or equipment that is defective at the time of check-in. At the end of the semester, or at the time the student leaves the course, each piece of glassware and equipment must be returned to the Department without chips or cracks and in good working order. All pieces of glassware or equipment missing, chipped, broken, or not in good working order will be charged to the student through the University billing system.

Clean Up: Students are responsible for seeing that the lab is left clean. Your TA will prepare a schedule that designates students for clean up at the end of every lab.
Drop Slips: Students wishing to drop the course must check out of their lab drawer a drop slip can be signed. Have your TA check your equipment and sign your course registration card. Take the signed card to the Chemistry Center to have your "Drop Slip" signed. Please don't wait until the last day because it may be difficult to find your TA.

Schedule of Experiments (tentative)  4:142 Spring 2010

<table>
<thead>
<tr>
<th>Exp. #: (from Pavia)</th>
<th>Dates: Sections I/II &amp; III</th>
<th>Experiment:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Jan. 20/21</td>
</tr>
<tr>
<td>3D and 57</td>
<td>Jan. 25/26</td>
<td>Separation of a multicomponent mixture by extraction: Identification of unknowns [p. 32 and p. 522]</td>
</tr>
<tr>
<td></td>
<td>Jan. 27/28</td>
<td></td>
</tr>
<tr>
<td>5 and 38</td>
<td>Feb. 1/2</td>
<td>Distillation &amp; gas chromatography [p. 46]. Aldol reaction, NMR and molecular modeling [p. 322]</td>
</tr>
<tr>
<td></td>
<td>Feb. 3/4</td>
<td></td>
</tr>
<tr>
<td>58A</td>
<td>Feb. 8/9</td>
<td>Isolation of an essential oil from spice [p. 526] GC-MS and NMR</td>
</tr>
<tr>
<td></td>
<td>Feb. 10/11</td>
<td></td>
</tr>
<tr>
<td>9 and 10</td>
<td>Feb. 15/16</td>
<td>Synthesis of acetaminophen and TLC of analgesics [pp. 68-78]</td>
</tr>
<tr>
<td></td>
<td>Feb. 17/18</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>March 1/2 March 3/4</td>
<td>Isolate benzoin/finish Exp. 43 Oxidation of benzoin to benzil (Exp. 34B, pp. 294-296).</td>
</tr>
<tr>
<td>34 and 35</td>
<td>March 8/9 March 10/11</td>
<td>Benzil to benzilic acid/tetraphenylcyclopentadienone (pp. 297-299 and 300-302)</td>
</tr>
<tr>
<td>*</td>
<td>March 29/30 March 31/April 1</td>
<td>Continue with synthesis and resolution of binaphthol (from the chemical literature)*</td>
</tr>
<tr>
<td>40</td>
<td>April 5/6 April 7/8</td>
<td>Reactions of enamines: Synthesis of 2-acetylcyclohexanone [p. 330]</td>
</tr>
<tr>
<td>41</td>
<td>April 12/13 April 14/15</td>
<td>Wittig reaction [p. 341]</td>
</tr>
<tr>
<td>55</td>
<td>April 19/20 thru May 3/4</td>
<td>Identification of a solid and a liquid unknown [pp. 467-516]</td>
</tr>
<tr>
<td></td>
<td>May 5/6</td>
<td>Check-out</td>
</tr>
</tbody>
</table>

-4-

The College of Liberal Arts and Sciences

Policies and Procedures

Administrative Home of the Course

The College of Liberal Arts and Sciences is the administrative home of this course and governs such academic matters as the add/drop deadlines, the second-grade-only option, issues concerning academic fraud or academic probation, and how credits are applied for various graduation requirements. Different colleges may have different policies. Students with questions about these or other CLAS policies should speak with an academic advisor or with the staff in 120 Schaeffer Hall. Also see the CLAS Academic Handbook:

www.clas.uiowa.edu/students/academic_handbook/index.shtml

Academic Fraud

Plagiarism and any other activities that result in a student presenting work that is not his or her own are academic fraud. Academic fraud is reported to the departmental DEO and then to the Associate Dean for Academic Programs and Services in the College of Liberal Arts and Sciences who deals with academic fraud according to these guidelines:

www.clas.uiowa.edu/students/academic_handbook/ix.shtml

Making a Suggestion or a Complaint

Students have the right to make suggestions or complaints and should first visit with the instructor, then with the course supervisor if appropriate, and next with the departmental DEO. All complaints must be made within six months of the incident.

www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5

Accommodations for Disabilities

A student seeking academic accommodations should first register with Student Disability Services and then meet with a SDS counselor who determines eligibility for services. A student approved for accommodations should meet privately with the course instructor to arrange particular accommodations. See www.uiowa.edu/~sds/

Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. See www.sexualharassment.uiowa.edu/

Reacting Safely to Severe Weather

If severe weather is indicated by the UI outdoor warning system, class members will seek shelter in the innermost part of the building, if possible at the lowest level, staying clear of windows and of free-standing expanses which might prove unstable. The class will resume after the severe weather has ended. See the Operations Manual section 16.14. i.