CHEM 213 - LABORATORY IN ORGANIC CHEMISTRY  
Spring 2007 - Room 4 MCB

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This syllabus is subject to change without any prior notice. Although changes will be announced during class, students are encouraged to check the on-line requirements weekly (ANGEL).

Course Description:
CHEM 213 introduces the student to basic operations in an organic chemistry lab including application of theories and principles obtained in previous chemistry courses. It is designed to take the information obtained in CHEM 210 & 212 and provide further insight into the principles of organic synthesis.

Objectives:
• Learn selected methodology and techniques of modern organic chemistry.  
• Understand the concepts on which the laboratory experiments are based.  
• Develop quantitative laboratory skills and skills in writing scientific reports, the ability to keep a laboratory notebook, and the ability to manipulate and interpret laboratory data.  
• Foster independent and critical thinking.

Required Textbooks and Supplies:
• Chemistry 213 Laboratory Manual- Organic Chemistry Lab  
• Laboratory duplicate notebook  
• Safety glasses or goggles of the approved type  
• Scientific calculator

Approximate Grading Criteria:
<table>
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<tr>
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<th>Percentage</th>
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<tbody>
<tr>
<td>Lab reports</td>
<td>75%</td>
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<tr>
<td>Written final</td>
<td>25%</td>
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</tbody>
</table>

Final Grading:
- A 92-100%  
- A- 90-92%  
- B 82-88%  
- B- 80-82%  
- C 70-78%  
- C+ 78-80%  
- D 60-70%  
- F < 60%

!!Failure to turn in 2 or more lab reports will result in an automatic failing grade in the class!!

Preparation for Laboratory Work:
All students are required to read the details of each experiment in the laboratory manual and, if necessary, a chemistry textbook to the point of being familiar with the theoretical background and practical details of each experiment before work is begun on that experiment.

Performing Laboratory Work:
Safety goggles of the approved type are required to be worn by all students while in the laboratory at all times. All data taken during the laboratory work must be recorded directly in the laboratory duplicate notebook. Erroneous data may be repeated and re-recorded if necessary. A copy of your data must be given to the instructor before you leave the laboratory. Normally, practical work will cease 10 minutes before the scheduled end of the lab period and the remaining time must be used for cleaning and tidying the work area. All students must leave the lab by the end of the scheduled time.
Notebook format:
- Your name and your partner’s name (if applicable)
- Date, experiment number, and title
- The objective of the experiment
- Summary of the procedure (use brief, but complete, descriptions)
- Pre-Laboratory Questions

Lab report format:
- Cover page: (title of the lab, your name, partners name, date)
- Introduction: 2-4 paragraphs discussing the goals of the experiment, a brief discussion of the procedures, and any pertinent equations that will be used.
- Data: This will include the data from your experiments including tables of raw data, graphs, and results. It should be logically and clearly arranged so that the instructor can easily see your data and calculated results. Graphs should be prepared in MS Excel or similar program and inserted into the Word document. All example calculations can be written in Word and included in this section, or they can be written by hand and turned in when the lab is due.
- Results and Discussion: This section will contain 2-4 paragraphs discussing the results of the experimental data shown in the previous section. It should include some discussion of the expected values which can usually be obtained from textbooks or through the internet. Discussion of error from this expected value and other possible sources of error should also be included in this section.

Attendance:
Laboratory space is assigned on the basis that students attend all scheduled laboratory periods of the section in which they are registered. Sections can not be arbitrarily switched and students who, for any reason, fail to attend regularly scheduled laboratory periods will forfeit the points assigned to that work. If the reason for absence from a laboratory period is judged by the instructor to be valid, an opportunity to make up the work missed may be provided if the laboratory space and time are available; however, this is strictly at the discretion of the instructor and is not guaranteed by a valid excuse. Participation in a university-sponsored athletic event is considered by the university to be a valid reason for absence from class, and the university policy provides that opportunities be given to make up the work missed. However, the university policy does no require instructors to provide extra non-scheduled instructional or supervisory times to those few students. Since laboratory work can not be performed without supervision, students participating in athletic events with not be able to make up the work missed unless arrangements can be made for temporary placement in another section. Often this is not possible, because the sections are already full; therefore, as a practical matter, students who are enrolled in this course and who plan to participate in athletic activities should schedule a section which does not conflict with these activities, or postpone one or other activity until a later time.

Academic Integrity/Plagiarism:
Any form of cheating/plagiarism will be considered a "major infraction" (as defined by current University policy) and immediate appropriate action will be taken. All students are expected to act with civility, personal integrity; respect other students' dignity, rights and property; and help create and maintain an environment in which all can succeed through the fruits of their own efforts. An environment of academic integrity is requisite to respect for self and others and a civil community. Academic integrity includes a commitment to not engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty include cheating or copying, plagiarizing, submitting another persons' work as one's own, using Internet sources without citation, fabricating field data or citations, "ghosting" (taking or having another student take an exam), stealing examinations, tampering with the academic work of another student, facilitating other students' acts of academic dishonesty, etc. Academic dishonesty violates the fundamental ethical principles of the University community and compromises the worth of work completed by others. A student should avoid academic dishonesty when preparing work for any class. If charged with academic dishonesty, students will receive written or oral notice of the charge by the instructor. Students who contest the charge should first seek resolution through discussion with the faculty member or the campus Director.
of Academic Affairs. If the matter is not resolved, the student may request a hearing with the Commonwealth College Committee on Academic Integrity at the campus. Sanctions for breaches of academic integrity may range (depending on the severity of the offense) from F for the assignment to F for the course. In severe cases of academic dishonesty, including, but not limited to, stealing exams or "ghosting" an exam, students may receive a grade of XF, a formal University disciplinary sanction that indicates on the student's transcript that failure in the course was due to a serious act of academic dishonesty. The University's statement on Academic Integrity from which the above statement was drawn is available at: http://www.psu.edu/dept/oue/aappm/G-9.html

**Students with Disabilities:**
Penn State is committed to providing access to a quality education for all students, including those with documented disabilities. If a student has a disability and wishes an accommodation for a course, it is the student's responsibility to obtain a University letter confirming the disability and suggesting appropriate accommodation. This letter can be requested from the York campus Disability Contact Liaisons, Dr. Sharon Christ, Student Affairs, and Dr. Cora Dzubak, Learning Center. Students are encouraged to request accommodation early in the semester so that, once identified, reasonable accommodation can be implemented in a timely manner.

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<thead>
<tr>
<th>Lab number</th>
<th>Name of Lab</th>
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<tbody>
<tr>
<td>1. Tech 701</td>
<td>Measuring the melting points of compounds and mixtures</td>
</tr>
<tr>
<td>2. Tech 703</td>
<td>Purifying acetaldehyde by recrystallization</td>
</tr>
<tr>
<td>3. Tech 705</td>
<td>Separating acids and neutral compounds by solvent extraction</td>
</tr>
<tr>
<td>4. Tech 710</td>
<td>Identifying an unknown compound by infrared spectroscopy</td>
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<tr>
<td>5. Tech 737</td>
<td>Thiamine-catalyzed benzoin condensation</td>
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<tr>
<td>6. Tech 738</td>
<td>Copper-catalyzed oxidation of benzoin to benzyl</td>
</tr>
<tr>
<td>7. Tech 712</td>
<td>Dehydrating cyclohexanol</td>
</tr>
<tr>
<td>8. Tech 713</td>
<td>Preparing isopentyl acetate by the Fischer esterification</td>
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<tr>
<td>9. Tech 718</td>
<td>Nucleophilic addition to carbonyl: Grignard reaction with an aldehyde</td>
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<tr>
<td>11. Tech 750</td>
<td>Cannizzaro reaction: Conversion of p-nitrobenzaldehyde to p-nitrobenzoic acid and p-nitrobenzyl alcohol</td>
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