

## COURSE SYLLABUS

### CHEMISTRY 221

#### ORGANIC CHEMISTRY LAB Spring, 2009

#### COURSE INFORMATION

**Course Schedule:** Monday and Wednesday, 1:00 PM to 4:10 PM

Tuesday and Thursday, 7:50 AM to 11:00 AM

**Instructor:** John Congleton

**Office Hours:** \_\_\_\_\_  
\_\_\_\_\_.

**Office Location:** Chemistry Building, Room 233

**E-mail Address:** [jcongleton@occ.cccd.edu](mailto:jcongleton@occ.cccd.edu)

**Course Web Site** <http://faculty.orangecoastcollege.edu/jcongleton/>

#### Course Objectives

##### STUDENT LEARNING OUTCOMES:

1. Explain the theoretical basis and applications of common techniques in organic chemistry including melting points, recrystallization, distillation, extraction, chromatography, and infrared spectroscopy.
2. Execute simple organic chemistry experiments using the common techniques of organic chemistry including melting points, recrystallization, distillation, extraction, chromatography, refractometry, and infrared spectroscopy.
3. Write the observations and results of organic chemistry experiments in a notebook journal using proper techniques for recording scientific experiments.
4. Identify the structures of unknown substances using infrared spectroscopy and nuclear magnetic resonance spectroscopy.
5. Apply safe and proper laboratory techniques while making accurate, reproducible measurements of masses and volumes, and reproducible experimental observations.

##### Additional Points:

- Learn to operate safely in the laboratory: This includes proper procedures for use and disposal of chemicals as well as the use and interpretation of HAZMAT data.
- Practice the execution and application of the following standard organic chemistry lab techniques: melting point, recrystallization, extraction, thin-layer chromatography, column chromatography, simple distillation, fractional distillation, and gas chromatography.
- Gain laboratory experience so as to relate the tangible with the theoretical aspects of reactant mechanisms and chemical concepts.
- Learn and practice good laboratory skills.
- Learn to maintain an organized and legible laboratory notebook following standard laboratory practices.
  - Become proficient at recording detailed observations (along with procedural steps). Sufficient detail should be recorded so that you could repeat an experiment, at a later date, with only your notebook as a guide or answer questions regarding details of the experiment.

- Learn the theory and application of standard spectroscopic techniques, including UV/VIS spectroscopy, infrared spectroscopy (IR), and nuclear magnetic resonance spectroscopy (NMR).
- Learn how to use and access standard chemical references.

### **REQUIRED MATERIALS**

<b>Lab Text:</b>	<i>Introduction to Organic Laboratory Techniques (A Microscale Approach)</i> by Pavia, Lapman, and Kris & Engel, (3 <sup>rd</sup> or 4 <sup>th</sup> edition).
<b>Record Book:</b>	All data and observations are to be recorded in a <i>bound</i> laboratory notebook which has <i>quadrille-ruled and bound pages</i> (National 43-475 for example). Remember, no Record book = No work that day in Lab = No points that day in lab.
<b>Spiral Notebook:</b>	A 3-hole punched spiral notebook with at least 100 pages. This will be used for all lab notes, special instructions, handouts, and notes on spectroscopy. It should be used exclusively for this course.
<b>3-Ring Binder</b>	This is to hold all handouts (such as this one), returned quizzes, and your Spiral Notebook. All handouts should be 3-hole punched, dated and placed in chronological order in the binder.
<b>Eye Protection:</b>	APPROVED SAFETY GLASSES ARE REQUIRED & MUST BE WORN AT ALL TIMES IN THE LABORATORY! Safety glasses must meet Z-87 specifications.

### **Course Policies**

#### **Safety in the lab is of paramount importance.**

1. **Safety glasses must be worn in the laboratory whenever anyone is doing experiments.**  
Serious violations of the safety rules could result in lowered grades or expulsion from the course.
2. **Late Assignments:** Lab reports will be collected at the beginning of the lab period on announced dates. Lab reports that are not submitted at the beginning of the lab on the due date are considered late. Late reports will be docked 20% for one period late, 50% for a week late, and not considered for credit after one week late unless extraordinary circumstances are present.
3. **Violation of Academic Honesty:** The penalties for violations of academic honesty are severe. Please see below for more detail concerning academic honesty.
4. **Preparation:** Students are required to read and understand all instructions pertaining to each lab before starting any experiments. Students should never perform any procedure that they do not completely understand. Students must not perform any unauthorized experiments.
5. **Hazards:** Students are required to check the hazards of all reagents or products before starting the experiment. Appropriate precautions should be taken to avoid exposure to potentially harmful chemicals. Any spills should be cleaned up immediately before proceeding with the experiment. Any exposures to chemicals should be reported to the instructor immediately.
6. **Waste Disposal:** All chemicals must be disposed in the proper waste receptacles. No chemicals should be disposed in the drains of the sink unless specifically indicated by the instructor. Students should clean their lab area, including the lab bench and balances, before leaving the lab each day.

7. **Attendance:** Students are expected to attend all lab sessions. Students should arrive on time and prepared. Students should plan their time appropriately to finish on time each day. Absences and excessive tardiness will result in points being deducted from the students' lab score.
8. **General Safety:** Safety should not be the concern only of the instructor; it must be the concern of *everyone*. As a student you are entitled to a safe environment and you are entitled to know at all times the lab activities of others in the class.
9. **Storing Products:** You are to save ALL solid products in ***sample tubes***. All sample tubes are to be corked and labeled as shown on page 27 of Pavia. The label and adhesive tape must not cover the bottom third of the sample tube. Since you do not know which experiments will be graded on yield and / or purity, you should assume that all experiments will be so graded.

### **METHOD OF GRADING**

Course grades will be assigned according to the percentage of total points. **The grade distribution will likely be curved.** Those who are consistent, conscientious and careful (and do well on quizzes) find lab to be a rewarding and painless experience. Historically, several students earn an "A" in each lab section. This is because your lab-grade is mostly task-based. Even so, to receive a grade of "A", you must do excellent work. The majority of students earn a grade of "B" or "C". A grade of "D" is difficult to obtain but it has been earned by past students that have been notable in their lack of effort and attendance.

Task	%
1. Worksheets	2.0
2. Quizzes	26.0
3. Lab notebook evaluations, inspections, and evaluation of experimental results.	40.0
4. 3-ring binder (completeness and organization).	4.0
5. Miscellaneous: <ul style="list-style-type: none"> <li>• On time attendance.</li> <li>• Proper organization of lab notebook.</li> <li>• Pre-lab assignments.               <ul style="list-style-type: none"> <li>• Students must have their lab record books initialed by the instructor <i>before the start of each lab</i>.</li> <li>• Students must have their lab record books initialed by the instructor <i>AFTER the completion of each lab</i>.</li> </ul> </li> <li>• Evaluation of your ability to work in a cooperative, efficient, conscientious and safe manner (safe for yourself, fellow students, staff, instructor, and environment).</li> </ul>	8.0
6. Lab Final. NOTE: All record books must be turned in to instructor at end of semester. Failure to do so may result in a failing grade.	20.0
<b>Total Points:</b>	100%

## Academic Dishonesty.

1. Academic Dishonesty is unacceptable and will not be tolerated.
2. Academic dishonesty includes, but is not limited to:
  - Giving assistance or information to another student during an exam.
  - Receiving assistance or information from another student during an exam.
  - Use of notes, books, or other aids during an exam.
  - Copying exams, lab notebooks, or other assignments from another student.
  - Falsifying laboratory data, procedures, or results.
  - Stealing exams, lab notebooks, notes or assignments from another student or the instructor
  - Using another person's work on exams, lab notebooks, or assignments.
  - Disrupting or sabotaging the work of another student.
  - Plagiarism: This is considered cheating.
3. Plagiarism is defined as "to steal and pass off (the **ideas** or **words** of another) as one's own : use (a created production) **without** crediting the source: to commit literary theft: present as new and original an idea or product derived from an existing source."

**FROM:** *Webster's New Collegiate Dictionary 9th ed*, (Springfield, Ma: Merriam 1981, p. 870).

*Plagiarism is considered a violation of academic honesty. Lab reports that contain any part that has been plagiarized will receive (at least) a failing report grade for the first incident. Subsequent instances of plagiarism may result in a failing grade for the class and a referral to the Dean of Students.*

- Students most often have issues of plagiarism in their Introduction and Conclusions.

Please consult the following for more detail on plagiarism and citing your resources.

- <http://www2.ups.edu/dean/handbook/honesty.shtml>
- <http://www.hamilton.edu/academics/resource/wc/usingsources.html?CFID=860572&CFTOKEN=51673284>
- <http://www.chem.uky.edu/courses/common/plagiarism.html>

4. **Any student found perpetrating academic dishonesty on an exam or assignment (lab write-ups included also) will receive 0 points for that exam or assignment. Depending on the severity of the incident, the instructor may pursue additional measures, including expulsion from the course and/or awarding an "F" for the student's final grade in the course.**

5. See the Orange Coast College Honesty Policy. These outline my responsibilities and yours too.

[http://www.orangecoastcollege.edu/about\\_occ/Staff+Development/faculty\\_staff\\_handbook/academic\\_practices/Academic+Honesty+Policy.htm](http://www.orangecoastcollege.edu/about_occ/Staff+Development/faculty_staff_handbook/academic_practices/Academic+Honesty+Policy.htm)

**Important Reminders...** Points will be deducted from the student's total lab score for the following violations of safe and sound laboratory practices.

You must at all times...

- Academic Dishonesty: See previous page for penalties.
- Come to lab meetings
  - The penalty for missed labs & lab meetings is severe:
    - ***Late attendance: 3<sup>n</sup> (n= number of occurrences, I'll give you one freeby here.)***
    - First lab period missed: 10% Deduction from lab report.
    - Second lab period missed: 30% Deduction from lab report.
    - Third lab period missed: 70% Deduction from lab report.
    - Fourth period missed: 100% Deduction from lab report.
- Keep a written as-you-go lab record – Deduction of 5<sup>n</sup> % per instance. (n = the number of instances)
- Use laboratory equipment with great care. Deduction of 5<sup>n</sup> % per instance.
- Never use flammable solvents near open flames. Deduction of 5<sup>n</sup> % per instance.
- Properly monitor experiments: Deduction of 5 % per instance.
- Improper waste and solvent disposal. Deduction of 5 % per /instance.
- Wear safety glasses at all times. Deduction of 5 % per /instance.
- Properly label stored chemicals. Deduction of 5 % per /instance.
- Complete ALL pre-lab assignments before starting lab work (*Record book is initialed*). Deduction of 5<sup>n</sup> % per /instance.
- Complete the current lab before starting another. Deduction of 5 % per /instance.
- Put away equipment and clean up lab area. Deduction of 5 % per /instance. (*there may be unannounced locker inspections*)