

 **Course Information**

**Last Updated: 1 September 2008**

**Chemistry 0310, Organic Chemistry 1**

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Office: CSC, Room 705

Office Hours: Tuesday and Friday 3:00-4:00 pm, or send an email to set a specific time. (When emailing to arrange a meeting, please suggest three specific times that you can meet -- I'll respond by reply email with which of those times works for me as well.) (Please note - that due to the multiple responsibilities that I have, on occasion I will not be at these office hours. In those cases, I will try to remember to post a note on my door.) If my door is open, come on in. If my door is closed and I expect to be back within 5 or so minutes, I'll usually leave a note to that effect.)

**Class Meeting Times**

**Lectures** will begin promptly each Monday and Wednesday at 6:00 p.m. and will conclude at 7:15 p.m. in Chevron Science Center, Room 12. In my opinion, based on many years of both being a student and teaching students, **ATTENDING ALL LECTURES** and **FAITHFULLY DOING ALL PROBLEM SETS** are by far and away the most efficient ways of learning the Organic chemistry that we will be responsible for.

**Please respect the class** -- if you must enter the classroom after the start time (see above) or before the end time (see above), or if you must make a "coffee run" in the middle of lecture, I request that you use the doors at the rear of the classroom.

**Recitations** will be a part of this course. At each recitation, we will have small group PLTL-type workshops based primarily on end-of-chapter problems. You should faithfully attend the same group each week. PLTL is a well-designed, well-researched, and well-documented "successful strategy" for substantially improving performance in Organic Chemistry for those students who avail themselves of that opportunity.

**Tutoring** is available, **FREE**, in the **Virtual Fishbowl** (see [MyCourseWeb/Organizations/Virtual Fishbowl](#)).

**Tutoring** is available, **FREE**, in the **Fishbowl** (see <http://www.chem.pitt.edu/p.php?pid=115>) or a direct link is: <http://www.chem.pitt.edu/documents/200809041036440.Fall%202091%20Fishbowl%20Schedule.pdf>

**Tutoring** is available, **FREE**, in the **Academic Resources Center (ARC)**; see <http://www.as.pitt.edu/arc>.

- The Academic Resource Center provides tutorial services for undergraduates in specific Arts and Science courses. Peer-lead study skill workshops are also provided.
- The fall 2091 Tutorial Schedule includes: Chemistry 0310 (along with many other courses).
- Tuesdays @ Noon: Survival Workshop Series and other Workshops will highlight skills specific to studying, test taking, note taking, time management and more.
- Students who would like one-on-one or group tutorial assistance should call the ARC: 412-648-7920 to check tutor availability and schedule an appointment.
- For a full listing of courses and workshops, visit <http://www.as.pitt.edu/arc>.
- Check out their calendar of events: <http://calendar.wiz.com\arcservices>

Private (for hire) **tutors** are listed on the Chemistry Department's web site (see <http://www.chem.pitt.edu/p.php?pid=114>).

**Course Description**

This two semester sequence of Chem 0310 and 0320 is a introduction to the theory and practice of organic chemistry through the study of structural principles, reaction mechanisms, and synthesis of all types of organic (i.e., carbon-based) compounds. The basic goals of the courses are to develop an appreciation of and skills at using the methods of "molecular analysis" which have made organic chemistry such a power intellectual discipline that leads to understanding many phenomena, from the basis of cellular structure and function to how to provide specific therapeutics at affordable costs to

combat a host of human ailments. The two-course sequence will prepare a student for advanced topics in biochemistry, molecular biology, medical sciences, chemistry, chemical engineering, and material sciences, to name but a few.

**Prerequisites:** A strong understanding of all the topics covered in general chemistry is helpful in Chemistry 0310 and it is impossible to master the material in Chemistry 0320 without having understood the principles of Chem 0310. (Students who receive less than a C- grade in Chem 0310 should repeat that course before attempting to take Chem 0320.)

**Other options:** Have you consider taking Honors Organic Chemistry? If you are interested in considering this alternative, small-enrollment class, please see Prof. G.

### Course Rationale



"We believe that a course should do more than provide students with a strong background of knowledge in a field. We believe that a course should enable students to use their strong backgrounds to solve problems, and that a truly valuable course should focus beyond the final exam to add to students' future lives, abilities, and skill sets and prepare students to think for themselves in the discipline after the course is over. Designing such a course is a challenge and involves providing not only opportunities for students to master content but also opportunities for students to practice thinking for themselves in the discipline so that they will be prepared to do so after the course is over." (Tewksbury and Macdonald, 2008)

"Science is not necessarily about absolute truths. It represents our best discernment based on the results of scientific processes applied to quantifiable data. Theories change and evolve over time as our understanding grows, new questions are asked, experiments are performed, and new data are gathered. Science doesn't have all the answers, nor does it purport to. Scientists don't gather "facts". That said, critical thinking and analysis are applied in an unbiased fashion to data gathered in response to a question posed. The results have their limitations. They can also illuminate startling findings (e.g., evolution, the expanding universe, plate tectonics, global warming). Provable, testable results provide strong insights into our natural world." (J. Pedicinio, 2008)

"Chemistry is a central science in the sense that it bridges such disparate areas as physics and biology, and connects those long-established sciences to the emerging disciplines of molecular biology and materials science. Similarly, ... organic chemistry sits at the center of chemistry, where it acts as a kind of intellectual glue, providing connections between all areas of chemistry. One does not have to be a chemist, or even a scientist, to profit from the study of organic chemistry." (M. Jones, 1997)

### Course Goals



We will address three big questions:

- (1) How do I understand structure and properties of millions of compounds?
- (2) How do I appreciate and predict electron movement in any organic reaction mechanism (i.e., how do I appreciate and predict reactivity of organic compounds)?
- (3) How do I apply the fundamental principles of organic chemistry to appreciate structure, properties, and reactions of compounds that will only be discovered tomorrow?

In a broader sense, the goal of this course is help all students enhance their proficiency in science.

Proficiency in science can be considered to have four strands:

1. Know, use, and interpret scientific explanations of the natural world.
2. Generate and evaluate scientific evidence and explanations.
3. Understand the nature and development of scientific knowledge.
4. Participate productively in scientific practices and discourse.

### Course Materials



**Text:** *Organic Chemistry: Structure and Function*, 5th Edition (Third printing), by K.P.C. Vollhardt and N.E. Schore; W.H. Freeman and Company, 2007.

**Also:** *Study Guide and Solutions Manual for Organic Chemistry: Structure and Function*, 5th Edition by N.E. Schore; W.H. Freeman and Company, 2007.

In the Chemistry Library in Eberly Hall, you can access reserve copies of both the 4th and 5th editions of Vollhardt and Schore's textbooks. Study Guides and Solution Manuals, if the library owns them, are also on reserve in the same location. *Update 8/25/08: (from the Chemistry Library in Eberly Hall) "...the 5th edition of Vollhardt/Schore's study guide has been ordered. It might still take a week or more before we receive it and can put it on reserve, but it's on its way."*

**Models:** A set of molecular models helps students understand the molecular-based approach that we use in this course. Although not required, it is strongly recommended that you borrow or buy a set of models such as Molecular Model Set for Organic Chemistry by Allyn & Bacon and that you use these models throughout the course. You will be allowed to use molecular models during all exams. (If you don't have a set of plastic models, use jelly beans and toothpicks.) Model kits are sold in the bookstore. You can also find some on-line; for instance, see the \$39 model kit available from [www.indigo.com](http://www.indigo.com).

**Handouts** may be provided to you at various times throughout the semester - often these handouts will contain material presented on the projector screen during the lecture. Handouts will only be provided at the one lecture section in which they are discussed so be sure to pick them up at that time. Handouts can also be retrieved, "after the fact", from the course web site.

**Old exams** (note - these are actual exams from previous offerings of this course; they are NOT practice exams) are available through the Course Web site. Additionally, the ACS-SA sells old exams from a variety of previous Chem 0310 courses - all of these provide additional practice at problem solving and are a good general purpose learning tool. Be advised that there is no implied guarantee that exams written for courses using a different text or by a different Professor are perfectly relevant to any specific exam in our course; they are of course an excellent resource to really self-test your knowledge of the broader world of Organic Chemistry and so are a valuable additional resource for the dedicated student.



### Course Requirements and Grading

**Course Grading:** Your course grade will be determined from your performance on the equivalent of four "hourly" exams and the final exam. The hourly exam dates shown on the Course Schedule are tentative and may be changed at the professor's discretion.

- **IMPORTANT NOTES**
  - There will be no makeup hourly exams.
  - No late "4th Hourly" assignments will be accepted. ([Click here](#) for an amusing article on excuses for missing due dates.)
  - See the statement below about exam regrades.
  - A multi-page take-home exam that is turned in without being stapled will not be graded.

**Basic Weighting Scheme** (500 points total):

- Four hourly exams 100 points each (= 400 points)
- Final exam 100 points

### Alternate Scheme

What if you miss one of the hourly examinations or turn in one poor performance (relative to your performance on the Final)? At the completion of the course, each student's grade will be calculated as described by the basic weighting scheme AND by dropping the lowest hourly exam score while increasing the final exam contribution (maximum possible) from 100 points (20% of the Final Grade) to 200 points (40% of the Final Grade). The better final grade for each student will be used. In effect, if you show improved performance on the final exam, the final exam will count for a larger fraction of your grade than in the basic weighting scheme and a poor hourly exam is completely discounted. If you miss one hourly exam, the alternate method of final grade computation is your only choice and you deny yourself the final grade option. It is to your distinct advantage not to miss any of the regularly scheduled hourlies or the regularly scheduled final as more than 75% of all past students have used the Alternate Scheme!

### Letter Grades

In order to reduce competition between students and to foster group learning, I am going to continue the grading approach I used in comparable courses previously. I will set the point totals now for the letter grade cutoffs. This way, the entire class can earn the letter grade they desire without worrying about what everyone else in the class is doing. The following points are based on a total possible of 500. I will reserve the right to set the "+" and "-" cutoffs at a later date. Earned Extra Credit may not exceed 50 points, and may or may not be offered.

| TOTAL POINTS  | LETTER GRADE |
|---------------|--------------|
| 400 + above   | A- to A+     |
| 344-399       | B- to B+     |
| 288-343       | C- to C+     |
| 232-287       | D- to D+     |
| Less than 231 | F            |

[Click here](#) to see letter grade distributions for several previous classes..