

CHE-375
Organic Chemistry III
Fall 2011
Gustavus Adolphus College

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Textbook: No textbook is required. We will have readings from the primary and secondary literature. These will be posted on the moodle page for the course.

Supplies : Molecular models. These are not a requirement, but I strongly urge you to purchase a set (if you don't still have them). You may use the model sets during the exams. They are invaluable for helping you draw conformations of complex structures.

I also recommend you take notes in pencil. Drawing should certainly be done in pencil, as mistakes are easier to correct....and you will be correcting a lot of mistakes.

Classroom: NHS 305, Nobel Hall

Office Hours: My scheduled office hours are Mon and Wed from 1:30 to 2:30 pm. I will, however, be available at other times.

Academic Honesty

I expect you to be honest. The policy of the college states in part:

...Gustavus Adolphus College expects all students to adhere to the highest standard of academic honesty, and to refrain from any action that impinges upon the academic freedom of other members of the college community. In all academic exercises, examinations, presentations, speeches, papers, and reports, students shall submit their own work.... In the case of cheating or plagiarism, the instructor will inform the student and the office of the Dean of the Faculty of the nature of the offense, the penalty within the course and the recommendations of the instructor as to whether further disciplinary action by the dean is warranted.

Anyone caught cheating on an exam or assignment will receive a grade of 0 for that exam or assignment. Repetition will result in an F for the course. If you have any questions about these policies, please come see me, or refer to the Gustavus Guide.

Homework:

I will give you a selection of homework problems out the body of chemistry literature. You should try to work the assigned problems on a regular basis, rather than trying to do them all right before the exam. Any questions that you have with regard to the homework problems are welcome as topics for discussion during or outside of class.

Major Assignments:

In addition to the routine homework, there are two major assignments: Structure elucidation (including stereochemistry) and a critical review article. The structure elucidation assignment will require you to interpret a variety of spectra, including the results of some NMR experiments you probably haven't seen. For this assignment you will work in a group of 4.

The critical review article will require you to select a methodology or a complex molecule and provide an overview of the important advances, including explanations of mechanism and stereochemistry. Through this exercise, you will become familiar with ChemDraw, searching literature, citation management, and writing in one of the styles within the organic chemistry discipline. This is an individual assignment.

Exams:

There will be three exams that will consist of short answer questions. In addition to asking you to be able to recall facts and principles from lectures and literature readings, you will be asked to extend the principles you learned to new situations and to offer explanations of the behavior of compounds with which you are not familiar. Exams may or may not be cumulative as much of the material builds upon previous learning. *You will need to know material from earlier units even if they are not tested directly.* Test dates are as follows: October 7; Nov 11; Dec 2. The final exam will be comprehensive. The date, time, and location will be announced closer to exam time.

Grading:

As this is an advanced class with a smaller enrollment, the exact grading scheme (i.e. straight scale, bell curve, etc.) has not been determined. We will discuss this throughout the semester. The breakdown of your grade, however, is as follows:

Literature review article.....	20%
NMR structure elucidation.....	10%
Homework.....	10%
In-class presentation.....	10%
3 one-period exams.....	30%
Comprehensive final exam.....	20%

Course Coverage:

In first two semesters of organic chemistry, we learned the language and many of the reactions that organic molecules undergo. We learned what kinds of things can happen. In organic III, we will study the how and why of these reactions. The course will focus on physical organic chemistry, and will attempt to deepen your understanding of mechanism. Additionally, organic chemists tend to communicate in drawings. In

order to communicate effectively, we must be able to draw. We will be working on this throughout the semester. I don't expect any Renoir protégés, but I do ask that you work on this uniquely important aspect of organic chemistry.

We will cover the same basic topics covered in organic I and organic II, but will go more in depth. These topics include:

- structure and bonding
- stereochemistry (including axes and planes of symmetry)
- conformational analysis (including molecular modeling)
- How to determine mechanistic detail (such as kinetics and thermodynamics)
- nucleophilic substitution
- addition/elimination
- carbanion chemistry (including stereochemistry of enolate formation)
- carbonyl chemistry (including aldol and asymmetric induction)
- aromaticity
- pericyclic reactions (including FMO theory and correlation diagrams)

The schedule is very flexible, and we will adjust the pace according to the class's needs.

Disability Services:

Gustavus Adolphus College is committed to ensuring the full participation of all students in its programs. If you have a documented disability (or you think you may have a disability of any nature) and, as a result, need reasonable academic accommodation to participate in class, take tests or benefit from the College's services, then you should speak with the Disability Services Coordinator, for a confidential discussion of your needs and appropriate plans. Course requirements cannot be waived, but reasonable accommodations may be provided based on disability documentation and course outcomes. Accommodations cannot be made retroactively; therefore, to maximize your academic success at Gustavus, please contact Disability Services as early as possible. Disability Services (<https://gustavus.edu/advising/disability/>) is located in the Advising and Counseling Center.