

CHEM 251 – Organic Chemistry II
Fall 2012
M, T, W, F (11:30 – 12:20, section 002)

Instructor: Dr. Todd Swanson
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Classroom: FAM; Rm. 214

Office Hours

and communication: M, W, 1:30 - 2:30; other times if I am available, or by appointment.
Not the hour before lecture. I will occasionally use email or Moodle to communicate with the class as a whole. Please check both with some frequency (~daily).

Materials:

Texts: John McMurry, *Organic Chemistry, with Biological Applications*, 2nd Edition;
Sapling Access to Saplinglearning.com.
Lab Text: *Organic Chemistry II: Che-251 Laboratory Experiments Fall 2012*
James W. Zubrick, *The Organic Chem Lab Survival Manual: A Student's Guide to Techniques*, 2010.
Supplies: A model kit: *Molecular Visions* by Darling Models.
Safety goggles; bound laboratory notebook with carbon-copy duplicate pages.

On-line Resources:

Moodle: The course Moodle page will contain information, handouts, powerpoints, etc. for the course. <http://moodle.gac.edu/>
Sapling homework: <http://saplinglearning.com>

Course Description:

This course will build upon the foundation of concepts that you learned in Organic I. In particular, we will use our knowledge of organic structure, bonding, chemical reactivity, acid/base properties, and stereochemistry. We will take a mechanistic approach to understanding new reactions, and gain practice in applying these and our previously learned reactions, to the syntheses of some small molecules.

In the laboratory portion of the course, you will get additional practice in techniques, synthesis, and characterization of organic compounds. You will improve your report writing and group presentation skills. You will also have greater responsibility for obtaining your own spectroscopic data (IR & NMR), for the characterization of the compounds you prepare.

Homework: Weekly homework will be completed using the Sapling **Online Learning system**. You should register for Sapling before the first day of class, so you can do the introductory assignments to be certain that your browser is set up correctly, and to learn to use the Sapling system. To get credit for the assignments, they must be completed by the set due date.

You may on occasion be given a hand-in (non-Sapling) written homework assignment. Due dates and other particulars about these assignments will be announced in class. Late hand-in homework will be severely penalized. **Homework received later than 3 days or after solutions have been posted, will**

not be accepted. As you study your text, you should also **work as many in-chapter and end-of-chapter problems as you have time for.** Answers to in-chapter problems can be found in Appendix D of the text. I will post the answers to **suggested end-of-chapter problems** on the course Moodle site.

You are allowed to work with others on lecture homework assignments, however, if you do that, be sure that you (and your collaborators) are all contributing, learning, and understanding the subject matter. You still must turn in your own assignments done in your own hand! Also, realize that copying someone else's homework would do nothing to help you at exam time! *If I determine that all or a portion of your submitted homework is an exact copy of someone else's, those homeworks will each receive a zero.*

Tips for Success:

Teach Yourself Realize, that if you want to do well in this course (or perhaps even to pass it) you must teach the material to yourself! Organic chemistry is a unique and difficult subject for many students, something like learning a foreign language. The instructor's role is to help and to facilitate your learning of the material, but it is necessarily your job to learn it. No one can teach it to you, and you cannot absorb it simply by attending class.

Attendance Attendance in class is essential. Although attendance is not formally recorded in lecture, I expect your attendance at all classes and hold you responsible for all that is handed out, announced, or discussed there. While the text will be followed fairly closely, additional materials and examples will supplement the lecture. **Some of the material we discuss in lecture will not be in the text.** Regular attendance and active participation in class is helpful to you, to me, and to your classmates. It helps you clarify any difficulties you encounter. It helps me know if I am lecturing too quickly and where I should spend additional time/emphasis. Your attendance and questions will help your classmates in much the same way they help you.

Keep Current To do well you must keep up with the material. Read the assigned chapter sections prior to the start of lecture discussions. Doing so will make the lecture material more understandable and enjoyable. You may also find it helpful to review and perhaps recopy your notes from each lecture before you attend the next one, and to reread/study text sections, and posted PowerPoints. The 15-30 minutes you spend reviewing or recopying your notes (perhaps onto or with printed PowerPoints) may save you hours at exam time. As you review/recopy the notes, think about the material, don't just copy blindly. Ask yourself if the material makes sense.

Solve Many Problems Your homework scores will be determined by your mastery of the Sapling online assignments as well as occasional hand-in homework. There are also in-chapter and end-of-chapter practice problems in your text that you should work as many as you have time for. Don't fool yourself into thinking you know the answers in your head. Work several end-of-chapter problems before looking at the posted solutions!! Then, at another time, go through them again to make sure that you understand & know how to work them without looking at the solutions!

I strongly suggest that you solve/write down all problem answers on paper before submitting them in the on-line exercises and before checking solutions to textbook problems! Practice at quickly and accurately drawing structures on paper is very important. You will be asked to solve problems and write out solutions on the exams!

Use Models Lots of practice is required in going from the 2-dimensional world of the printed page to the 3-dimensional world where the molecules (and ourselves) exist. The molecular models will help you greatly in making that dimensional transition.

Laboratory Attendance: *Attendance in every scheduled laboratory, in your assigned section, is mandatory.* One missed lab is equal to a failure in the lab course. If you know of potential conflicts with your scheduled lab, you must make every effort to resolve those conflicts with a schedule change. Make up labs will be offered by instructor discretion, ONLY if you are very ill (bed-ridden), or if you notify your instructor in advance of a college-approved conflict with your normal lab session.

Cell phones/pagers/other electronics

As a courtesy to your fellow classmates and instructor, please turn your cell phones, iPods, and any other electronic devices OFF during scheduled lecture and laboratory time. Use of a prohibited electronic device may result in dismissal from that class (at the instructor's discretion). There will be no calculators or any other electronic devices used during exams!

Grading:

Lecture:

Four in-class exams:	45%
Homework (Sapling on-line exercises; possible other hand-in):	15%
Quizzes (most Friday's):	5%
Final Exam (cumulative):	15%

Laboratory:

Notebook Prelabs, Reports:	<u>20%</u>
	100%

Approximate Grading Scale: A: 100-92%; A-: 91-89; B+: 88-87; B: 86-82; B-: 81-79; C+: 78-77; C: 76-72; C-: 71-69; D+: 68-67; D: 66-62

At the discretion of the instructor, these cutoffs may be adjusted according to how the class as a whole has performed. For example, if the final average of the class is lower than 77% (bottom of the C+ in the above scale), the cutoffs may be lowered, and a student with an average score of 86 may receive a B+ rather than a B. Conversely, the cutoffs may be raised if the final average of the class is higher than 77%.

Notes:

- The Office of Student Advising (204 Johnson Student Union) is open daily to help students with study problems, time management problems, and other problems that might interfere with your ability to do your best work. Chemistry Tutors are also available Sunday through Thursday evenings in Nobel 305.
- There will not be any make-up exams or quizzes. If you must miss an exam because of an extreme circumstance, you must seek prior approval of the instructor.
- In the event classes are canceled because of weather, etc. on a date when a quiz or an exam was to be given, the exam or quiz will be given the next class meeting.
- If you feel there was an error in grading, you must see your instructor ***within one week of the return date.***
- If at any time during the quarter you have any questions regarding your current score and standing you are encouraged to see your instructor.

Academic Honesty: Every Gustavus Adolphus College student is required to sign the following statement before final admittance into the College and /or registration for fall courses:

"As a community of scholars, the faculty and students of Gustavus Adolphus College have formulated an academic honesty policy and honor code system, which is printed in the Academic Bulletin and in the Gustavus Guide. As a student at Gustavus Adolphus College I agree to uphold the honor code. This means that I will abide by the academic honesty policy, and abide by decisions of the joint student/faculty Honor Board."

The policy of the college states in part:

The faculty of Gustavus Adolphus College expects all students to adhere to the highest standards of academic honesty, and to refrain from any action which impinges upon 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 Provost of the nature of the offense, the penalty within the course, and the recommendation of the instructor as to whether further disciplinary action is warranted.

I will expect the following honor code to be signed by you and handed in to me early in the first week of class.

"On my honor, I pledge that I will not give, receive, or tolerate others' use of unauthorized aid in completing exams or other appropriate (so designated) written assignments for this course.

I will then naturally expect you to function with integrity by abiding by this pledge for the duration of the course.

In the case of **laboratory work**, in most cases Reports should be completed individually. This means that it will be an honor code violation to use the narrative components of a laboratory report written by another individual. It will also be an honor code violation to present the data of another individual or laboratory group as your own without proper acknowledgment and instructor permission. See the section on page 3 of your laboratory manual on "Policies ...", and on "The Honor Code". Any question you have about the expectations for a particular experiment should be directed to your lab instructor.

An integral part of the honor code is non-tolerance of violations. Any student found in violation of the academic honesty policy and honor code will receive a grade of zero for that quiz, exam, lab, etc. In addition, the office of the Provost will be notified of the nature of the offense. Repetition may result in an 'F' for the course.

Services:

Disability Accommodations

Gustavus 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 exams, or benefit from the College's services, then you should speak with the Disability Services Coordinator, Laurie Bickett (lbickett@gustavus.edu or x6286) 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.

Help for Students Whose First Language is not English Support for English Language Learners (ELL) and Multilingual students is available via the College's ELL Support staff person, Andrew Grace (agrace@gustavus.edu or x7395). He can meet individually with students to consult about academic tasks and to help students seek other means of support. In addition, ELL and multilingual students can seek help from peer tutors in the Writing Center.

Che-251-002 Tentative Class Schedule Fall 2012

Week	Topic	Lectures	Material / Chapter	Exam
1	Introduction; Review of Basic Principles (no lab)	Sept. 4, 5, 7	Moodle Handouts; your Org. I notes	
2	Aromatic substitution (Caffeine Lab)	Sept. 10, 11, 12, 14	Chapter 9 (sec. 6 – 11)	
3	Alcohols, phenols, thiols, sulfides (Electrophilic Aromatic Substitution Lab)	Sept. 17, 18, 19, 21	Chapter 13	
4	Preview of Carbonyl Chemistry; Aldehydes & Ketones: nuc. addition (Grignard Lab week 1)	Sept. 24, 25, 26	Preview of Carbonyl Chem. & Chapter 14	Sept. 28: Exam 1 (9.6-9.11 & 13)
5	Aldehydes & Ketones: nuc. Addition (no lab)	Oct. 1, 5 Nobel Conf. on 2,3	Chapter 14	
6	Carboxylic Acids and Nitriles Carboxylic Acid Derivatives: Nucleophilic Acyl Substitution (Grignard Lab week 2)	Oct. 8, 9, 10, 12	Chapter 15 Chapter 16	
7	Carboxylic Acid Derivatives: Nucleophilic Acyl Substitution (Transfer Hydrogenation week 1)	Oct. 15, 16, 17	Chapter 16	Oct. 19: Exam 2 (14, 15, 16)
8	Conjugated Dienes, Diels-Alder Reaction, other Pericyclic reactions (no lab)	Oct. 24, 26 Reading days 22, 23	Chapter 8 (sec. 12 - 15)	
9	Alkynes Carbonyl α -Substitution & Condensation Reactions (Transfer Hydrogenation week 2)	Oct. 29, 30, 31, Nov. 2	Chapter 8 (sec. 12 – 15) Chapter 17	
10	Carbonyl α -Substitution & Condensation Reactions; (Transfer Hydrogenation week 3)	Nov. 5, 6, 7	Chapter 17	Nov. 9: Exam 3 (8.12 – 8.15, 17)
11	Amines & Heterocycles; (Antibiotic SAR Lab)	Nov. 12, 13, 14, 16	Chapter 18;	
12	Amino Acids, Peptides, Proteins (no lab)	Nov. 19, 20 Thanksgiving break	Chapter 19	
13	Amino Acids, Peptides, Proteins UV-Vis. Spectroscopy; Conjugation, Color, Vision (Dilantin Synthesis)	Nov. 26, 27, 28	Chapter 19 Chapter 10 (sec. 9 – 11)	Nov. 30: Exam 4 (18, 19)
14	Carbohydrates (Azo Dyes Lab; Checkout)	Dec. 3, 4, 5, 7	Chapter 21 (sec. 1 – 8)	
15	Carbohydrate Metabolism; Catch up; Review	Dec. 10, 11, 12, 14	Chapter 22 (sec. 1 – 4, selective treatment)	Final Exam: T, Dec. 18 10:30-12:30 FAM 214?