

Organic Chemistry I – CHM 2210 Syllabus

CHM 2210-0784, Fall 2008, Monday, Wednesday, Friday, 10:40 am – 11:30 am

Classroom: Flint 50

Professor Stephen A. Miller, miller@chem.ufl.edu, Office LEI 318A

Course Description. The first half of the CHM 2210/2211 sequence, intended for majors and pre-professional students. A study of the structures, syntheses, and reactions of organic compounds.

Prerequisites. CHM 2046 and CHM 2046L or the equivalent.

1	August 25	1.1 – 1.2	Electronic Structure of Atoms, Lewis Model of Bonding
2	August 27	1.3 – 1.4	Functional Groups, Bond Angles and Shapes
3	August 29	1.5 – 1.7	Polarity, Quantum Mechanics, Valence Bond and Molecular Orbital Theory
	September 1	No Class	Labor Day
4	September 3	1.8	Resonance
5	September 5	1.9 – 1.10	Delocalized Systems, Bond Lengths, Bond Strengths
6	September 8	2.1 – 2.3	Alkane Structure, Constitutional Isomerism, Nomenclature PS#1
7	September 10	2.4 – 2.5	Cycloalkanes, Conformations of Alkanes
8	September 12	2.5	Conformations of Cycloalkanes
9	September 15	2.6	Cis/Trans Isomerism in Cycloalkanes and Bicycloalkanes
10	September 17	2.7 – 2.9	Physical Properties of Alkanes and Cycloalkanes, Reactions, Importance
11	September 19	3.1 – 3.3	Stereoisomerism, Chirality, The <i>R,S</i> System PS#2
12	September 22	3.4 – 3.5	Acyclics with Multiple Chiral Centers, Cyclics with Multiple Chiral Centers
13	September 24	3.6 – 3.9	Properties of Stereoisomers, Optical Activity, Biological Significance, Resolution PS#3
14	September 26		Midterm Examination I (Chapters 1-3)
15	September 29	4.1 – 4.3	Arrhenius Acids and Bases, Brønsted-Lowry Acids and Bases, pK_a
16	October 1	4.4 – 4.5	Acid-Base Equilibrium Position, Thermochemistry and Mechanisms
17	October 3	4.6 – 4.7	Molecular Structure and Acidity, Lewis Acids and Bases
18	October 6	5.1 – 5.2	Alkene Structure, Nomenclature PS#4
19	October 8	5.3 – 5.4	Physical Properties of Alkenes, Naturally Occurring Alkenes
20	October 10	6.1 – 6.3	Reactions of Alkenes—Overview, Reactive Intermediates, Electrophilic Additions PS#5
21	October 13	6.3	Electrophilic Additions
22	October 15	6.3	Electrophilic Additions
23	October 17	6.4 – 6.5	Hydroboration—Oxidation, Oxidation
24	October 20	6.6 – 6.7	Reduction, Reactants and Products with Chiral Centers PS#6
25	October 22		Midterm Examination II (Chapters 4-6)
	October 24	No Class	Homecoming
26	October 27	7.1 – 7.6	Alkyne Structure, Nomenclature, Properties, Acidity, Preparation, Electrophilic Addition
27	October 29	7.7 – 7.9	Alkyne Hydration, Reduction, Organic Synthesis
28	October 31	8.1 – 8.4	Haloalkane Structure, Nomenclature, Physical Properties, Preparation PS#7
29	November 3	8.5	Halogenation Mechanism
30	November 5	8.6 – 8.8	Allylic Halogenation, Radical Autoxidation, Radical Addition of HBr to Alkenes
31	November 7	9.1 – 9.2	Nucleophilic Substitution in Haloalkanes, Mechanisms PS#8
32	November 10	9.3	Evidence for S_N1 and S_N2 Reactions
33	November 12	9.4 – 9.5	Analysis of Several Nucleophilic Substitution Reactions, Beta Elimination
34	November 14	9.6 – 9.7	Beta Elimination Mechanisms, Evidence for E1 and E2 Mechanisms
35	November 17	9.8 – 9.9	Substitution vs. Elimination, Neighboring Group Participation PS#9
36	November 19		Midterm Examination III (Chapters 7-9)
37	November 21	10.1 – 10.3	Structure and Nomenclature of Alcohols, Physical Properties, Acidity and Basicity
38	November 24	10.4 – 10.5	Reactions of Alcohols with Active Metals, Haloalkanes and Sulfonates
39	November 26	10.6 – 10.7	Dehydration of Alcohols, The Pinacol Rearrangement
	November 28	No Class	Thanksgiving
40	December 1	10.8 – 10.9	Oxidation of Alcohols, Thiols
41	December 3	11.1 – 11.4	Structure of Ethers, Nomenclature, Physical Properties, Preparation PS#10
42	December 5	11.5 – 11.8	Reactions of Ethers, Silyl Ethers, Epoxides, Synthesis of Epoxides
43	December 8	11.9 – 11.12	Epoxide Reactions, Ethylene Oxide and Epichlorohydrin, Crown Ethers, Sulfides
44	December 10		TBA PS#11
45	December 18	Final Exam	(Chapters 1-11) Thursday, December 18th, 5:30 pm – 7:30 pm, Flint 50

Required Textbook: Brown, Foote, Iverson, Anslyn. *Organic Chemistry, Fifth Edition*; Brooks/Cole, 2008. (ISBN 0495388572)

Highly Recommended Study Guide: Iverson, Iverson. *Study Guide with Student Solutions Manual*; Brooks/Cole, 2008. (ISBN 049538870X)

Recommended Bundle (first one listed): http://ufchem.ichaptersbuy.com/ichapters/micro/?cluster_id=3146

Supplementary Textbooks: Organic Chemistry Textbooks by: Wade; McMurry; Vollhardt & Schore; Morrison & Boyd; Bruice; Hornback; Streitwieser & Heathcock.

E-Learning Website. All students will have access to the E-Learning website: <https://elearning.courses.ufl.edu/webct>

You will login with your Gatorlink account username and password. This is where you will find general class information, important news, office hours, handouts, class notes, and keys. This is also where you will be able to find out your point totals and histograms.

Class Requirements:

- 1) Eleven problem sets (20 points each; 200 points max; the lowest score will be dropped)
 - 2) Ten in-class quizzes (10 points each = 100 points)
 - 3) Three midterm examinations (150 points each = 450 total)
 - 4) Final examination (250 points)
- = 1000 points total**

Problem Sets. Problem sets will be **due at 4:30 pm** on the designated due dates. They can be turned in after class or to the box by my office (318A Leigh Hall). Answer keys will be posted around this time. Please write only on the paper provided. The problem sets may be spot-graded; this means that only some or parts of the problems may be scored and contribute to the 20 points. The lowest of the eleven scores will be dropped. You may work in groups or alone. But, you may not copy answers. The problem sets are designed to prepare you for the examinations.

In-class Quizzes. The ten in-class quizzes, which will be unannounced and randomly distributed during the semester, will be short and are designed to encourage you to attend class and to keep up with the course. They may occur at the beginning, middle, or end of class. They should be very easy for those who have read the assigned material. The quizzes can only be taken during the class period in which they are administered. They cannot be made up without an official, written University excuse.

Midterm Examinations. There will be three midterm examinations and each will focus on the chapters designated. The midterms are not designed to be cumulative; but you may expect some natural amount of material from a previous midterm to be important and necessary. Please bring and display your Gator1 Card for the exams.

Final Examination. The final examination will be cumulative. To do well, it will be important to keep up during the semester and review all notes and assignments for the course. Working problems—frequently and consistently—may be the best overall approach to mastering the course material. Please bring and display your Gator1 Card for the final.

Grading. Grades will be curved based on points earned out of 1000. The curve will be based on the distribution and any result is possible. Everyone could receive A's; everyone could receive D's. There is no individual penalty for a class that performs well. The last time I taught CHM 2210 (Spring 2008), a typical distribution resulted and the grades were:

Grade	#	percent
A	20	19.4 %
B+	13	12.6 %
B	16	15.5 %
C+	23	22.3 %
C	20	19.4 %
D+	1	1.0 %
D	5	4.9 %
F	4	3.9 %
I	1	1.0 %

Assignment Regrading. If you have a question concerning the grading of an assignment, you may submit the entire assignment for complete regrading. The assignment must be submitted for regrading by the second class meeting after the date the assignment was returned to the class.

Online Note Templates will be available at E-Learning (see above) in pdf format. They are organized by book chapter. The templates are made and posted to help you follow the lecture; hopefully this will allow you to spend less time writing and more time thinking. Students are encouraged to print the note templates and bring them to class to facilitate notetaking. Except for Chapter 1, they will not be available in class.

Office Hours. Office hours will be posted on the E-Learning Website. They will likely be held in Leigh Hall 328 (the Polymer Conference Room). Additional/individual office hours should be possible and should be scheduled by email.

Makeup Examinations. Makeup examinations will be given only for University-excused absences provided the appropriate documentation is supplied within the allowed timeframe. Please inform me of an absence ahead of time whenever possible.

Returning Assignments. To facilitate the return of assignments, I request that you write your name and number (to be assigned) on the back of each assignment that is turned in—within one inch from the top. Thus, I will be able to turn them upside-down and alphabetize them for mass distribution on a table at the front of class. The Teaching Assistants reserve the right to deduct one point from each assignment that lacks this identification.

UF Honor Code: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: **"On my honor, I have neither given nor received unauthorized aid in doing this assignment."** "The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff and administrators who practice dishonest or demeaning behavior."

Cheating and Plagiarism. Cheating and/or plagiarism will not be tolerated. The minimum penalty will be an automatic zero on the assignment in question. Suspension from the University may also result. Do not risk it. It is not worth it. Plagiarism consists of passing off as one's own the ideas, words, writings, etc. that belong to someone else. You are committing plagiarism if you copy the work of another person and turn it in as your own, even if you have that person's permission.

See:

<http://www.registrar.ufl.edu/catalog/policies/students.html>

<http://www.dso.ufl.edu/judicial/honorcode.php>

<http://www.dso.ufl.edu/judicial/academic.php>

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