

Organic Chemistry I – CHM 2210 Syllabus

CHM 2210-0783, Fall 2011, Monday, Wednesday, Friday, 8:30 am – 9:20 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 22	1.1	Electronic Structure of Atoms
2	August 24	1.2	Lewis Model of Bonding
3	August 26	1.3 – 1.4	Functional Groups, Bond Angles and Shapes of Molecules
4	August 29	1.5 – 1.7	Polarity, Quantum Mechanics, Valence Bond and Molecular Orbital Theory
5	August 31	1.8 – 1.10	Resonance, Delocalized Systems, Bond Lengths, Bond Strengths
6	September 2	2.1 – 2.3	Alkane Structure, Constitutional Isomerism, Nomenclature PS#1
	September 5	No Class	Labor Day
7	September 7	2.4 – 2.5	Cycloalkanes, Conformations of Alkanes
8	September 9	2.5	Conformations of Cycloalkanes
9	September 12	2.6	Cis/Trans Isomerism in Cycloalkanes and Bicycloalkanes
10	September 14	2.7 – 2.9	Physical Properties of Alkanes and Cycloalkanes, Reactions, Importance
11	September 16	3.1 – 3.3	Chirality, Stereoisomerism, The <i>R,S</i> System PS#2
12	September 19	3.4 – 3.5	Acyclics with Multiple Chiral Centers, Cyclics with Multiple Chiral Centers
13	September 21	3.6 – 3.9	Stereoisomer Terminology, Optical Activity, Biological Significance, Resolution PS#3
14	September 23		Midterm Examination I (Chapters 1-3)
15	September 26	4.1 – 4.3	Arrhenius Acids and Bases, Brønsted-Lowry Acids and Bases, pK_a
16	September 28	4.4 – 4.5	Acid-Base Equilibrium Position, Thermochemistry and Mechanisms
17	September 30	4.6 – 4.7	Molecular Structure and Acidity, Lewis Acids and Bases
18	October 3	5.1 – 5.2	Alkene Structure, Nomenclature PS#4
19	October 5	5.3 – 5.4	Physical Properties of Alkenes, Naturally Occurring Alkenes
20	October 7	6.1 – 6.3	Reactions of Alkenes—Overview, Reactive Intermediates, Electrophilic Additions PS#5
21	October 10	6.3	Electrophilic Additions
22	October 12	6.3 – 6.5	Electrophilic Additions, Hydroboration—Oxidation, Oxidation
23	October 14	6.5 – 6.6	Oxidation, Reduction
24	October 17	6.7, 29.6A,D	Reactants and Products with Chiral Centers, Polymerization of Alkenes PS#6
25	October 19		Midterm Examination II (Chapters 4-6)
26	October 21	7.1 – 7.5	Alkyne Structure, Nomenclature, Properties, Acidity, Preparation
27	October 24	7.6 – 7.9	Electrophilic Addition, Alkyne Hydration, Reduction, Organic Synthesis
28	October 26	8.1 – 8.4	Haloalkane Structure, Nomenclature, Physical Properties, Preparation PS#7
29	October 28	8.5	Halogenation Mechanism
30	October 31	8.6 – 8.8	Allylic Halogenation, Radical Autoxidation, Radical Addition of HBr to Alkenes
31	November 2	9.1 – 9.3	Nucleophilic Substitution in Haloalkanes, Mechanisms, S_N1 and S_N2 Reactions PS#8
	November 4	No Class	Homecoming
32	November 7	9.3	Evidence for S_N1 and S_N2 Reactions
33	November 9	9.3 – 9.5	S_N1 and S_N2 Reactions, Several Nucleophilic Substitution Reactions, Beta Elimination
	November 11	No Class	Veterans Day
34	November 14	9.6 – 9.7	Beta Elimination Mechanisms, Evidence for E1 and E2 Mechanisms
35	November 16	9.8 – 9.10	Substitution vs. Elimination, S/E Competitions, Neighboring Group Participation PS#9
36	November 18		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 23	10.4 – 10.5	Reactions of Alcohols with Active Metals, Haloalkanes and Sulfonates
	November 25	No Class	Thanksgiving Holiday
39	November 28	10.6 – 10.8	Dehydration of Alcohols, The Pinacol Rearrangement, Oxidation of Alcohols
40	November 30	10.8 – 10.9	Oxidation of Alcohols, Thiols
41	December 2	11.1 – 11.5	Structure of Ethers, Nomenclature, Physical Properties, Preparation, Reactions PS#10
42	December 5	11.6 – 11.9	Silyl Ethers, Epoxides, Synthesis of Epoxides, Epoxide Reactions
43	December 7	11.10 - 11.12	Ethylene Oxide and Epichlorohydrin, Crown Ethers, Sulfides PS#11
44	December 15	Final Exam	(Chapters 1-11) Thursday, December 15th, 10:00 am – 12:00 pm, Flint 50

Required Textbook: Brown, Foote, Iverson, Anslyn. *Organic Chemistry, Sixth Edition*; Brooks/Cole, 2011. (ISBN 084005498X) <http://www.amazon.com/Organic-Chemistry-William-H-Brown/dp/084005498X>

First chapter free preview: http://www.cengagebrain.com/shop/content/brown5498x_084005498x_02.01_chapter01.pdf

Required Study Guide: Iverson, Iverson. *Study Guide with Student Solutions Manual*; Brooks/Cole, 2011. (ISBN 1111426813) <http://www.amazon.com/Student-Solutions-Iverson-Anslyn-Chemistry/dp/1111426813/>

Publisher's Website: <http://www.cengagebrain.com/micro/ufchem>
<http://www.cengagebrain.com/shop/isbn/9780840054982?cid=D2S>

Highly Recommended Model Sets: HGS Polyhedron molecular model student set, student organic chemistry-C <http://www.sigmaaldrich.com/catalog/search/ProductDetail/ALDRICH/Z277746> or HGS Researcher model set, Organic chemistry-B <http://www.sigmaaldrich.com/catalog/search/ProductDetail/ALDRICH/Z277770> or HGS Student model set, Fundamental organic chemistry <http://www.sigmaaldrich.com/catalog/search/ProductDetail/ALDRICH/Z277703> or

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://lss.at.ufl.edu/>

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**
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Problem Sets. Problem sets will be **due at 4:30 pm** on the designated due dates. Answer keys will be posted around this time. The format is multiple choice with 20 questions and your answers will be turned in as an Assessment on E-Learning. 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.

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.

Office Hours. Subject to change, office hours will held Thursdays and Fridays from **3:00 pm – 3:50 pm in Leigh Hall 328** (the Polymer Conference Room). Additional/individual office hours should be possible and should be scheduled by email. Additionally, students are encouraged to visit the Organic Chemistry Learning Center, located in Rooms 257 and 258 in Flint Hall. This Center is staffed with Graduate Student Teaching Assistants in the mornings and afternoons Monday–Friday. The open hours of the OCLC are roughly 8:30 am to 6:00 pm and the final schedule will be posted on E-Learning.

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.

Attendance. Attendance for this class is not recorded. However, the ten unannounced and random in-class quizzes will generally reflect your attendance pattern.

Class Numbers. To facilitate the grading and return of assignments, I request that you write your name and **class number** on each one. The class numbers will be assigned after a few classes.

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 three semesters that I taught CHM 2210, the grade distributions were as follows:

Spring 2008:			Fall 2008:			Fall 2009:		
Grade	#	percent	Grade	#	percent	Grade	#	percent
A	20	19.4 %	A	26	19.8 %	A	35	20.7 %
B+	13	12.6 %	B+	13	9.9 %	A-	6	3.6 %
B	16	15.5 %	B	38	29.0 %	B+	35	20.7 %
C+	23	22.3 %	C+	7	5.3 %	B	9	5.3%
C	20	19.4 %	C	31	23.7 %	B-	19	11.2 %
D+	1	1.0 %	D+	3	2.3 %	C+	23	13.6 %
D	5	4.9 %	D	6	4.6 %	C	30	17.8 %
F	4	3.9 %	F	7	5.3 %	C-	2	1.2 %
I	1	1.0 %				D+	3	1.8 %
						D	2	1.2 %
						D-	1	0.6 %
						F	4	2.4 %
Total	103	100.0%	Total	131	100.0%	Total	169	100.0%

Accommodations for students with disabilities. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

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.dso.ufl.edu/sccr/honorcodes/honorcode.php>
<http://www.dso.ufl.edu/sccr/honorcodes/conductcode.php>

Copyright Notice. All handouts used in this course are copyrighted and may not be copied without my expressly granted permission. "Handouts" include all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, problems, in-class materials, review sheets, problem sets, or other materials. Tutors and tutoring services are expressly forbidden from copying any or all of these materials. Only students currently enrolled in the class may make a single copy of this material for their personal use.

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