

## CHM 251/251H: Organic Chemistry for Chemistry Majors

Fall 2016, 8:30-9:45, MWF, 319 Kreger Hall

### Contact Info

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Instructor: Dr. Benjamin Gung  
Office: 260B Hughes Hall  
Telephone: 513-529-2825  
E-mail: gungbw@miamiOH.edu

### Office Hours

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MWF 10-11 am or by appointment.

### Course Objectives

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CHM 251 will provide an introduction to the basic principles of organic chemistry. It is assumed that you have a working knowledge of the fundamental concepts of chemistry: atoms in molecules, thermodynamics, etc. In this course, we will use this foundation to discuss the structures, properties, and reactivity of organic compounds.

### Miami Plan

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In combination with the concurrent laboratory courses, CHM 244/254, CHM 251 addresses all four principles of the Miami Plan. Critical thinking is fundamental to all chemistry classes; in these courses, you are expected to use the principles learned in the lectures to solve theoretical and technical problems in organic chemistry. Although by its nature this sort of introductory course focuses on fundamental principles, I will try to help you understand the context of the content and reflect and act on its importance by bringing in examples of how organic chemistry has had a significant impact on our society. Chemistry is rarely practiced by individuals working alone. In these courses you will engage other learners by discussing the concepts and working in the laboratory. I encourage you to discuss the homework problems, keeping in mind that “discussing” and “copying” are very different: every student will need a solid working knowledge of the course in order to succeed on the exams.

### Our Responsibilities

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We will all seek to uphold the Miami University statements on Vision of Inclusion and Asserting Respect for Human Diversity. Two portions of the statements that we need to keep in the forefront of our class are:

- *Through valuing our own diversity and the diversity of others, we seek to learn from one another, foster a sense of shared experience, and commit to making the university the intellectual home of us all.*
- *Good listening and honest intellectual dialogue will be fostered to create a trusting, challenging and seamless learning environment which will encourage purposeful risks, ethical reasoning, and continuous reflection and improvement.*

### Honors (CHM 251H)

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Honors students enrolled in CHM 251H will be expected to fulfill one additional requirement:

Attend 6 departmental seminars (CHM 600, 11:30 am-12:50 pm, Thursday) and write a 2-3-page report on 3 seminars. These reports should include some background to the topic, a summary of the key results and a significant portion expressing your reaction to the seminar and what you gained from it.

You can also substitute CHM 600 with CHM 720 (5:00 pm-5:55 pm, Thursday), the organic chemistry seminar, if you have scheduling conflict. No report is needed for participating in CHM 720. However, you need to attend 12 sessions.

### Required Materials

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**Textbook:** The textbook for CHM 251 is Organic Chemistry, 5<sup>th</sup> ed. (although the older 4<sup>th</sup> ed. should work as well), by Jones and Fleming, published by Norton. The textbook is available in the bookstore as a package along with a molecular modeling kit. You will be allowed to use the modeling kit while taking midterm exams. The Study Guide/Solutions Manual is also included with the textbook. A copy of both the textbook and the solutions manual will be available on reserve at BEST Library. The textbook has an accompanying website at [www.chemplace.com](http://www.chemplace.com). This site has additional material that may be of interest, although it will not be specifically referred to in the lectures. Access to this online material may be helpful, but it is not required (e.g., if you purchased a used copy of the textbook).

### Important Course Websites

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Course material will be posted on the course website in addition to canvas. Announcements will be posted on the Canvas site and distributed by e-mail; please check the site and your Miami e-mail regularly to ensure that you receive any important information.

**Homework:** This semester, we will be using Sapling homework associated with the Jones/Fleming text. Instructions for signing up will be posted on the Canvas site.

Each assignment will consist of a set of ~30 questions related to corresponding lecture material. The goal of these assignments is to reward a consistent effort in the course, but they are not by themselves enough practice to master the material. Additional problems from the textbook will be assigned but not graded. It is very important that you keep up with the reading and work on all the assigned problems.

A key aspect of learning organic chemistry is problem solving. It is relatively easy to read the notes and assume you understand the concepts; it is another thing to prove to yourself that you understand by working through examples and questions.

**Exam Schedule:** The following schedule and topics for the exams are tentative. Three midterm exams will be given in the Tuesday evenings (6:30 pm-8 pm) and will last for 1 hour and 30 minutes. The final exam will be given from 8 am -10 am in 319 Kreger. You will be notified a week before the exam. In addition we will have in class quizzes throughout this semester (see calendar below).

First Exam	(Chapt. 1-4, 100 pts)	Tuesday, September 20
Second Exam	(Chapt. 5-8, 100 pts)	Tuesday, October 18
Third Exam	(Chapt. 10-11, 100 pts)	Tuesday, November 15
Final Exam	(Chapt. 12-13, 100 pts)	Friday, December 16
Sapling Problem Sets (3):	25	
Attendance	25	
Exams:	400	
Course Total:	450	

Approximate cutoffs: A  $\geq$  90%, B  $\geq$  75%, C  $\geq$  60%, D  $\geq$  50%, F < 50%. Plus/minus grades will generally not be awarded. The grading scale may be adjusted downward at the discretion of the instructor.

### **Make-Up Exams**

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A make-up exam will be provided only in cases of illness (doctor's note required), university-approved absence, or conflict with another class. The instructor must be notified by the student prior to the regularly scheduled exam. Failure to do so may result in a grade of zero for the missed exam. The make-up exams will be scheduled for a day/time close to the regularly scheduled exams and may have a different format from the original exam. Emergency situations will be handled on an individual basis.

### **Students with Disabilities**

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Access to my office is available from the elevator next to 170 Hughes. While there is no requirement that I be notified of any disability, the university and I will make reasonable accommodations for persons with documented disabilities. All disabilities will be kept strictly confidential between you, myself, and my graduate assistants. Students should register with the Office of Disability Resources (19 CAB, 529-1541). Please notify me if you will require a special accommodation as soon as possible, but no later than one week in advance.

### **Academic Misconduct**

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The Student Handbook sections 01.501.A and 01.501.B state the Miami University commitment to academic honesty. Two important statements are "Cheating and other forms of academic misconduct undermine the value of a Miami education for everyone, and especially for the person who cheats" and "Misunderstanding of the appropriate academic conduct will not be accepted as an excuse for academic misconduct." Cheating in any form will be regarded as a serious violation of academic ethics and will result in the initiation of academic misconduct proceedings as described in the Student Handbook: ([http://www.miamioh.edu/\\_files/documents/secretary/Student\\_Handbook.pdf](http://www.miamioh.edu/_files/documents/secretary/Student_Handbook.pdf)). Violations of the Academic Misconduct Policy can result in penalties ranging from grade reductions to suspension, dismissal, or expulsion from the University. It is important that you familiarize yourself with the regulations in the Student Handbook.

### **Electronic Equipment**

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Cell phones should not be used in class unless they are being used to answer clicker questions. Clickers may be used whenever solving questions in class. Laptops/Tablets may be used for note taking during class. All electronic devices are prohibited during exams.

### **Classroom Citizenship**

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It is important not to disturb others in class. Some examples are talking when others are listening, allowing your cell phone to ring in class, arriving late, or leaving early.

**Tentative Schedule of Topics – (Subject to change)**

<b>Dates</b>	<b>Topics</b>	<b>Chapters (5<sup>th</sup> ed.)</b>
Week 1: Aug/29-31	Introduction, Electronic Structure and Bonding	1
Week 2: Sep/7, 9	Charges, Curved Arrows, Acids and Bases	2
Week 3: Sept, 12, 16 <b>(No class Sep/5: Labor day)</b>	Nomenclature, alkanes and functional groups	3
Week 4: Sep/18-24	Basics of Alkenes and Alkynes <b>Exam 1: Sep/20, 6:30–7:50 pm</b>	4
Week 5: Sep/25-	Stereochemistry. Enantiomers, R,S notation and diastereoisomers	5
Week 6: Oct/2-8	Rings and Cyclic Structures	6
Week 7: Oct/9-10	Substituted Alkanes, Functional Groups Substitution Reactions (Thermodynamics vs Kinetics)	6 7
Week 8: Oct/10-12 <b>(No class 10/14: Fall Break)</b>	Elimination Reactions	8
Week 9: Oct/17-21	Elimination Reactions (cont.) <b>Exam 2: Oct/18, 6:30–7:50 pm</b>	8
Week 10: Oct/23-29	Electrophilic Addition to Alkenes	10
Week 11: Nov/1-5	Electrophilic Addition to Alkenes	10
Week 12: Nov/6-12	Further Additions to $\pi$ Bonds. <b>Exam 3: 11/15, 6:30-7:50 pm</b>	11
Week 13: Nov/13-19 <b>(No class Nov/23, 25: Thanksgiving Break)</b>	Radicals	12
Week 14: Nov/28-	Radicals	12
Week 15: Dec/5-10	Dienes and Allylic System <b>Final Exam: Friday, Dec/16, 8am-10am</b>	13 Cumulative

	28	29 Class starts	30	31	1 CHM 600 CHM 720	2	3
Sep 2016	4	5 Labor day holiday	6	7	8 CHM 600 CHM 720	9	10
	11	12	13	14	15 CHM 600 CHM 720	16	17
	18	19	20 First Exam UPH 001	21 No class	22 CHM 600 CHM 720	23	24
	25	26	27	28	29 CHM 600 CHM 720	30	1
Oct 2016	2	3	4	5	6 CHM 600 CHM 720	7	8
	9	10	11	12	13 CHM 600 CHM 720	14 Fall break	15
	16	17	18 Second Exam UPH 001	19 No class	20 CHM 600 CHM 720	21	22
	23	24	25	26	27 CHM 600 CHM 720	28	29
	30	31	1	2	3 CHM 600 CHM 720	4	5
Nov 2016	6	7	8	9	10 CHM 600 CHM 720	11	12
	13	14	15 Third Exam UPH 001	16 No class	17 CHM 600 CHM 720	18	19
	20	21	22	23 Thanksgiving holiday	24 Thanksgiving holiday	25 Thanksgiving holiday	26
	27	28	29	30	1 CHM 600 CHM 720	2	3
Dec 2016	4	5	6	7	8 CHM 600 CHM 720	9 Last day of class	10
	11	12 Final exam week	13	14	15	16 8:00-10:00 am Final exam.	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31

