

**\*\*Chemistry 209: Organic Chemistry II for Concentrators  
Fall 2018 Syllabus; MWF 09:00-09:50, Morton 220**

**Instructor:** Robert J. Hinkle, Integrated Science Center (ISC), Room 1039-A, x-1501; [rjhink@wm.edu](mailto:rjhink@wm.edu)

**Special Considerations:** There will be *class and lab* on Labor Day

**Office Hours:** Wed. & Thurs. 1:00-2:30. **WEEKLY Problem Sessions, Thursday evenings at 5:30 in Small 111**  
By Appt.: *email me to set up an appointment if you cannot attend other office hours!*

**Textbooks:** *Required:* Klein, D., *Organic Chemistry as a second language, 4th edition*. You will need both first AND second semester topics, but you should already have the first semester book from Chem. 206. *First semester book* (ISBN-13: 978-1119110668); *second semester* (ISBN-13: 978-1119110651)

*Strongly Recommended:* **a)** *Organic Chemistry 8th Edition*. Brown, Foote, Iverson, & Anslyn (ISBN-13: 978-1305580350); **b)** *Student Study Guide and Solutions Manual for Organic Chemistry, 8th Ed.* Brown, Foote, Iverson & Anslyn (ISBN-13: 978-1305864504). Although graphics have changed a bit, the 6th or 7th Editions can also be used since the content is essentially the same.

**Online Homework:** Problem sets and additional practice problems will be completed Sapling learning (<http://www.saplinglearning.com>). See Blackboard for more info.

**Model Kits:** You should have model kits from Orgo I and they may be used on exams.

**Plagiarism:** Cheating will not be tolerated and any evidence of copying others' materials will be reported to the Honor Council for their consideration. This rule is essentially for exams and hand-written assignments. However, working together on problem sets can be very, very beneficial ... **IF** you *help each other* through problems and *don't* just divide up an assignment among peers and then copy each other's answers.

**Model Kits:** Model kits can be used on the exams, but are optional for this course.

**Website:** Course Information and Documents will be posted on Blackboard ([blackboard.wm.edu](http://blackboard.wm.edu))

**Overview of Course:** Material learned in Chem. 206 will form a foundation for this course. The suggested problems shown on the following page are from Brown, Foote, Anslyn & Iverson. You should do all problems withing Klein as I publicize the sections covered. This course will, however, focus on reactions and "interconversions" of various functional groups; reactions mechanisms will also be emphasized since these mechanisms explain *why* the reactions occur the way they do.

**Bad Exam Policy<sup>‡</sup>:** As with Chem. 206, I recognize that you may have other commitments and/or an illness and that you might have an exam that just isn't on par with your other performances. Therefore, your lowest mean-relative exam performance (100 points) will be dropped. This dropped exam grade may be one of your mid-terms or ½ of your final exam grade, but if it's the final, it will hurt you more than a midterm would. Neither quizzes nor hand-written problem set grades will be part of this "Bad Exam Policy." Quizzes and problem sets are designed to help you keep up so that you are not overwhelmed for the exams.

**Grading:** There will be **three quizzes, seven Sapling Learning problem sets (six count), and two problem sets** that will be *hand-written and graded (not just checked for handing it in)*. Three mid-semester exams and a final exam will also count toward your overall grade. I will produce "curves" for each exam to give you *an idea of your approximate grade on individual exams (the curves are not linear throughout all scores)*. *The final course curve will be devised based on the TOTAL points at the end, not based on each, approximate exam curve.* The overall point system is shown below:

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Graded Item	Points Each	Total Points	Dates
3 Quizzes	20	60	9/21, 10/19, 11/16
7 Sapling Sets (6 count)	15	90	9/13, 9/20, 10/11, 10/18, 11/1, 11/15, 12/6
2 HW sets	20	40	9/7, 11/9
3 Exams	100	300	10/5, 10/26, 11/30
1 Final Exam	200	200	Monday 12/10, 09:00-12:00
<b>Total</b>		<b>690-100<sup>¥</sup> = 590</b>	

### General envisioned Schedule.

Dates	Book Material	Due Dates
8/29 8/31	Review of Chem. 206—Structure, resonance, and reactions—Begin Alcohols.	<b>WEEKLY Problem Sessions, Thursday evenings at 5:30 in Small 111 – starting 9/6.</b>
9/3 9/5 9/7	Alcohols Ethers, Sulfides and Epoxides	<b>Hand-written Problem Set #1, Friday 9/7—BEGINNING of class.</b>
9/10 9/12 9/14	Ethers, Sulfides and Epoxides, continued Organometallics (R-MgX, R-Li, R <sub>2</sub> CuLi)	<b>LAST DAY TO DROP</b> w/out a “W” on Transcript <b>Sapling PS #1, Thurs. night <u>by midnight (M-N)</u></b>
9/17 9/19 9/21	Aldehydes and Ketones	<b>Sapling PS #2, Thurs. by M-N</b> <b>Quiz #1, Friday 9/21</b>
9/24 9/26 9/28	Aldehydes and Ketones including carbohydrates, continued Carboxylic Acids	<b>Family Weekend—Special Lecture Friday.</b>
10/1 10/3 10/5	Derivatives of Acids <b>EXAM 1</b>	<b>Exam #1, Friday 10/05 <b>** (Review Session Small 111, Thursday 10/4 @ 5:30 p.m.)</b></b>
10/8 10/10 10/12	Derivatives of Acids, including proteins, continued	<b>Sapling PS #3, Thurs. by M-N</b>
10/12-16: <b>BREAK</b> 10/17 10/19	Enolates and Enamines	<b>Sapling PS #4, Thurs. by M-N</b> <b>Quiz 2, Friday 10/19</b>
10/22 10/24 10/26	Enolates and Enamines, continued <b>EXAM 2</b>	<b>Oct. 26—LAST DAY TO WITHDRAW</b> <b>Exam #2, Friday 10/26 <b>** ( Review Session McGlothlin 20, Thursday 10/25 @ 5:30 p.m.)</b></b>
10/29 10/31 11/2	Benzene and Aromaticity	<b>Sapling PS #5, Thurs. by M-N</b>
11/5 11/7 11/9	Aromaticity and Reactions of Benzene and its Derivatives	<b>Hand-written Problem Set #2, Friday 11/9 —BEGINNING of class.</b>
11/12 11/14 11/16	Derivatives of Acids, continued Amines	<b>Sapling PS #6, Thurs. by M-N</b> <b>Quiz 3, Friday 11/16</b>
11/19 11/21	Amines, cont. & Conjugated Systems <b>Thanksgiving</b>	

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11/23		
11/26 11/28 11/30	Conjugated Systems, cont.  <b>Exam 3</b>	<b>Exam #3, Friday 11/30 ** (Review Session Small 111, Thursday 11/29 at 5:30 p.m.)</b>
12/3 12/5 12/7	Carbon-Carbon Bond Formation  Last day of classes—Final exam info., etc.	<b>Sapling PS #7, Thurs. by M-N</b>
<b>12/10</b>	<b>*FINAL EXAM; 09:00-12:00 in Morton 220</b>	<b>Monday Exam **Review for Final Exam – waiting for room reservation for time/place.</b>

**\*Only the Dean of Students or the Dean of Undergraduate Studies can approve changes in your the final exam date!**

**\*\*We'll discuss a date/time for the final exam review before scheduling it; the Registrar's office won't schedule a room until near the end of the semester!**

**Quizzes:** These graded quizzes are also a tool to help you prepare for the exams and will be given on Fridays during the semester. The grades earned on these quizzes do not count toward any "Bad Exam Day" policy.

**Problem Sessions and Sets:** Two *hand-written* problem sets will be distributed and graded. The first will be comprised partly of problems to help you review concepts and reactions from Chem. 206. Seven problem sets will also be assigned using Sapling Learning software and *six of the seven will count toward your grade*. These problem sets are a way to help you keep up with the material. As with the quizzes, the hand-written and graded problem sets are not part of the "Bad Exam Day" policy.

**Suggested Problems:** As a general rule, you should do ALL problems that *are shown in each appropriate section* of Klein. In addition, a number of suggested problems from the end of each chapter from the 8<sup>th</sup> edition of the Brown, Foote, Anslyn, Iverson & Iverson book are listed below to help you master the material presented in class (these may change, so look for updates!). I know this represents far more problems than you can realistically do; just do as many as you can since repetition is a key to learning Orgo -- *anywhere you take it*. The problems are the same for the 6<sup>th</sup>/7<sup>th</sup> editions.

Chapter 10 (alcohols): 14a-d, 15(a-c, f, i), 16a-f, 18, 20, 23, 27, 30, 31, 34, 35, 37, 40, 43, 45 & 51 (lots of rxns in last 2)

Chapter 11 (Ethers, epoxides & Sulfides): 10(a, b, e), 11(a-c, g), 12a-d, 15-17, 21, 25, 29, 30, 33, 43

Chapter 15 (Organometallics): 7, 10, 18, 19, 20b-d, 25, 26

Chapter 16 (aldehydes & Ketones): 14(a, b, d, i), 18, 20(a, d, i), 21, 23-25, 29-31, 36-38, 41, 42, 51, 52, 54, 59, 67, 68

Chapter 17 (carboxylic acids): 17a-b, 18-20, 23, 26, 28, 32-35, 39, 42-44

Chapter 18 (Derivatives of Acids): 12(a-d, h, i, k), 14, 15, 19, 20, 22, 24, 25, 27, 28, 30, 32, 35, 41, 43, 55, 56,

Chapter 19 (Enolates and Enamines): 18, 20, 22, 23, 25, 28, 29, 32-34, 43, 44, 46, 50, 52

Chapter 21 (Benzene and Aromaticity): 8(a-c, e, g), 12, 14-16, 23, 25, 27, 32, 34, 47, 51(a-f, j, l, n), 53, 56

Chapter 22 (Aromaticity and Rxns of Benzene and Derivs): 7, 8, 11, 14-17, 19, 20, 24, 25, 28, 30, 32, 34, 35, 45-47

Chapter 23 (Amines): 16, 18, 21, 24, 25, 29, 30a-d, 34, 40, 45, 49, 56, 67

**Student Accessibility:** It is the policy of The College of William & Mary to accommodate students with disabilities and qualifying diagnosed conditions in accordance with federal and state laws. Any student who feels that they may need an accommodation based on the impact of a learning, psychiatric, physical or chronic health diagnosis should be referred to Student Accessibility Services staff at 757-221-2509 or at [sas@wm.edu](mailto:sas@wm.edu). SAS staff will work with you to determine if accommodations are warranted, and if so, to help you obtain an official letter of accommodation. For more information please see [www.wm.edu/sas](http://www.wm.edu/sas).

**Student Conduct:** You are all here to learn what you can so that you can in order to reach a variety of goals. Treat each other with respect and help each other through this process.

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## General strategies to help with this course:

1) Orgo II (Chem. 209 or 207) focuses far more on reactions and mechanisms than Orgo I (Chem. 206) did, so your studying habits may end up being a bit different this semester. If you are having trouble understanding the material, *get help early rather than waiting!*

2) In general, look over and carefully review any class notes. If I've discussed it in class, I view it as important! Then, use the book to clarify the concepts from class. As a general rule, reading the text as you would a history book, newspaper, or work of prose won't work in science. You have to "actively" read each paragraph and repeatedly refer to the pictures that are described in those paragraphs. *Continually* reviewing class and book material is crucial to learning the material in Orgo II. Several study/reading sessions are generally much better than one night of cramming for a test. *Please don't wait until a day or two before any exam to study.*

3) Don't just look at the answers until after you've attempted the problems. When you do look at the answers, make sure that you go back later to do the problem again. Your goal should be to understand the problem enough to repeat it later and get the correct answer without having to refer to the answer book.

4) Repetition is the key to mastering organic chemistry.

a) Take the time to re-write your notes *while you think about what you're writing*. If you don't understand something, try to figure it out right away. If you can't figure it out, come see me.

b) There are reaction summaries at the ends of each chapter; these are great review tools and you should take the time to re-write the reactions. Just be careful not to turn your brains off when you do so. You should be able to repeat these general reactions and know the types of materials that will give what type of product with the reagents shown.

c) Make lots of lists to help you remember the reactions. No matter where you go, Orgo is always considered a hard subject, but it's mostly because there aren't any "plug and chug" mathematical problems and chemical structures vary quite a bit. Furthermore, there's a lot of memorization you need to do and reactions are not always clear-cut. If you use flash cards, I'd suggest putting the starting molecule and reagents on one side, and reagents and product(s) on the other side.

The class scores and grades will be scaled/curved with the following considerations:

**\*\* A** = Excellent performance and *mastery* of the material presented

**B** = Very good understanding of the material

**C** = Adequate performance

**D** = Poor performance, which is often accompanied by missing homework scores, absences, etc.

**F** = Unsatisfactory performance, which often means missed exams and homework scores.

**\*\*Mastery** means that you can apply what you've learned to new, and *different problems* from those you have already seen. Exams will contain problems/questions of varying difficulty.

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