

**Chem. 206-03: Organic Chemistry I  
Spring 2019 Syllabus**

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*Email is the best way to get in touch with me outside of classtime.*

**Class Meetings:** MWF 11-11:50 am in ISC 1127.

**Course Materials**

Required: *Organic Chemistry as a Second Language, 4<sup>th</sup> Edition*, Klein (ISBN 9781119110668)(**Klein**)

Required: Sapling Learning access (can be ordered online, ISBN 9781319080228)(**Sapling**)

Recommended: *Organic Chemistry, 7<sup>th</sup> Ed.*, Brown, Iverson, Anslyn, & Foote (ISBN 9781285052618)(**BIAF**)

Recommended: *Student Study Guide and Solutions Manual for Organic Chemistry, 7<sup>th</sup> Ed.*, Iverson and Iverson (ISBN 9781133952848)

Recommended: Darling Organic Model Set. The model set may be used during tests. (ISBN 9780964883710)

**Problem Sessions:** Regular problem-working sessions will be held 4-5 pm Mondays and 4:30-5:30 pm Thursdays in ISC 1127 *except* during weeks when we have an exam. Attendance is optional but encouraged.

**Office Hours:** 3:30 – 4:30 pm Wednesdays, or by appointment.

**Website:** Course information, documents, and problem sets will be posted on Blackboard.

**Course Structure**

*Material.* We will cover Chapters 1 – 9 and 12 – 13, which form the foundation of Organic Chemistry.

*Problem Sets.* “Orgo” is best learned by working problems, and you should plan regular problem-working as part of your study schedule. To encourage you in this direction, 10 problem sets will be assigned throughout the semester to be completed online through Sapling Learning. Problem sets are due on the dates indicated on the syllabus at 11:55 pm. Each problem set will be worth 20 points. You will have 5 chances to get the correct answer for each question, but each additional attempt after submitting an incorrect answer will reduce your score for that question by 5%. Your best 8 problem sets will be counted towards your final grade. Suggested end-of-chapter problems for you to work on your own are listed on p.4 of this syllabus. Additional practice problems will be posted on Blackboard. Book and additional problems will not be collected or graded, but working them is crucial to your success in Orgo.

*Exams.* Test problems will be drawn from the material we have covered in class. Each test will include different types of problems, including but not limited to short answer, fill-in, and multiple choice. Problems that require drawing organic structures will be emphasized. The final exam will be cumulative but weighted toward material learned in the second half of the course.

**Absence Policy**

You are expected to be present for all class exams. If you have a conflict with an exam due to a College function such as varsity sports, choir, etc., you must notify me in advance of your absence to reschedule. In case of an extended illness or death in the family, please notify the Dean of Students. Due to the large class size, makeup exams will not normally be offered but may be given at the discretion of the instructor.

### Grading Policy

A total of 1160 points may be earned in this course by completing problem sets and exams as shown below:

Graded Item	Points	Date
Exam 1	200	Wed., Feb. 20
Exam 2	200	Mon., March 25
Exam 3	200	Wed., April 17
Problem Sets	160	see schedule
Final Exam	400	<b>Tues, April 30 (7 pm)</b>
	1160 pts.	

We will be using a “bad exam day” policy in which your lowest, mean-relative 200 exam points – either a midterm or one-half of your final exam – will be dropped and replaced with either your next lowest, mean-relative midterm or  $\frac{1}{2}$  of the final exam score, whichever is better. Approximate grade distributions for each exam will be announced in class.

### General Considerations and Final Grades

Organic chemistry is traditionally a very challenging topic for many students. You should plan your semester schedule so that you have time available to study and practice problem working for this course on a very regular basis. It has been my experience that students who overextend themselves by enrolling in an excessive number of credits or taking on too many extracurricular activities often struggle in this course.

The final class scores and grades will be scaled 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
- F** = Unsatisfactory performance

### Technology Policy

Every one of you contributes to the learning environment of this class through your presence, your questions, and the energy you bring to the room. Technology can enhance the learning environment when you use it to seek additional information. However, technology can also distract you and those around you to the point that it destroys our carefully crafted learning environment. Accordingly, use of laptops, tablets, and phones for texting, social media, email, and web browsing unrelated to class is prohibited.

### Honor Code

The student Honor Code is an important part of what makes W&M a special community. I expect you to observe the Honor Code fully and faithfully.

### Accessibility

William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels they may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services staff at 757-221-2512 or at [sas@wm.edu](mailto:sas@wm.edu) to determine if accommodations are warranted and to obtain an official letter of accommodation.

## Spring 2019 Chem. 206 Schedule

<b>Week Beginning</b>	<b>Topics</b>	<b>BIAF Ch.</b>	<b>BIAF Sections</b>	<b>Klein Chapters</b>	<b>Sapling Probs. Due</b>
Jan 16	Structure and Bonding, Functional Groups	1	1.1-1.4		
Jan 21	<b>Martin Luther King, Jr. day 1/21: no class</b> Polarity, Resonance, Molecular Orbital Theory Alkane Structure & Drawing	1 2	1.5-1.10 2.1	Chs. 2, 4 Ch. 1	PS 1, 1/25 (F)
Jan 28	<i>add/drop period ends 1/28</i> Acids and Bases Alkanes and Cycloalkanes: Isomerism	4 2	4.1-4.7 2.2	Ch. 3	PS 2, 2/1 (F)
Feb 4	Alkanes and Cycloalkanes: Conformations, Nomenclature, Geometrical Isomers, Properties and Reactions	2	2.3-2.9	Ch. 5 Ch. 6.1-6.2	PS 3, 2/8 (F)
Feb 11	Alkanes and Cycloalkanes Stereochemistry	2 3	2.3-2.9 3.1-3.9	Ch. 6.3-6.7	PS 4, 2/15 (F)
Feb 18	Stereochemistry <i>Review: Mon., Feb. 18, 7 pm, ISC 1221</i> <b>Wed., Feb. 20: Test 1</b>	3	3.1-3.9	Ch. 7	
Feb 25	Alkenes: Structure, Nomenclature and Properties Reaction Mechanisms (Primer 1, p.213) Alkenes: Reactions	5 6	5.1-5.4 6.1- 6.4	Ch. 11	
Mar 11	<i>last day to withdraw from course 3/15</i> Alkenes: Reactions	6	6.5-6.7	Ch. 11	PS 5, 3/15 (F)
Mar 18	Alkenes: Reactions and Stereoselectivity NMR Spectroscopy	6 13	6.5-6.7 13.1-13.8	Ch. 11	PS 6, 3/22 (F)
Mar 25	NMR Spectroscopy, IR Spectroscopy <i>Review: Sun., March 24, 1 pm, ISC 1127</i> <b>Mon., March 25: Test 2</b>	13, 12	13.9-13.12, 12.1-12.5		
Apr 1	Finish Spectroscopy, Alkyl Halides and Radicals	8	8.1-8.6, 8.8		PS 7, 4/3 (W)
Apr 8	Substitution and Elimination	9	9.1-9.2	Ch. 9	PS 8, 4/10 (W)
Apr 15	Substitution and Elimination <i>Review: Mon., April 15, 7 pm, Washington 201</i> <b>Wed., April 17: Test 3</b>	9	9.3-9.9	Ch. 10	PS 9, 4/15 (M)
Apr 22	Alkynes, Review	7	7.1-7.9	Ch. 12	PS 10, 4/24 (W)

**Final Exam Review Session: Sun., April 28, time and location to be announced**

**Final Exam: Tuesday, April 30, 7 – 10 pm (block final for all Chem. 206 sections)**

Please note that only the Dean of Students or the Dean of Undergraduate Studies can approve a change in your final exam date.

## Suggested Problems

Problem working is essential to learning organic chemistry! Below are some selected problems from the end of each chapter in the Brown & Foote textbook. These problems will not be collected or graded, but working them in addition to the Sapling and Klein problems is strongly suggested. Problem numbers shown in bold represent challenge problems that will test your mastery of the chapter material. *Mastery means that you can apply the concepts you've learned to new and unfamiliar material.*

<b>Ch. 1</b>	31, 32, 41, 45, 46, 47, 48, 49, <b>50</b> , 52, 53, 56, 57, 70, <b>74, 75</b>
<b>Ch. 2</b>	16, 21, 24, 25, 26, 29, 30, 33, 43, 48, 49, 50, <b>64</b>
<b>Ch. 3</b>	16, 17, 18, 20, <b>21</b> , 26, 27, 30, 31, <b>39</b>
<b>Ch. 4</b>	15, 16, 22, 30, 32, 36, 41, 42, <b>44, 45, 48, 53</b>
<b>Ch. 5</b>	14, 15, <b>19</b> , 20, 23, 24, <b>35</b>
<b>Ch. 6</b>	15, 17, 18, 19, 21, 24, 26, <b>28</b> , 30, 33, 37, <b>38</b> , 39, 40, 45, 46, 48, 49, <b>51</b> , 54
<b>Ch. 7</b>	8, 10, 11, 12, 16, 17, 20, 23, 25, <b>27</b> , 29, 30, 31, <b>35</b>
<b>Ch. 8</b>	8, 9, 10, 14, 15, 23, 25, 26, 28, 29, 30, 32, <b>34</b>
<b>Ch. 9</b>	11, 12, 13, 14, 17, 20, 22, 23, 25, 28, 34, 37, 38, 40, 43, 44, 45, 47, 51, 54, 55, 56, 57 <b>62, 64</b>
<b>Ch. 12</b>	5, 6, 7, 11
<b>Ch. 13*</b>	9, 12, 15, 16, 17*, 18, 20, 21, 24, <b>26</b>

\*Several problems in Ch.13 tell you that the compound decolorizes bromine in  $\text{CCl}_4$ . This is a structural clue that tells you the compound is capable of reaction with  $\text{Br}_2$  (Ch. 6). In # 17, the "reacts with sodium metal" comment tells you that the compounds are alcohols (Ch. 10, Orgo II).

## Study Strategies

The early part of this course focuses on the conceptual foundations of organic chemistry including structure, bonding, conformations, and stereochemistry. It is important to master these concepts early so that you will be able to apply them in the later portion of the course, which emphasizes spectroscopy and the reactions of organic molecules. Success in organic chemistry requires an **active** study strategy. Passive studying (simply reading the textbook and your lecture notes) can sometimes be a helpful first step in studying but will only take you so far. Here's how to study actively for this class:

- Recopy your lecture notes when studying for exams and ask yourself if they make sense (if they don't, figure out why).
- Make flashcards to test yourself on reactions and mechanisms (e.g., draw a starting material and reagents on the front of the card and the reagents and the product on the back).
- And **the #1 most recommended strategy for learning this material**: work the assigned homework problems (listed in this syllabus) and complete the problem sets. Here's the recommended approach in detail:
  - For problems in the book, work all of the problems as best you can **WITHOUT** looking at the answers. If you have to look back in the book or your notes the first time through for help, that's fine. For problems involving stereochemistry or conformations, use your model kit. You're less likely to make a mistake than if you try to visualize the molecule without making a model. You'll be able to use your model kit on exams, so using it for homework problems is great practice for the real thing.
  - Once you've completed the problem set, check your answers with the answer manual. For the ones you miss (or even ones you got right but weren't really sure of), write down the correct answer rather than simply looking at it. Keep a list of the problems you missed.
  - A few days later, work the same problem set again, giving special attention to the problems you missed last time around. Yes, again. Repetition is the key to learning this material. Follow the same procedure for checking the answers and writing down the correct answers. Repeat this entire procedure until you really understand the material and can do all the problems.