

Chemistry 240: Organic Chemistry I, Spring 2019

Daisy Bourassa, Ph.D., Winship G-37, x-5208, e-mail: dbourassa@agnesscott.edu
Office hours by appointment, **Lecture: M/W/F 8:30am – 9:20am in SC102W**

Course Text and Materials

- *Organic Chemistry* by John McMurry, 9th edition
- Index cards (100 5' x 8')
- Three-ring binder to organize handouts, notes, and homework problem sets
- *Study Guide and Student Solutions Manual for Organic Chemistry* by Susan McMurry (Optional)
- Molecular modeling kit (Optional but *highly* recommended!!)

Course Description

Chemistry 240 is a foundational course that introduces students to the chemistry of organic compounds. The principal topics discussed throughout the semester include:

- The three dimensional structure of organic compounds
- How structure affects reactivity
- How reactions take place (reaction mechanisms including common substitutions and elimination reactions)
- The fundamental reactions of classes of organic compounds such as alkanes, cycloalkanes, alkyl halides, alcohols, aldehydes, ketones and carboxylic acids.

Course Learning Goals and Objectives

Content Goals: This course is traditionally associated with a large volume of material. While it is important that you master a broad set of chemical knowledge concerning the fundamentals in the basic areas of organic chemistry, it is best that we avoid the common practice of memorizing the dozens of principal reactions of organic compounds. Instead, the course will focus on understanding why some molecular features lead to certain reactivity patterns enabling you to use this knowledge to make sound predictions when these features are encountered in unfamiliar reaction schemes. It is my goal that you acquire the problem-solving skills that will enable you to make knowledgeable predictions about the reaction pathways of organic compounds. These skills will be most useful when applying the principles of organic chemistry in other science courses.

Noncontent Goals: The scheduled class time will consist of different types of learning activities to include lectures, in-class group work and different types of writing and problem-based assignments. These various "active learning" activities will help you develop skills such as critical thinking, enhanced written and oral communication and allow you to develop habits that will facilitate learning as a future scientist or as an engaged and knowledgeable citizen.

Course Assignments

All assignments will be posted on the ASC *Moodle* system.

Homework / Problem Sets: Organic chemistry is a very problem-solving based subject. The intended purpose of homework and problem sets is to provide you opportunities to practice applying your knowledge but will not be turned in for a grade. It is in the student's best interest to take these assignments seriously since the quizzes and exam will be related to these practice problems.

Quizzes: To encourage attendance, study habits and practice, there will be 25 short on-line (using Moodle) quizzes given after each class in which new material has been presented. Quizzes must be completed by the beginning of the next lecture period. Students may use their class notes, text books, and other materials but the quiz must be completed independently. There will be no opportunity to make-up a missed quiz, however, only the best 20 quizzes will count 20% toward a student's final grade.

Exams: There are four, in-semester exams that will be administered during the 50 minute regular class times as indicated by the schedule at the end of this syllabus. Exams may also include a "take-home" portion. Missing an exam without prior approval from the instructor will result in a zero for that exam. Students should refer to the tentative exam schedule listed at the end of this syllabus. Any changes to the schedule will be announced in advance. Only the 3 best exam scores will count towards a student's final grade. Each of the three exams are 20% of the final grade. A cumulative final exam will also be administered during the self-scheduled examination periods. The final exam will be a comprehensive, multiple-choice, standardized exam provided by the American Chemical Society along with a small section of problems created by the professor from the most recent material.

The best method to prepare for the quizzes and exams is the assigned homework problems. If you have already completed the assignments I suggest you re-solve and rewrite the homework problem sets. Simply visually reviewing solved problems is often a complete waste of your time.

Grading Policy: Your grade in this course will be calculated as follows:

Three exams (@ 20% each)	60%
Quizzes (best 20 out of 25)	20%
Comprehensive final exam	20%

Grades are tentatively assigned according to the following scale: 92-100 A; 90-91 A-, 88-89 B+; 82-87 B; 80-81 B-; 78-79 C+; 72-77 C, 70-71 C-; 68-69 D+; 62-67 D; 60-61 D-; < 60 F.

The instructor reserves the right to alter the course requirements and/or assignments based on new materials, class discussions, or other legitimate pedagogical objectives.

Academic Assistance

Chemistry Learning Support Center: Refer to schedule at <http://rcms.agnesscott.edu/> The tutors are excellent, and it would be a wise decision for students in this course to get to know the tutors and utilize their talents. Students are also encouraged to seek assistance from their fellow classmates, the organic tutors and/or Dr. Bourassa before falling behind. Workshop hours will be announced. As an incentive for attendance, you will be given one bonus point on your exam for each week that you attend the workshop.

Accessible Education: Agnes Scott College seeks to provide equal access, support and services for students with disabilities. Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning, and psychiatric disabilities. To be eligible for services, students need to contact the Office of Accessible Education. Once registered, please contact Dr. Bourassa to discuss the specific accommodations required to fulfill individual needs for this course.

Office Hours: You are encouraged to stop by the instructor's office early in the semester, if nothing else, just to say hello, and introduce yourself. If you want to speak privately about performance or issues related to the class, please email Dr. Bourassa to schedule an appointment.

Course Policies

Attendance: Attendance during regular class time is not required. However, it is to the student's advantage to attend all scheduled class meetings. Keeping up with the enormous amount of new material presented in each lecture is the key to success in this course. It is much more difficult to keep up if a class is missed. Additionally, it is possible material will be discussed in a different fashion than how it is presented in the textbook. Students are responsible for all material discussed in class. *If a class is missed due to illness, it is YOUR responsibility to obtain the notes and handouts that you missed from a classmate and Moodle, please do not ask the instructor.*

Email: Updates, corrections and announcements are communicated by email regularly throughout the semester. Students are expected check their email at least once per day. All emails are sent to official Agnes Scott College email address. Email is also the best way to contact Dr. Bourassa. If you have a specific request that you bring up in the hall or after class it is highly recommended that you send an email to Dr. Bourassa with the same information, otherwise there is a high chance she will forget your request.

Academic Honesty: The Agnes Scott College honor code embodies an ideal of character, conduct, and citizenship, and is an important part of the College's mission and core identity. This applies especially to academic honesty and integrity. Passing off someone else's work as your own represents intellectual fraud and theft, and violates the core values of our academic community. To be honorable, you should understand not only what counts as academic dishonesty, but also how to avoid engaging in these practices. Students are expected to conduct themselves in a way that is consistent with College policies and in a manner appropriate with the College's mission as an educational institution. In academic matters, mutual responsibility between instructors and students requires cooperation and trust in maintaining the details and spirit of an honor system. This insures that a high level of integrity and honesty will be maintained within the academic programs.

The following are the major violations of the Honor Code and will not be tolerated in this course:

- **Cheating:** Copying others' works, collaborating with others without authorization, using notes or other unauthorized source materials during exams, accessing and using others' computer files without authorization, and violating other specific regulations of the instructor. Specifically, discussing questions, providing answers to other students or any collaboration on online quizzes with classmates is considered cheating.
- **Plagiarism:** Intentionally or unintentionally using someone else's words, works, thoughts, or expression of ideas without giving proper credit. When a source is not cited, it is assumed that the words, works, thoughts, or ideas are the sole product of the author, i.e., the student. Plagiarism includes handing in as one's own work a paper on which a student has received extensive aid in substance and/or structure without acknowledging that help.

Students of Agnes Scott College are expected uphold the Honor Code by presenting work only of their own creation. In addition, students are responsible for upholding the ethical professional standings of their programs. Students must try to ensure that others in the community also act honorably. Students are encourage to:

- review each course syllabus for the professor's expectations regarding course work and class attendance.
- attribute all ideas taken from other sources; this shows respect for other scholars. Plagiarism can include portraying another's work or ideas as your own, buying a paper online and turning it in as if it were your own work, or not citing or improperly citing references on a reference page or within the text of a paper.
- not falsify or create data and resources or alter a graded work without the prior consent of your professor. This includes making up a reference for a works cited page or making up statistics or facts for academic work.
- not allow another party to do your work/exam, or submit the same or similar work in more than one course without permission from the course instructors. Cheating also includes taking an exam for another person, looking on another person's exam for answers, using exams from previous classes without permission, or bringing and using unauthorized notes or resources (i.e., electronic, written, or otherwise) during an exam.
- not facilitate cheating, which can happen when you help another student complete a take home exam, give answers to an exam, talk about an exam with a student who has not taken it, or collaborate with others on work that is supposed to be completed independently.
- be truthful about the submission of work, which includes the time of submission and the place of submission (e.g., e-mail, online, in a mailbox, to an office, etc.).

You should understand that penalties result from dishonest conduct, ranging from failure of the assignment to expulsion from the college. You should speak with your professors if you need clarification about any of these policies.

Title IX: For the safety of the entire community, any incidence of or information about sexual misconduct must be reported immediately to Title IX Coordinator Marti Fessenden, Hopkins Hall 207, 404-471-6547.

This course adheres to the principles of diversity and inclusion integral to the Agnes Scott community. We respect people from all backgrounds and affirm people's decisions about gender expression and identity. Please feel free to correct me if your preferred name or gender pronoun are different from that listed on the class roster.

Accessible Education: Agnes Scott College provides support and services for students with disabilities. Agnes Scott complies with section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act Amendments Act (ADAA) of 2008. Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning, and psychiatric disabilities. To be eligible for services, students need to contact the Office of Accessible Education.

Religious Observance and Athletics: Accommodations for religious observance and athletic competitions will be given, provided at least a one-week advance notice is given to the instructor. If a one-week advance notice is not given, the student is responsible for all graded materials, including exams, quizzes, homework assignments and laboratories.

General Advice:

1. **For every hour you spend in class, you should spend at least *three hours outside of class reading and solving problems*.** This includes time spent before and after each topic is covered. Make it a habit to prepare yourself before each lecture. Before coming to class you should read the relevant chapter and review the online lecture(s) posted on Moodle. After class you should review your notes, complete the problem sets, and seek help from peers, tutors, or the instructor if needed.
2. **Study according to our optimal studying environment.** Log-off, turn-off, tune-out – NO TV watching, phone answering, texting, emailing, IMing, Snap-Chatting, Instagramming, Tweeting, Facebooking, active "Pandora"ing, YouTubing, Posting, Wikiing, chatting, talking, eating, munching, snacking, daydreaming, sleeping, cooking, drinking, shopping, surfing, distracting or social planning, for 1, optimally 2 hour blocks at a time, in the same location, NOT in your bed, not wearing headphones and not within 45 minutes of finishing a meal.
3. **Keep up with your work from day to day—never let yourself get behind.** One key to success in Organic Chemistry is to keep up with the fast pace of the class; cramming right before exams will not work! You will be presented with a lot of new material in each lecture. Procrastination is the biggest source of failure in organic chemistry! Succeeding in this course takes a lot of dedication and commitment, but it will be well worth the effort. *If you are one lecture behind with the reading and homework assignment double the time you dedicate to each the past and current lecture – 6 hours each = 12 hours. If you are two lectures behind with the reading and homework assignments triple the time – 9 hours each = 28 hours total. If you are three lectures behind you should probably schedule a meeting with Dr. Bourassa to discuss.

4. **Study material in small units and be sure that you understand each new section before going to the next.** Do not just attempt, but actually understand each assigned homework problem set to such a level that you can explain the answer to your peers. A "B" in this class is earned for above average work. An "A" is earned for far superior performance. "A" does not stand for average.
5. **Write when you study.** You cannot learn by "looking at solved problems." You must solve homework problems to learn. Simply looking at the solutions is often a complete waste of time.
6. **Learn by teaching and explaining.** Use the answers to the problems in the Study Guide in the proper way. Disciplined studying with other students in the course is effective for some but not all. Dedicate a time to meet with classmates a couple of times each week if possible only after you yourself have worked through problems on your own. Try to meet the same time and place each week, and be dedicated to studying chemistry. The more people involved the more difficult it will be to maintain focus. Quietly working on problems as a small group and occasionally seeking help from peers is reported to be highly effective for many.
7. **Use molecular models when you study.** Visualizing what is physically occurring in three dimensions is one of the biggest hurdles students face when studying organic. Spend the \$10 - 20 to purchase a molecular model kit and take the time to build models of molecules to train your brain to see molecules in three dimensions.
8. **Attend all classes and stay awake.** Each minute of class is cost roughly \$2.45. Missing an entire lecture of class is like wasting \$183.75! Even running 15 minutes late is wasting \$36.78!
 - Agnes Scott Tuition = \$39,720 per year
 - The average student will take 8 courses per year = \$4,965 per course
 - This course has 27 lecture periods (including exams) that are 75 minutes each = 2,025 minutes
 - \$4,965 / 2,025 minutes = **\$2.45 per minute of class**

Tentative Schedule

The tentative schedule is outlined on the following page.

This schedule is provided as a guide for you through the semester, however, it is likely that some subjects will require more or less time than anticipated. Therefore, the subject matter covered during a particular lecture period may not coincide with this schedule, however, the dates of the exams will not change (unless extensively discussed with the class). There are 37 non-exam class periods and 4 exam class periods. The 25 quizzes are noted with an (*). The asterik indicates an online quiz will occur following that class period. These quizzes may move to different dates depending on the flow of the material. There will be 25 in total, but they might not be the exact days listed below.

Date	Topic
Wednesday, Jan 9	Intro to course, drawing structures (1.1 – 1.9)
Friday, Jan 11	Drawing and naming structures (1.1 – 1.9)*
Monday, Jan 14	Alkanes and alkane isomers; Alkyl groups; naming alkanes (3.2 – 3.4)*
Wednesday, Jan 16	Alkane properties and reactions, alkane conformations; Functional groups (3.1 and 3.5 – 3.7)*
Friday, Jan 18	Alkene/alkyne structure; Naming cycloalkanes (4.1 – 4.6)*
Monday, Jan 21	MLK Day – Campus is Closed
Wednesday, Jan 23	Cis-Trans isomerism in cycloalkanes; Conformations of cyclohexane (4.1 – 4.6)*
Friday, Jan 25	Conformations of disubstituted cyclohexanes (4.7 – 4.8)
Monday, Jan 28	Exam I
Wednesday, Jan 30	Chirality, enantiomers, diastereomers, and meso compounds (5.1 – 5.6)*
Friday, Feb 1	Chirality, enantiomers, diastereomers, and meso compounds (5.1 – 5.6)*
Monday, Feb 4	Chirality, diastereomers, and meso compounds and prochirality (5.7 – 5.9 and 5.11 – 5.12)*
Wednesday, Feb 6	Chirality, diastereomers, and meso compounds and prochirality (5.7 – 5.9 and 5.11 – 5.12)*
Friday, Feb 8	Introduction to resonance structures (2.1 – 2.6)*
Monday, Feb 11	Continues resonance structures and introduction to mechanisms (6.1 – 6.6)*
Wednesday, Feb 13	Acids/bases/pKas (2.7 – 2.12)*
Friday, Feb 15	Acids/bases/pKas (2.7 – 2.12)
Monday, Feb 18	Exam II
Wednesday, Feb 20	Reaction rates, energy changes, equilibrium (6.7 – 6.10)*
Friday, Feb 22	Reaction rates, energy changes, equilibrium (6.7 – 6.10)*
Monday, Feb 25	Alkyl Halide Reactions (10.1 – 10.6)*
Wednesday, Feb 27	Alkyl Halide Reactions (10.1 – 10.6)*
Friday, Mar 1	Intro to S _N reactions (11.1 – 11.6)*
Mar 4 – Mar 8	Peak Week
Mar 11 – Mar 15	Spring Break
Monday, Mar 18	Review last 5 class periods*
Wednesday, Mar 20	S _N reactions & Elimination (E) reactions (11.1 – 11.6)*
Friday, Mar 22	S _N reactions & Elimination (E) reactions (11.1 – 11.6)
Monday, Mar 25	Exam III
Wednesday, Mar 27	Elimination (E) reactions (11.8 – 11.12)
Friday, Mar 29	Elimination (E) reactions (11.8 – 11.12)*
Monday, Apr 1	Alcohols and Phenol (17.1 – 17.6)
Wednesday, Apr 3	Alcohols and Phenol (17.1 – 17.6)*
Friday, Apr 5	Alcohols and Phenol (17.7 – 17.11)*
Monday, Apr 8	Aldehydes and ketones (19.1 – 19.7)*
Wednesday, Apr 10	Aldehydes and ketones (19.1 – 19.7)
Friday, Apr 12	Exam IV
Monday, Apr 15	Aldehydes and ketones (19.8 – 19.14)*
Wednesday, Apr 17	Carboxylic Acids (20.1 – 20.4)
Friday, Apr 19	Good Friday – Campus Closed
Monday, Apr 22	Carboxylic Acids (20.5 – 20.8)*
Wednesday, Apr 24	Carboxylic Acids (20.5 – 20.8)*
Friday, Apr 26	Intro to Infrared Spectroscopy (12.6 – 12.8)
Monday, Apr 29	Intro to Nuclear Magnetic Resonance Spectroscopy (13.1 – 13.5)*
Wednesday, May 1	Review