

CHE 225: Organic Chemistry I Lecture

M, T, R, F: 8:30 am – 11:00 am and 1:00 pm – 3:00 pm
W: 8:30 am – 11:00 am

Course Instructor: Jai A.P. Shanata, Ph.D. (call me Jai, or, if you prefer, Dr. Shanata)

Email: jshanata@cornellcollege.edu

(email is the best way to reach me unless you need an instant response)

Office: Russell Science Center 406

Home (cell): Given in class (call until ~6:30 pm; text if later); office phone: x4842

Office hours (Russell Science Center 406): M 3:30 – 4:45 pm; T 5:00 – 6:00 pm; W 11:00 – 12:15 pm

Extended office hours: Usually 8:00 – 10:00 pm W and/or R evenings in Cole Library or Zamoras. We will pick the optimal time(s) for the class together.

I am also available most days to meet immediately after each day after nearly each class session. Additional office hours (with some review) will be held the night before each exam at times determined by a class vote. To meet with me at other times check my office to see if I'm in or email me to make an appointment. Deviations from the listed office hours will be announced.

The tutors for this course are Danielle Amonica (damonica21@cornellcollege.edu) and Sanjana Palekar (spalekar20@cornellcollege.edu).

Course Description

Welcome to Organic Chemistry I Lecture! Chemistry is a science that describes matter and how it changes over time. These changes may or may not be readily observable. Chemistry seeks to develop ways to explain why some changes do happen (while others don't happen) as well as under what conditions and how these changes occur. Chemistry can be broken down into several common subfields, including: organic chemistry, analytical chemistry, physical chemistry, inorganic chemistry, biochemistry, and theoretical/computational chemistry. Organic chemistry is the study of carbon-containing compounds. An understanding of Organic Chemistry is fundamental to fields such as: biochemistry, psychology, pharmacology, neuroscience, cell biology, molecular biology, physiology, polymers/materials, food and agricultural chemistry, and much more!

There is an artistic component to this course—you will learn to draw molecules on paper and visualize them in your brain. We will use these 'pictures' (models) to work towards representing and understanding how specific arrangements of atoms and their associated electrons are related to the reactivity of the molecules they make up. Although millions of organic compounds are known, several key arrangements of atoms with particular properties—termed functional groups—reoccur in these compounds. To avoid nearly endless memorization and be able to apply your knowledge of chemistry to molecules you've never seen before, learn to recognize functional groups, their reactivity, and patterns in their reactivity.

Course Goals

Students who complete this course successfully meet the following goals/learning objections.

1. Students will be able to draw, visualize and describe in words the basic bonding motifs and types of interactions within Organic Chemistry. [Knowledge]
2. Students will be able to draw and compare compounds of varying size, polarity, and geometry. [Knowledge]
3. Students will show how acid base chemistry relates to the structure and reactions of organic compounds. [Reasoning]
4. Students will learn to apply kinetics and thermodynamics to organic reactions. [Knowledge, Reasoning]
5. Students will show the mechanistic path for reactions. This process will be applied to several different types of foundational reactions that are expanded in CHE 326 and 327. As a whole, CHE 225 and 326 will prepare you for Organic Chemistry Lab (CHE 327), where you will carry out isolations, syntheses and characterizations of molecules that help you to see, understand, and apply organic concepts. [Knowledge, Reasoning]
6. Provide the necessary foundation of chemical knowledge to study Cell and Molecular Biology (BIO 205) and begin preparing you for Biochemistry (CHE 334). [Knowledge]
7. Students will learn to work on their own and in teams with other students to digest, understand, and solve fundamental and applied problems [Reasoning, Citizenship, Ethical Behavior, Communication]
8. Students will **learn to learn** effectively on your own in a college course (with guidance) by reading the textbook actively before class, then listening and engaging with the material during lecture. [Communication, Knowledge]

Course Support of Educational Priorities and Outcomes of the College

This course supports the following Educational Priorities and Outcomes of Cornell College: knowledge, reasoning, communication, ethical behavior, and citizenship.

Required Texts and Materials

- Textbook: Paula Bruice, Organic Chemistry (5th Edition; ISBN 0-13-196316-3); we will cover most of chapters 1-3, 5, 7-10, 13, and 16-17; and a few sections from other chapters (see course schedule and assignments for details of coverage)
- A model kit. Several options are available. One fairly affordable one is the HGS 1013A model kit.
- Learning Journal and Study Guide—I strongly recommend that you use a binder of papers so that you can add and rearrange as needed. A separate handout will provide additional details.
- Frequent access to the internet, including: email, Moodle, library resources, etc. Additional readings and course materials may be posted on Moodle.

Daily Work/Homework

- Before coming to class each day, students are expected to read the assigned sections from the required textbook, attempt the relevant in-text problems, and make note of what concepts are unclear.
- Homework and competency assignments are not intended to be comprehensive. In order to be prepared for a strong performance in this course, at a minimum you should fully understand all example problems in the textbook chapters (a few exceptions should be obvious based on the material we cover in class), all recommended problems, and carefully study the notes that you take in class.

Major Assignments/Exams

- Your Learning Journal and Study Guide (separate from homework) will be collected at the start of each exam. See separate handout for further details.
- Each exam will be comprehensive (including an expectation that you understand and can correctly apply material from course prerequisites such as CHE 121 and 122 (or 161)), but will emphasize material covered since the previous exam. See Course Grading section for dates.
 - If your performance on any exam is unsatisfactory (less than 60%), you must make arrangements to discuss the exam and how to improve with me within 24 hours of the exam's return.
 - My goal is for you to have ample time to complete each exam. However, a firm cut-off time for each exam will be announced in class. If you think that the time that I've allotted may be insufficient, make sure to request accommodations (see "Other Accommodations", below).
- Project: You will prepare a brief (~5-10 minutes) presentation that clearly demonstrates the relationship between material covered in class and a topic of interest to you and of relevance to human health or some other application of Organic Chemistry.

Class Participation

Daily participation and group work: Every day pick up a note card when you come into class and write your name on it. These will be used for you to answer miscellaneous questions during lecture and after each class period for you to write at least one question that you have about the material we covered that day. If everything we covered that day is perfectly clear in your brain, then instead write me a brief note about what was most (or least) interesting to you and the pace of class. When problems, group work, and group exams are assigned in class, I will be watching to make sure that everyone is contributing, but also listening. In addition, you are strongly encouraged to actively participate in class by taking careful notes and asking conceptual questions related to the material at any time (questions related to the assigned problems should be asked during office hours). You will be expected to engage in this active way multiple times during each class session. All interactions related to the course (in-class, office hours, study groups, email, etc.) are expected to be civil, respectful, and supportive of an inclusive learning environment for all students

Course Grading

Statement of Grading Process and Criteria

Grades will be assigned based on the points accrued and an application of competency assignments to modulate the grade (see below). This is meant to encourage students to learn foundational aspects of the course, while rewarding daily work, problem solving, participation, and exam performance. Note that you must complete ALL assignments in order to receive a passing grade. This is true even if the assignment is late and receives partial credit or no credit (see late policy).

Explanation of Grading System

Point Distribution (some components may be scaled)

Competency Assignments	<i>See separate handout</i>
Homework and Presentation	50
Learning Journal and Study Guide	100
Exam I (Friday, September 27 th)	75
Exam II (Tuesday, October 8 th)	125
Final Exam (Tuesday, Oct 15 th and Wednesday, Oct 16 th)	200
<u>Daily participation and group work</u>	<u>50</u>
Total	600

The course grade will be determined based on the successful completion of the 10 competencies as well as the points above. Specifically, students completing all 10 competencies will earn:

If >90% of the above points, then an A.

If 80-89% of the above points, then at least a B.

If 64-79% of the above points, then at least a C.

If 47-63% of the above points, then at least a D-.

Students who don't successfully complete all competencies will have their final course grade decreased proportional to the number of incomplete competencies, as outlined in class.

Course-Specific Support

The instructor will arrange for a combination of student tutoring and instructor-led review sessions in the 24-48 hours before each exam and possibly at other times. Specific times arranged so far include:

Week 1:

Thursday afternoon (9/26): 3:15-4:45 pm; Sanjana Palekar (our classroom)

Thursday night (9/26): 7-9pm; Daniella Amonica (Cole library, 3rd floor)

Week 2:

Thursday night (10/3): 7-9pm; Daniella Amonica (Cole library, 3rd floor)

Sunday night (10/7): 7-9pm; Daniella Amonica (Cole library, 3rd floor)

Week 4:

Monday night (10/14): 7-9pm; Daniella Amonica (Cole library, 3rd floor)

Tuesday afternoon/night (10/15): TBD

Additionally, students are encouraged to form regular study groups.

Course Policies and Information for Students

1. ATTENDANCE and TECHNOLOGY POLICIES

Attendance at all lectures, exams, and quizzes is absolutely mandatory. Some homework, quiz, and exam content will be based specifically on discussions in class. If you can't attend for any reason, you

should notify me in advance. I expect that students will come **on time**, be prepared, and actively participate in all class meetings. Please show respect for your classmates and limit disruptions, especially the use of electronic devices such as cell phones. I reserve the right to reduce the grade of students who have been repeatedly late or have unexcused absences from lecture, even if they have a number of points that would otherwise have earned them a higher grade based on the grading cutoffs.

2. PENALTIES FOR LATE WORK and REQUESTS FOR EXTENSIONS

You are expected to hand in all assignments on time; this is part of being a responsible adult. Moreover, being a day behind on the block plan may make it impossible for you to catch up. Unless arranged in advance, late work will receive a reduced grade as follows:

10 minutes – 12 hours late: -20%

12 hours – 36 hours late: -40%

36 hours – 72 hours late: -70%

>72 hours late: -100%

If you can't get a physical copy of an assignment to me, digitize it and send me an electronic version (picture, scan, etc.) by email—I will count it as submitted whenever I receive that email. Then, get the hardcopy to me as soon as possible. Also, note that you must hand in **all** late work, even if it is >72 hours late and receives an automatic 0.

Please contact me as soon as possible if you are having difficulty with the course or if a serious sickness/incident occurs during the block. Similarly, if you need to miss class, let me know ahead of time; at my discretion the assignment in question may be excused. In addition to the resources listed at the end of this syllabus (librarian, quantitative reasoning studio, writing studio, and student chemistry tutor), there are many other ways that I and others can help directly and indirectly, but you have to let me know! I reserve the right to reduce the final grade of students who have handed in multiple assignments late, even if they have a number of points that would otherwise have earned them a higher grade based on the grading cutoffs.

3. COURSE COMMUNICATION

For this course I require that you check your Cornell College email and Moodle accounts each at least once every day in the evening (sometime between 7:00 pm and 11:00 pm). The syllabus, selected handouts, list of problems, and assignments will be posted on our CHE 225 Moodle page.

4. **DISABILITIES AND ACCOMODATIONS POLICY:** Cornell College makes reasonable accommodations for persons with disabilities. Students should notify the Office of Academic Support and Advising and their course instructor of any disability related accommodations within the first three days of the term for which the accommodations are required, due to the fast pace of the block format. For more information on the documentation required to establish the need for accommodations and the process of requesting the accommodations, see <http://www.cornellcollege.edu/academic-support-and-advising/disabilities/index.shtml>.

5. **ACADEMIC HONESTY POLICY:** Cornell College expects all members of the Cornell community to act with academic integrity. An important aspect of academic integrity is respecting the work of others. A student is expected to explicitly acknowledge ideas, claims, observations, or data of others, unless generally known. When a piece of work is submitted for credit, a student is asserting that the submission is her or his work unless there is a citation of a specific source. If there is no appropriate acknowledgment of sources, whether intended or not, this may constitute a violation of the College's requirement for honesty in academic work and may be treated as a case of academic dishonesty. The procedures regarding how the College deals with cases of academic dishonesty appear in The Catalogue, under the heading "Academic Honesty."

Responsible Scientific Conduct and Collaboration Policy

As scholars, in this class and beyond you will be expected to explicitly acknowledge words, ideas, calculations, and data created by others. Failure to do so is a form of academic misconduct, and academic misconduct is an extreme form of disrespect towards your peers and mentors. Obvious examples include plagiarism (copying, paraphrasing, or stitching), cheating on exams, or writing something in your lab notebook that you didn't actually do; however, there are other examples of academic misconduct (and how to avoid them) that are outlined in your student handbook. Students engaging in academic dishonesty in this course will automatically fail the assignment and, at my discretion, may receive a failing grade for the course. Violations of Cornell College's policies on academic misconduct will also be referred to the Registrar and the Dean of the College and will be dealt with as described in the student handbook.

Unless otherwise specified, all work on exams and other assignments must be entirely your own—absolutely no collaboration is allowed. While you may choose to work with other students on the assigned problems, **all work that is graded in this course must be your own in that you must fully understand everything that you have written down—including in your Learning Journal and Study Guide.** In order to make sure that this is true, I will on occasion ask you to verbally explain to me a problem or assignment that you have handed in. For all of the assigned problems, I strongly encourage you to first read and attempt the problem on your own without using any external resources (classmates, internet, instructor, tutor, etc.). Then if you are stuck, start discussing with your classmates or come to office hours and talk to me or the chemistry tutor.

Value of a Liberal Arts Education

What you take out of your college experience will (hopefully) be more than your GPA. You will gain a range of knowledge, skills, experiences, a network, and grow in to a responsible, caring adult. To facilitate these goals, I encourage you to attend events of interest to you across campus this block.

Preliminary Schedule of Topics, Readings, and Assignments

Day		Date	Topics (tentative)	Reading/Work
0	prior to block		read chapter 1	review; Chapter 1
1	M	9/23	syllabus; Ch 1; review	Chapter 2
2	T	9/24	finish Ch 1 (am); start Ch 2 (2.1-2.9)	Chapter 3
3	W	9/25	Finish Chapter 2 (am); start Ch 3 (pm)	finish HW 1 (due 10:00 pm); study for exam 1
4	R	9/26	Chapter 3	study for exam 1
5	F	9/27	Exam 1 (am) ; introduce Ch 5	
	Sat	9/28		break
	Sun	9/29		Chapter 5
6	M	9/30	Chapter 5	Chapter 7
7	T	10/1	Chapter 7 and start 8	Chapter 8
8	W	10/2	Chapter 8	Chapter 9; start HW 1
9	R	10/3	Chapter 9	Chapter 10; HW 1 (due 10:00 pm)
10	F	10/4	Finish Chapter 9; start Ch 10 (10.1-10.5)	break
	Sat	10/5		review all problems so far
	Sun	10/6		study for exam 2
11	M	10/7	Finish Chapter 10; student presentations	study for exam 2
12	T	10/8	Exam 2 (all day)	Chapter 13
13	W	10/9	Chapter 13	Chapter 16
14	R	10/10	Chapter 16	Chapter 17
15	F	10/11	Chapter 16; start Chapter 17	
	Sat	10/12		Study for Final Exam; HW 2 due
	Sun	10/13		break
16	M	10/14	Finish Chapter 17; finish any other material; complete all presentations	Finish Learning Journal
17	T	10/15	grad school/science/life advice; science philosophy; course evaluations; Final Exam, part 1	Study for Final Exam
18	W	10/16	Final Exam (part 2; all day)	

**Learning Journals will be graded during each exam*

**Competency Assessments will occur on days: 2, 3, 4, 7, 8, 9, 11, 14, 15, and 16.*