

CHEMISTRY 231 Elemental Organic Chemistry Fall 2023
Course URL: <https://canvas.iastate.edu/courses/101108>

Sections:	Monday, Wednesday, Friday 11:00-11:50 a.m.
Room:	1002 Gilman
Instructor:	Dr. Yan Zhao (3101D Hach Hall)
Phone:	515-294-5845
E-Mail:	zhaoy@iastate.edu [Write " Chem 231 " on the subject]
Office Hours:	After lectures and by appointments Meeting URL: https://iastate.webex.com/meet/zhaoy
Head TA:	Mr. Yu Fu (yufu@iastate.edu) will handle logistics related to this class such as exam rearrangements and regrades. Office hours: Wednesday 9:00–10:00 a.m. at 3354 Gilman Hall Friday 9:30–10:30 a.m. at 3195 Hach Hall

Co-requisite: Chem 231 is a CO-REQUISITE for Chem 231. NO GRADE WILL BE GIVEN FOR CHEM 231 UNLESS CHEM 231L IS COMPLETED.

Textbook: *Introduction to Organic Chemistry*, 6th Edition, by William Brown and Thomas Poon. The e-book is accessible through the Wiley Course Resources tab on Canvas, which contains many resources including videos and practice problems.

Canvas: All course-related materials and announcements will be posted on Canvas.

Exams: In addition to the Final Exam (200 pts), there will be **four exams** (100 pts each) scheduled throughout the semester. **All exams take place in the same classroom at the indicated times in the class schedule (next page).**

Any re-grades on an exam **must** be requested within one week after receiving the graded exam. Mark the questions you request regrade on the cover page and briefly explain the issue. **Turn the exam to Ms. Taylor Gerdes (1608 Gilman Hall) and she will pass it on to the head TA.** The head TA generally looks over the entire exam to correct any mistakes in grading. **Missing an exam for any reason will result in that exam being dropped.** The reason that I drop an exam is that it allows you to miss an exam for a personal or family emergency (such as an illness, a death in the family, car troubles, etc), or for other legitimate causes without suffering a grade penalty.

Grading: All exams including the final will be curved based on a class average of 70% unless the class average is higher (e.g., all students who have taken a particular exam will get 15% added to the earned score if the class average is 55%; students who choose to skip an exam will get a zero). The lowest score on a 100-point exam or a missed hour exam will be dropped. The course grade will be based on the three best 100-point exams and the final (maximum total = 500 points). The final course grade will be based on the following scale:

A ≥ 88%; 88% > **A-** ≥ 85%; 85% > **B+** ≥ 82%; 82% > **B** ≥ 78%; 78% > **B-** ≥ 75%; 75% > **C+** ≥ 70%;
70% > **C** ≥ 65%; 65% > **C-** ≥ 60%; 60% > **D+** ≥ 57%; 57% > **D** ≥ 53%; 53% > **D-** ≥ 50%; **F** < 50%

Other resources to learn chemistry: Khan academy (<https://www.khanacademy.org/science/organic-chemistry>) and YouTube videos (e.g., <https://www.youtube.com/channel/UCeWpbFLzoYGPfuWUMFPSaoA>)

1. Lecture and Exam Schedule

1	M 08/21	Chap. 1 Bonding	9	W 10/16	Chap. 8 Alcohols and Ethers
	W 08/23	Chap. 1 Structures		W 10/18	Chap. 8 Alcohols and Ethers
	F 08/25	Chap. 1 Hybridization		F 10/20	Chap. 9 Aromatic Compounds
2	M 08/28	Chap. 1 Functional Groups	10	M 10/23	Chap. 9 Aromatic Compounds
	W 08/30	Chap 11.1–11.4 IR		W 10/25	Chap. 10 Amines
	F 09/01	Chap 11.1–11.4 IR		F 10/27	<u>Review</u>
3	M 09/04	Labor Day (no class)	11	M 10/30	EXAM 3 (Chap. 8, 9, 10)
	W 09/06	Chap. 2 Acids and Bases		W 11/01	Chap. 11.5–11.12 NMR
	F 09/08	Chap. 2 Acids and Bases		F 11/03	Chap. 11.5–11.12 NMR
4	M 09/11	Chap. 3 Alkanes and Cycloalkanes	12	M 11/06	Chap. 12 Aldehydes and Ketones
	W 09/13	Chap. 3 Alkanes and Cycloalkanes		W 11/08	Chap. 12 Aldehydes and Ketones
	F 09/15	EXAM 1 (Chap. 1–4)		F 11/10	Chap. 13 Carboxylic acids
5	M 09/18	Chap. 4 Alkenes/Alkynes	13	M 11/13	<u>Review</u>
	W 09/20	Chap. 4/5 Alkenes/Alkynes (Reactions)		W 11/15	EXAM 4 (Chap. 11b, 12, 13)
	F 09/22	Chap. 5 Alkenes/Alkynes (Reactions)		F 11/17	Chap. 14 Carboxylic acid derivatives
6	M 09/25	Chap. 5 Alkenes/Alkynes (Reactions)	14	M 11/20	<u>Thanksgiving Break (no class)</u>
	W 09/27	<u>Review</u>		W 11/22	<u>Thanksgiving Break (no class)</u>
	F 09/29	<u>Review</u>		F 11/24	<u>Thanksgiving Break (no class)</u>
7	M 10/02	Chap. 6 Chirality	15	M 11/27	Chap. 14 Carboxylic acid derivatives
	W 10/04	Chap. 6 Chirality		W 11/29	Chap. 16 Organic Polymers
	F 10/06	Chap. 7 S _N /E Reactions for RX		F 12/01	Chap. 17 Carbohydrates
8	M 10/09	Chap. 7 S _N /E Reactions for RX	16	M 12/04	Chap. 18 Amino acids and proteins
	W 10/11	<u>Review</u>		W 12/06	<u>Review</u>
	F 10/13	EXAM 2 (Chap. 5–7)		F 12/08	<u>Review</u>

Final: 7:30–9:30 a.m. Thursday, December 14th

2. Learning Objectives

Learning Objectives:

Organic chemistry is a challenging subject. You will be expected not only to learn factual information, but also to apply your newfound understanding to open-ended problems. You should not aim simply to memorize the material. Rather, you should try to make sense of trends so that you can make predictions in unfamiliar situations. Problems fall into Five major categories:

Naming of Organic Compounds: You will learn about naming compounds which are cyclic or acyclic, alkanes, alkenes and alkynes with or without specifying stereochemical information such as R, S, E, Z, cis or trans.

Structure and properties: Major topics in this area include the properties of functional groups (the key parts of organic molecules), conformational analysis (the study of how molecules fold in three dimensions), and stereochemistry (the study of molecules possessing mirror-imaged partners).

Reactions and mechanisms: You will learn to predict the products of reactions, propose reagents for effecting desired reactions, and explain why reactions proceed the way they do.

Organic synthesis: Using your understanding of reactions, you will propose methods for preparing target molecules through multi-step reaction sequences.

Structure determination: Using your understanding of organic chemistry, you will deduce the structures of unknown compounds by analyzing their properties under a variety of condition

Course Expectations: *A large amount of new material will be covered in this course and it is extremely important that you keep up. You should read the appropriate chapter before the lecture covering that material in order to follow the discussion more easily. Also, do not cut classes and you will miss the connections between lectures. Work on the end-of-chapter problems for your own benefit. The answers to those problems are available in the Study Guide & Solutions Manual. It is strongly advised that you work as many problems as you can to do well in this course.*

The four most important tips for doing well in this class:

1. Read the book chapter and work the in-chapter problems **prior** to coming to class. This is an effective use of your time because you will get more out of lecture if you have read ahead.
2. Study the posted lecture notes and the corresponding materials in the textbook.
3. Work on the online homework after the chapter is finished (the homework is generally due a week after the chapter is done).
4. Don't fall behind, as it is nearly impossible to catch up!

3. Other Information

Disability Accommodation

Iowa State University complies with the Americans with Disabilities Act and Sect 504 of the Rehabilitation Act. If you have a disability and anticipate needing accommodations in this course, please contact Dr. Zhao to set up a meeting **within the first two weeks of the semester** or as soon as you become aware of your need. Before the meeting, you will need to obtain a SAAR form with recommendations for accommodations from the Disability Resources Office, located in Room 1076 on the main floor of the Student Services Building. Their telephone number is 515-294-7220 or email disabilityresources@iastate.edu. **Retroactive requests for accommodations will not be honored. For any special exam accommodations, turn the SAAR form to Ms. Taylor Gerdes (1608 Gilman Hall) to set it up.**

Drops and Audits: Students taking Chem 231L will be required to drop the lab if they drop or decided to audit Chem 231 lecture course. Auditing does not count towards full-time student status. **For signing your drop slip, please see Taylor Gerdes in 1608 Gilman Hall.**

Organic Help Hours (1761 Gilman): Organic teaching assistants will be available to help with questions related to lab and lecture material: (<https://www.chem.iastate.edu/chemistry-help-room>)