

Day and time:	Monday, Wednesday, Friday 8:50 – 9:40 am
Room:	1222 Hach
Instructor:	Prof. Junqi Li
Office:	3128 Hach Hall
Phone:	515-294-7268
Email:	junqili@iastate.edu [Write "CHEM 531" in the beginning of the subject line]
Office hours:	By appointment

Textbook: This course will not follow any textbook closely. For supplementary reading, you may consider *March's Advanced Organic Chemistry* by Michael B. Smith and Jerry March, *Advanced Organic Chemistry Part B: Reactions and Synthesis* by Francis A. Carey and Richard J. Sundberg, and *Heterocyclic Chemistry* by John A. Joule and Keith Mills.

Electronic resource: Encyclopedia of Reagents for Organic Synthesis (open access online).

Canvas: Lecture notes, problem sets, grades, and class announcements will be posted on Canvas.

Grading and exams:

5 problem sets	50 points
4 mid-term exams	200 points
1 Final exam	100 points
Total	350 points

Important note about exams: All exams are cumulative. You are allowed one handwritten A4- or letter-sized page of notes (single-sided for mid-term exams, double-sided for final exam). You must write your own notes – photocopies will not be allowed.

Learning Objectives: The purpose of this course is to be a resource for students conducting organic synthesis, and to provide a foundation for understanding modern literature in organic synthesis. Do not use Scifinder or other reaction databases (e.g. Reaxys) to complete problem sets.

Course Expectations: This course will be challenging, and students are highly encouraged to clear gaps in understanding by making use of office hours. Don't fall behind - keep up with the lectures!

Work on problem sets individually. If you are stuck on a problem, discuss the problem with the instructor. The instructor will provide hints. All problem sets must be completed on time.

Academic Dishonesty: Academic Misconduct in any form is in violation of Iowa State University Student Disciplinary Regulations and will not be tolerated.

This includes, but is not limited to: copying or sharing answers on tests or assignments, plagiarism, using Scifinder and other reaction databases to complete problem sets, and having someone else do your academic work.

Depending on the act, a student could receive an F grade on the test/assignment, F grade for the course, and could be suspended or expelled from the University. See the Conduct Code at www.dso.iastate.edu/ja for more details and a full explanation of the Academic Misconduct policies.

Public Health:

- If you are not feeling well, you should stay home and focus on your health. Should you miss class due to illness, it is your responsibility to work with your instructor to arrange for accommodations and to make up coursework, as consistent with the instructor's attendance policy.
- You may choose to wear a face mask and/or receive the COVID-19 vaccine and boosters, as well as other vaccines such as influenza, but those options are not required. Thielen Student Health Center will continue to provide COVID-19 vaccinations free-of-charge to students. The university will continue to offer free masks and COVID-19 test kits during the fall 2022 semester.
- Other wellbeing resources for students are available at: <https://www.cyclonehealth.iastate.edu/wellbeing-resources/>
- Public health information for the campus community continues to be available on Iowa State's public health website. All public health questions should be directed to publichealthteam@iastate.edu.

Accessibility Statement: Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. Students requesting accommodations for a documented disability are required to work directly with staff in Student Accessibility Services (SAS) to establish eligibility and learn about related processes before accommodations will be identified. After eligibility is established, SAS staff will create and issue a Notification Letter for each course listing approved reasonable accommodations. This document will be made available to the student and instructor either electronically or in hard-copy every semester. Students and instructors are encouraged to review contents of the Notification Letters as early in the semester as possible to identify a specific, timely plan to deliver/receive the indicated accommodations. Reasonable accommodations are not retroactive in nature and are not intended to be an unfair advantage. Additional information or assistance is available online at www.sas.dso.iastate.edu, by contacting SAS staff by email at accessibility@iastate.edu, or by calling 515-294-7220. Student Accessibility Services is a unit in the Dean of Students Office located at 1076 Student Services Building.

Harassment and Discrimination: Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, Student Assistance at 515-294-1020 or email dso-sas@iastate.edu, or the Office of Equal Opportunity and Compliance at 515-294-7612.

Religious Accommodation: If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and your instructor or supervisor will review the request. You or your instructor may also seek assistance from the Dean of Students Office or the Office of Equal Opportunity and Compliance.

Freedom of Speech and Academic Freedom: Iowa State University supports and upholds the First Amendment protection of freedom of speech and the principle of academic freedom in order to foster a

learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech as long as student expression in a class context is germane to the subject matter of the class and conveyed in an appropriate manner.

Contact Information: If you are experiencing, or have experienced, a problem with any of the above issues, email academicissues@iastate.edu.

Prep Week: This class follows the Iowa State University Dead Week policy as noted in section 10.6.4 of the Faculty Handbook (<http://www.provost.iastate.edu/resources/faculty-handbook>)

Tentative schedule for Fall 2022 CHEM 531

Week	Date	Key Topics
1	Week of Aug 22	Course details, introductory concepts on bonding, reactivity and stereochemistry
2	Week of Aug 29	Activation of OH and COOH
3	Week of Sep 5 Sep 7 (Wed)	Labor Day (no class on Monday) Exam 1 Protecting groups
4	Week of Sep 12	Protecting groups Oxidation
5	Week of Sep 19	Oxidation
6	Week of Sep 26 Sep 30 (Friday)	Catalytic hydrogenation Reduction with hydrides Exam 2
7	Week of Oct 3	Enolate chemistry
8	Week of Oct 10	Enolate chemistry
9	Week of Oct 17 Oct 21 (Friday)	Enolate chemistry Exam 3
10	Week of Oct 24	Alkene formation – carbonyl olefination and metathesis Polar additions to alkenes and alkene synthesis via elimination
11	Week of Oct 31	Organolithium, organomagnesium, and organozinc chemistry Organocopper chemistry Transition-metal catalyzed cross-coupling reactions
12	Week of Nov 7	Organoboron chemistry Organosilicon chemistry
13	Week of Nov 14 Nov 14 (Monday)	Alkynes Exam 4
14	Week of Nov 21	Thanksgiving break (no classes)
15	Week of Nov 28	Arene and heteroarene chemistry
16	Week of Dec 5	Prep week
17	Week of Dec 12	Final exam