

Day and time:	Monday, Wednesday, Friday 8:50 – 9:40 am
Room:	1222 Hach
Instructor:	Prof. Yuan Zhang
Office:	3101B Hach Hall
Phone:	515-294-4711
Email:	yazhang@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:

4 problem sets (class participation)	80 points
2 mid-term exams	100 points
1 Final exam	150 points
Total	330 points

Important note about exams: All exams are cumulative. You are allowed handwritten A4- or letter-sized pages of notes. Exam details will be given during the semester. You must write your own notes – photocopies are not 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!

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.

Accessibility Statement: Iowa State University is committed to advancing equity, access, and inclusion for students with disabilities. Promoting these values entails providing reasonable accommodations where barriers exist to students' full participation in higher education. Students in need of accommodations or who experience accessibility-related barriers to learning should work with Student Accessibility Services (SAS) to identify resources and support available to them. Staff at SAS collaborate with students and campus partners to coordinate accommodations and to further the academic excellence of students with disabilities. Information about SAS is available online at www.sas.dso.iastate.edu, by email at accessibility@iastate.edu, or by phone at 515-294-7220.

Harassment and Discrimination: Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. Veteran. Inquiries regarding non-discrimination policies may be directed to Office of Equal Opportunity, 3410 Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, Tel. 515-294-7612, Hotline 515-294-1222, email eooffice@iastate.edu.

Mental Health and Well-Being: Iowa State University is committed to proactively facilitating all students' well-being. Resources are available on the ISU Student Health and Wellness website (<https://www.cyclonehealth.iastate.edu/>).

Prep week: This class follows the Iowa State University Prep Week policy as noted the ISU Policy Library; as well as section 10.6.4 of the Faculty Handbook. Visit the [ISU Policy Library website](http://www.policy.iastate.edu/) (<http://www.policy.iastate.edu/>) for policy wording.

Religious Accommodation: Iowa State University welcomes diversity of religious beliefs and practices, recognizing the contributions differing experiences and viewpoints can bring to the community. There may be times when an academic requirement conflicts with religious observances and practices. If that happens, students may request reasonable accommodation for religious practices. In all cases, you must put your request in writing. The instructor will review the situation in an effort to provide a reasonable accommodation when possible to do so without fundamentally altering a course. For students, you should first discuss the conflict and your requested accommodation with your professor at the earliest possible time. You or your instructor may also seek assistance from the [Dean of Students Office website](http://dso.iastate.edu/) (<http://dso.iastate.edu/>) or via phone 515-294-1020 or the [Office of Equal Opportunity website](https://www.eoc.iastate.edu/) (<https://www.eoc.iastate.edu/>) or via phone 515-294-7612.

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 for Academic Issues: If you are experiencing, or have experienced, a problem with any of the above statements, email academicissues@iastate.edu.

Tentative schedule for Fall 2024 CHEM 5310

Week	Date	Key Topics
1	Week of Aug 21	Course details, introductory concepts on bonding, reactivity and stereochemistry
2	Week of Aug 28	Activation of OH and COOH
3	Week of Sep 4	Labor Day (no class on Monday) Protecting groups
4	Week of Sep 11 Sep 15 (Friday)	Protecting groups <u>Problem set 1</u> Exam 1
5	Week of Sep 18	Oxidation
6	Week of Sep 25	Oxidation Catalytic hydrogenation Reduction with hydrides
7	Week of Oct 2	Catalytic hydrogenation, reduction with hydrides Organolithium and organomagnesium chemistry <u>Take-home exam due Oct 11</u>
8	Week of Oct 9	Organozinc and organocopper chemistry Transition-metal catalyzed cross-coupling reactions Arene and heteroarene chemistry
9	Week of Oct 16	Arene and heteroarene chemistry
10	Week of Oct 23 Oct 27 (Friday)	Arene and heteroarene chemistry <u>Problem set 2</u> Exam 2
11	Week of Oct 30	Alkene formation Alkynes
12	Week of Nov 6	Organoboron chemistry Organosilicon chemistry
13	Week of Nov 13	<u>Problem set 3</u> Asymmetric synthesis and enolate chemistry
14	Week of Nov 20	Thanksgiving break (no classes)
15	Week of Nov 27	Enolate chemistry
16	Week of Dec 4	Prep week
17	Week of Dec 11	Final exam (date TBD)