

Organometallic Chemistry
CHEM 574, Spring 2025
Tuesday and Thursday, 11:00 AM to 11:50 AM, 1801 Gilman Hall

Instructor: Prof. Levi Stanley (3101E Hach Hall, Phone: 515-294-3609, e-mail: lstanley@iastate.edu - please include 574 in the subject of messages)

Office hours: M and W 11-11:50 AM or by appointment in 3101E Hach Hall.

Communication: Email – I welcome your email with questions about the course. To ensure your email is answered, please follow these guidelines: 1) please include “574” somewhere in the subject line; 2) please send your email from an iastate.edu address; and 3) Please DO NOT use Canvas to send me emails.

Textbook: There are no required textbooks for the class. However, I strongly recommend *Organotransition Metal Chemistry: From Bonding to Catalysis* by John Hartwig as a resource to aid in your understanding of the course content. An additional text you may consider acquiring is *The Organometallic Chemistry of Transition Metals* by Robert H. Crabtree.

Canvas: Course information including a course syllabus, supplemental materials, announcements, and grades will be uploaded to Canvas. Please do not use Canvas to contact me. Please use my university email address to contact me.

Exams: There will be three 100-point midterm exams. **All exams are cumulative.** Exam due dates are as follows:

Exam 1:	February 25
Exam 2:	April 3
Exam 3:	May 12 – May 15 – Date and Time TBD

Grading: The course will be graded out of 300 points based on scores for three 100 point exams.

Course Objectives: This course is intended to provide an overview of modern organometallic chemistry by introducing fundamental organometallic reactions and their applications in catalysis.

Learning Environment: My goal for this course is to create an active learning environment. To accomplish this goal, you as students must be willing to engage in the learning process. Questions from students, answers to my questions, and participation in problem solving activities are expected.

Tentative Schedule

Date	Topic
1/21/25	Course Details and Introduction to Organometallic Chemistry
1/23/25	Introduction to Organometallic Chemistry
1/28/25	Counting Electrons
1/30/25	Counting Electrons
2/4/25	Lewis Basic Ligands and Carbonyl Ligands
2/6/25	Phosphine Ligands
2/11/25	Alkyl Ligands and More
2/13/25	Alkene and Alkyne Ligands
2/18/25	Arene and Cp Ligands
2/20/25	Substitution Reactions
2/25/25	Exam 1
2/27/25	Substitution Reactions
3/4/25	Oxidative Addition and Reductive Elimination
3/6/25	Oxidative Addition and Reductive Elimination
3/11/25	Migratory Insertion
3/13/25	Migratory Insertion
3/25/25	Introduction to Catalysis
3/27/25	Hydrogenation
4/1/25	Hydrogenation
4/3/25	Exam 2
4/8/25	Hydroformylation
4/10/25	Hydroformylation
4/15/25	Acetic Acid Synthesis
4/17/25	Cross Coupling
4/22/25	Polymerization and Metathesis
4/24/25	Metathesis
4/29/25	C-H Activation
5/1/25	C-H Activation
5/6/25	Allylic Substitution
5/8/25	Allylic Substitution
5/12/25-5/15/25	Exam 3 – Date and Time TBD

University Policies

Academic Integrity

The class will follow Iowa State University's policy on academic misconduct (**5.1 in the Student Code of Conduct**). Students are responsible for adhering to university policy and the expectations in the course syllabus and on coursework and exams and for following directions given by faculty, instructors, and ISU Test Center regulations related to coursework, assessments, and exams. Anyone suspected of academic misconduct will be reported to the **Office of Student Conduct in the Dean of Students Office**. Information about academic integrity and the value of completing academic work honestly can be found in the **Iowa State University Academic Integrity Tutorial**.

Accessibility

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.

Discrimination and Harassment

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, 2680

Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, Tel. 515-294-7612, Hotline 515-294-1222, email eooffice@iastate.edu.

Free Expression

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.

No employee, student, applicant, or campus visitor is compelled to disclose their pronouns. Anyone may voluntarily disclose their own pronouns.

Mental Health and Well-Being Resources

At Iowa State, we're committed to your success and well-being. As a Cyclone, you can access 24/7 resources, services, and people dedicated to helping you achieve your goals and be your best in and out of the classroom. Whether you need academic support or just someone to talk to, we're here for you at Cyclone Support (cyclonesupport.iastate.edu). If you are struggling emotionally and need support, there's confidential help available 24/7/365. You can call or text 988 or use the chat at 988lifeline.org.

Prep Week

This class follows the Iowa State University Prep Week policy, as noted in the ISU Policy Library and the Senior Vice President and Provost's website.

Religious Accommodations

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 the 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](#) at 515-294-1020 or the [Office of Equal Opportunity](#) at 515-294-7612.