

**Organometallic Chemistry**  
**CHEM 574, Spring 2021**  
**Tuesday and Thursday, 11:00 AM to 11:50 AM, 1312 Gilman Hall**

**Instructor:** Prof. Levi Stanley (3101E Hach Hall, Phone: 515-294-3609, e-mail: [lstanley@iastate.edu](mailto:lstanley@iastate.edu) - please include 531 in the subject of messages)

**Office hours:** T and Th 10-10:50 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:** *Organotransition Metal Chemistry: From Bonding to Catalysis* by John Hartwig is the required text for the course and will be the basis for the material presented in the course. An additional text you may consider acquiring is *The Organometallic Chemistry of Transition Metals* by Robert H. Crabtree. The Crabtree text is not required, but you may find it a useful resource.

**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:	March 3
Exam 2:	March 30
Exam 3:	May 4

**Grading:** The course will be graded out of 300 points. The point breakdown is as follows: 300 points from midterm 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
1/26/21	Course Details and Chapter 1: Structure and Bonding
1/28/21	Chapter 1: Structure and Bonding
2/2/21	Chapter 2: Dative Ligands
2/4/21	Chapter 2: Dative Ligands
2/9/21	Chapter 3: Covalent (X-Type) Ligands Bound Through Metal-Carbon and Metal-Hydrogen Bonds
2/11/21	Chapter 3: Covalent (X-Type) Ligands Bound Through Metal-Carbon and Metal-Hydrogen Bonds
2/16/21	Chapter 4: Covalent (X-Type) Ligands Bound Through Metal-Heteroatom Bonds
2/18/21	Chapter 4: Covalent (X-Type) Ligands Bound Through Metal-Heteroatom Bonds
2/23/21	Chapter 5: Ligand Substitution Reactions ( <b>Exam 1 Distributed</b> )
2/25/21	Chapter 5: Ligand Substitution Reactions
3/2/21	Chapter 6: Oxidative Addition of Nonpolar Reagents ( <b>Exam 1 Due</b> )
3/4/21	Chapter 6: Oxidative Addition of Nonpolar Reagents
3/9/21	Chapter 7: Oxidative Addition of Polar Reagents
3/11/21	Chapter 7: Oxidative Addition of Polar Reagents
3/16/21	Chapter 8: Reductive Elimination
3/18/21	Chapter 8: Reductive Elimination
3/23/21	Chapter 9: Migratory Insertion Reactions ( <b>Exam 2 Distributed</b> )
3/25/21	Chapter 9: Migratory Insertion Reactions
3/30/21	Chapter 10: Elimination Reactions ( <b>Exam 2 Due</b> )
4/1/21	Chapter 10: Elimination Reactions
4/6/21	Chapter 11: Nucleophilic Attack on Coordinated Ligands
4/8/21	Chapter 11: Nucleophilic Attack on Coordinated Ligands
4/13/21	Chapter 12: Electrophilic Attack on Coordinated Ligands
4/15/21	Chapter 12: Electrophilic Attack on Coordinated Ligands
4/20/21	Chapters 14+: Applications and Topics in Catalysis
4/22/21	Chapters 14+: Applications and Topics in Catalysis
4/27/21	Chapters 14+: Applications and Topics in Catalysis ( <b>Exam 3 Distributed</b> )
4/29/21	Chapters 14+: Applications and Topics in Catalysis
5/4/21	<b>Exam 3 Due</b>

### University Policies

#### **COVID-19 health and safety requirements**

Students are responsible for abiding by the university's [COVID-19 health and safety expectations](#). All students attending this class in-person are required to follow university policy regarding health, safety, and face coverings:

- wear a cloth face covering in all university classrooms, laboratories, studios, and other in-person instructional settings and learning spaces. Cloth face coverings are additionally required to be worn indoors in all university buildings, and outdoors when other people are or may be present where physical distancing of at least 6 feet from others is not possible. Students with a documented health or medical condition that prevents them from wearing a cloth face covering should consult with [Student Accessibility Services](#) in the Dean of Students Office.
- ensure that the cloth face covering completely covers the nose and mouth and fits snugly against the side of the face.
- practice physical distancing to the extent possible.
- assist in maintaining a clean and sanitary environment.
- not attend class if you are sick or experiencing symptoms of COVID-19.
- not attend class if you have been told to self-isolate or quarantine by a health official.
- follow the instructor's guidance with respect to these requirements. Failure to comply constitutes disruptive classroom conduct. Faculty and teaching assistants have the authority to deny a non-compliant student entry into a classroom, laboratory, studio, conference room, office, or other learning space.

These requirements extend outside of scheduled class time, including coursework in laboratories, studios, and other learning spaces, and to field trips. These requirements may be revised by the university at any time during the semester.

In accordance with university policy, instructors may use a face shield while they are teaching as long as they are able to maintain 8 feet of physical distance between themselves and students during the entire instructional period. Some form of face covering must be worn at all times in learning spaces regardless of the amount of physical distancing.

Faculty may refer matters of non-compliance to the Dean of Students Office for disciplinary action, which can include restrictions on access to, or use of, university facilities; removal from university housing; required transition to remote-only instruction; involuntary disenrollment from one or more in-person courses; and other such measures as necessary to promote the health and safety of campus.

It is important for students to recognize their responsibility in promoting the health and safety of the Iowa State University community, through actions both on- and off-campus. The university's faculty asks that you personally demonstrate a commitment to our [Cyclones Care campaign](#). Iowa State University's faculty support the Cyclones Care campaign and ask you personally to demonstrate a commitment to our campaign. Your dedication and contribution to the campaign will also protect your family, classmates, and friends, as well as their friends and families. Our best opportunity for a successful semester with in-person learning and extramural activities requires all of us to collaborate and fully participate in the Cyclones Care campaign.

### **Academic Integrity**

Academic Integrity, based on the values of honesty, trust, fairness, respect, and responsibility, is a fundamental principle of scholarship in higher education. Iowa State's Academic and Research Misconduct Policy prohibits: plagiarism (using another person's writing or copying any work without proper citation); falsification; unauthorized collaboration during a test or on an assignment or substitution for another student to take an exam, course or test; and other forms of academic dishonesty. If you are to benefit from this class and be properly evaluated for your contributions, it is important for you to be familiar with and follow Iowa [State's Academic Dishonesty and Research Misconduct policies](#). Students are also encouraged to review these [Student Resources](#). Work that violates this policy will not be tolerated. Students who are found responsible for a violation of the Academic Misconduct Policy will have both a university process sanction and an academic outcome that could include a failing grade on the assignment or exam, or a failing grade for the course.

### **Accessibility**

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](http://www.sas.dso.iastate.edu), by contacting SAS staff by email at [accessibility@iastate.edu](mailto: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.

### **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, 3410 Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, Tel. 515-294-7612, Hotline 515-294-1222, email [eooffice@iastate.edu](mailto: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.

### **Prep Week**

This class follows the Iowa State University Prep Week policy, as noted in the ISU Policy Library and section 10.6.4 of the Faculty Handbook. Visit the [ISU Policy Library website](#) for policy wording.

### **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 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.

**Contact Information for Academic Issues:** If you are experiencing, or have experienced, a problem with any of the above issues, email [academicissues@iastate.edu](mailto:academicissues@iastate.edu)