

**Chemistry 516: Synthesis, Reactivity and Mechanism in
Inorganic and Organometallic Chemistry
4 units**

Prof. Megan Fieser
Fall 2022
(Lecture = 9:30-10:50 TTh, SGM 307)

CHEM 516 is a graduate level course in Organometallic Chemistry. The intent of this course is to provide you with tools, generalizations and trends that allow you to better understand the literature and your research. At the end of this course, you should be able to use these principles to predict synthesis, structure and stability/reactivity of transition metal organometallic compounds. Additionally, you will be able to read, follow and propose catalytic cycles. If there is time, we will also cover tools to analyze organometallic reactions (both catalytic and stoichiometric).

Required Texts: Hartwig, *Organotransition Metal Chemistry: From Bonding to Catalysis* This textbook is extremely helpful for the content of this course, however, it is not necessary to be successful in this course. It can also be a great start to identify a topic for a qual or proposal idea. Many graduate students in various groups have this textbook, so if you don't think you will want to keep it, you can see if anyone will be willing to loan it to you.

Supplemental Texts: Crabtree, *The Organometallic Chemistry of the Transition Metals (6th ed.) (optional)*

Office/Contact: MEF SGM 216 (or Zoom) (fieser@usc.edu) Office hours = by appointment.

Grading: Hour Exams (x2): 50% (1st exam after reaction types, second after catalytic cycles, tentatively 10/27 and 11/30)
Proposal 25% (final document due Oct 20)
Written Assignment: 25% (due Dec 9 at 5:00 pm by email)

Outline:

- I. Intro
- II. Generalizations on Organometallic Complexes
- III. Overview of the Main Types of Reactions and Their Purposes
- IV. Catalytic Cycles
- V. Analysis of Organometallic Reactions

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, "Behavior Violating University Standards" <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Support Systems:

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

National Suicide Prevention Lifeline - 1-800-273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

Relationship & Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

Office of Equity and Diversity (OED)/Title IX compliance – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

Student Support & Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

Diversity at USC – <https://diversity.usc.edu/>

Tabs for Events, Programs and Training, Task Force (including representatives for each school), Chronology, Participate, Resources for Students.

Learning Experience Evaluations will be conducted on date TBA This will be your opportunity to provide feedback about your learning experience in the class. This feedback helps the instructor determine whether students are having the intended learning experiences for the class. It is important to remember that the learning process is collaborative and requires significant effort from the instructor, individual students, and the class as a whole. Students should provide a thoughtful assessment of their experience, as well as of their own effort, with comments focused on specific aspects of instruction or the course. Comments on personal characteristics of the instructor are not appropriate and will not be considered. For this feedback to be as comprehensive as possible, all students should complete the evaluation.