

Course Syllabus

Chemistry (CHE) 520 – Organometallic Chemistry – Spring 2018

Mon, Wed, Fri • 11:00AM – 11:50 AM • Bell 337

Instructor Information

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Office Hours

Monday 2:00 – 3:00 pm or by appointment

CHE 520 Course Description

CHE 520 is a survey of organometallic chemistry, with the emphasis on transition metals. The course covers structure and bonding of organometallic compounds, synthesis, reaction mechanisms, and selected applications in synthetic organic chemistry, and catalysis.

1 – Text(s)

1. R. H. Crabtree, *“The Organometallic Chemistry of the Transition Metals, 6th ed.”* Wiley Interscience, 1994.
2. James H. Espenson, *“Chemical Kinetics And Reaction Mechanisms, Second Edition,”* McGraw-Hill Companies, 1995.
3. Jim D. Atwood, *“Inorganic and Organometallic Reaction Mechanisms, Second Edition”* Wiley-VCH, 1997.
4. Robert B. Jordan, *“Reaction Mechanisms of Inorganic and Organometallic Systems, Second Edition,”* Oxford University Press, 1991.
5. John F. Hartwig, *“Organotransition Metal Chemistry From Bonding to Catalysis,”* University Science Books, 2010. ISBN 978-1-891389-53-5.

Chemistry Librarian

A. Ben Wagner, *Chemistry Librarian*, 118 Lockwood Memorial Library, Phone: 645-1333. Email: abwagner@buffalo.edu

2 – Grading and Course Content

• 3 problem sets	20% (80 pts)	Class period before each exam
• Exam 1	25% (100 pts)	March 2 nd -ish
• Exam 2	25% (100 pts)	Apr 7 th -ish
• Exam 3 (Final)	30% (120 pts)	Scheduled May 14 th (Monday) 11:45 – 2:45 Bell 337
• Total points	400 pts	

Changes to problem set and exam dates will be announced in class. Make-up exams or absences from problem set days must be scheduled **in advance** and are only allowed with proper documentation validating the need for the absence. Make-up exams may be different from the exam given in class. Missed exams or problem sets without excused absence **prior** to the due date will result in zero credit unless appropriate documentation is provided. Problem sets must be turned in during class, no exceptions unless discussed prior to class.

3 – Attendance and Appropriate Classroom Conduct

It is expected that all students will exhibit appropriate classroom conduct, which includes: (1) arriving to class on time; (2) minimizing classroom distractions, such as cell phones and laptops; (3) remaining awake and alert during class; and (4) refraining from talking or texting during class. Students causing an in-class disturbance that either distracts the instructor or other students may be asked to leave the classroom.

4 – Tentative Outline of Learning Objectives and Assessment[§]

Note: This course is foundational; meaning, the material covered builds upon itself. Therefore, by nature the exams and problem sets are always cumulative.

<i>Exam Dates</i>	<i>Course Objectives, Topics covered, Readings[¶]</i>	<i>Primary assessment & assignments*</i>
	<i>Part I: Structure and Bonding of Organometallic Compounds</i> Crabtree: Chapters 1 - 5 Hartwig: Chapters 1 - 4	Exam 1
Exam 1	<i>Part II: Synthesis of Organometallic Compounds</i> Crabtree: Chapters 3 - 5 Hartwig: Chapters 2 - 4	Exam 1
	<i>Part III: Reaction Mechanisms in Organometallic Chemistry</i> Crabtree: Chapters 6 - 8, 11 Hartwig: Chapters 5 - 14 Atwood: Chapters 1 - 5 Jordon: Chapters 1 - 3, 5 Espenson: 1 - 4	Exam 1 will cover ligand substitution Exam 2
Exam 2	<i>Part IV: Catalysis</i> Atwood: Chapter 6 Jordon: Chapter 5.5 - 5.6 Crabtree: Chapters 9, 12, 14 Hartwig: Chapters 14 – 22 Espenson: 6 - 7, 10	Exam 2, Final
	<i>Part V: Applications in Organic Chemistry / Special topics</i> Atwood: Chapter 8 Jordon: Chapters 6 - 8 Crabtree Chapters 12, 14, & 16 Hartwig: Chapters 16 – 22 Applications from selected literature and guest lectures	Final
Final	Cumulative material with emphasis on new material	May 14 th 11:45 – 2:45 Bell 337
HW	HW sets are representative of the exams and serve as review	Due the class period before each exam

[§]Specific objective/assessment groupings and due dates may vary. Changes will be discussed in advance during lecture. [¶]Readings from required and secondary texts. * All of the exams are cumulative; however, emphasis is new material.

5 – Academic Integrity

Academic dishonesty is a serious offense and may be met with immediate failure from the course. At minimum, a score of zero will be given for the exam or homework assignment where cheating is involved.

Assignments and exams may be returned to students after grading. This material should not be circulated and using the material to gain an unfair advantage over classmates in any way is violating academic integrity. Any evidence of violating academic integrity will be met with immediate action and could result in failure from the course.

For more information, see the University's graduate policy regarding academic integrity:

<http://academicintegrity.buffalo.edu/policies/>

For specific examples see:

<http://undergrad-catalog.buffalo.edu/policies/course/integrity.html>

6 – Accessibility Resources

Students with disabilities or special needs should meet with an advisor in the Office of Accessibility Resources (OAR, <http://www.student-affairs.buffalo.edu/ods/>), 25 Capen Hall, 716.645.2608, as soon as possible to initiate disability verification and discuss necessary accommodations. Special needs should be made known to the instructor during the first week of the course. Written documentation from the OAR is required.