CHM 501 **Advanced Inorganic Chemistry** **Spring 2023**

Organometallic Chemistry

Prof. Daniel N. Huh

Tues/Thurs 2pm-3:15pm

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Office Hours: Tues/Thurs 1pm–2pm

Wed 10am–11am

Course Syllabus

Recommended Textbook: *Organometallic Chemistry of the Transition Metals* 6th or 7th Edition
Robert H. Crabtree

Slack: This course will utilize Slack to communicate class material and to ask questions. If you have not yet been added to the channel, please contact the instructor.

Mask Policy: Instructor and students will not be required to wear masks unless recommended by the University. If current-events change, then it will be reinstituted.

(course material may be subject to change during the semester)

Grading:

Exam 1	100
Exam 2	100
Final Exam	200
Problem Sets (4x)	200
TOTAL	600

Your score (%) on your Final Exam will replace your lowest Exam score only if this improves your overall grade. Late problem sets will not be accepted.

Academic Honesty

Students are expected to be honest in all academic work. A student's name on any written work, quiz or exam shall be regarded as assurance that the work is the result of the student's own independent thought and study. Work should be stated in the student's own words, properly attributed to its source. Students have an obligation to know how to quote, paraphrase, summarize, cite and reference the work of others with integrity. The following are examples of academic dishonesty.

- Using material, directly or paraphrasing, from published sources (print or electronic) without appropriate citation
- Claiming disproportionate credit for work not done independently
- Unauthorized possession or access to exams
- Unauthorized communication during exams
- Unauthorized use of another's work or preparing work for another student
- Taking an exam for another student
- Altering or attempting to alter grades
- The use of notes or electronic devices to gain an unauthorized advantage during exams
- Fabricating or falsifying facts, data or references
- Facilitating or aiding another's academic dishonesty
- Submitting the same paper for more than one course without prior approval from the instructors.

Any student with a documented disability is welcome to contact me as early in the semester as possible so that we may arrange reasonable accommodations. As part of this process, please be in touch with Disability Services for Students Office at 330 Memorial Union, 401-874-2098 (http://www.uri.edu/disability/dss/)

Tentative Schedule and Content Spring 2023

Jan 24, Tues	Introductions/Syllabus/History of Organometallic Chemistry
Jan 26, Thurs	Fundamentals of Structure and Electronics
Jan 31, Tues	Crystal Field Theory/Molecular Orbital Theory (Assign PS1)
Feb 2, Thurs	X- and L-type Ligands and Nine Valence Orbital Generalization (18-electron rule)
Feb 7, Tues	
Feb 9, Thurs	Halpern-Ellis (HE) Analogy (PS1 due)
Feb 14, Tues	Limitations of HE Analogy and Transition Metal (TM) Reactivity (Assign PS2)
Feb 16, Thurs	Organic and TM Reaction Comparisons/Isolobal Theory
Feb 21, Tues	Overview of Important Transition Metal Reactions
Feb 23, Thurs	Metal-Carbon Single Bonds (PS2 due, Feb 28)
Feb 28, Tues	
Mar 2, Thurs	Exam I (Jan 24-Feb 21 Material)
Mar 7, Tues	Metal-Carbon Double Bonds (Assign PS3)
Mar 9, Thurs	
Mar 11-19	*Spring Break*
Mar 21, Tues	Columbus Day (*no class*)
Mar 23, Thurs	π-Complexes (PS3 Due Mar. 28)
Mar 28, Tues	
Mar 30, Thurs	Organometallic Reactions (Ligand Substitution, Oxidative Addition, Reductive Elimination) (Assign PS4, April 4)
April 4, Tues	
April 6, Thurs	Organometallic Reactions (Insertion and Elimination)
April 11, Tues	
April 13, Thurs	Organometallic Reactions (Ligand Substitution, Oxidative Addition, Reductive Elimination (PS4 Due April 18)
April 18, Tues	Applications in Catalysis
April 20, Thurs	f Elements
April 25, Tues	Exam 2 (Feb 23-April 20 Material)
April 27, Thurs	Review Day (Last Day of Class)
May 2-3	Reading Day
May 4-5, 8-10	Final Exams (TBA)