Spring 2012 – CHEM-652
Organometallics
Tues + Thurs 11:00 – 12:15 PM
BRL 207

Prof. Joel Rosenthal
Office: BRL 032
Tel: (302) 831-0716
Email: joelr@udel.edu
Web: http://www.udel.edu/chem/rosenthal/
Office Hours by appointment

REQUIRED MATERIALS

Textbook: *Organotransition Metal Chemistry: From Bonding to Catalysis* – John F. Hartwig (ISBN: 0131755536)

Website: http://www.udel.edu/chem/rosenthal/CHEM652/Chem652_2012.html

OPTIONAL MATERIALS – below is a list of several texts that will serve as appropriate background and reference.

Inorganic Chemistry – 4th Ed, Shriver and Atkins
Inorganic Chemistry – 4th *Ed*, Huheey and Keiter
Basic Inorganic Chemistry – 3rd Ed, Cotton and Wilkinson
Advanced Inorganic Chemistry – 6th Ed, Cotton, Murillo and Bochmann
Orbital Interactions in Chemistry, Albright, Burdett and Whangbo
Organometallic Chemistry – 2nd Ed, Spessard and Miessler
Synthesis of Organometallic Compounds, Komiya
Inorganic and Organometallic Reaction Mechansims – 2nd Ed, Atwood

COURSE INFORMATION

This course will focus on the molecular structures and reactivity of organometallic complexes. We will study concepts in bonding and electronic structure, synthesis, reaction mechanisms and catalysis.

COURSEWORK AND GRADING

Assignments and work responsibilities are outlined as follows:

Problem Sets – 30%

Will be due immediately before class on 2/21, 3/6, 4/3, 4/17, 5/1 and 5/15. Problem sets will be assigned at least one week prior to the due date.

Midterm Examination – 25%

Will be administered in class on 3/22. More details will be given as this date approaches.

Literature Summary and Presentation – 20%

Each student will select one peer-reviewed article from either the journal *Science*, *Nature* or the Proceedings of the National Academy of Science (PNAS) that has been published in the last three years (Publication year of 2009 or later) and deals with some aspect of inorganic chemistry. All selections must be approved by October 27th. Each student will provide an outline for their report by no later than November 3rd. Students will prepare a three-page review (including figures and references) of their chosen article using the format of a communication in the *Journal of the American Chemical Society* to be due on November 17th. Finally, on Saturday December 10th, we will gather for a class symposium in which each student will provide a 10-15 minute presentation of their selected paper in order to teach the class about the subject they have reviewed. I will assign the order of the student presentations. Each presentation must be made using PowerPoint. More details regarding the final project will be distributed in the near future.

Final Examination – 25%

Time and place to be determined by registrar's office.

ACADEMIC INTEGRITY

Academic dishonesty will not be tolerated in this class. Such behavior is unethical, creates a negative atmosphere and inhibits learning. This later point is most critical as the material covered in this course is critical to your education and may be important to your future career path. It is expected that you will learn the material covered in this course because you will need it to be a functional synthetic chemistry. If you have any questions about this issue, please review the University of Delaware's Academic Dishonestly Policy: http://www.udel.edu/stuguide/09-10/code.html#honesty.

For assigned problem sets, students are permitted to study in groups, but it is expected that each student will turn in their own independent work. For written assignments, cases of plagiarism will be taken very seriously. It is unethical to use previously published prose or ideas without proper acknowledgment and uncited quoting or paraphrasing not appropriate. For the written project in this class, make sure to properly cite any sources you use. For more information, please see: http://www.english.udel.edu/wc/student/handouts/plagiarism.html

LEARNING GOALS – It is anticipated that upon completion of this course, students will be able to meet the following:

- Understand the basic concepts of organometallic bonding
- Be able to synthesize organometallic and other inorganic complexes
- Be able to connect electronic and molecular structure with chemical reactivity
- Be able to critically read, understand and evaluate the organometallic literature
- Have a working understanding of organometallic catalysis
- Be prepared for future inorganic cumulative examinations