

CHEM 431: Advanced Organic Chemistry

Dr. Kenny Miller

Fall 2013 – Chem Hall Room 020

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Office Hours: MWF 9:00-10:00 am; T 11:30 am-1:30 pm; CHEM 144

Text: Grossman “The Art of Writing Reasonable Reaction Mechanisms” Second Ed., Springer.

Course Description: Advanced organic chemistry will expand on many of the topics covered in Organic Chemistry I and II with a focus on understanding the underlying mechanism of each reaction studied. Most of the topics covered this semester would be discussed in a graduate level Organic Synthesis course: named reactions, stereoselective and stereospecific reactions, molecular orbital theory, and designing multistep organic syntheses.

Learning Objectives: The primary goal of this course is for students to competently identify and propose reasonable mechanisms for any organic reaction. By the end of the semester students will have a thorough knowledge of most “strategy level” organic reactions: those most commonly used by organic chemists to introduce structural complexity. Students will gain a mastery of all aspects of stereochemistry and the relationship between stereoisomers. Students will be able to design and evaluate regioselective, diastereoselective, and enantioselective syntheses of complex molecules. Students will gain an appreciation and respect for the art of multistep organic synthesis.

Dropbox: All the course materials (syllabus, homework, practice problems, etc.) are available on the course dropbox webpage. Go to <http://tinyurl.com/CHEM431FLC> to download any of these files.

Grading: Grades will be a weighted average of three midterm exams, regular problem sets, and a final total synthesis project. Problem sets will be assigned regularly and will be collected the following week. Three in-class hour exams will be given covering 1 or 2 chapters in the required text by Grossman and any other topics covered in class or weekly problem sets. Given the cumulative nature of organic chemistry expect topics discussed throughout the semester to be fair game on all exams. The final project will be a presentation of a complex molecule synthesis, and details regarding this presentation will be discussed in lecture.

Problem Sets = 25%

Exams (3) = 50%

Final Project = 25%

Tentative Exam Schedule

Exam #1 – Friday, Sept. 27

Exam #2 – Friday, Nov. 1

Exam #3 – Friday, Dec. 6

Synthesis Presentations – Dec. 2, 4, 6, 9, 11, & 13

Course Schedule: We will work through the text roughly in order, but special emphasis will be placed on Chapters 2, 4, and 6.

Week 1: “The Basics”

Week 2-4: “Reactions under Basic Conditions”

Week 5-6: “Reactions under Acidic Conditions”

Week 7-9: “Pericyclic Reactions”

Week: 10-12: “Transition Metal Catalyzed Reactions”

Disability Statement: Fort Lewis College is committed to providing all students a liberal arts education through a personalized learning environment. If you think you have or you do have a documented disability which will need reasonable academic accommodations, please call Dian Jenkins, the Coordinator of Disability Service, 280 Noble Hall, 247-7459, for an appointment as soon as possible.