

Clemson University

Organic Chemistry: **CH 821**

SEMESTER I, Fall 2008

Lectures: Times: 9:05-9:55 a.m. MWF (Section 1), Hunter 158
Dr. Karl Dieter: (Office; Hunter 463); Tel: 656-5025; e-mail: dieterr@clemsun.edu ; Office Hours: Open or by appointment.

The class is expected to wait until 9:20 if the instructor is late. There is no formal **Attendance Policy**, but examination questions will be taken from classroom lectures, and focus on problem solving demonstrated in lecture.

Course Objectives: It is the objective of this course to acquaint the student with the guiding and organizing principles and concepts of reactivity and molecular behavior in organic chemistry. To this end, the course will utilize lecture delivered content coupled to student self study revolving around assigned reading, homework problems, and quizzes, as well as independent student reading as required to achieve mastery. It is the aim of the course to help students develop their own protocol for navigating back-and-forth between theory and experiment, concept and detail in a seamless pattern of reiteration.

Textbook: Eric V. Anslyn/Dennis A. Dougherty, *Modern Physical Organic Chemistry*, University Science Books (2006). *Of Symbols, Electrons, and Xanadu: The Language of Organic Chemistry*, by R. Karl Dieter, is a study guide of basic concepts and can be found on Professor Dieter's Chemistry Department WEB page. Lecture material will be taken from the above sources as well as additional texts, monographs, review articles, and original research papers. It is to be understood that at the 800-level the student is expected to acquire a working understanding of the subject material irrespective of the level presented in the assigned textbooks or the lecture. The student is expected to engage in additional reading, which should not be limited to sources listed by the instructor. The textbook and lecture presentations represent a minimum level of understanding expected in this course.

Examinations: There will be a mid-term exam (30% of grade) in October, five quizzes throughout the semester (20 pts each, 30% of grade), and a final exam which will constitute 40% of the final grade. The final exam will be cumulative. A passing grade of B will be given for performance at a first year graduate level, which is interpreted to mean sufficient knowledge to recognize and apply the basic concepts and principles of organic chemistry to the reactivity profiles of the functional groups. Work below an acceptable level for a graduate student will receive a grade of C or lower.

Grades: Grades will be determined by examinations. Handed in homework will measure the class' dedication and hence influence the instructor's grading scale.

Assumed Knowledge: It is assumed that students will have a working knowledge of basic stereochemistry including enantiomeric (R,S nomenclature, Fischer, Newman and sawhorse projections, chirality in the absence of chiral centers) and diastereomeric (resolutions, geometric, multiple chiral centers and descriptors of relative stereochemistry, cyclic systems, and chiral molecules which lack chiral centers) relationships as well as conformational analysis of mono and polycyclic cyclohexanes. It is expected that the student will have a good understanding of acid-base chemistry, organic functional groups, electronegativity, bonding and structure, valence bond theory (resonance) and molecular orbital theory as applied to the routine daily practice of organic chemistry. For review of these concepts consult basic undergraduate texts.

Academic Integrity: “As members of the Clemson University community, we have inherited Thomas Green Clemson’s vision of this institution as a “high seminary of learning.” Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form. In instances where academic standards may have been compromised, Clemson University has a responsibility to respond appropriately and expeditiously to charges of violations of academic integrity.”

“When in the opinion of a faculty member, there is evidence that a student has committed an act of academic dishonesty, the faculty member shall make a formal written charge of academic dishonesty including a description of the misconduct, to the Dean of the Graduate School. At the same time, the faculty member may, but is not required to, inform privately the student charged of the nature of the allegation.”

Disability Access: “It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities. Students are encouraged to contact Student Disability Services to discuss their individual needs for accommodation.”

IMPORTANT DATES:

First day of class	Wednesday August 20
Last day students can add class	Tuesday August 26
Last day to drop without a W	Tuesday September 2
Last day to drop without final grade	Friday October 10
Last day of class	Friday December 5
Final Examination	Friday December 12 (8:00-10:30 a.m.)

Topics

Subject	Chapter (Anslyn/Dougherty)	Chapter	pages
Introduction to Structure & Bonding		1	1-64
Advanced Concepts in Electronic Structure Theory (14.3- 14.5 HMOT)		14	837-862
Strain and Stability		2	65-143
Stereochemistry		6	297-351
Acid-Base Chemistry		5	259-296
Energy Surfaces & Kinetic Analysis		7	355-419
Experiments Related to Thermodynamics and Kinetics		8	421-488
Reactions Involving Additions & Eliminations.....		10	537-625
Substitutions at Aliphatic Centers & Thermal Isomerizations/Rearrangements..		11	627-704