Organic Chemistry II Syllabus
University of Alaska Fairbanks
Fall 2010

Course Information
Chemistry F322, Organic Chemistry II, 3.0 Credits.
Reichardt 201A, MWF 11:45-12:45pm
Prerequisite: Chem 321, Organic Chemistry I

Instructor
Thomas Green, Professor of Chemistry
Reichardt 174, Phone: 474-1559, Email: tkgreen@alaska.edu
Office Hours: Tues 1-5 pm, Thurs 1-5 pm.
Website: http://www.uaf.edu/chem/faculty/tgreen/tgreen.htm

Course Materials
ACS Organic Chemistry Study Guide

I will place a copy on reserve in Rasmuson Library

Course Description
This course will focus on the theory of organic chemistry (or chemistry of molecules containing carbon) from the viewpoint of structure/reactivity relationships. Topics covered will be bonding, functionality, reactivity, synthesis, spectroscopy, nomenclature, and computer modeling. Homework and Exams will constitute the majority of the points earned in class, with some computer modeling using the Department's HyperChem software.

Course Goals
1. Know reaction chemistry of major functional groups of organic molecules (molecules with carbon).
2. Know how to interpret spectra of organic molecules.
3. Know how to write mechanisms for organic reactions.
4. Know how to build and interpret molecules/reactions using computer modeling techniques.
5. Know how to write organic reactions in a logical sequence to demonstrate how a molecule might be synthesized in the laboratory.
Student Learning Outcomes

At the end of this course, students should be proficient in:
1. Understand fundamental concepts of bonding in organic functional groups.
2. Know how to name simple organic compounds.
3. Be able to predict the reactivity of aromatic compounds, alcohols, phenols, aldehydes, ketones, carboxylic acids and their derivatives, and amines.
4. Be able to confidently interpret the IR, Mass, NMR spectra of simple organic compounds in order to arrive at a structure.
5. Understand the basic concepts of stereochemistry and apply it to reaction chemistry.
6. Be able to predict and write mechanisms of reactions based on fundamental concepts of acid/base chemistry (nucleophiles and electrophiles).
7. Know how to build and optimize organic molecules using molecular modeling program (i.e. Hyperchem).
8. Know the fundamental structures of biological molecules such as carbohydrates, amino acids, proteins, and lipids.
9. Know how to write out synthetic pathways using the correct order of reactants and reagents in order to arrive at a target molecule.

Instructional Methods

1. The instructor will lecture on the theoretical aspects of organic chemistry, using a combination of Power Point slides and Chalkboard, providing copies of notes to the students via the web.
2. Computer modeling assignments will be given on a timely basis in order to reinforce concepts in lecture.

Schedule and Coverage

Sept 3 - Sept 17; Chapters 16,17
Sept 22 - Oct 11; Chapters 18,19,20
Oct 15 - Nov 1; Chapters 21,22
Nov 2 - Nov 15; Chapters 23-24
Nov 19 - Nov 24; Chapter 25
Nov 25- Nov 28; Holiday
Nov 29 - Dec 6; Chapter 26
Dec 10,13; Chapter 27
Evaluation

1. Exams (6 @ 100 pts = 600 pts)

   Exam I, Sept 20 (Mon); Chapters 16,17
   Exam II, Oct 13 (Wed); Chapters 18,19,20
   Exam III, Nov 1 (Mon); Chapters 21,22
   Exam IV, Nov 17 (Wed); Chapters 23,24
   Exam V, Dec 8 (Wed); Chapters 25,26
   Final, Dec 15 (Wed); Comprehensive Final 10:15am - 12:15pm
   American Chemical Society Exam Covers both
   Organic Chem I and Organic Chem II.

2. Homework (260 pts)

   1. OWL (150 pts) - See OWL Link on the Course Webpage. Due dates are indicated
      within the OWL website.
   2. End-of-Chapter Problems: (110 pts)
      Chapter 16: 16.31, 16.32, 16.35, 16.37, 16.45; Due Sept 10
      Chapter 17: 17.33, 17.39, 17.44, 17.47, 17.48; Due Sept 20
      Chapter 18: 18.26, 18.29, 18.32, 18.43, 18.55; Due Oct 1
      Chapter 22: 22.27, 22.30, 22.31, 22.36, 22.44; Due Nov 1
      Chapter 23: 23.35, 23.39, 23.46, 23.50, 23.53; Due Nov 10
      Chapter 24: 24.33, 24.35, 24.41, 24.50, 24.52; Due Nov 17
      Chapter 25: 25.33, 25.37, 25.40, 25.44, 25.52; Due Nov 24
      Chapter 26: 26.27, 26.29, 26.43, 26.47, 26.58; Due Dec 8

3. HyperChem Molecular Modeling Assignments (100 pts)
   4 @ 25 pts = 100 pts
   See Website for Specific Assignments and due dates.

4. Point Totals and Grade Assignment
   6 exams @ 100 pts each = 600 points
   OWL HW = 150 points
   End-of-Chapter HW 11 @ 10 = 110 points
   HyperChem 4 @ 25 pts = 100 points
   Total = 960 pts

   Grading
   90-100% A
   80-89% B
   70-79% C
   60-69% D
   <60% F
Notes and Policies:

1. Molecular models are allowed during the exam. The Final is Dec 15 (Wed)
   10:15am-12:15pm
2. Modeling assignments will be given in class and will involve the use of the
   program HyperChem which is available to students in the Departmental Computer
   Lab. A user name and password is required to use the computers.
3. Class attendance is expected and role will be taken.
4. Make-up exams are only allowed in the event of a legitimate excuse as
   determined by the instructor. Oversleeping is not an excuse. Exams must be made
   up as soon as possible.
5. Cheating will result in a grade of F for the course.
6. The course will move quickly and it is important to keep up on a daily basis. The
   best way to do this is to read the text and to work the problems. Use the solution
   manual after you have worked the problems.

Disabilities Services

The Office of Disability Services implements the Americans with Disabilities Act
(ADA), and insures that UAF students have equal access to the campus and course
materials. Students with documented disabilities who may need reasonable academic
accommodations should discuss these with me during the first two weeks of class. I will
work with the Office of Disabilities Services (*208 WHIT, 474-5655) to provide
reasonable accommodation to students with disabilities. You will need to provide
documentation of your disability to Disability Services.

ATTENTION: Those wishing to take Chem 324 Organic Lab in the future should get
on the waiting list. Contact Mist in the Chemistry Dept Office, Reichardt 194, 474-5510.