# CHEMISTRY 3362 POLICIES

**Instructor**

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**Prerequisite**

Successful completion of Chem 3361 (Grade of C or better).

**Corequisite**

Chemistry 3362L (Laboratory)

**Text**

Organic Chemistry, F. A. Carey, fifth edition. Student guide is optional but strongly suggested.

**Office hours**

I will be available for office hours on Monday and Wednesday from 11:00AM-12:00PM, and immediately following the time designated for class lectures. If you are unable to meet with me during these hours, call ahead of time to schedule an appointment at a mutually convenient time.

**Course Content**

This course is the second in the sequence of two courses on Modern Organic Chemistry. We will continue the mechanistic emphasis introduced in the first course in our study of synthesis and reactions of functional groups. New functional groups discussed include alkynes, alcohols, ethers, aldehydes, ketones, carboxylic acids and derivatives, amines and aromatic compounds. The student will also be introduced to spectroscopy, including IR, NMR, UV, and MS. Applications of these tools in structure elucidation and probing of mechanism will be emphasized throughout.

We will cover chapters 9 through 20, and 22 of Carey in whole or parts.

Alkynes
Aromatic compounds
Electrophilic aromatic substitution
Spectroscopy
- Infrared spectroscopy
- Ultraviolet spectroscopy
- Nucleomagnetic resonance

Free radical reactions
Alcohols
Ethers
Organometallic compounds
Oxidation-reduction
Conjugated unsaturated systems
Resonance

Aldehydes
Ketones
Nucleophilic addition to carbonyl
Carboxylic acids and derivatives
Amines

The co-requisite laboratory course (Chem 3362L) consists of hands on experiments. Students will be allowed to work in pairs.

**Learning Outcomes** A student successfully completing this course should:

- Be able to understand and demonstrate knowledge of fundamental aspects of bonding and structure including molecular orbital, valence bond concepts, isomerism, stereoisomerism, electronegativity, electron delocalization, and aromaticity.

- Would gain appreciation for and be able to relate specific examples that would illustrate how chemical structure determines such physical and chemical properties as boiling point, melting point, polarity, solubility, and reactivity.

- Be able to understand, and demonstrate knowledge of the all the steps involved in basic organic reaction mechanisms such as acid/base, SN1, SN2, E1, E2, electrophilic addition, free radical substitution, free radical addition, electrophilic aromatic substitution, nucleophilic addition to carbonyl and nucleophic substitution to carbonyl.

- Be able to elucidate structures of basic organic molecules possessing one or two functional groups by means of spectroscopic tools such as IR, UV, H-NMR, $^{13}$C-NMR, mass spectrometry, etc.

- Be able to understand and demonstrate knowledge of a selected set of basic laboratory methods (and in some cases industrial methods) needed for the preparation of organic compounds possessing the following functional groups: alkane, alkene, alkyne, alkyl halide, alcohol, ether, aldehyde, ketone, carboxylic acid, derivatives of carboxylic acid such as esters, amide, acid chloride, acid anhydride, etc., and amine.

- Would be able to plan the synthesis of organic compounds involving a few intermediate compounds using the retrosynthesis approach.

- Would be familiar with and able to specify the uses of most organic reagents, including organometalic reagents and the use of light in photochemical reactions.

- Would learn and demonstrate knowledge of the scope and limitations of techniques used for isolation and purification of organic compounds (i.e extraction, crystallization, distillation, and various chromatographic techniques)

- Would gain an appreciation of the scope and select specific ways in which such areas as chemical kinetics and spectroscopy are used to gain knowledge of molecular structure, reactivity, and their correlation.

- Gain an appreciation for the use of primary and secondary sources of chemical information.

**Attendance**

Attendance to lectures is optional. Each student is responsible for all material including announcements that he or she may have missed. Please be sure to make arrangements with another student to obtain any missed material or announcements.

**Tests & Grade**

During the course of the semester, four 1 hour-exams will be given according to the tentative schedule attached. These tests will vary in format from multiple-choice to short answers. If you must miss a test for any reason, please notify me at least one day in advance. Although make-up tests will not be given, arrangements may be possible for a late test.

In addition to the four tests, a comprehensive final exam from the American Chemical Society will also be given. Your overall grade from the course will be computed according to the two schemes outlined below and you will be assigned the higher of the two grades.

| | Scheme I | Scheme II |
|---|---|---|
| 1 hour-tests (4) | 60 % | 75% |
| Final Exam | 40 % | 25% |

The usual grading scale will apply (A=90->, B=80-89, C=70-79, D=60-69, F=->59).

**Study Help**

The textbook companion study guide & solution manual is strongly recommended. I also strongly urge each student to get a kit of molecular model. In addition to these resources, a number of organic chemistry software titles and web sites (see below) exists that would be helpful in providing additional helpful resources, better visualization of abstract concepts, and opportunity for solving problems.

The following software packages are on computers housed in the Computer Laboratory of the Science building:

Chemical Bonding
Introduction to General Chemistry
Molecules-3D (model building software)
MathCad
An Introduction to Lewis Structures
VSEPR Theory
Orbitals and Electrons

**Web Resources**

WebSpectra-- http://www.chem.ucla.edu/~webspectra/index.html ,
http://www.nd.edu/~smithgrp/structure/workbook.html
http://www.herts.ac.uk/lis/subjects/natsci/chem/chemweb/#ChemOrganic ,
http://ep.llnl.gov/msds/orgchem/Web-sters_Org_Chem.html#MENU ,
http://www.organicworldwide.net/ ,
http://www.columbia.edu/itc/chemistry/c3045/index.html ,
http://www.ux1.eiu.edu/~cfthb/classes/orglinks/ ,
http://www.towson.edu/~sweeting/orgrxs/reactsum.htm

**Withdrawal**

The last day to withdrawal without academic penalty is **October 18, 2004**. Ceasing to attend class or oral notice thereof DOES NOT constitute official withdrawal and will result in the rendering of a grade of "F" for the class. Students wishing withdrawal after the scheduled change period (add/drop) must obtain and complete a withdrawal form from the Academic Services Department in the Registrar's Office.

You should be aware that "W" grades on your transcript are a negative factor in evaluating your academic performance. Some professional schools go through a transcript and substitute "F" for every "W" and recalculate the GPA. For anyone serious about a professional school of any kind, I would recommend that your transcript should show no more than 4 "W" grades. Even if you have only 4 "W's" when you graduate you should have an excellent reason for each one of them (sickness, death in the family, etc.). Please refer to the University 2004, p. 42 for the complete description of the new withdrawal policy.

"I" grades are awarded only when the student has done satisfactory work up to the last two weeks of the semester, but for non-academic reasons beyond his/her control is unable to meet the full requirements of the course."

Please take your academic experience very seriously, and have a frank discussion with an advisor about your strengths and weaknesses so that you don't waste time in an area where you are not likely to be successful.

**Academic Honesty**

Every KSU student is responsible for upholding the provisions of the Student Code of Conduct, as published in the Undergraduate Catalog. Section II of the Student Code of Conduct addresses the University's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation / falsification of University records or academic work, malicious removal, retention, or destruction of library materials, malicious / intentional misuse of computer facilities and / or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the University Judiciary Program, which includes either an "informal" resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimum one semester suspension requirement.

>>> BE CAREFUL! Copying or paraphrasing either all or a portion of another student's lab report is improper and easily detected.

**Enrollment**

Only those students who are enrolled in the class may attend lectures, receive assignments, take quizzes and exams, and receive a grade in the class. If a student is administratively withdrawn from this course, they will not be permitted to attend class nor will they receive any grade for the class.

**Electronic Devices**

In order to minimize the level of distraction, all beepers and cellular phones must be on quiet mode during class meeting times. Students who wish to use a computer/PDA for note taking need prior approval of the instructor since key clicks and other noises can distract other students. Recording of lectures by any method requires prior approval of the instructor.

**OwlPrint System**

Effective Fall Semester, 2001 (9/13), the OwlPrint system (student network printing/copying solution) has been in place in the KSU library as well as all the open labs and lab/electronic classroom combinations across campus.

Students must have an OwlPrint card to use printing/copying services. While in a classroom situation, faculty/staff will use their department OwlPrint cards to give student access to the printer/copier. Students will not be required to use their own personal OwlPrint card for any printing while in a classroom setting.

# Chemistry 3362/01 Exam Schedule for Fall 2003

| Month | Monday | Wednesday |
|---|---|---|
| August | 23<br>First day of classes | 25 |
| | 30 | 1 |
| September | 6<br>Labor Day Holiday—No Class | 8 |
| | 13<br>Test #1 | 15 |
| | 20 | 22 |
| | 27 | 29 |
| October | 4 | 6 |
| | 11<br>Test #2 | 13 |
| | 18<br><br>Last day to withdraw without academic penalty | 20 |
| | 25 | 27 |
| November | 1 | 3 |
| | 8<br>Test #3 | 10 |
| | 15 | 17 |
| | 22 | 24<br>Fall/Thanksgiving Break—No Class |
| | 29 | 1 |
| December | 6<br>Test #4 | 8 |
| | 13 Final Exam (12:30PM to 2:30PM) | |

**THE LAST DAY TO WITHDRAW FROM FALL SEMESTER 2004 CLASSES, WITHOUT ACADEMIC PENALTY, IS:**

Be sure send by email your acknowledgement of receipt of the syllabus.