

**COURSE SYLLABUS**  
**CHM 239 sect. 01**  
**Organic Chemistry II, Lecture**  
**3 CRED HRS.**  
**FALL 2007**

**(The Student Acknowledgement Form at the end of the syllabus must be completed, signed, and turned in to the Instructor by Aug. 21, 2007)**

Instructor:	Dr. Benny E. Arney	Semester:	Fall 2007
Classroom	CFS 123	Class Time	MWF 8:00-8:50 AM
Office Phone:	294-1531 off-camp ext. 41531 on-camp	Email:	CHM_BEA@SHSU.EDU
Office:	CFS 326 Or CFS 305	Office Hours:	TuTh 8:00-10:00 AM TuWTh 1:30-2:30 PM

**Textbook (required):**

ORGANIC CHEMISTRY, 6<sup>TH</sup> ED., by L. G. Wade, Jr., Prentice Hall, 2005, ISBN# 0-13-187151-X

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**Course Description:**

This is the second half of a two-semester course in organic chemistry. Topics include the properties, synthesis, and reactions of alcohols, ethers, ketones, aldehydes, conjugated systems, amines, and carboxylic acids & derivatives. This course builds upon the material covered in the first semester (chap. 1-13) which will be assumed as common knowledge.

The course is lecture based, but it is very important to realize that the lecture is virtually useless for learning the material if one does not read and study the covered material before class and works very diligently to do the problems in the text, both in the chapter and at the end of the chapter. Questions in class are welcomed, but only for the current material. If there are questions or problems from previous lectures or material, bring them to me before or after class during office hours or make an appointment for other times.

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**Prerequisites:**

Students in this course must have successfully completed CHM 238 and CHM 218 with a grade of C or higher. Concurrent enrollment in CHM 219 is strongly encouraged.

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## Required Materials:

You are required to bring your book to class. Also, you are expected to keep a notebook of all the home work problems you have worked.

**THE REACTIONS, MECHANISMS, AND NOMENCLATURE FROM CHM238 AND THE SPECTROSCOPIC MATERIAL FROM CHM218 ARE REQUIRED KNOWLEDGED AND WILL NOT BE REVIEWED.** If you have forgotten this material, review, review, and review, on your own of course.

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## Critical Learning Techniques:

Before each class meeting, it will be essential for you to complete the assigned reading and homework so that lectures might be supplemented with appropriate questions and valuable discussion. **If you are having difficulty with any of the assignments, it is your responsibility to make regular visits to my office and/or the chemistry tutors.**

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## Attendance Policy:

It will be essential for you to attend class regularly. Class attendance will not be used, however, as a criterion for evaluating student performance.

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## Objectives: Skills to be Acquired This Course:

It is an overall goal of this course to improve the problem solving and structure-property relationship skills of all students enrolled. In addition, students successfully completing this course should be able to:

1. Understanding of molecular structure and geometry as the result of atomic electronic geometry (hybridization).
2. Ability to distinguish the hydrocarbons into alkanes, alkenes, alkynes, aromatics, or composites based on structure.
3. Ability to distinguish the major functional groups; alcohols, ethers, amines, amides, nitriles, ketones, aldehydes, esters, carboxylic acids, acid halides, and acid anhydrides based on structure.
4. Ability to name, using IUPAC rules, alkanes, alkenes, alkynes, alkyl halides, alcohols, ether, ketones, aldehydes, esters, amines, amides, nitriles, carboxylic acids, acid halides, acid anhydrides, and composites.
5. Know the reactions and preparation of alkanes.
6. Know the reactions and preparation of alkyl halides.
7. Know the reactions and preparation of alkenes.
8. Know the reactions and preparation of alcohols.
9. Know the reactions and preparation of ethers.
10. Know the reactions and preparation of aromatics.
11. Know the reactions and preparation of aldehydes.
12. Know the reactions and preparation of ketones.

13. Know the reactions and preparation of amines.
14. Know the reactions and preparation of carboxylic acids.
15. Know the reactions and preparation of esters.
16. Know the reactions and preparation of amides.
17. Know the reactions and preparation of nitriles.
18. Know the reactions and preparation of acid halides.
19. Know the reactions and preparation of acid anhydrides.
20. Know the general condensation reactions.
21. Understand and utilize the relative acid-base properties of atoms in various functional groups.
22. Understand and discuss structure-stability trends for reactive intermediates and stable molecules.
23. Predict the behavior of molecules under reaction conditions.
24. Predict relative physical and chemical properties of similar molecules based on comparative structure.
25. Predict possible products of reactions as well as the major product.
26. Ability to derive an acceptable mechanism for a reaction based on an understanding of the structure and properties of the starting materials, the reagents, and the products.
27. Ability to compose a reasonable synthesis of relatively simple organic compounds based on structure and a knowledge of basic reactions.
28. Ability to apply structural features of a compound to explain the chemical properties and stabilities observed.
29. Fundamental understanding and ability to interpret IR, MS, and NMR spectroscopic data.

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## Examinations:

**No examination may be taken earlier or later than the scheduled time.**

There will be three (3) in-class, closed-book examinations each worth 100 points. Any exam that is missed, it will be replaced by the percentage grade on the final. The total number of exam grade points is 300 points.

A final, **comprehensive** examination (covering **both semesters**) will be given at the University scheduled time. This exam will be worth 200 points. All students must take this exam (the score obtained can not be dropped). A score of 60 points or less on the final exam or a missed final will result in an "F" for the course regardless of other points earned. The total number of exam points possible is 500.

All tests will be graded and the grades posted on black board as soon as possible, which is usually by the next class meeting. Tests will not be returned, discussed or reviewed in class. Questions about the grading of assignments may be discussed during office hours or by appointment.

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## Make-up Tests and Quizzes:

There are none.

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## Grading:

A letter grade will be assigned based on your total accumulated points:

4 (A)	425 - above
3 (B)	375 - 424
2 (C)	325 - 374
1 (D)	250 - 324
0 (F)	249 or below

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## Writing Standards:

Students enrolled in this course are expected to use literate and effective English in their speech and in their writing. All papers submitted must be well-written; grades on written work (including examinations) will be based on expression as well as on content.

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## Schedule for Lectures:

Date	Topic	Reading Assignment
Aug 20	<b>Introduction and Overview.</b> Mass Spectrometry (MS) Quick Review of Infrared (IR) Spectroscopy.	Chap 12
22	Mass Spectrometry (MS), Quick Review of Infrared (IR) Spectroscopy.	Chap 13
24	Quick Review of NMR	
27	Ethers-properties, nomenclature, spectroscopy:	Chap14
29	Preparation & Reaction of Ethers	
31	Reaction of Ethers	
Sept 5	Conjugated Systems: Orbitals and additions ( <b>Last day to drop w/o grade of "Q" &amp; receive 100% refund</b> )	Chap15
7	Kinetic vs Thermodynamic, Allylic system	
10	Diels-Alder reaction, UV	
12	Benzene, aromatic, antiaromatic, orbitals	Chap 16
14	Huckel's Rule, Aromatic compounds	
17	Fused, Heteroaromatic, Nomenclature and Spectra of Benzene compounds	
19	Electrophilic aromatic substitution,	Chap 17
21	<b>EXAM 1</b>	
24	Activation-Deactivation, <i>o,m,p</i> -directors	

26	Friedel-Crafts and Nucleophilic Aromatic Substitution	
28	Additions, Side-chain reactions, RXNs of phenols	
Oct 1	Structure and Nomenclature of ketones and aldehydes	Chap 18
3	Properties, Spectra, and Prep. of Ketones and Aldehydes	
5	Synthesis of Aldehydes and Ketones	
8	Reactions of Aldehydes and Ketones ( <b>Last day to drop w/o grade of "F". Last day to Resign w/o mark of W. Degree applications to be filed in Registrar's office by students expecting to graduate in May 2008.</b> )	
10	Reactions of Aldehydes and Ketones	
12	Aldehydes and Ketones	
15	Properties, nomenclature, and basicity of Amines	Chap 19
17	Basicity, spectroscopy, and salts	
19	<b>Exam 2</b>	
22	Reactions of Amines	
24	Reactions of Amines	
26	Reactions of Amines	
29	Nomenclature, structure, properties of Carboxylic acids	Chap 20
31	Salts, Spectroscopy, and sources of Carboxylic acids	
Nov 2	Nucleophilic Acyl Substitution, Acid halides, Diazomethane	
5	No Class –American Chemical Society Meeting	
7	Reactions of Carboxylic acids	
9	Structure and Nomenclature of Acid Derivatives	Chap 21
12	Interconversion of acid derivatives	
14	Chemistry of Acid Derivatives	
16	Enols, enolates, and alpha halogenation	Chap 22
19	<b>Exam 3</b>	
26	Alkylations and aldol condensations	
28	Claisen & Dieckmann Condensations	
30	Beta-dicarbonyl condensations	
3	Your Problems & Your Questions	
5	Your Problems & Your Questions	
6	<b>(LAST DAY FOR RESIGNATIONS)</b>	
	<b>FINAL Examination</b>	

## Homework Problems:

You have a standing homework assignment to complete the problems at the end of each chapter as we progress through the book. These problems are not to be turned in, but are to be used as a measure of your

progressive understanding and assimilation of the material. Remember to periodically go back and redo random problems from older chapters. If you get stuck come me for help.

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## Do you want to do well in this course?

If your answer to this question is yes, you should frequently ask yourself the following questions:

1. Have I prepared for class by completing and outlining the assigned reading before coming to lecture?
  2. Have I made notes during my reading of the points which are confusing or difficult so that I may ask questions about them during lecture?
  3. Have I kept a neat and complete notebook of homework problems and sought help from a tutor or faculty member for those problems I did not fully understand?
  4. Have I prepared for the exams by working on assignments daily and not waiting until two or three days before the exam?
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## Academic Dishonesty:

All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in academic experiences both in and out of the classroom. Any student found guilty of dishonesty (by the professor) in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and abuse of resource material.

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## Classroom Rules of Conduct:

Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and the mission of the university.

1. Cell phones and pagers must be turned off before class begins. If your cell phone or pager “goes-off” you are required to leave the class room and not return until the next class period. This applies even during a test.
2. The classroom is not for individual instruction, tutoring, or addressing questions about a particular grade. These types of interactions should be addressed during office hours or by appointment. It is disruptive and a waste of the other students’ time and efforts to do this in class.
3. Student may not do the following in class.
  - a. Eat.
  - b. Use tobacco products.
  - c. Use offensive, disruptive or obscene language or remarks.
  - d. Read newspapers or non-class related materials.
  - e. Carry on personal conversations.
  - f. Engage in distractive behavior.

g. Wear hats or distracting clothing.

Students engaging in inappropriate behavior or being especially disruptive shall be directed to leave the classroom. Students who are excessively or especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.

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## Visitors to the Classroom:

Unannounced visitors to class must present a current, official SHSU identification card to be permitted in the classroom. They must not present a disruption to the class by their attendance. If the visitor is not a registered student, it is the instructor's discretion whether or not the visitor will be allowed to remain in the classroom.

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## Student Acknowledgement of Syllabus:

I, \_\_\_\_\_ (*your name*) having SHSU ID# \_\_\_\_\_, have printed the syllabus for CHM 239 (FALL 2007). I further acknowledge that I have read said syllabus and that I am familiar with its contents. I also recognize that my continuance in this course requires that I agree to its content and requirements and that changes to this syllabus are only possible if they further the aims of the course as deemed appropriate by the professor.

I am also aware that questions and/or problems with the course must be addressed to the instructor. If these problems are not part of the day's scheduled material, it should be addressed after class, during office hours, or by appointment.

Signed : \_\_\_\_\_

Date: \_\_\_\_\_