COURSE SYLLABUS

(Tentative**)
CHM 238.01
Organic Chemistry I
3 semester credit-hours
Classroom: CFS 123
MTWThF 10-11:50

Instructor:	Dr. Rick C. White	Semester:	Summer I2008
Office Phone:	294-1060 off-camp ext. 41060 on-camp	Email:	chm_rcw@shsu.edu
Office: Check each room	CFS 317D office Or CFS 307 Res. lab Or CFS 323 NMR lab	Office Hours:	TuTh 1:30—3:30 M,W 2:30-4:00 PM
Website	Blackboard at www.shsu.edu		

Textbook (required): John McMurry, "Organic Chemistry", 7th ed., Thomson, Brooks/Cole, 2008, ISBN 0-495-11258-7. **Must bring book to every class.**

Description:

This is the first half of a two-semester course in organic chemistry. Topics include molecular bonding and structure, properties and reactions of alkanes, alkenes, alkyl halides, and alcohols, and the nomenclature of alkanes, alkenes, alkynes, alkyl halides, and alcohols. Other topics will be interspersed throughout the lecture. This is the foundation material for all further work in Organic Chemistry and it is absolutely critical to your success both in this course and in subsequent organic related course-work that the concepts and tools in this first semester be mastered as fully as possible. If you do not learn the first half you can not pass the second half.

Prerequisites:

Students in this course must have successfully completed CHM 139 & CHM119 with a grade of **C** or higher. The students are expected to be proficient in the nomenclature, vocabulary, and principles from General Chemistry as these are the foundations of Organic Chemistry and will be included in testing and course materials.

Study Requirements:

Most of the important learning in this class will be **SELF-LEARNING or SELF-TEACHING**. To discuss all of the necessary important topics in class would leave no time for questions or discussion and not enough material could be covered to justify the class. In order to be effective in this class you must prepare by reading and working problems prior to coming to class. Class time is best used to work on applying the readings and material. **Attending class and writing notes will NOT be enough for most students to pass the class**. Each student must find the level of interaction with the material necessary to succeed. Study groups may be excellent methods for many students. **Remember you are responsible for your advancement.**

Required Materials:

You are required to bring your book to class. Requisite material from CHM 138/139 includes, but is not limited to, bonding, structure, equilibria, thermodynamics, and nomenclature of common ions, ionic compounds, binary compounds, and acids. Also, you are expected to attempt to work as many of the problems in each chapter as possible.

Questions in Class:

If you ask a question in class, I generally will not answer it directly, but will ask you questions to find the source of your question. Most questions arise because of inadequate background or misunderstanding of a prior concept or material. Just providing you an answer to write in your notebook would not solve the problem.

If I ask a question in class, especially one that should be easily answered if a student is keeping up and understanding the material, I will wait for the class to come up with an acceptable answer. You should not consider this class a spectator class where you show up take notes and then study before the test.

Attendance Policy:

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

Objectives: Skills to be Acquired in This Course:

This a science major's course and as such will be conducted at a level consistent with the preparation of majors for advanced level work. Regardless of your specific major, the demands of the course will be same for all students as will also the testing. It is an overall goal of this course to improve the problem solving skills and understanding of chemical systems of all students enrolled. In addition, students successfully completing this course should be able to:

1. To build on the foundations of General Chemistry.
2. Grasp and explain the concept of atomic geometry as a result of electronic orbitals.
3. Understanding of molecular structure and geometry as the result of atomic electronic geometry (hybridization).
4. Ability to distinguish the hydrocarbons into alkanes, alkenes, alkynes, aromatics, or composites based on structure.
5. 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.
6. Ability to name, using IUPAC rules, alkanes, alkenes, alkynes, alkyl halides, and composites.
7. Know the reactions and preparation of alkanes.
8. Know the reactions and preparation of alkyl halides.
9. Know the reactions and preparation of alkenes.
10. Familiar with and functional, at a basic level, in the nature and use of spectroscopic methods.
11. Understand and utilize the relative acid-base properties of atoms in various functional groups.
12. Understand and discuss structure-stability trends for reactive intermediates and stable molecules.
13. Predict the behavior of molecules under reaction conditions.
14. Predict relative physical and chemical properties of similar molecules based on comparative structure.
15. Predict possible products of reactions as well as the major product.
16. 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.
17. Ability to compose a reasonable synthesis of relatively simple organic compounds based on structure and a knowledge of basic reactions.
18. Ability to apply structural features of a compound to explain the chemical properties and stabilities observed.
19. Fluency in the terms and vocabulary of fundamental Organic and Freshman Chemistry.

Examinations:

Examinations will only be given at the times and dates assigned within this syllabus. Do not ask for an earlier or later exam.

As stated above, it is expected that each student will work through as many of the problems in each chapter as possible as the course progresses. This is important as it is the only way that the understanding, use, and application of the material and skills can be acquired. Additionally, much of each test will be modeled after the problems from the chapters in addition to multiple choice, fill in the blank, etc. Nomenclature and important concepts from CHM138/139 will be included in the tests.

There will be four, in-class, closed-book examinations each worth 100 points. **Any exam that has been missed will be replaced by the final examination percentage grade.** Total possible exam points = 400.

A final, **comprehensive** examination will be given at the University scheduled time. This exam will also be worth 200 points and a grade of 60 points or more on the final examination is required to be eligible to pass the course. All students must take this exam (the score obtained will not be dropped). A missed final will generate a grade of F for the course. Therefore, the total number of points possible is 600. (400 exam, & 200 final).

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.

Test Format & Content:

Every test will be comprehensive, approximately 60% new material and 40% old material. Every new topic will be built upon older material because its understanding requires fluency in the previous material. Studying and working the problems at the end of each chapter is the best way to study and evaluate your progress in this course. If you cannot work the problems without the book or study guide you are not ready to move on to new material or take the next test.

There are six main types of testing formats in each test.

1. Multiple choice: May be over any new or prior material.
2. Matching: covers terminology, concepts, reagents, reactions, etc.
3. Filling the blank: supply the appropriate term for the context.
4. Give missing component for a reaction (A, B, or C): $A \xrightarrow{B} C$: supply the correct starting material, reagent, or product to complete the given reaction.
5. Random types of problems taken from the Ends of Chapters.
6. Nomenclature

Make-up Tests:

There are none. Do not ask about them.

Grading:

Grading will be based on 400 total points for the semester (four exams at 100 pts each) and grades are given as below.

4 (A)	350- above
3 (B)	300 – 349
2 (C)	250 - 299
1 (D)	200—249
0 (F)	199 or below

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.

ADA Policy:

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. NOTE: no accommodation can be made until you register with the Counseling Center.

Academic Dishonesty (Cheating) Policy:

"*All students are expected to engage in al 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 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 the abuse of resource materials*."

Inappropriate Classroom Conduct Policy:

"*Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. Cellular*

telephones and pagers must be turned off before class begins. Students are prohibited from eating in class, using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy."

Visitors to the Classroom:

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

Schedule for Lectures: CHM238

Date	Topic	Reading Assignment
Jun 2	Atomic Orbitals, Molecular Orbitals, Bondings	Chap 1
Jun 3	Atomic Orbitals, Molecular Orbitals, Bondings	
Jun 4	Molecular Structures, Polarity, Resonance, Acid-base	Chap 2
Jun 5	Polarity, Resonance, Acid-base	Chap 2
Jun 6	**Ex 1** Alkane nomenclature and properties	
Jun 6	Conformations, Cycloalkanes	
Jun 9	Cycloalkane nomenclature, cis/trans isomerism, stabilities and conformations of cycloalkanes and cyclohexanes	
Jun 10	Polycyclic alkanes, Reactions of alkanes	
Jun 11	Mass spectrometry, Infrared spectroscopy	Chap 4
Jun 12	**Ex. 2** Spectroscopy Problems	
Jun 13	Stability and Conformation of cycloalkanes and cyclohexanes	
Jun 16	Polycyclic alkanes Mass Spectrometry, interpreting mass spectra.	
Jun 17	Infrared Spectrocopy, interpreting IR	
Jun 18	MS and IR interpretation and problems. Nuclear Magnetic Resonance Spectroscopy,	Chap 12
Jun 19	Integration, spin-spin splitting, Types of Reactions, mechanisms, Radical, Polar, Arrow pushing	Chap 13
Jun 20	Equilibria, rates, energy changes, Bonds, and transition states	Chap 5
Jun 21	Alkenes, nomenclature, preparations, reactions	Chap 6
Jun 22	**Ex.3** E/Z isomers, addition reactions, rearrangements epoxidation	

Jun 23	.Alkynes, nomenclature, reactions	Chap 8
Jun 24	Stereochemistry	Chap 9
Jun 25	Alkyl halides	Chap7
Jun 26	Alkyl halide reactions, substitution and elimination	Chap. 9
Jun 27	Alkyl halides: synthesis	
July 1	**Final Exam**	