

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: CHM 2210C

COURSE TITLE: Organic Chemistry I

PREREQUISITE(S): CHM 2046C or equivalent

COREQUISITE(S): None

CREDIT HOURS: 4

CONTACT HOURS/WEEK: 6

CONTACT HOUR BREAKDOWN:

Lecture/Discussion: 3

Laboratory: 3

Other _____:

FACULTY WORKLOAD POINTS: 5.1

STANDARDIZED CLASS SIZE ALLOCATION: 18

CATALOG COURSE DESCRIPTION:

This course emphasizes the general principles and theories of organic chemistry with emphasis on classification, nomenclature, methods of preparation, characteristic reactions, stereo-chemistry and structure determination of organic compounds.

SUGGESTED TEXT(S):

Organic Chemistry. Latest edition, Brown and Foote Harcourt

Organic Chemistry, Latest Ed., Smith, McGraw-Hill

Microscale and Macroscale Organic Experiments, Latest edition, Williamson Hart Crain, Houghton-Mifflin.

Organic Chemistry, Latest Ed., Morrison-Boyd, Prentice Hall

Organic Chemistry, Latest Ed., McMurry, Brooks/Cole

IMPLEMENTATION DATE:

Fall Term, 1993 (941)--Reactivation

REVIEW OR MODIFICATION DATE:

Fall Term, 2002 (20031)

Fall Term, 2006 (20071)

Fall Term, 2008 (20091) - Outline Review 2007

COURSE TOPICS	CONTACT HOURS <u>PER TOPIC</u>
I. Introduction & Structure and Bonding	2
A. Historical Review	
B. Atomic Structure and Configuration	
C. Chemical Bonding	
D. Orbital Hybridization & Resonance Theory	
E. Functional groups	
II. Acids and Bases	2
A. Bronsted-Lowry Acids and Bases	
B. Acid Dissociation Constants, pKa's	
C. Position of Equilibrium in Acid-Base Reactions	
D. Molecular Structure and Acidity	
E. Lewis Acids and Bases	
III. Alkanes and Cycloalkanes	4
A. Structure of Alkanes	
B. Bond Rotation	
C. Cycloalkanes and Cycloalkenes	
D. Methods of Preparation	
E. Reactions	
F. Nomenclature	
IV. Stereochemistry and Chirality	4
A. Stereoisomerism	
B. Chirality	
C. The R, S system	
D. Molecules with two or more stereocenters	
E. Conformational Analysis	
F. Properties	
G. Separation	
V. Alkenes	6
A. Structure and Nomenclature	
B. Preparations	
C. Reactions and Properties	
D. Uses	
VI. Halogen Compounds	3
A. Structure and Nomenclature	
B. Preparations	
C. Reactions and Properties	
D. Uses	

COURSE TOPICS (Continued)	<u>CONTACT HOURS PER TOPIC</u>
VII. Alkynes	3
A. Structure and Nomenclature	
B. Preparations	
C. Reactions and Properties	
D. Uses	
VIII. Nucleophilic Substitutions	4
A. Transition States and Resonance Energy	
B. Hyperconjugation	
C. SN2 Reaction	
D. SN1 Reaction	
IX. Elimination Reactions	3
A. E2 Mechanism	
B. E1 Mechanism	
C. Substitution vs. Elimination	
X. Alcohols	4
A. Structure and Nomenclature	
B. Preparations	
C. Reactions and Properties	
D. Uses	
XI. Ethers	3
A. Structure and Nomenclature	
B. Preparations	
C. Reactions and Properties	
D. Uses	
XII. Infrared Spectroscopy	2
A. Electromagnetic Radiation	
B. An IR spectrometer	
C. Interpreting Infrared Spectra	
XIII. Nuclear Magnetic Resonance Spectroscopy	4
A. Theory	
B. An NMR spectrometer	
C. Chemical Shift	
D. Integration	
E. Splitting	

COURSE TOPICS (Continued)

CONTACT HOURS
PER TOPIC

- | | |
|--|---|
| XIV. Mass Spectrometry | 1 |
| A. Theory | |
| B. A Mass spectrometer | |
| C. Interpreting Mass Spectra | |
| D. Interpreting an IR, MS, NMR combination | |

Topics not covered in 2210C will be covered in 2211C.

LABORATORY EXPERIMENTS

The laboratory associated with the chemistry major course in organic chemistry should provide a thorough grounding in the following experimental techniques:

	Hours
A. Isolation and Purification Techniques - including extraction, distillation, sublimation, crystallization, and chromatography (column, thin layer, gas-liquid, HPLC).	9
B. Analytical Techniques - including chromatography (see above) and spectrophotometry (UV.Vis, IR, NMR, mass spectra).	9
C. Synthesis Techniques - including the synthesis of an appropriately selected group of "simple" organic compounds.	9
D. Identification Techniques - including the application of analytical techniques (see above) and synthesis techniques (see above) to the identification of appropriately chosen "unknown" compounds.	9
E. Library Techniques - including instruction in how to locate information pertinent to organic analysis and synthesis in the library.	9



Florida State College
At Jacksonville

Course Learning Outcomes & Assessment
For All College Credit Courses

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

<i>Section 1</i>	
COURSE PREFIX AND NUMBER: <u>CHM 2210C</u>	SEMESTER CREDIT HOURS: <u>4</u>
COURSE TITLE: <u>Organic Chemistry I</u>	

<i>Section 2</i>	
TYPE OF COURSE: (Click on the box to check all that apply)	
<input checked="" type="checkbox"/> AA Elective	<input type="checkbox"/> AS Required Professional Course
<input type="checkbox"/> AS Professional Elective	<input type="checkbox"/> AAS Required Professional Course
<input type="checkbox"/> Other _____	<input type="checkbox"/> College Prep
<input type="checkbox"/> General Education: (For General Education courses, you must also complete Section 3 and Section 7)	<input type="checkbox"/> Technical Certificate

<i>Section 3 (If applicable)</i>	
INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:	
<input type="checkbox"/> Communications	<input type="checkbox"/> Social & Behavioral Sciences
<input checked="" type="checkbox"/> Natural Sciences	<input type="checkbox"/> Humanities
	<input type="checkbox"/> Mathematics

<i>Section 4</i>	
INTELLECTUAL COMPETENCIES:	
<input checked="" type="checkbox"/> Reading	<input checked="" type="checkbox"/> Speaking
<input checked="" type="checkbox"/> Writing	<input checked="" type="checkbox"/> Listening
<input checked="" type="checkbox"/> Critical Analysis	<input checked="" type="checkbox"/> Information Literacy
<input checked="" type="checkbox"/> Quantitative Skills	<input checked="" type="checkbox"/> Ethical Judgment
<input checked="" type="checkbox"/> Scientific Method of Inquiry	<input checked="" type="checkbox"/> Working Collaboratively

<i>Section 5</i>	LEARNING OUTCOMES	METHOD OF ASSESSMENT
	<ul style="list-style-type: none"> Explain and apply major concepts in organic chemistry including classification, nomenclature, methods of preparation, characteristic reactions, stereochemistry and structure determination of organic compounds. 	Written tests, reports and/or use of equipment to demonstrate student competency in field.
	<ul style="list-style-type: none"> Demonstrate knowledge of scientific method. 	Formulate problem, make observations, derive and test hypothesis and make conclusions.
	<ul style="list-style-type: none"> Communicate scientific ideas through oral or written assignments. 	Students use analytical reasoning skills to solve problems on written tests and/or laboratory work.
	<ul style="list-style-type: none"> Interpret scientific models such as formulas, graphs, tables and schematics, draw inferences from them and recognize their limitations. 	Written reports of lab experiments and/or written tests demonstrate student competency in the application of scientific knowledge.
	<ul style="list-style-type: none"> Demonstrate problem solving methods in situations that are encountered outside of the classroom. 	Students use demonstrations, group discussions, written tests, laboratory reports, research projects and/or field experiences to illustrate competence in recognizing and evaluating various scientific processes.
	<ul style="list-style-type: none"> Demonstrate proper laboratory technique including safety in the use and care of laboratory equipment and materials. 	Results from laboratory work and experiments demonstrate student awareness of science and society.

<i>Section 6</i>	
Name of Person Completing This Form: <u>Steve Milczanowski</u>	Date: <u>3/4/2005</u>