

**CHEM 8 Course Outline as of Fall 2000****CATALOG INFORMATION**

Dept and Nbr: CHEM 8                      Title: INTRO ORGANIC CHEM  
Full Title: Introductory Organic Chemistry  
Last Reviewed: 11/26/2018

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	5.00	Lecture Scheduled	4.00	17.5	Lecture Scheduled	70.00
Minimum	5.00	Lab Scheduled	3.00	17.5	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	7.00		Contact Total	122.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 140.00

Total Student Learning Hours: 262.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

An introduction to the principles, nomenclature, structure and reaction mechanisms of Organic Chemistry.

**Prerequisites/Corequisites:**

Chem 1A.

**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: An introduction to the principles, nomenclature, structure and reaction mechanisms of Organic Chemistry. (Grade Only)

Prerequisites/Corequisites: Chem 1A.

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>		Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>		Effective:	Inactive:
	B1	Physical Science	Fall 1981	
	B3	Laboratory Activity		

<b>IGETC:</b>	<b>Transfer Area</b>		Effective:	Inactive:
	5A	Physical Sciences	Fall 1981	
	5C	Fulfills Lab Requirement		

**CSU Transfer:** Transferable      Effective:      Fall 1981      Inactive:

**UC Transfer:** Transferable      Effective:      Fall 1981      Inactive:

**CID:**

**Certificate/Major Applicable:**

Not Certificate/Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

A successful student in Chemistry 8 should be able to:

- use bonding theories to explain structures and structural features of organic compounds
- use intermolecular forces to predict and explain the relative boiling points, melting points and water solubilities of organic compounds
- name simple organic compounds using the IUPAC system of nomenclature
- apply resonance theory to organic compounds
- apply acid-base theories to organic compounds
- predict and draw the possible conformations of alicyclic and cyclic organic compounds
- predict if a given organic structure is chiral and optically active
- determine the stereochemical relationship between pairs of compounds
- predict the influence a change in structure will have on an organic reaction
- predict and explain the products of reactions involving organic compounds
- predict if a substitution reaction is occurring by the SN1 or SN2 mechanism
- predict if an elimination reaction is occurring by the E1 or E2 mechanism
- write a logical mechanism for an organic reaction
- predict if a structure is aromatic
- apply the principles of organic chemistry to biomolecules such as carbohydrates and proteins
- demonstrate an understanding of theoretical ideas in organic chemistry by application of these concepts to performed experiments
- learn appropriate laboratory skills germane to organic chemistry, including crystallization, extraction, distillation, chromatography

- and spectroscopic methods
- understand the theory behind crystallization, extraction, distillation, chromatography and spectroscopic methods
- operate the infrared spectrophotometer
- analyze infrared spectra
- operate a gas chromatograph
- analyze a gas chromatogram
- effectively communicate observations and subsequent conclusions by means of written laboratory reports

## **Topics and Scope:**

### **LECTURE MATERIAL**

1. Bonding and structure of organic compounds
2. Acid-base chemistry
3. Organic reactions
4. Alkanes and cycloalkanes
5. Stereochemistry
6. Alkenes
7. Alkynes
8. Alcohols, ethers and sulfur compounds
9. Aldehydes and ketones
10. Carbohydrates
11. Carboxylic acids
12. Derivatives of carboxylic acids
13. Amines
14. Polypeptides and Proteins

### **LABORATORY MATERIAL**

1. Crystallization
2. Melting point determinations
3. Infrared spectroscopy
4. Simple distillation
5. Gas chromatography
6. Liquid-liquid Extraction
7. Steam distillation
8. Polarimetry
9. Isolation of organic compounds
10. Synthesis of organic compounds
11. Structure determination

## **Assignment:**

Assignments for Chemistry 8 include:

1. specific reading and study assignments (averaging 40-50 pages per week)
2. completion of end-of-chapter exercises (averaging 25-30 pages per week)
3. writing (on average) one laboratory report per week and previewing upcoming laboratory experiments and completion of the required pre-laboratory assignment.

## Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written homework, Lab reports, Essay exams

Writing  
20 - 60%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Lab reports, Quizzes, Exams

Problem solving  
5 - 10%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Class performances, LAB SKILL EVALUATION

Skill Demonstrations  
1 - 5%

**Exams:** All forms of formal testing, other than skill performance exams.

PROBLEM SOLVING AND SHORT ESSAY

Exams  
30 - 70%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

None

Other Category  
0 - 0%

## Representative Textbooks and Materials:

FUNDAMENTALS OF ORGANIC CHEMISTRY: McMurry, Brooks/Cole, 1998

ORGANIC CHEMISTRY: A BRIEF COURSE: Atkins and Carey, McGraw Hill, 1997

INTRODUCTION TO ORGANIC CHEMISTRY: Brown, Saunders, 1999

MICROSCALE TECHNIQUES FOR THE ORGANIC LAB: Mayo and Pike, Wiley, 1998

ORGANIC CHEMISTRY LABORATORY MANUAL: Svoronos and Sarlo, W.C. Brown, 1997