## CHEM 8 Course Outline as of Fall 2010

# **CATALOG INFORMATION**

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

| Units   |      | Course Hours per Week |      | Nbr of Weeks | <b>Course Hours Total</b> |        |
|---------|------|-----------------------|------|--------------|---------------------------|--------|
| 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:** Course Completion of CHEM 1A OR Course Completion of CHEM 42

**Recommended Preparation:** Eligibility for ENGL 100 or ESL 100

## **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: Course Completion of CHEM 1A OR Course Completion of CHEM 42 Recommended: Eligibility for ENGL 100 or ESL 100 Limits on Enrollment: Transfer Credit: CSU;UC.

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

| AS Degree:<br>CSU GE: | <b>Area</b><br><b>Transfer Area</b><br>B1<br>B3 | Physical Scient<br>Laboratory Act             |           | Effective:<br>Effective:<br>Fall 1981 | Inactive:<br>Inactive: |
|-----------------------|---|---|-----------|---------------------------------------|------------------------|
| IGETC:                | <b>Transfer Area</b><br>5A<br>5C                | Physical Sciences<br>Fulfills Lab Requirement |           | Effective:<br>Fall 1981               | Inactive:              |
| CSU Transfer          | :Transferable                                   | Effective:                                    | Fall 1981 | Inactive:                             |                        |
| UC Transfer:          | Transferable                                    | Effective:                                    | Fall 1981 | Inactive:                             |                        |

# CID:

# **Certificate/Major Applicable:**

Major Applicable Course

# **COURSE CONTENT**

## **Outcomes and Objectives:**

Upon successful completion of this course the student will be able to:

- 1. Predict and explain three-dimensional structure, including conformational changes, for organic compounds.
- 2. Apply rules of nomenclature for naming organic compounds.
- 3. Deduce the structures for products of organic reactions.
- 4. Predict and explain relative physical properties of organic compounds.
- 5. Predict and explain relative reactivities of organic compounds.
- 6. Suggest appropriate methods for the syntheses of organic compounds.
- 7. Propose mechanisms for organic reactions.
- 8. Compare and contrast structures and properties of biological compounds.
- 9. Make observations and apply chemical concepts in the laboratory.
- 10. Analyze compounds by instrumental methods.

# **Topics and Scope:**

## LECTURE MATERIAL

- 1. Bonding and structure of organic compounds
- 2. Acid-base chemistry
- 3. Alkanes and cycloalkanes
- 4. Stereochemistry
- 5. Alkenes and alkynes
  6. Aromatic compounds
- 7. Alcohols, ethers and sulfur compounds
- 8. Substitution and elimination reactions
- 9. Aldehydes and ketones
- 10. Carboxylic acids

- 11. Derivatives of carboxylic acids
- 12. Amines
- 13. Carbohydrates
- 14. Amino acids and proteins
- 15. Nucleic acids
- LABORATORY MATERIAL
- 1. Crystallization
- 2. Melting point determinations
- 3. Spectroscopy
- 4. Distillations
- 5. Chromatography
- 6. Extraction
- 7. Isolation of organic compounds
- 8. Synthesis of organic compounds
- 9. Structure determination
- 10. Instrumental methods

# Assignment:

Assignments may include:

- 1. Specific reading and study assignments averaging 30-45 pages per week.
- 2. Completion of end-of-chapter exercises averaging 15-20 problems per week.
- 3. Laboratory experiments: identification of unknowns and products of reactions by physical, instrumental, and spectroscopic methods.
- 4. A written laboratory report on each experiment detailing accomplishments.
- 5. Four to six lecture and laboratory exams plus a comprehensive final exam.

# 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.

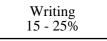
## Lab reports

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

## Lab reports

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

Class performances, Lab skill technique/accurate lab results



Problem solving 5 - 10%

Skill Demonstrations 1 - 5% Multiple choice, completion, problem solving and short essay

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

None

# **Representative Textbooks and Materials:**

Essential Organic Chemistry, Bruice, Prentice Hall, 2009 Fundamentals of Organic Chemistry, 6th ed., McMurry and Simanek, Brooks/Cole, 2007 Organic Chemistry, Hill and Barbaro, Contempory Publishing Company of Raleigh, 2004 Techniques for the Organic Laboratory: Microscale and Macroscale, Pavia,

Lampman, Kriz, and Engel, Brooks/Cole, 2006

Exams 65 - 75%

Other Category 0 - 0%