GROSSMONT COLLEGE

Official Course Outline

CHEMISTRY 241 – ORGANIC CHEMISTRY I LECTURE

1. Course Number Course Title Semester Units Semester Hours

CHEM 241 Organic Chemistry I 3 3 hours lecture: 48-54 hours

Lecture 96-108 outside-of-class hours 144-162 total hours

2. Course Prerequisites

A “C” grade or higher or “Pass” in Chemistry 142 or equivalent.

Corequisite

None

Recommended Preparation

None

3. Catalog Description

First of a two semester organic chemistry lecture sequence. The topics covered will include nomenclature of organic compounds, stereochemistry, reaction mechanisms, and the study of representative reactions for certain classes or organic compounds. The relationship of structure to properties, reactivity and mechanism or reaction will be emphasized.

4. Course Objectives

The student will:

1. Distinguish among the numerous classes of organic compounds and predict their properties and reactivity.
2. Deduce the structures of the constitutional isomers corresponding to a given molecular formula.
3. Write a systematic name for an organic compound given its structure and vice-versa.
4. Deduce the principal conformations of open chain molecules and cyclohexane derivatives and determine their relative potential energies.
5. Deduce the structures of the stereoisomers possible for molecules with stereogenic centers.
6. Predict the operative mechanisms and the structures of the products in nucleophilic substitution, elimination, electrophilic addition, nucleophilic addition, radical substitution and addition, oxidation, and reduction reactions.
7. Design the synthesis and identify intermediates for an organic compound requiring multiple reaction steps.
8. Determine the structure of molecules from their FTIR and NMR spectra.
9. Interpret GC/MS data to characterize the nature of product and by-products of synthesis reactions.

5. Instructional Facilities

1. Lecture room with demonstration bench equipped with gas, air, vacuum, water, sink
2. Computer room with computers loaded with molecular modeling and drawing software.
3. Smart Cart.
4. Wall mounted Periodic Chart.

6. Special Materials Required of Student

1. Scientific calculator with exponential and logarithmic functionality.
2. Molecular model kit.

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7. Course Content

1. Classes, properties and reactivity of organic compounds.
2. Draw the structures of all the possible constitutional isomers corresponding to a given molecular formula.
3. Nomenclature of organic functional groups and organic compounds.
4. Conformational analysis of aliphatic hydrocarbons and cyclohexane derivatives.
5. Stereochemistry of saturated, unsaturated, and cyclic hydrocarbons.
6. Nucleophilic substitution, elimination and radical reactions and their mechanisms.

8. Method of Instruction

1. Lecture.
2. Videos and appropriate media.
3. Computer assisted instruction.

9. Methods of Evaluating Student Performance

1. Written exams and final exam.
2. Essays/presentations on topics such as experimental results, descriptive chemistry or current issues in chemistry.
3. Homework.
4. Computer drills.

10. Outside Class Assignments

1. Essays/presentations on topics such as experimental results, descriptive chemistry, or current issues in chemistry.
2. Homework, both text and computer based such as writing and predicting reactions, evaluating structural information, classification of organic compounds..

11. Texts

1. Required Text(s):

Wade, L.G. *Organic Chemistry*. 9th ed.  Upper Saddle River, New Jersey: Pearson, 2016.

1. Supplementary texts and workbooks:

None.

Addendum: Student Learning Outcomes

Upon completion of this course, our students will be able to do the following:

* 1. Demonstrate a working knowledge of the language of organic chemistry.
  2. Recognize the major functional groups of organic compounds.
  3. Predict the major products of chemical reactions of representative organic functional groups.
  4. Apply a theoretical approach to explain the chemical and physical behavior of organic compounds.

Date approved by the Governing Board: December 13, 2016