

CIP Code: 40.0504

METROPOLITAN STATE COLLEGE OF DENVER
Office of Academic Affairs

REGULAR COURSE SYLLABUS

SCHOOL: Letters, Arts & Sciences

DEPARTMENT: Chemistry

SEMESTER(S) OFFERED: Fall, Spring, & Summer

PREFIX & COURSE NUMBER: CHE 3100

COURSE TITLE: Organic Chemistry I

CREDIT HOURS: 4 (4 + 0)

CONTACT HOURS: Lecture 60 Lab 0 Internship 0 Practicum 0

RESTRICTIONS (VARIABLE TOPICS COURSES): None

PREREQUISITE(S): CHE 1800, CHE 1810, CHE 1850, satisfaction of Level I General studies course requirements

COREQUISITE(S): None

CATALOG COURSE DESCRIPTION:

An introduction to the study of nomenclature, structure, synthesis, reactions, properties, identification, and mechanisms of both aliphatic and aromatic organic compounds.

REQUIRED READING MATERIALS (Title, Author, Publisher, Copyright Date):

Organic Chemistry, McMurray, Brooks/Cole, 5th Edition, 2000.

APPROVED:

Department Chair

Dean

V.P., Academic Affairs

Richard Lind
James M. Cronin
David Koster Holley

DATE:

2/22/00

2/22/00

2/27/00

DISTRIBUTION: Original to Vice President for Academic Affairs
Copies retained by Dean and Department Chair

Revised 9/94: Academic Affairs-Curriculum-Regular Course Syllabus
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SPECIFIC (MEASURABLE) STUDENT BEHAVIORAL LEARNING OBJECTIVES:

Upon completion of this course the student should be able to:

1. Write structural formulas for alkanes, alkenes, alkynes, cyclic compounds, benzene, and their derivatives from their names and vice versa.
2. Designate molecular orbitals used in organic compounds.
3. Draw formulas for stereoisomers, and designate with appropriate descriptors.
4. Write mechanisms for free radical, carbocation, S_N1 , S_N2 , E-1, E-2, and aromatic substitution reactions.
5. Write equations for the synthesis of alkanes, alkyl halides, alkenes, alkynes, alcohols, glycols, acids, halohydrins, and benzene derivatives.
6. Balance chemical equations for alkane, alkene, alkyne, and aromatic reactions.
7. Determine the structure of organic compounds from their IR, NMR, and MS spectra.
8. Write resonance structures for organic ions, radicals, and molecules, and use the concept of resonance to explain the stability and/or reactivity of organic substances.

OUTLINE OF COURSE CONTENT (Major Topics and Subtopics):

1. Introduction
2. Alkanes & Cycloalkanes
3. Reaction Mechanism
4. Stereochemistry & Stereoisomerism
5. Alkenes
 - a. structure and preparation
 - b. reactions
6. Alkynes
7. Organic Instrumentation Structure Determination
8. Aromatic Compounds

EVALUATION OF STUDENT PERFORMANCE:

Students will be given periodic fifty minute examinations. These examinations will be supplemented by short quizzes. A final exam one hundred minutes long will terminate the course. The final grade determination will be based on the students performance on the examinations, quizzes, final exam, and the instructors evaluation.

GENERAL STUDIES COURSE PROPOSAL FORM
(To Accompany Regular Syllabus Form)

Check one of the following:

Date 9-3-88

New course

Current course with revisions

Current course without revisions

LEVEL

CATEGORY

I

English 101

Mathematics

English 102

Communications

II

Historical

Arts and Letters

Social Science

Natural Science

III

Senior Experience

School Metropolitan State College

Prefix & Course Number CHE310

Department Chemistry

Title Organic Chemistry I Lecture

CIP _____
HEGIS _____

Prerequisites/Corequisites CHE120 & CHE121

Anticipated Number of
Sections per Semester 4

Recommended Maximum
Enrollment per Section 30

I. Describe how the course will address the criteria listed for the category for which this course is being proposed.

This course will:

1. Foster students' writing ability via the requirement of written reports in conjunction with the corresponding organic laboratory course(s) (CHE312 and CHE313).
2. Develop students' manual dexterity and observational skills in conjunction with the setting up of laboratory equipment and the running of laboratory experiments.
3. Develop students' research skills by challenging them with laboratory projects that require students' to do an appropriate chemical literature search prior to designing a detailed plan of action.

II. If the proposed course is for Level II, specify how the relevant general criteria for Level II courses will be met.

The course will:

1. Impart basic knowledge dealing with the characteristic physical/chemical properties of the major families of organic compounds.
2. Discuss theories and concepts to account for structure/reactivity relationship of organic compounds.
3. Discuss the technological means by which the structure of organic compounds can be elucidated.
4. Relate the study of organic chemistry to such closely related areas as biochemistry, physiology, medicinal chemistry, and pharmacology.
5. Develop students' problem solving and critical thinking skills by exposing students to classroom and examination questions that require the student to organize the data given, to apply basic knowledge to the problem at hand, and to draw conclusions in a logical, stepwise manner.

APPROVALS:

Milton Bieder
Department Curriculum Committee

School Curriculum Committee

General Studies Committee

Joseph A. Cummi
Department Chair

School Dean

Joint Board on Curriculum

Vice President for Academic Affairs

Addendum to General Studies Criteria for Chemistry 310

This course will enable and encourage students to use the basic knowledge obtained in organic chemistry to make objective value judgements and sound ethical decisions when evaluating societal issues such as environmental quality, the allocation of limited resources, drugs, etc.