CHEM C225L: ORGANIC CHEMISTRY B LAB

Item	Value
Curriculum Committee Approval Date	12/12/2008
Top Code	190500 - Chemistry, General
Units	2 Total Units
Hours	108 Total Hours (Lecture Hours 18; Lab Hours 90)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)
Local General Education (GE)	• CL Option 1 Natural Sciences (CB1)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 5C Laboratory Activity (5C)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 5C Laboratory Activity (5C)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B3 Laboratory Activity (B3)

Course Description

Formerly: CHEM C226. Further study of the structures, reactions, and reaction mechanisms of organic compounds, with particular emphasis on conjugated molecules, aromatic systems, and carbonyl containing-compounds and an introduction to biologically important molecules such as amino acids, carbohydrates, and lipids. PREREQUISITE: CHEM C220L. COREQUISITE: CHEM C225. Transfer Credit: CSU; UC. C-ID: CHEM 160 S.**C-ID:** CHEM 160 S.

Course Level Student Learning Outcome(s)

1. Use logical and critical analysis to interpret data produced from NMR and infrared spectroscopy.
2. Conduct and interpret organic chemistry experiments using the common techniques of organic chemistry, including melting points, recrystallization, distillation, extraction, chromatography, refractometry, and infrared spectroscopy.
3. Explain the theoretical basis and applications of common techniques in organic chemistry including melting points, recrystallization, distillation, extraction, chromatography, and NMR and infrared spectroscopy.
4. Describe observations and results of organic chemistry procedures in a laboratory notebook and use the principles of spectroscopy to identify organic compounds.

Course Objectives

- 1. Use logical and critical analysis to interpret organic chemistry analytical and spectroscopic data.
- 2. Identify an unknown organic compound by chemical and spectroscopic means
- 3. Apply knowledge of organic chemistry reactions to biological molecules.

Lecture Content

Isolation of Trimyristin Diels - Alder Reaction Nitration of Methyl Benzoate Reactivities of Different Aromatic Compounds Synthesis of Triphenylmethanol using a Grignard Reaction Reduction of Vanillin Esterification Benzoin Condensation Wittig Reaction Identification of an Unknown Organic Compound Aldol Condensation Reaction Synthesis of Lidocaine Isolation of casein and Lactose from milk

Lab Content

Multi-step organic syntheses involving aromatics, carbonyls, and aldol condensations Wet chemistry analysis of an unknown compound Isolation and purification of naturally occurring organic molecules Interpretation of IR and NMR spectra

Method(s) of Instruction

- Lecture (02)
- Lab (04)

Instructional Techniques

Hands-on experimentation and data collection Acquisition and interpretation of NMR and infrared spectroscopy

Reading Assignments

Laboratory Text and handouts

Out-of-class Assignments

Laboratory Reports

Demonstration of Critical Thinking

Laboratory reports and quizzes

Required Writing, Problem Solving, Skills Demonstration

On time Completion of Lab assignments and documentation in a laboratory notebook.

Eligible Disciplines

Chemistry: Masters degree in chemistry OR bachelors degree in chemistry or biochemistry AND masters degree in biochemistry, chemical engineering, chemical physics, physics, molecular biology, or geochemistry OR the equivalent. Masters degree required.

Textbooks Resources

1. Required Pavia, Donald L.; Lampman, Gary M.; Kriz, George S.; Engel, Randall G. Introduction to Organic Laboratory Techniques, A Microscale Approach, 5th ed. Brooks/Cole Cengage Learning, 2013 Rationale: - Legacy Textbook Transfer Data: Legacy text

Other Resources

1. Coastline Library