

J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: CHM 245 **Credits:** 2

Course Title: Organic Chemistry I Laboratory

Course Description:

Introduces various methods and procedures used in present day organic laboratories. Covers the general techniques, organic synthesis, and the use of common spectroscopic instrumentation; synthesizing a variety of compounds; and analyzing the products through physical properties and spectroscopy. Part I of II. Prerequisite: CHM 112 with a grade of C or better; Co-requisite: CHM 241. Lecture 1 contact hour. Lab 3 contact hours. Total 4 contact hours. 2 credits.

General Course Purpose:

Explores the physical properties and reactivity of organic compounds including common methods of separation, purification, and instrumental analysis.

Course Prerequisites/Co-requisites:

Prerequisite: CHM 112 with a grade of C or better; Co-requisite: CHM 241.

Course Objectives:

Upon completing the course, the student will be able to:

Safety in the Organic Laboratory

- Use proper procedures and regulations for safe handling and use of chemicals in the organic chemistry laboratory
- Lab notebook
- Maintain a lab notebook and demonstrate proper recording, organization, and interpretation of scientific data
- Laboratory techniques
- Perform physical property analyses, such as melting point and boiling point determinations, density, recrystallization, etc.
- Perform various separation techniques, such as extraction, distillation, chromatography (TLC, column chromatography, GC), sublimation, etc.
- Use and/or interpret spectra from laboratory instruments, such as a gas chromatograph, refractometer, IR, and UV-Vis spectrometer, mass spectrometer, polarimeter.

Synthesis/Characterization

- Prepare and analyze organic compounds, with potential syntheses that could include SN1, SN2, E2, E1 reactions, green chemistry, alcohol dehydration, electrophilic addition reactions, and/or bromination.

Theoretical understanding

- Explain the theoretical basis of all techniques and state reasons for use of specific reagents.

Major Topics to be Included:

- Safety in the Organic Laboratory
- Lab notebook
- Laboratory techniques
- Synthesis/Characterization
- Theoretical understanding

Effective Date/Updated: August 1, 2023