

CHEM 351L: Organic Chemistry Laboratory I

Instructor Information

Instructor	Email	Course Format	Number of Credits
Mark Perks	perks@umbc.edu	Lab	2

General Information

Delivery Format

In-Person

Prerequisite /Co-requisite:

CHEM 101, 102, 102L (pre); CHEM 351 (co)

Course Materials

Currently Used Materials

- Williamson, K.L. and Masters, K.M. "Macroscale and Microscale Organic Experiments" (6th ed.), 2011 (customized for UMBC)

Course Objectives/Learning Outcomes:

CHEM 351L is the laboratory complement to Organic Chemistry I (CHEM 351). Students will learn the techniques to separate, purify, and characterize organic compounds and will perform fundamental functional group transformations. Separate rubric handouts each day will detail the expectations for the student to complete the experiments in a safe and informed manner.

Learning objectives:

- Precautions for conducting the experiments safely and awareness of toxic and corrosive properties of chemicals used.
- Names and structures of the compounds you work with.
- The background theory of stereochemistry, regiochemistry, equations and mechanism.
- Application of experiments accomplishing synthetic steps to analogous reactions.
- The purpose of the steps in the procedure of the experiments both practically and how the procedure relates to theory. Why the choice of solvent? Why additions in two portions? Why cool? Why add base? Why add acid? Why wait?
- Stoichiometry calculations and general laboratory practice.
- The physical properties of the compounds. It's not necessary to memorize specific values but instead the effects of size, polarity and hydrogen bonding. Also the properties of common chemicals.

Potential Topics Covered:

Experiments to be performed include:

Safety and Basic Operations
Thin-layer/Column Chromatography
Melting Points and Recrystallization
Reactive Acid-Base Extraction
Free-Radical Chlorination
Stereoisomers (with worksheet)
Nucleophilic Substitution (with worksheet)
Distillation and Boiling Points
Dehydration of Alcohols

Instructions for Visiting Students:

Visiting students must submit proof of completion of courses equivalent to CHEM 102 and 102L with grades of "C" or better. They must also either be currently enrolled in or provide proof of successful completion ("C" or better) of CHEM 351 or its equivalent.