



# Alabama Community College System

## CHM 222 Organic Chemistry II

### I. CHM 222 Organic Chemistry II—4 Semester Hours

### II. Course Description

This is the second course in a two-semester sequence. Topics in this course include nomenclature, structure, physical and chemical properties, synthesis, and typical reactions for aliphatic and aromatic compounds and their derivatives, with special emphasis on reaction mechanisms, spectroscopy, and stereochemistry. Laboratory is required and will include common organic chemistry techniques.

### III. Prerequisite

CHM 221

### IV. Textbook

Due to the varied selection of quality college-level textbooks, each college will select the textbook needed to meet the requirements of this course.

### V. Course Learning Outcomes

1. Using IUPAC guidelines, students will be able to name, classify, and draw the structures of organic compounds.
2. Students will be able to identify structural features of organic compounds, which include (but are not limited to) atom hybridization, geometry, aromaticity, and prominent resonance structures.
3. Students will be able to identify the properties and explain the reactivity of important classes of organic compounds listed in the course topics.
4. Given starting materials, students will be able to predict products from reactions of the functional groups listed in the course topics based on a mechanistic understanding of these reactions and apply these reactions in multi-step synthesis.
5. Given spectroscopic data, students will be able to identify the functional group(s) and when appropriate, identify the structure of simple organic molecules.
6. Students will be able to demonstrate proper lab techniques and safety in the performance of common experiments in organic chemistry.
7. Students will be able to apply scientific reasoning to interpret experimental data.

## **VI. Course Outline of Topics**

Lecture Topics:

1. Alcohols and phenols
2. Ethers, epoxides, sulfides, and thiols
3. Conjugated pi systems and pericyclic reactions
4. Benzene and aromatic compounds
5. Aldehydes and ketones
6. Amines
7. Carboxylic acids and derivatives
8. Enols and enolates
9. Spectroscopy

Optional Lecture Topics:

1. Carbohydrates
2. Amino acids and proteins
3. Lipids
4. Polymers

Lab Topics:

1. Chemical synthesis
2. Isolation of compounds
3. Spectroscopic analysis
4. Qualitative analysis

## **VII. Evaluation and Assessment**

Grades will be given based upon A = 90 – 100%, B = 80 – 89%, C = 70 – 79%, D = 60 – 69%, and F = below 60%.

## **VIII. Attendance**

Students are expected to attend all classes for which they are registered. Students who are unable to attend class regularly, regardless of the reason or circumstance, should withdraw from that class before poor attendance interferes with the student's ability to achieve the objectives required in the course. Withdrawal from class can affect eligibility for federal financial aid.

**IX. Statement on Discrimination/Harassment**

It is the official policy of the Alabama Community College System and entities under its control, including all Colleges, that no person shall be discriminated against on the basis of any impermissible criterion or characteristic, including, without limitation, race, color, national origin, religion, marital status, disability, sex, age, or any other protected class as defined by federal and state law. (ACCS Policies 601.02 and 800.00)

**X. Americans with Disabilities**

*The Rehabilitation Act of 1973 (Section 504) and the Americans with Disabilities Act of 1990 state that qualified students with disabilities who meet the essential functions and academic requirements are entitled to reasonable accommodations. It is the student's responsibility to provide appropriate disability documentation to the College.*