

**I. COURSE INFORMATION**

- A. Chemistry 295 Organic Chemistry II
- B. 5 credit hours
- C. Brown, Iverson, Anslyn, and Foote. *Organic Chemistry*. 8<sup>th</sup> ed. Cengage Learning, 2018
- D. Prerequisites: CHE 265 Organic Chemistry I

**II. COURSE DESCRIPTION**

Organic Chemistry II is an integrated lecture and laboratory course for chemistry and pre-Health Science students. This course continues the study begun in CHE 265, with areas of focus on the nomenclature, structures, and reaction of the following: Aromatic hydrocarbons, Alcohols, Carbonyl compounds, Carboxyl compounds, Nitrogen-based organic compounds, and a study of Biochemistry.

**III. LEARNING OUTCOMES**

- A. To investigate reactions and mechanisms of alcohols, phenols, and ethers, aromatic compounds, aldehydes and ketones, carboxylic acids and their derivatives, organometallic compounds, amines, and biomolecules
- B. To look at the concept of resonance and conjugation, and to study the effects of both on various compounds such as alkenes, dienes, aromatic compounds, etc.
- C. To correctly recognize and name compounds such as alcohols, ethers, organometallic compounds, carboxylic acids and their derivatives, aldehydes and ketones, aromatic compounds and their derivatives
- D. To study and investigate, through study and experimentation, the reactions and preparations of alcohols, aldehydes, amines, ketones, carboxylic acids, phenols, aromatic compounds, and the respective derivatives of each
- E. To note how benzene and other aromatic compounds differ in structure, nomenclature, reactivity, and stability from cyclic aliphatic compounds. Also, you will observe how branched groups will affect the stability and reactivity of aromatic compounds.
- F. To investigate, through study and experimentation, how instrumentation such as nuclear magnetic resonance (NMR) and infrared spectroscopy (IR) can be used to determine the structure and arrangement of various organic compounds, including those studied in CHE 265
- G. To investigate the area of organic chemistry referred to as biochemistry, with the study of compounds such as lipids, carbohydrates, proteins, and nucleic acids, and how chemists and scientists view this area and its role in today's scientific world
- H. To conduct organic experiments that will help and follow the investigation of organic chemistry as seen in lecture

**IV. MAJOR CONTENT AREAS**

- A. Arenes and aromaticity: structures and nomenclature
- B. Electrophilic and nucleophilic aromatic substitutions
- C. Organometallics, alcohols and diols, and ethers
- D. Aldehydes and ketones: structure, nomenclature, and reactions
- E. Carboxylic acids, acids derivatives: structure, nomenclature, and reactions
- F. Biochemistry: study of carbohydrates, lipids, amino acids and proteins

**V. ASSIGNMENTS** (may include but are not limited to)

- A. Assignments
- B. Quizzes and exams
- C. Laboratory exercises
- D. Final exam

**VI. EVALUATION METHODS** (may include but are not limited to)

- A. Attendance and participation

- B. Lab exercises
- C. Assignments
- D. Quizzes and exams