CHEM 220: ORGANIC CHEMISTRY B

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2021
Credits:	3
Total Contact Hours:	54
Lecture Hours :	54
Lab Hours:	0
Hours Arranged:	0
Outside of Class Hours:	108
Prerequisite:	CHEM 210.
District General Education:	B2. Natural Sciences - Physical Sciences, B3. Natural Sciences - Laboratory
Transferable to CSU:	Yes
Transferable to UC:	Yes - Approved
Grading Method:	Standard Letter

Catalog Course Description

A course in organic chemistry including the properties and reactions of aromatic compounds, aldehydes, ketones, carboxylic acid derivatives, enols, enolates, amines, NMR. Second semester course required for students in pre-professional programs in medicine, dentistry, pharmacy, veterinary science, biology, and chemistry. CHEM 221L is required concurrently for most of the stated majors. 54 lecture hours.

Course Objectives

- Name Alcohols, Phenols, Ethers, Epoxides, Thiols, Aromatic Compounds, Aldehydes and Ketones, Carboxylic Acids and their Derivatives, Amines and determine their physical properties, and their chemical reactions.
- Predict the reactions of conjugated Pi Systems and Pericyclic Reactions, Alpha Carbon Chemistry, Enols and Enolates. predict thermodynamic control vs liketic control, Diels-Alder reactions. Alpha halogenation of enols and enolates, aldol reaction, Claisen condensations, conjugated addition reactions.
- Determine the structure of an organic compound from the number of signals, the area under each peak, the multiplicity of each peak, and the location of each signal (peak) by analyzing NMR spectroscopy.
- Solve a problem such as: give an organic compound which has two functional groups an aldehyde and a ketone. the objective is to reduce the ketone while leaving the aldehyde untouched. The aldehyde fuctional group must be blocked by a chemical recation. The ketone will be reduced. The aldehyde will be converted back using acid hydrolysis.

Major Course Content

1. Alcohols and Phenols.
2. Thiols, Ethers, Epoxides, and Sulfides.
3. Nuclear Magnetic Resonance Spectroscopy.
4. Benzene and Aromatic Compounds.
5. Aromatic Substitution Reactions.
6. Ketones and Aldehydes.
7. Substitution at the Carbonyl Group.
8. Carboxylic Acids and Derivatives.
9. Enolates.
10. Selective Synthesis.

Suggested Reading Other Than Required Textbook

None

Examples of Required Writing Assignments

Extra credit assignment. Homework. NMR problems.

Examples of Outside Assignments

Extra credit assignments such as explaining Hammond Postulate which requires an E-diagram to be drawn to show Energy va Reaction Coordinate. The shape of the graph will indicate whether the intermediate look more like reactant or product. Therefore the stability and the structure of the intermediate can be discussed. The choice of solvent in this case can be critical as which side of the reaction would be stabilized.

Instruction Type(s)

Lecture, Online Education Lecture

IGETC Area 5: Physical and Biological Sciences

5A. Physical Science