

IMS Major – Organic Chemistry (CHM 3217)

CHM 3217: Organic Chemistry (Textbook: Organic Chemistry, 10th ed., Carey and Giuliano)

This course is designed as a 1-semester organic chemistry course for students intending to enter a health-related field or major in a non-chemistry science discipline. However, it is not simply a survey of organic chemistry course (eg. CHM 2200) where the introduction of functional groups and naming are the primary goals. The topics to be covered in CHM 3217 are shown below.

Unit	Chapter(s)	Topic
1	2,3	Alkanes
2	4	Stereochemistry
3	5	Alcohols, Alkyl Halides, Intro to Rxns
4	7,8,9	Alkenes, Alkynes
5	16,18,24	Carbonyls (Aldehyde/Ketone/Carbohydrates)
6	19,20,26	Carboxylic Acids and Derivatives, Peptides
7	21	Enols, Enolates
8	14	Spectroscopy
9	11,12	Conjugation, Aromaticity

Throughout the course students will be exposed to reaction mechanisms and synthesis will be included as each new functional group is introduced. In addition, some biosyntheses of small molecules and enzyme mechanisms will be introduced to reinforce the relevance of basic organic reactions and mechanisms.

Differences between CHM 3217 and a typical 2-semester organic sequence (CHM 2210/2211) -the introductory material (Lewis structures, acids/bases, hybridization) is covered in general chemistry so the students will receive worksheets on the first day of class and be expected to “brush up” on their own.

-the typical first-semester organic reactions (substitution, elimination, addition) will be discussed in terms of mechanism and chemical reactivity but with fewer possible reactants (eg. nucleophiles).

-carbonyl chemistry (Chaps. 18-21) will be introduced early. These chapters represent most of the chemistry that is involved in biochemical reactions so this material will be covered in depth. The basic structures of carbohydrates and peptides will be introduced in this course so that their biological functions can be the focus in the subsequent biochemistry course (CHM 3218).

-conjugation, aromaticity, and spectroscopy (Chaps. 11,12,14) will be covered in much less detail than a typical 2-semester sequence.

-radical chemistry (Chap. 10), organometallic chemistry (Chap. 15), and epoxides (Chap 17) will be mentioned briefly since they are less common in biology and medicine.