

**Office of Academic Affairs
Tarleton State University
May 2003**

Master Course Syllabus Outline

Department: Chemistry, Geosciences, and Environmental Science

Official Course Title: Organic Chemistry I

Master Syllabus Approved by Department on: ____/____/____
month date year

I. Course Description

The first semester of a year sequence in the chemistry of carbon compounds involving their synthesis, reaction mechanisms, nomenclature, physical and spectral properties. Includes substances of theoretical, biological, agricultural, and industrial importance.

II. Prerequisites

CHEM 1084.

III. Expanded Course Description

Chemistry 2014 is the first course in the chemistry of organic (carbon containing) compounds. It includes structures, acid-base properties, nomenclature, fundamental aspects of chemical reactivity, stereochemistry, reaction mechanisms, factors affecting reactivity, factors affecting physical properties, and laboratory exercises. Organic functional groups covered include hydrocarbons, alkyl halides, alcohols, amines, arenes, carboxylic acids and derivatives, aldehydes, ketones, as well as a brief introduction to carbohydrates, amino acids, and other compounds of biological interest. This course is the prerequisite to CHEM 2024 and together, these are the two organic courses that are required for chemistry degrees and for entering professional schools such as medical school, dental school, pharmacy school, etc. These courses are also required for further study in biochemistry and in other advanced organic chemistry courses.

IV. Intended Student Learning Outcomes

Knowledge Outcomes

The student who successfully completes this course will be able to

- A. understand organic nomenclature
- B. predict reactants, reagents, or major organic products of reactions of alkanes, alkenes, alkynes, alkyl halides, alcohols, ethers, amines aromatic compounds, acids, acid derivatives, aldehydes, ketones, etc.

C. understand and apply principles of acids and bases as they apply to organic reactions.

D. understand and explain the bonding, hybridization, orbitals, and conformations of organic compounds

E. understand and explain and apply theories of mechanisms of reactions of alkanes, alkenes, alkynes, alkyl halides, alcohols, ethers, amines aromatic compounds, acids, acid derivatives, aldehydes, ketones and related compounds.

F. understand and explain stereochemistry of organic compounds.

Skill Outcomes

The student who successfully completes this course will be able to

A. apply good laboratory techniques including melting points, boiling points, distillations, chromatography, recrystallization, extraction, simple organic synthesis, and IR and mass spectral analysis of organic compounds.

B. name and draw structural formulas of alkanes, alkenes, alkynes, alkyl halides, alcohols, ethers, amines, aromatic compounds, acids, acid derivatives, aldehydes, ketones and related compounds.

C. solve problems involving structures, reactions, and spectral data about organic compounds

Value Outcomes

The student who successfully completes this course will

A. gain an appreciation for the importance of organic chemicals in everyday life.

B. understand something of the the role of petrochemicals in a modern industrial society.

V. Unless otherwise stipulated in this master syllabus by the department, the following items are subject to faculty discretion as described in each faculty member's individual course outline/syllabus.

a) Course Requirements

The student is expected to attend all classes and complete all work. If unavoidable absences occur, the student is expected to make arrangements with the instructor for catching up. Students with special requirements or circumstances should contact the instructor and the Director of Disability Services. Organic chemistry simply cannot be absorbed like a tissue absorbing water. It must be practiced. For this reason, working problems is essential to good performance in the class. You are strongly encouraged to seek help immediately upon encountering any difficulty.

Grading is based on the averages of several weekly quizzes, three or four major exams, the laboratory, and a comprehensive final exam. The quizzes count as one major exam, the average of the lecture exams will count as either 50% or 25% of the

course grade, the laboratory grade will be 25% of the course grade and the final exam will count as either 25% or 50% of the course grade (depending upon whether it is lower or higher than the lecture exam grade).

b) Required Textbook and Materials

1. Bruice, P. Y. Organic Chemistry, 3rd. ed., Prentice Hall, 2001.
2. CER Modules for Organic Chemistry Experiments;
3. lab notebook, safety glasses, and other lab supplies.
4. *-optional-* molecular models & handbook

Department Head Signature / Date

_____ ____/____/____
Signature month date year