El Paso Community College
Syllabus
Part II
Official Course Description

SUBJECT AREA	**Chemistry**
COURSE RUBRIC AND NUMBER	**CHEM 2425**
COURSE TITLE	**Organic Chemistry II**
COURSE CREDIT HOURS	**4 3 3** **Credits Lec Lab**

I. Catalog Description

Studies the advanced principles of organic chemistry including the structure, properties, and reactivity of aliphatic and aromatic organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasizes the organic synthesis and mechanisms. Studies the covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. Provides the use of spectroscopic data to determine the structure of organic molecules. THIS COURSE IS INTENDED FOR STUDENTS IN SCIENCE OR PRE-PROFESSIONAL PROGRAMS. **Prerequisite: CHEM 2423. (3:3). Lab fee.**

II. Course Objectives

Upon satisfactory completion of this course, the student will be able to:

A. Understand the structure of alkyl halides, radical halogenation of alkanes, allylic bromination of alkenes. Solve problems on stability of the allyl radical and resonance. Learn the rules of nomenclature of alkyl halides. Understand the reactions of alkyl halides and Grignard Reagents.

B. Work with reactions of alkyl halides: Nucleophilic Substitutions and Eliminations. Understand the sterochemistry of nuclephilic substitution and kinetics of Nucleophilic substitution. Identify the characteristics and differences among S_N2, SN1 and Elimination reactions.

C. Identify the procedures for mass Spectrometry and Infrared Spectroscopy analysis. Interpret Mass Spectra, Fragmentation Patterns, Mass-Spectral behavior of some common functional groups. Interpret Infrared Spectra of organic compounds and functional groups.

D. Understand the procedures for structure determination: Nuclear Magnetic Resonance Spectroscopy. Understand the problems on chemical shifts, ^{13}C NMR Spectroscopy, Signal Averaging and FT-NMR. Know the uses of ^{1}H NMR Spectroscopy.

E. Understand the principles of Ultraviolet Spectroscopy related with conjugated dienes, their preparation and stability. Interpret UV Spectra: The effect of Conjugation, and colored organic compounds.

F. Understand the chemistry of Benzene, its structure, and aromatic compounds. Learn the rules of nomenclature for aromatic compounds. Understand the spectroscopy of Aromatic compounds. Understand the chemical reactions of benzene.

III. THECB Learning Outcomes (ACGM)

Upon successful completion of this course, students will:

1. Correlate molecular structure with physical and chemical properties of aliphatic and aromatic organic molecules.

2. Predict the mechanism and outcome of aliphatic and aromatic substitution and elimination reactions, given the conditions and starting materials.
3. Predict the chirality of reaction products based on enantiomeric and diastereomeric relationships.
4. Describe reaction mechanisms in terms of energetics, reaction kinetics, and thermodynamics.
5. Use spectroscopic techniques to characterize organic molecules and subgroups.

Learning Outcomes (Lab)

1. Perform chemical experiments, analysis procedures, and waste disposal in a safe and responsible manner.
2. Utilize scientific tools such as glassware and analytical instruments to collect and analyze data.
3. Identify and utilize appropriate separation techniques such as distillation, extraction, and chromatography to purify organic compounds.
4. Record experimental work completely and accurately in laboratory notebooks, and communicate experimental results clearly in written reports.
5. Correlate molecular structure with physical and chemical properties of aliphatic and aromatic organic molecules.
6. Predict the mechanism and outcome of aliphatic and aromatic substitution and elimination reactions, given the conditions and starting materials.
7. Predict the chirality of reaction products based on enantiomeric and diastereomeric relationships.
8. Describe reaction mechanisms in terms of energetics, reaction kinetics, and thermodynamics.
9. Use spectroscopic techniques to characterize organic molecules and subgroups.

IV. Evaluation

A. Pre-assessment

Instructors should check each student's prerequisites the first week of class; those who do not qualify should be sent back to Admissions.

B. Challenge Exam

Students who wish to challenge the course should contact the Testing Center and the Division Dean. Challenges must be accomplished before the census cut-off date. Students who previously have received a W or a letter grade for the course are not eligible to challenge the course.

C. Post-assessment

1. The instructor will maintain a continuous record of each student's progress on an institutionally approved grade sheet or computerized substitute. All instructors must keep records in such a way that information would be clear to a second party having to check grade computation in special cases. An explanatory legend should be provided on the grade sheet.

2. The evaluation of the exams should be in an objective and reproducible manner. In addition to reading assignments, the instructor may require quizzes and exercises on the subject material.

It is essential that students commit themselves to the assignments throughout the semester.

Number and Types of Examinations: The course will include a minimum of four major written examinations and one final examination.

Reading assignments of textbook or library materials may vary in length, depending on the nature of the subject, and may be part of the examinations.

The following approaches may be involved; however, instructors should stress the possible overlap of these strategies.

1. Process analysis
2. Critical thinking
3. Comparison/contrast
4. Classification
5. Definition
6. Description

7. Causal analysis
8. Analogy
9. Problem/solution

D. Final Examination
A final examination is required in all Chemistry 2425 classes. The exam should consist of all material covered in class during the semester in the scheduled two-hour final examination period. The final essay should reflect a satisfactory mastery of the course objectives including the use of appropriate strategies of problem solving.

E. Grading Percentages
Grade percentages for determining the course grade may be devised by the individual instructor, but the grade for the final exam should be averaged as 200% of the regular exam grades.

F. Remediation
There will be no remediation. Since the lowest exam grade is dropped, there are no make-up examinations.

G. Grading Scale:

A = 90 -100	F = below 60
B = 80 - 89	I = Incomplete
C = 70 - 79	W = Withdrew or withdrawn
D = 60 - 69	

V Disability Statement (Americans with/Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located:VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54(831-8815); and MDP Rm A-125 (831-7024*)*

VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.