El Paso Community College
Syllabus
Part II
Official Course Description

SUBJECT AREA	**Chemistry**
COURSE RUBRIC AND NUMBER	**CHEM 1307**
COURSE TITLE	**Health Science Chemistry II**
COURSE CREDIT HOURS	**3 3 : 0** **Credits Lecture Lab**

I. Catalog Description

Covers Organic Chemistry and Biochemistry, classification, molecular structure, and nomenclature of organic compounds, the reactions of organic compounds containing functional groups, the chemistry of carbohydrates, fats, and proteins, and selected biochemical concepts such as metabolisms, enzyme–catalyzed bioreactions, the functioning of hormones, neurotransmitters, and nucleic acids. **Prerequisite: CHEM 1306 and CHEM 1106. Corequisite: CHEM 1107. (3:0).**

II. Course Objectives

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

A. Understand the general concepts of organic chemistry. Apply IUPAC rules to name hydrocarbons (alkanes/cycloalkanes, alkenes/cycloalkenes, alkynes, aromatic compounds). Draw and interpret full structural, condensed, and bond-line formulas of organic compounds. Apply the principles of structural and cis/trans isomerism. Predict the outcome of addition reactions to alkenes and alkynes and substitution reactions of aromatic compounds.

B. Recognize and name alcohols, thiols, ethers, aldehydes, ketones, amines according to IUPAC rules. Predict some physical properties (melting point, boiling point, solubility) of these compounds based on the polarity/nonpolarity of certain parts of the molecules. Predict the outcome of important reactions: oxidation of alcohols, thiols, and aldehydes; reduction of aldehydes, ketones, and carboxylic acids; dehydration of alcohols to alkenes and ethers, reactions of aldehydes and ketones with alcohols to produce hemiacetals/hemiketals and acetals/ketals, and the formation of amine salts.

C. Recognize and name carboxylic acids, esters, amides. Understand the syntheses of these compounds by oxidation of aldehydes, reactions of acids or reactive acid derivatives with alcohols and amines. Predict the outcome of hydrolysis reactions/saponification. Explain the principle of polymerization in the syntheses of polyesters, polyamides.
Recognize chiral molecules and understand the principles of optical rotation, enantiomers. Understand the basic chemistry of carbohydrates: mono/di/polysaccharides, especially the formation of cyclic from open structures by formation of hemiacetals/ketals, and the linking of monosaccharides by the formation of acetals/ketals. Explain the concept of reducing sugar and mutarotation.

D. Classify lipids (fats, waxes, phosphoglycerides/sphingolipids/glycolipids, steroid systems, prostaglandins, etc.) based on their structure. Understand the importance of these compounds as part of the biological bi-layer, as hormones, as nutrients.
Understand the build-up principle of proteins from amino acids, their primary, secondary, tertiary, (and sometimes quaternary) structures. Explain the principles of denaturation and digestion/hydrolysis and list

chemical agents and other influences leading to these processes. Understand the importance of the mentioned protein structures for the activity of enzymes. Explain their individual parts (apoenzymes, coenzymes, cofactors) and the individual selectivity of the holoenzyme when a reaction is catalyzed because of the shape (chiraliy) of the active site.
Recognize the structure of DNA and its building blocks (nucleotides) and the importance of the base pairs. Understand the principles of replication/transcription. Explain the principles of the genetic code (base triplets) in protein synthesis and the role of messenger/transfer RNA and ribosomes. Understand the basic principles of recombinant DNA/genetic engineering.

III. 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 1307 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	I = Incomplete
B = 80 – 89	W = Withdrew or withdrawn
C = 70 - 79	
D = 60 - 69	
F = below 60	

IV. Disability Statement (American 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*)*

V. 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.