El Paso Community College
Syllabus
Part II
Official Course Description

SUBJECT AREA	**Chemistry**
COURSE RUBRIC AND NUMBER	**CHEM 1306**
COURSE TITLE	**Health Science Chemistry I**
COURSE CREDIT HOURS	**3 3 : 0** **Credits Lecture Lab**

I. Catalog Description

Covers the basic laws of Chemistry including atomic theory and bonding, chemical equations and calculations, equilibria, chemical energetics, and the theory of acids and bases. Fulfills the laboratory science requirements for Health Science and related majors. Requires one year of high school algebra or MATH 0303 and one year of high school chemistry or CHEM 1204. **Prerequisites: READ 0309 or INRW 0311 or ESOL 0340 (can be taken concurrently) or by placement exam or ENGL 1301 with a "C" or better or ENGL 1302 with a "C" or better. Corequisite:CHEM 1106. (3:0).**

II. Course Objectives

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

A. Understand the concept of matter: pure matter (elements, compounds), mixtures (homogeneous, heterogeneous) and the properties (intensive, extensive) describing matter. Explain the different forms of energy. Demonstrate the ability to convert between different units of measurement, and to perform calculations based on density.
Distinguish between elements and compounds. Understand the concepts of the nuclear atom and of isotopes. Predict the electron configuration of a given atom/ion. Interpret the periodic table and derive important properties (e.g. atomic size, ionization energy, electron affinity, electronegativity) of the elements based on their position in the periodic table.

B. Demonstrate knowledge of the priciples of chemical bonding, predict the formulas of ionic and covalent compounds. Write Lewis structures of covalent compounds and polyatomic ions and predict their shapes and polarities.
Write, interpret and balance chemical equations. Predict the outcome of types of chemical reactions (e.g. precipitation, acid base neutralization, reactions where gases are formed, redox reactions). Perform calculations based on the formulas of compounds (formula weight, percent composition), the mole. Determine theoretical and actual yields from the balanced equation. Understand the limiting reagent concept.

C. Explain the differences between the solid, liquid, and gaseous states of matter. Predict the strength of intermolecular attractions and relate this to their influence on properties of solids and liquids (e.g. melting point, boiling point, surface tension, viscosity). Perform calculations based on the gas laws (Bolyle's, Charles', Gay-Lussac's laws, the combined gas law and the ideal gas law). Understand the concepts of the partial pressures of gas mixtures (Dalton's law) and of diffusion/effusion (Graham's law). Calculate the energies associated with phase changes.
Understand the concept of solutions. Calculate molar concentrations, the boiling/freezing points and the osmotic pressures of solutions.

Explain the difference between solutions and colloids and understand the principles of osmosis/dialysis.

D. Understand the principle of reaction rates, based on the collision theory and the activation energy of chemical reactions. Predict the influences of concentration, temperature, a catalyst, on the rates of reactions. Explain the principles of chemical equilibrium, interpret the equilibrium with the rates for the two opposite reactions, apply Le Chatelier's principle to predict the influence of changes of concentration, temperature, and pressure on the equilibrium. Calculate equilibrium constants from the equilibrium constant expression and given equilibrium concentrations.
Demonstrate familiarity with the concepts of acids and bases and their definitions (Arrhenius, Bronsted), as well as acid base pairs. Understand the difference between strong and weak acids and bases. Explain the concept of self-ionization of water as the basis for pH, calculate the pH values of strong and weak acids and bases. Be familiar with general reactions of acids and bases. Predict the pH of aqueous solutions of salts, and explain how buffer systems work.
Explain basic concepts of nuclear chemistry, e.g. natural radioactivity, nuclear fusion/fission. Understand the different types of radiation and their effects on health. List important applications of radiation in medical diagnosis and treatment. Work problems based on the half lives of radioisotopes.

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 1306 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.