

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Chemistry</u>
COURSE RUBRIC AND NUMBER	<u>CHEM 1112</u>
COURSE TITLE	<u>General Chemistry Laboratory II</u>
COURSE CREDIT HOURS	<u>1 0 3</u> Credits Lecture Lab

I. Catalog Description

Provides a basic laboratory experiments supporting theoretical principles presented in CHEM 1312; introduction of the scientific method, experimental design, chemical instrumentation, data collection and analysis, and preparation of laboratory reports. **Prerequisite: CHEM 1111. Corequisite: CHEM 1312. (0:3). Lab fee.**

II. Course Objectives

Upon satisfactory completion of this General Chemistry laboratory II section, the student will be able to:

- A. Predict solubility of substances to define polar, non-polar and ionic substances to define intermolecular forces. Become familiar with colligative properties and use them to determine the molar mass of a substance. Be able to construct graphs from data and interpret the graphs. Measure the effect of concentration upon the rate of the reaction to determine the order of the reaction with respect to reactant concentrations, and to obtain the rate law of the reactions.
- B. Become familiar with the concept of equilibrium by determination of an equilibrium constant for a reaction in solution. Study the effects of concentration and temperature on equilibrium positions to understand "Le Chatelier's principle"
- C. Learn how to obtain the standardization of an acid or a base. Understand the techniques of titration, a volumetric method of analysis to determine the concentration of an acid. Work with a pH meter to determine the dissociation constant of a weak acid. Calculate the pka from the ka of an unknown acid.
- D. Prepare standard solutions. Learn how to use a spectrophotometer. Determine the solubility product constant for a sparingly salt. Understand the relationship between free energy and the equilibrium constant by determining the ksp of a soluble compound to apply in thermodynamics.
- E. Understand and apply oxidation-reduction chemistry through analysis of a sample. Become familiar with some fundamentals of electrochemistry, including the Nernst equation, by constructing electrochemical (voltaic) cells and measuring their potentials at various temperatures. Calculate ΔG , ΔH , and ΔS from the measured electromotive force (emf)

III. THECB Learning Outcomes (ACGM)

1. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.
2. Demonstrate safe and proper handling of laboratory equipment and chemicals.
3. Conduct basic laboratory experiments with proper laboratory techniques.
4. Make careful and accurate experimental observations.
5. Relate physical observations and measurements to theoretical principles.
6. Interpret laboratory results and experimental data, and reach logical conclusions.
7. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.
8. Design fundamental experiments involving principles of chemistry and chemical instrumentation.

9. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

IV. Evaluation

- A. Pre-assessment
Instructors should check each student's co-requisites the first week of class; those who do not qualify should be sent back to Admissions.
- B. Post-assessment
1. The instructor will maintain a continuous record of each student's progress on an institutionally approved grade sheet or computerized substitute from each experiment report. 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. Two exams will be given: the mid-term and the final exam. In addition to reading assignments, the instructor may require quizzes and exercises according to the experiment.

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

Number and Types of Examinations: The course will include one mid-term written examination and one final examination.

The student has to read the experiment in advance to be able to do it.

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 1112 labs. The exam should consist of all material covered on the experiments during the semester in the scheduled two-hour final examination period.
- E. Grading Percentages
60% will be obtained from the average of the reports
20% will be obtained from the mid-term examination
20% will be obtained from the final exam
- 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

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.