Chemistry 1412 Syllabus, Fall 2019
El Centro College

Instructor Information
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Office Hours: By Appointment

Course Information
Course Title: General Chemistry II
Course & Section Number: CHEM-1412-51001 (1206938)
Semester/Year: Fall 2019
Credit Hours: 4
Class Meeting Time/Location: Lecture: A841 TR 11:00 AM – 12:20 PM
Lab: A721 TR 12:30 – 1:50 PM

Course Prerequisites
CHEM 1411 with a minimum grade of "C."

Course Description
Chemical equilibrium; phase diagrams and spectrometry; acid-base concepts; thermodynamics; kinetics; electrochemistry; nuclear chemistry; an introduction to organic chemistry and descriptive inorganic chemistry.

Coordinating Board Approval Number 4005015703

Statement of Purpose and Core Objectives

Statement of Purpose
Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

Core Objectives
This course supports, develops, and assesses the following Core Objectives:

Chemistry 1412 develops the following Core Objectives:

Critical Thinking - to include creative thinking, innovation, inquiry, and analysis, evaluation, and synthesis of information.
Communication - to include effective development, interpretation, and expression of idea through written, oral, and visual communication.
Teamwork - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

(Lecture)
1. State the characteristics of liquids and solids, including phase diagrams and spectrometry.
2. Articulate the importance of intermolecular interactions and predict trends in physical properties.
3. Identify the characteristics of acids, bases, and salts, and solve problems based on their quantitative relationships.
4. Identify and balance oxidation-reduction equations, and solve redox titration problems.
5. Determine the rate of a reaction and its dependence on concentration, time, and temperature.
6. Apply the principles of equilibrium to aqueous systems using LeChatelier’s Principle to predict the effects of concentration, pressure, and temperature changes on equilibrium mixtures.
7. Analyze and perform calculations with the thermodynamic functions, enthalpy, entropy, and free energy.
8. Discuss the construction and operation of galvanic and electrolytic electrochemical cells, and determine standard and non-standard cell potentials.
10. Describe basic principles of organic chemistry and descriptive inorganic chemistry.

(Lab)
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.
Required Course Materials


Lab: General Chemistry - Laboratory Manual - CHEM 1411 & CHEM 1412, by T. Deng and J. Borvak, bluedoor, LLC

Note: A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

Course Activities:
Discussions of readings during lectures.
Homework assignments using concepts studied during lecture.
Participation in lab activities (Pre-lab, the experiment, and post lab).
Exams

Grade Policy:
Exam 1, 2 and 3: 40%
Final Exam: 15%
Lab Exams and Lab Reports: 20%
Assessment (Blackboard): 15%
Quizzes (at home): 10%

Grading Scale:
A = 90 – 100%
B = 80 – 89.9%
C = 70 – 79.9%
D = 60 – 69.9%
F = Below 60%
## CHEM -1412-51001 - Tentative Course and Exam Schedule – Fall 2019

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<th>Lecture Material &amp; Exams</th>
<th>Lab</th>
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<td>Course Orientation; Thermochemistry - Chapter 08</td>
<td>Safety Rules</td>
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<tr>
<td>09/02</td>
<td>Thermochemistry - Chapter 08</td>
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<td>10/07</td>
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<td>Complex ion and Precipitation Equilibrium – Chapter 15</td>
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<td>Comprehensive Final Exam</td>
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## Institutional Policies

Institutional Policies relating to this course can be accessed using the following link: [Institutional Policies](http://www.elcentrocollege.edu/syllabipolicies).