

Lassen Community College Course Outline

CHEM-45A – Introduction to General Chemistry Discussion Session 1.0 Units

I. Catalog Description

This is a required co-requisite for students enroll in CHEM 45 who have not taken any basic chemistry courses (including introduction to physical science or equivalent) in the past 4 years. It is strongly recommended for all students enroll in CHEM 45. Students will use quantitative strategies to solve chemistry in topics of atomic theory, periodic properties, chemical bonds, stoichiometry, gas laws, kinetics and equilibrium of chemical reactions, acids and bases, redox reactions, and thermodynamics. This course has been approved for online delivery.

Co-requisites: CHEM 45 must be taken concurrently

Transfer Status: CSU/UC (elective)

17 hours lecture

Scheduled: Fall, Spring

II. Coding Information

Repeatability: Not Repeatable-Take one Time

Grading Option: Graded or Pass/No Pass

Credit Type: Credit – Not Degree Applicable

TOP Code: 190500

III. Course Objectives

A. Course Student Learning Outcomes

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

Demonstrate a basic understanding of fundamentals of chemistry including the language, laws, theories and processes of chemistry.

B. Course Objectives

Upon completion of this course the student will be able to solve problems related to:

1. Algebra concepts related to stoichiometric calculations in chemistry: Unit conversions, mole concept, stoichiometry, density, specific heat, gas laws, energy changes, molarity, dilution, colligative properties, and acid-base chemistry.
2. Further discuss topics in atomic structure, nomenclature, types of reaction, predicting products and solubility, balancing an equation, energy, the physical and chemical changes, acid-base chemistry, equilibrium, bond polarity, and difference between ionic and covalent bonds.
3. Develop own rules and strategies for problem solving that are effective in solving new sets of problems.

IV. Course Content

Lecture Content

1. Matter and its properties
 - a. Elements
 - b. Structure of atoms
 - c. Electronic structure and properties

2. Nomenclature
3. Measurement
4. Bonding in compounds
5. Chemical reactions and equations
6. Energy and States of matter
7. Gas Laws
8. Stoichiometry
9. Solutions
10. Chemical equilibrium
11. Acids and bases
12. Introduction to organic chemistry

V. Assignments

A. Appropriate Readings

Read and study college-level textbook sections assigned in CHEM 45 and read problems from supplemental handouts.

B. Writing Assignments

Write a short answer to a problem and solve calculation problems.

C. Expected Outside Assignments

Reading Assignments – read a section or sample problem from a handout. Be prepared to use the content to participate in the classroom and to complete assigned problems from the textbook and handout.

Writing Assignments – write short answer and solve calculation problems assigned.

D. Specific Assignments that Demonstrate Critical Thinking

This course emphasizes observation, synthesis of information to arrive at generalizations, and use of these generalizations as a basis for prediction. Problem solving and critical thinking skills are required to solve the appropriate problems.

VI. Methods of Evaluation

Traditional Classroom Instruction

Each student will be given a syllabus at the start of the class that indicates the evaluation tools to be used in the course. The course may include but not constrained to evaluation tools such as homework, quizzes, examinations, essays, and presentations.

Online Evaluation

A variety of methods will be used, such as: research papers, asynchronous and synchronous (chat/forum) discussions, online quizzes and exams, posting to online website and email communications.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

Traditional Classroom Delivery Correspondence Delivery

Hybrid Delivery

Online Delivery

Traditional Classroom Instruction

Lecture, demonstration, multi-media presentation, in-class problem sets, and discussion.

Online Delivery

Participation in forum-based discussions. Online exercises/assignments contained on website. Web based video vignettes with discussion paper, email communications, postings to forums, online lecture notes and web links will comprise the method of instruction.

VIII. Representative Texts and Supplies

Textbook (same as CHEM 45):

MCMurry et al, "*Fundamentals of General, Organic, and Biological Chemistry*", 8th edition; 2017, Pearson, ISBN: 13: 9780134015187.

IX. Discipline/s Assignment

Chemistry

X. Course Status

Current Status: Active

Original Approval Date: 03/05/2019

Board Approval Date: 03/12/2019

Chancellor's Office Approval Date: 03/15/2019

Revised By: Yuting Lin

Curriculum/Academic Standards Committee Revision Date: 10/20/2020