Northwest Arkansas Community College

(Science and Mathematics Division)

Discipline Code CHEM

Course Number

Course Title Fundamentals of Chemistry

Catalog Description

Fundamental principles of chemistry for students majoring in home economics, animal science, and other agricultural-related disciplines and students in health professions. Includes 3 hours lecture, 1 hour drill and 2 hours of laboratory per week

Prerequisites

Intermediate Algebra (MATH 0103) or higher math, or minimum placement score for College Algebra

Credit Hours

4 credit hours

Contact hours

45 lecture contact hours; 45 lab contact hours

Load hours

5 load hours

Semesters Offered

Fall, Spring

ACTS Equivalent

CHEM 1214 Chemistry for Health Related Professions

Grade Mode

A-F

Learning Outcomes

Students completing this course will:

- Utilize unit analysis and significant figure rules to solve problems and manipulate data.
- Write correct names and formulas for chemical substances, balance chemical equations and calculate quantities of chemicals involved utilizing stoichiometry.
- Identify types of chemical reactions and visible evidences of chemical reactions.
- Interpret macroscopic observations from a microscopic particle perspective and apply to:
 a) Solids, liquids, and gases at changing temperatures.

- b) Gas laws and the behavior of gases.
- c) Aqueous chemical reactions.
- Utilize periodic properties of atoms to predict bonding (ionic, polar covalent, and nonpolar covalent) in compounds, draw Lewis Structures and predict geometric shapes of molecular compounds.
- Demonstrate ability to prepare, follow instructions, perform laboratory techniques and utilize measuring devices to collect, interpret, and manipulate experimental data.

General Education Outcomes Supported

• Students develop higher order thinking skills.

Standard Practices

Topics list

- Scientific Measurements
- The Metric System
- Matter and Energy
- Models of the Atom
- The Periodic Table
- Language of Chemistry
- Chemical Reactions
- The Mole Concept
- Stoichiometry
- The Gaseous State
- Chemical Bonding
- Liquids and Solids
- Solutions
- Acids and Bases
- Oxidation and Reduction
- Nuclear Chemistry
- Chemical Equilibrium

Learning activities

 Lab safety orientation and enforcement of safety protocols is the responsibility of each faculty. A standard lab safety PowerPoint will be provided to faculty for training. Scoring 100% on a mandatory department-provided lab safety quiz is required before students may participate in lab.

Assessments

• Variable methods of assessment will be used which include, but are not limited to, exams and laboratory activities.

Grading guidelines

- At least 50% of the grade should come from proctored work
- Lab activities/exams should comprise approximately 25% of the overall grade.

Revision Date

April 1, 2021