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COURSE SYLLABUS

COURSE: CHM 131 INTRODUCTION TO CHEMISTRY

HOURS: Lecture: **3** Lab/Shop: **0** Work Exp/Clinical: **0** Credits: **3**

COURSE DESCRIPTION:

This course introduces the fundamental concepts of inorganic chemistry. Topics include measurement, matter and energy, atomic and molecular structure, nuclear chemistry, stoichiometry, chemical formulas and reactions, chemical bonding, gas laws, solutions, and acids and bases. Upon completion, students should be able to demonstrate a basic understanding of chemistry as it applies to other fields.
Note: In accordance with the Comprehensive Articulation Agreement, this course has been approved to satisfy the general education requirement for natural sciences in A.A., A.S., and A.A.S. degree programs.

PREREQUISITE(S): None

COREQUISITE(S): CHM 131A

TEXTBOOK(S) & OTHER SPECIAL REQUIREMENTS:

Open Educational Resources (OER) are listed in the course Moodle.

Required Supplies and Materials: Basic Scientific Calculator

STUDENT LEARNING OUTCOMES:

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

1. Demonstrate quantitative math skills, including significant figures, error analysis, and unit conversions.
2. Demonstrate comprehension of the different forms of energy, and apply to thermochemical calculations involving heat flow and phase changes.
3. Demonstrate understanding of atomic structure and electron energy levels. Apply these concepts to theories of bonding.
4. Name compounds and write formulas.
5. Apply the conversion of moles and grams to balanced equations. Predict the number of atoms and molecules in a sample. Use experimental data to derive empirical formulas of compounds.
6. Identify types of reactions including identifying oxidation reduction reactions, single and double replacement, combination and decomposition, and combustion reactions.
7. Apply the ideal gas laws to solve problems involving static properties of gases. Apply the concepts of partial pressure and diffusion.
8. Calculate solution concentrations in a range of units and understand solubility limits. Apply colligative property relationships to common systems.
9. Identify the factors affecting reaction rates and the position of equilibrium. Calculate and apply equilibrium constants.

10. Recognize, describe, and predict products of acid-base reactions. Calculate and interpret pH values.
11. Develop familiarity with electrochemical cells and the component oxidation reduction reactions.
12. Develop familiarity with the notation of nuclear and radiochemical reactions and current nuclear health science technologies.
13. Describe principles and experimental procedures clearly and briefly through writing of laboratory reports.

*****Please refer to the online version of the Richmond Community College Program & Course Catalog and the Student Handbook for current academic and general information.**