CHEM 111 Introduction to General Chemistry

Credit Hours: 4

Scheduled hours per week

Lecture: 3
Lab: 2
Field : Experience: N/A

Catalog Course Description: Elementary introduction to concepts of chemistry including metric measurement, periodic properties, atomic and molecular structure, bonding, formulas and nomenclature, redox chemistry, stoichiometry, states of matter and gas laws, solutions, equilibria, and acid-base chemistry. Designed for students with no background in chemistry. Co-requisite laboratory coordinates exercises with lecture topics. (3 lecture hours and 2 lab hours per week)

Pre-requisites: None

Co-requisites: CHEM 111L

Course Learning Outcomes (CLO):

- Adhere and implement safety rules with proper operation of instruments and equipment in executing scientific experiments accurately in the laboratory environment.
- Record experimental observation for quantitative and qualitative data analysis with conclusions to write lab reports following standard scientific guidelines.
- Build up independent decisions and collaborative working skills.
- Understand and apply the concepts of CHEM 111 course in practical applications for quantitative and qualitative measurements.
- Apply mathematical and algebraic skills in problem solving.
- Use metric systems and measurements in quantification with accuracy.
- Understand the trends of atomic structures and properties in periodic table.
- Understand the states of matter and solutions.
- Write and name molecular formulae as well as understand the structures and properties of molecules.
- Write balanced chemical reactions with the understanding of stoichiometry and redox chemistry.
- Explain the solution properties including molecular polarity, solubility, concentrations, colligative properties and chemical reactions.
- Understand and explain acid – base reactions, buffer solution, quantitative titrations and pH measurements.
- Explain chemical equilibrium phenomena in different chemical reactions.
- Understand gas laws and employ calculations in gaseous systems.

Topics to be studied:

- Introduction: Matter and Measurement
- Atoms, Molecules, and Ions
- Stoichiometry: Calculations with Chemical Formulas and Equations

- Reactions in Aqueous Solutions
- Electronic Structure of Atoms
- Periodic Properties of the Elements
- Basic concepts of Chemical Bonding
- Molecular Geometry and Bonding Theories
- Gases

Relationship of Course to Program Learning Outcomes (PLO) or Discipline Learning Outcomes:
Check if approved as: X Foundational Learning Course □ Reinforcement Learning Course

Special requirements of the course:

None

Additional information: None

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