

CHEM 115 Fundamentals of Chemistry 1**Credit Hours:** 4**Scheduled hours per week**

Lecture:

3

Lab: 2

Field :

Experien

ce : N/A

Catalog Course Description: Terminology and quantitative relationships; atomic structure, periodic law, chemical bonding, states of matter, and solutions. (3 lecture hours; 2 lab hours per week)

Pre-requisites: None**Co-requisites:** CHEM 115L**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 115 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.
- Explain the concepts and applications of thermochemistry and employ problems solving.

Topics to be studied:

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

- Reactions in Aqueous Solutions
- Thermochemistry
- 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: Foundational Learning Course Reinforcement Learning Course

Special requirements of the course:

None

Additional information: None

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