

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

Lecture: 3

Lab: 2

Other: 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: N/A**Co-requisites:** CHEM 115L**Course Learning Outcomes:**

- Use metric system and measurements in quantifying distance, mass, and volume to meet required accuracy
- Implement safety rules and concepts in the chemical laboratory environment
- Execute safety in operating laboratory equipment, instruments, and procedures
- Execute written procedures to set up and conduct experiments, write observations, make judgements, and perform required calculations
- Illustrate basic mathematics and simple algebra skills (Use calculator, computer, and linear slope extrapolation to solve chemical related math problems)
- Carry out the principles of building elements, periodic table, simple molecules, and prediction of chemical properties
- Explain the solution properties including molecular polarity, solubility, concentrations, the colligative properties, and chemical reactions
- Distinguish stoichiometry and equilibrium phenomena in various kinds of chemical reactions
- Employ calculations for a gas system including using Boyle's and Charles's Laws

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 or Discipline Learning Outcomes:

Relationship of Course to Science Learning Outcomes:	
Students will learn the process and reasoning behind the Scientific Method and be able to conduct experiments that meet the requirements of the model.	X

Students exhibit the basic safety-related rules and regulations of working in the lab.	X
Students be able to recount the basic safety tenants associated with a specific scientific discipline.	X
Students will become proficient at Science Writing.	
Students will recognize and identify the applications of their specific discipline in the 'real world.'	X
Students will accurately recount important milestones in the history of scientific inquiry in their discipline.	X
10/30/2017	

Relationship of Course to General Education Learning Outcomes:	
Composition and Rhetoric Students illustrate a fundamental understanding of the best practices of communicating in English and meet the writing standards of their college or program-based communication requirements.	
Science & Technology Students successfully apply systematic methods of analysis to the natural and physical world, understand scientific knowledge as empirical, and refer to data as a basis for conclusions.	X
Mathematics & Quantitative Skills Students effectively use quantitative techniques and the practical application of numerical, symbolic, or spatial concepts.	X
Society, Diversity, & Connections Students demonstrate understanding of and a logical ability to successfully analyze human behavior, societal and political organization, or communication.	
Human Inquiry & the Past Students interpret historical events or philosophical perspectives by identifying patterns, applying analytical reasoning, employing methods of critical inquiry, or expanding problem-solving skills.	
The Arts & Creativity Students successfully articulate and apply methods and principles of critical and creative inquiry to the production or analysis of works of art.	
10/30/2017	

Special requirements of the course:

Additional information:

Prepared by:

Date: 10/30/2017