

CHEM 116 Fundamentals of Chemistry 2**Credit Hours:** 4**Scheduled hours per week**

Lecture: 3

Lab: 2

Other: #

Catalog Course Description: Continuation of CHEM 115. Chemical equilibrium, Ionic equilibrium, electrochemistry, and organic chemistry. (3 lecture hours; 2 lab hours per week) (Pre-requisite: CHEM 115)

Pre-requisites: CHEM 115/115L

Co-requisites: CHEM 116L

Course Learning Outcomes:

- Implement safety rules and concepts in the chemical laboratory environment
- Execute safety when 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)
- Broaden knowledge in determine trends in chemical properties and physical properties in both metal and non-metal chemistry
- Determine chemical solution properties including solubility, equilibrium, concentration, acid-base reactions, and electrochemistry
- Be able to identify the difference between chemical thermodynamics and kinetics
- Appreciate modern materials, organic chemistry, environmental chemistry and nuclear chemistry

Topics to be studied:

- Liquids and intermolecular forces
- Solids and modern materials
- Properties of solutions
- Chemical kinetics
- Chemical equilibrium
- Acid-base equilibria
- Additional aspects of aqueous equilibria
- Chemistry of the environment
- Chemical thermodynamics
- Electrochemistry
- Nuclear chemistry
- Chemistry of nonmetals

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.	X
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.	X
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