

NORTHWESTERN CONNECTICUT COMMUNITY COLLEGE

COURSE SYLLABUS SPRING 2018

Course Title: Concepts in Chemistry lab

Course #: CHE* 111

Course Description: Laboratory period to accompany CHE* 111. Students perform experiments to demonstrate the concepts presented in lecture.

Pre-requisite/Co-requisite: Must be taken concurrently with CHE* 111 lecture

Goals: To provide students with a hands on learning experience designed to enhance learning. Experiments include projects such as working with model kits and performing experiments to demonstrate density and specific heat. To develop basic laboratory skills including quantitative measurement, use of basic chemistry equipment such as balances, Bunsen burners, burettes, and other specialized glassware.

Outcomes: At the completion of this course students will be able to:

- Demonstrate safe laboratory procedures, techniques as well as proper handling of reagents
- Accurately measure mass, volume, and length using metric instruments
- Calculate density
- Calculate specific heat
- Determine experimentally the boiling point, freezing point of unknowns
- Build models to determine molecular structure
- Recognize chemical and physical changes
- Perform a titration reaction and calculate the molarity of an unknown acid
- Determine the percent composition of an unknown hydrated salt
- Perform an experiment and calculate the percent yield and determine the percentage of salt in an unknown mixture using stoichiometry

Competencies:

Scientific Reasoning: Upon the completion of this course, students should be able to:

- Explain the methods of scientific inquiry that lead to the acquisition of knowledge. Such methods include observations, testable hypotheses, logical inferences, experimental design, data acquisition, interpretation, and reproducible outcomes.
- Apply scientific methods to investigate real-world phenomena, and routine and novel problems. This includes data acquisition and evaluation, and prediction.
- Represent scientific data symbolically, graphically, numerically, and verbally.
- Interpret scientific information and draw logical references from representations such as formulas, equations, graphs, tables, and schematics.
- Evaluate the results obtained from scientific methods for accuracy and/or reasonableness

Scientific Knowledge: Upon the completion of this course, students should be able to:

- Communicate using appropriate scientific terminology.
- Use representations and models to communicate scientific knowledge and solve scientific problems.
- Plan and implement data collection strategies appropriate to a particular scientific question.
- Articulate the reasons that scientific explanations and theories are refined or replaced.
- Evaluate the quality of scientific information on the basis of its source and the methods used to generate it.