

## NORTHWESTERN CONNECTICUT COMMUNITY COLLEGE

### COURSE SYLLABUS

**Course Title:** General Chemistry II lab

**Course #:** CHE\* 122

**Course Description:** Laboratory period to accompany CHE\* 122. Students perform experiments to demonstrate the concepts presented in lecture.

**Pre-requisite/Co-requisite:** Must be taken concurrently with CHE\* 122 lecture

**Goals:** Continuation and expansion of foundations learned in General Chemistry I. Topics include solution properties, chemical kinetics, chemical equilibrium, acids and bases, equilibrium and solubility, thermodynamics, transition metal chemistry and coordination chemistry, and organic and biochemistry.

**Outcomes:** Upon successful completion of this course, the student should be able to:

- Understand and apply colligative properties of compounds.
- Calculate rate constants and determine the order of the reaction
- Be able to explain how Le Châtelier's principle applies to equilibrium
- Understand basic acid base properties and definitions
- Be able to perform titrations (acid-base and redox)
- Determination of solubility constants
- Understand Redox reactions
- Classification of reactions
- Understanding acids, bases, and buffers
- Application of the laws of thermodynamics
- Explain concentration (Molarity, Molality, Percent by mass)
- Understanding thermodynamic constants at equilibrium

**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.