CHEM A086N: LAB SKILLS FOR GENERAL CHEMISTRY B

Item	Value
Curriculum Committee Approval Date	12/08/2021
Top Code	493062 - Secondary Education (Grades 9-12) and G.E.D.
Units	0 Total Units
Hours	18 Total Hours (Lecture Hours 18)
Total Outside of Class Hours	0
Course Credit Status	Noncredit (N)
Material Fee	No
Basic Skills	Basic Skills (B)
Repeatable	Yes; Repeat Limit 99
Open Entry/Open Exit	Yes
Grading Policy	P/NP/SP Non-Credit (D)

Course Description

This is a course designed to provide additional instruction and practice of the lab skills taught in CHEM A185- General Chemistry. Students will develop skills necessary to successfully demonstrate competency in CHEM A185 laboratory. This non-credit course will be a part of the new Chemistry Skills Certificate and is expected to increase student retention and success in CHEM A185. Noncredit. NOT DEGREE APPLICABLE. COREQUISITE: CHEM A185. Not Transferable.

Course Level Student Learning Outcome(s)

1. Apply proper safety practices during laboratory procedures.
2. Apply proper mathematics to chemistry laboratory problems.
3. Master technical skills involving laboratory equipment.
4. Learn how to make and record proper observations and measurememts.

Course Objectives

- 1. Apply basic math skills to chemistry laboratory problems.
- 2. Apply basic problem solving skills to chemistry laboratory problems.
- 3. Have basic chemistry lab skills.

Lecture Content

1. Remediation of Basic Math Skills: 1.1. Apply algebraic substitution and manipulation to chemical equations in lab. 1.2. Apply statistical analysis to experiments with multiple data sets. 1.3. Learn and apply the use of logarithms in chemistry. 1.4. Apply proper mathematics to eliminate statistical outlier data points. 2. Remdiation of Basic Chemistry Lab Skills: 2.1 Learn proper fundamental analytical laboratory techniques. 2.2 Learn how to properly make laboratory observations and measurements. 2.3 Master technical skills involving common laboratory equipment such as burets, pipets, balances, spectrophotometers and calorimeters. 2.4 Master solution preparation skills. 2.5 Apply proper safety during laboratory procedures. 3. Remediation of Basic Problem Solving Skills: 3.1 Learn fundemental problem solving in laboratory chemical calculations involving solution concentrations, titrations, and others. 3.2 Apply qualitative and quantitative error analysis to experimental results. 3.3 Learn to plot experimental data and do a least squares analysis. 3.4 Learn the theoretical and mathematical differences between molarity and activity.

Method(s) of Instruction

- Enhanced NC Lect (NC1)

Instructional Techniques

Laboratory skills and techniques are primarily demonstarted by the instructor and then practiced individually by the students as the instructor maneuvers through the class giving individual instructions as needed. Live presentations, videos presentations, and team instructional methods will be utilized.

Reading Assignments

Websites, online and class handouts

Writing Assignments

Proper observation writing, data recording, mathematical and statistical calculations and worksheets.

Out-of-class Assignments

Online videos, worksheets and technique practice

Demonstration of Critical Thinking

Graded worksheets will demonstrate abilities to explain concepts and describe principles in writing as well as the development of problem solving skills.

Required Writing, Problem Solving, Skills Demonstration

Weekly quizzes will include some questions requiring the writing of sentence explanations and/or descriptions. Students will be expected to analyze questions and generate answers to them. Some answers will be in the language of mathematics and others will be in English. Some questions will require the use of principles to synthesize and answer which is not taught.

Eligible Disciplines

Chemistry: Master's degree in chemistry OR bachelor's degree in chemistry or biochemistry AND master's degree in biochemistry, chemical engineering, chemical physics, physics, molecular biology, or geochemistry OR the equivalent. Master's degree required.