J. Sargeant Reynolds Community College  
Course Content Summary

Course Prefix and Number: CHM 111  
Credits: 4

Course Title: General Chemistry I

Course Description: Explores the fundamental laws, theories and mathematical concepts of chemistry. Designed primarily for science and engineering majors. Requires a strong background in mathematics. Part I of II. Prerequisite or Co-requisite: MTH 161 or higher with a grade of C or better. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose: Designed primarily for science and engineering majors. This is a prerequisite course for those students who must take Organic Chemistry CHM 241/242 or the equivalent. It is the recommended chemistry course for pre-medicine, pre-dental, pre-pharmacy, and pre-veterinary students.

Course Prerequisites and Co-requisites:  
Prerequisite or Co-requisite: MTH 161 or higher with a grade of C or better.

Student Learning Outcomes:  
Upon completing the course, the student will be able to
a. Apply the basic concepts of chemistry to explain the interaction of the different forms of matter;

b. Demonstrate ability to weigh evidence and decide if generalizations or conclusions based on the obtained data are warranted;

c. Demonstrate the ability to interpret and use mathematical formulas; and

d. Explain clearly and concisely the methods and reasoning used to accomplish the above objectives.

Major Topics to Be Included:

a. Matter and measurement/significant figures
b. Physical properties: density, boiling point/melting point
c. Atoms, molecules and ions, and ionic bonding
d. Covalent bonding
e. Lewis structures/Valence shell electron pair repulsion model(VSEPR) and molecular models
f. Polarity/Orbital hybridization
g. Mass relationships, % Composition/Empirical formula and stoichiometry
h. Reactions in aqueous solutions and solubility
i. Gas relationships and gas laws
j. Electronic structure and the periodic table
k. Thermochemistry
l. Safety/Lab notebook/Report writing
m. Chemical nomenclature
n. Laboratory techniques

Date Created/Updated (Month, Day, and Year): January 4, 2019