CHEM 025 Course Outline

6 credits, 6 hours lecture

Course Description

Chemistry 025 begins with an introduction to elements and the Periodic Table, followed by atomic theory and periodicity, chemical bonding and types of compounds, chemical nomenclature, and chemical reactions. The remainder of the course focuses on calculations involving measurements in chemistry, the metric systems (SI), and scientific notation as applied to gases, solutions (including acids and bases), and stoichiometry.

Pre and Co-requisites

Co requisite: MATH 010C

Course Learning Outcomes (CLOs)

Upon successful completion of the course, the student shall be able to:

CLO 1 Recognize the main branches of Science and explain the scientific method
CLO 2 List the five branches of Chemistry
CLO 3 Describe the basic particles that make up the underlying structure of matter
CLO 4 Explain the Atomic Theories leading to the modern structure of the atom (Dalton, Thomson, Rutherford and Bohr)
CLO 5 Describe the three subatomic particles that make up the atom.
CLO 6 Explain the division of elements in the periodic table
CLO 7 Identify and characterize of elements in groups and periods
CLO 8 Explain the chemical bonding and properties of compounds
CLO 9 Classify and explain the structure of compounds.
CLO 10 Write names and formulas for compounds
CLO 11 Apply VSEPR theory to predict molecular shapes for molecules
CLO 12 Explain the types of intermolecular forces
CLO 13 Recognize the systematic chemical name of binary, ternary and higher compounds
CLO 14 Recognize the difference between precision vs accuracy, types of errors and significant digits
CLO 15 Employ the measurement system for unit conversion and density problems.
CLO 16 Apply the mole concept for calculation of molar mass, moles of elementary units, and molar volume of gas
CLO 17 Explain molecular behavior, using models of the gaseous state of matter.
CLO 18 Investigate solutions, describing their physical and chemical properties
CLO 19 Describe molar concentration, molar concentration of ions in solution, and dilutions
CLO 20 Describe acidic and basic solutions qualitatively and quantitatively
CLO 21 Explain how balanced chemical equations indicate the quantitative relationships between reactants and products involved in chemical changes.
CLO 22 Use stoichiometry in quantitative analysis.

Evaluation

Assessment Type	Percentage
Assignments and quizzes	30%
Projects	20%
Midterm Exam (Units 1, 2, and 3)	25%
Final Exam (Units 4, 5 and 6)	25%

Course Completion Requirements

Minimum passing mark of 50% or D is required.

Grading Scale

4.0 Grade Scale	Alpha Grade	Percentage Grade
4.0	A+	93-100
4.0	A	85-92.9
3.7	A-	80-84.9
3.3	B+	77-79.9
3.0	B	74-76.9
2.7	B-	70-73.9
2.3	C+	67-69.9
2.0	C	64-66.9
1.7	C-	60-63.9
1.3	D+	55-59.9
1.0	D	50-54.9
0.0	F	0-49.9

Land Acknowledgement

We respectfully acknowledge that Keyano College is on Treaty No. 8 Territory, the ancestral and traditional territory of the Cree, Dene, and Métis people.

Review Date: March 4, 2024