Massasoit Community College
General Chemistry I
CHEM 151

Course description: This course is designed for students who plan to continue in a science or related area. The major topics covered include atomic structure, stoichiometry, modern chemical bonding and the gaseous state of matter. The laboratory is both preparative and analytical using classical and spectroscopic techniques. Lecture: 3 hours Laboratory: 2 hours

Prerequisite: ENGL 092 Preparing for College Reading II, ENGL 099 Introductory Writing, and MATH 003 Preparation for College Math III or MATH 012 Intermediate Algebra; waiver by placement testing results; or departmental approval.

Textbook: * N. Tro, *Chemistry, A Molecular Approach*, 5th Edition, Pearson,

- **ISBN:** 9780134112831

- Twomey, General chemistry lab manual, 3rd ed., Kendall-Hunt

- A scientific calculator will also be needed.

    - **No calculators on your phone are allowed during quizzes and exams**
    - **No computer-algebra calculators allowed.**

Course Objectives: Students at the end of the semester should be able to :

- Classify matter, properties of matter, and perform dimensional analysis problems
- Discuss atomic theory and the components and history of the atom
- Perform stoichiometry, limiting reagent, empirical formula, molecular formula, and percent composition calculations
- Determine concentration of solutions and solve dilution problems
- Discuss how we came about today's modern view of the atom
- Determine the electron configurations of the elements using quantum mechanical model
- Distinguish between ionic, polar covalent, and covalent bonds

- Discuss VSEPR and valence bond theories; molecular orbital theory
- Draw Lewis structures of compounds
- Calculate formal charges of compounds
- Explain resonance structures
- Perform calculations using the gas laws
- **Lab:** be familiar with lab safety, lab glassware, working with a partner, volume, mass, and temperature measurements, recording in a lab sheets, and analysis of data

Grading Policy

The grades will be based upon quizzes, exams, labs, and homework.

There is NO EXTRA CREDIT!

A	94-100
A-	90-93
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	less than 60

Attendance Policy: Students are expected to attend all classes. You are responsible for the material you missed. Refer to CANVAS for the material as soon as possible. Lateness to lab will not be tolerated as safety issues and labs procedures will be discussed during the first minutes of labs.

LABS for CHEM 151:

Lab Introduction and Safety lecture

Basic Laboratory Techniques

Separation of components of a mixture

Physical Properties

Sugar Content of soda

The Empirical Formula of an Oxide / Gravimetric Analysis

Precipitation Reactions

Chromatography of analgesic drugs / Ions

Titration of Acids and Bases

Determination of the Amount of Citric Acid

Determination of Unknown Sample Concentration

Synthesis of Soap

Molecular mass of a gas