

SYLLABUS
PART I
EDISON STATE COMMUNITY COLLEGE
CHM 110S INTRODUCTION TO CHEMISTRY
4 CREDIT HOURS

COURSE DESCRIPTION

Fundamental concepts of chemistry: atomic structure, bonding, chemical formulas and equations, states of matter, acids, and bases. Class consists of three hours lecture and two hours lab per week. Prerequisite: One year of high school algebra or MTH 093D. Lab fee.

COURSE GOALS

The student will:

Bloom's Level		Gen Ed Outcomes
3	1. Apply knowledge of the metric system to perform unit conversion problems.	1, 3
3	2. Use knowledge of atomic structure to answer questions related to the electronic structures of atoms and chemical bonding.	1
3	3. Use the mole concept to solve problems involving chemical formulas and equations.	1, 3
3	4. Balance simple chemical equations by inspection and interpret the meaning of balanced equations.	1
2	5. Compare and contrast the three states of matter in terms of their properties, the movement of the particles, the distance between the particles, and the attractions between the particles.	1
3	6. Describe kinetic and potential energy and solve problems involving energy changes during heating, cooling, and changes of state.	1, 3
3	7. Describe the physical properties of gases and solve problems involving the gas laws.	1, 3
3	8. Describe the factors which influence the formation of solutions and the solubility of solutes and apply the properties of liquid mixtures to answer questions related to specific examples.	1
3	9. Solve problems involving molarity and dilution of molar solutions.	3
3	10. Define the terms electrolyte, acid, base, and neutralization, and apply this information to writing chemical equations to describe their behavior.	1
3	11. Use the concepts of pH and buffers to answer questions related to specific acid-base examples.	1
3	12. Apply class material to explain laboratory observations and solve problems.	1, 3
3A	13. Work efficiently in teams when performing laboratory experiments.	5
2	14. Communicate clearly orally and in written form.	2

CORE VALUES

The Core Values are a set of principles that guide in creating educational programs and environments at Edison. They include communication, ethics, critical thinking, human diversity, inquiry/respect for

learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will introduce/reinforce these Core Values whenever appropriate.

TOPIC OUTLINE

1. Scientific measurement, scientific notation, unit conversions using dimensional analysis, density, and temperature scales.
2. Elements, subatomic particles, isotopes, and the electronic structure of simple atoms.
3. Compounds, names and formulas of compounds, ion formation, ionic and covalent bonding, Lewis dot structures of covalent compounds.
4. The mole concept, conversions between mass and the number of moles of an element or compound.
5. Balancing chemical equations, stoichiometric calculations, and chemical and physical changes.
6. The states of matter, changes of state, energy, and energy changes in physical and chemical processes.
7. Kinetic molecular theory, behavior of gases, Boyle's law, Charles' law, Gay-Lussac's law, combined gas law, and the ideal gas law.
8. Solution terminology, solution formation, solubility behavior, molarity of solutions, the dilution of molar solutions, colloids, suspensions, osmosis, diffusion, and dialysis.
9. Electrolytes, Arrhenius acid-base theory, neutralization equations, buffers, and pH of solutions.
10. Use of balances, burets, and pipets and procedures for determining the properties of chemicals and identifying chemicals.