

CAPITAL COMMUNITY COLLEGE

Course Outline for

CHEMISTRY I

SECTION I

SUBJECT AREA AND COURSE NUMBER: Chem. 121

COURSE TITLE: Chemistry I

CATALOG DESCRIPTION:

Chemistry I is the first course of the year long general chemistry sequence which is required of most science and engineering students in baccalaureate programs. It provides the base for more advanced work in these areas. Students will acquire information on atomic structure, chemical reactions and the properties of solids, liquids and gases. In addition students develop skill in using mathematics logical and other types or reasoning to solve problems.

LECTURE HOURS PER WEEK: 3

LABORATORY HOURS PER WEEK: 3

CREDITS: 4

PREREQUISITE:

High School chemistry, Chemistry 111, or permission of the department.
Intermediate Algebra or equivalent

SECTION II

- A. SCOPE:** The objective of chemistry I is to provide students with a background in general chemistry which will enable them to better understand the world around them and to prepare the students for academic programs in science, medicine, engineering and related fields.
- B. REQUIRED WORK:** determined by the instructor.
- C. ATTENDANCE AND PARTICIPATION:** Students are expected to attend class and to participate in class activities. It is particularly important that students attend laboratory. Students must take examinations at the scheduled time and must hand in any reports, homework or other assignment at the time requested by the instructor.
- D. METHODS OF INSTRUCTION:** This course will involve students in active learning. They will need solve problems, conduct laboratory experiments and work as a member of a group in order to be successful. Other methods of instruction which may include but are not limited to lecture, discussion, student presentations, computer instruction or exercises which make use of computers.

E. OBJECTIVES, OUTCOMES and ASSESSMENT

The following objectives and outcomes represent the department's core requirements for student achievement.

Learning Objectives	Outcomes	Assessment
To demonstrate an understanding of:	Student will:	As measured by:
Atomic structure	Investigate the relationship between atomic structure and the properties of atoms.	
Chemical bonds	a. Predict the types of chemical bonds formed between different elements b. Classify compounds by the type of bonds they contain.	1. Written in class tests, quizzes and examinations
Compound Structure	a. Calculate formulas for compounds. b. Discuss the structure and properties of ionic crystals. c. Describe the structure of molecular compounds and use this information to predict the properties of these compounds.	2. Graded laboratory reports and/or laboratory examinations
Chemical Reactions	a. Identify the major classes of chemical reactions. b. Describe chemical reactions using equations. c. Use the concept of the mole to determine mass relationships in reactions.	Other methods may include but are not limited to:
Enthalpy	a. Calculate enthalpy changes accompanying chemical and physical changes. b. Discuss the effects of these changes on the physical world.	Graded homework assignments, reports, presentations or projects.
Ideal Gases	Use gas laws to predict or describe the behavior of gases.	
Problem solving using mathematics	Use algebra, dimensional analysis, graphing, logic and other techniques to solve problems in Chemistry	
Relationship between theoretical concepts and practical problems.	a. Use theoretical information to solve practical problems. b. Use collected data to make generalizations. c. Perform assigned experiments in the laboratory, collect the required data and draw appropriate conclusions.	

F. TEXTS AND MATERIALS: Chemistry the Central Science by Brown, LeMay and Bursten, publisher: Prentice Hall ; Chemical Principles in the Laboratory by Slowinski, Wolsey and Masterton publisher: Saunders College Publishing

G. INFORMATION TECHNOLOGY: calculator