

PALOMAR COLLEGE
COURSE OUTLINE OF RECORD FOR
DEGREE CREDIT COURSE

__ Transfer course __ A.A. degree applicable course
(check all that apply)

COURSE NUMBER AND TITLE: CHEM 110 – General Chemistry

UNIT VALUE: 3

MINIMUM NUMBER OF SEMESTER HOURS: 48

BASIC SKILLS REQUIREMENTS: Appropriate language and computational skills.

ENTRANCE REQUIREMENTS

PREREQUISITE: A minimum grade of "C" in CHEM 100 or high school chemistry with laboratory, and two years of high school mathematics including algebra.

COREQUISITE: CHEM 110L – General Chemistry Laboratory

RECOMMENDED PREPARATION: None

SCOPE OF COURSE:

Principles of, and calculations in, areas such as atomic structure, solutions, chemical bonding, chemical formulas and equations, gases, energy transformations accompanying chemical changes, and descriptive chemistry.

SPECIFIC COURSE OBJECTIVES:

The successful student will be able to:

1. Explain the composition of matter and atomic structure.
2. Solve mathematical problems and explain chemical formulas and reactions.
3. Solve mathematical problems and explain heat effects that accompany chemical reactions.
4. Compare and solve mathematical problems over the solid, liquid, and gaseous states.
5. Explain chemical bonding and derive molecular structures.
6. Explain concentration units and solve problems concerning concentration units.

CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:

1. Matter and measurements
 - a. Measurements and the metric system
 - b. Classification of matter
 - c. Scientific method and use of dimensional analysis in problem solving
2. Atoms, molecules, and ions
 - a. Basic atomic theory
 - b. Structure of the atom
 - c. Mole concept introduced
 - d. *Molecules and molecular mass*
 - e. Empirical formula and percent composition

- f. Ion concept introduced
- g. Elements and the periodic table
- 3. Chemical formulas and equations
 - a. Writing chemical formulas
 - b. Nomenclature for inorganic compounds
 - c. Types of chemical equations
 - d. Balancing chemical equations and stoichiometry problems
- 4. Thermochemistry
 - a. Introduction of calorimetry
 - b. Enthalpy changes and chemical reactions
- 5. Electronic structure of atoms and the periodic table
 - a. Basic quantum theory
 - b. Periodic properties of atoms
- 6. The chemical bond and molecular structure
 - a. Ionic and covalent type bonds
 - b. Bond polarity and electronegativity
- 7. Physical properties of states of matter
 - a. Gas laws, behavior and calculations
 - b. Liquids, solids and changes of state
- 8. Solutions
 - a. Solubility
 - b. Concentration concepts
 - c. Colligative properties

REQUIRED READING:

Ebbing, Darrel D. General Chemistry. 6th edition. Boston: Houghton Mifflin Company, 1999.

SUGGESTED READING: None

REQUIRED WRITING:

Students are required to:

1. Answer assigned questions (homework, quizzes, and exams) involving definitions, concepts, and theory. Approximately 26 paragraphs of required writing.
2. Set up and calculate problems related to course content.

OUTSIDE ASSIGNMENTS:

Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.

Preparation may include such activities as assigned reading in text, review of lecture material, solving assigned problem sets, etc. There are homework assignments for each chapter.

INSTRUCTIONAL METHODOLOGY:

Check all that apply:

- lecture
- laboratory
- lecture-laboratory combination
- directed study

This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.

Yes _____ No X.

If yes, check all that apply.

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
- Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
- Two-Way Video Conferencing (Two-way interactive video and audio)
- One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
- Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

GRADING POLICY AND STANDARDS (include methods of determining whether the stated objectives have been met by students):

A typical grading policy might be:

1 Mid-term exam	15%
1 Final exam	30%
10 Quizzes	50%
Homework	5%

Course grade based on class curve.

IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?

Yes ___ No X Number of times course may be taken for credit: 1.

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:

CONTACT PERSON: Geetha Natarajan

SIGNATURES:

SIGNATURES ON FILE
