

**PALOMAR COLLEGE**  
**COURSE OUTLINE OF RECORD FOR**  
**DEGREE CREDIT COURSE**

X Transfer Course X A.A. Degree applicable course  
(check all that apply)

**COURSE NUMBER AND TITLE:** CHEM 102 – Chemistry and Society

**UNIT VALUE:** 3

**MINIMUM NUMBER OF SEMESTER HOURS:** 48

**BASIC SKILLS REQUIREMENTS:** Appropriate language and computational skills.

**ENTRANCE REQUIREMENTS**

**PREREQUISITE:** None

**COREQUISITE:** None

**RECOMMENDED PREPARATION:** None

**SCOPE OF COURSE:**

Introductory course for non-science majors, to acquaint students with the language and tools of chemistry and to enable them to develop an appreciation for the role of chemistry in our environment and life's processes.

**SPECIFIC COURSE OBJECTIVES:**

The successful student will be able to:

1. Explain how the basic principles of chemistry relate to our daily lives and our surrounding environment.
2. Apply scientific methods and principles in solving problems, both real and theoretical.
3. Use chemical language in the appropriate context.
4. Comprehend and appreciate scientific endeavors in today's technological society as reported in the media and the literature.
5. Analyze and evaluate the validity of scientific articles.
6. Make reasoned judgment on social issues that are founded on the processes and fruits of science in general and chemistry in particular.

**CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:**

- I. Chemical Concepts and Inorganic Chemistry
  - A. An Introduction to Chemistry
    1. Chemistry of Ordinary Things
    2. Energy and Matter
    3. The Scientific Method
    4. The Metric System
  - B. Atoms and Elements
    1. Structure of Atoms

- 2. Mass and Weights
- 3. Atoms and Elements
- C. Chemical Bonds
  - 1. Valence Electrons
  - 2. Periodicity
  - 3. Ionic Bonds
  - 4. Chemical Formulas
  - 5. Covalent Bonds
  - 5. Chemical Equations
- D. Stoichiometry; Arithmetic of Chemistry
  - 1. Counting Atoms
  - 2. Mole and Avogadro's number
  - 3. Concentration and Molarity
- E. Nuclear Chemistry
  - 1. Radioactivity and Half-life
  - 2. Fission vs. Fusion
  - 3. Medical use of Radioactivity
- F. Oxidation-Reduction
  - 1. Oxidation-reduction Reactions
  - 2. Electrochemistry
- G. Acids and Bases
  - 1. Acid-base Definition
  - 2. pH Measurement
  - 3. Strong Acids and Weak Acids
  - 4. LeChatelier's Principle
  - 5. Buffers
- H. States of Matter
  - 1. Solids and Liquids
  - 2. The Gas Laws
  - 3. Ideal Gas Law

## II. Organic Chemistry

- A. Hydrocarbons
  - 1. Alkanes
    - a. Nomenclature
    - b. Physical properties
  - 2. Alkenes and Alkynes
  - 3. Cyclic Hydrocarbons and Aromatics
  - 4. Petroleum
- B. Organic Molecules Containing Oxygen
  - 1. Alcohols, Phenols and Ethers
  - 2. Aldehydes and Ketones
  - 3. Carboxylic Acids and Esters
  - 4. Rxn and Prep of Organic Compounds
- C. Polymers and Plastic
- D. Cosmetic Products

## III. Biochemistry

- A. Foods
- B. Fats and Oil
- C. Carbohydrates
- D. Proteins and Enzymes

- E. Minerals and Vitamins
- F. Chemicals and the Mind
- G. Nucleic Acid
  - 1. DNA and the Genetic Code
  - 2. RNA and Protein Synthesis

**REQUIRED READING:**

Stanitski, Conrad L., Lucy Pryde Eubanks, Catherine H. Middlecamp, and Wilmer J. Stratton. Chemistry in Context Applying Chemistry to Society. Ed. 3. Boston: McGraw Hill, 2000.

**SUGGESTED READING:**

Scientific articles in newspapers and magazines.

**REQUIRED WRITING:**

One 2-page article review per semester that summarizes the major points and discusses the impact of chemistry on society.

End of chapter assignments that sharpen the problem-solving skills.

**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.**

Assignments include:

- Careful reading of text
- Studying lecture notes
- Writing papers and working problem set
- Students should study and prepare for exams.

**INSTRUCTIONAL METHODOLOGY:**

**Check all that apply:**

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

**DISTANCE LEARNING:**

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

Yes  No

**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):

Article preparation and presentation	5-10%
Homework assignments	5-10%
Exams (1-3)	30-50%
Quizzes	10-30%
Final exam	10-30%

**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:** Ronald Phillips

**SIGNATURES:**

SIGNATURES ON FILE