

**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 210 – Analytical Chemistry

**UNIT VALUE:** 5

**MINIMUM NUMBER OF SEMESTER HOURS:** 144

**BASIC SKILLS REQUIREMENTS:** Appropriate computational skills

**ENTRANCE REQUIREMENTS**

**PREREQUISITE:** A minimum grade of “C” in CHEM 115 and CHEM 115L

**COREQUISITE:** None

**RECOMMENDED PREPARATION:** None

**SCOPE OF COURSE:**

Principles, calculations, and applications of volumetric, gravimetric, and instrumental analysis. Practice in standardizing reagents and determining the composition of samples of various materials.

**SPECIFIC COURSE OBJECTIVES:**

The successful student will:

1. Statistically analyze data.
2. Deduce methods for solving advanced chemical calculations.
3. Apply principles of analytical chemistry to actual laboratory considerations.
4. Write clear, concise summaries of their experimental results.

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

- I. Basic tools of Analytical Chemistry
- II. Data handling, including computer assisted data reduction
- III. General concepts of chemical equilibrium
- IV. Acid-base equilibria
- V. Gravimetric analysis
- VI. Volumetric analysis

- VII. Acid-base titrations
- VIII. Precipitation and complexometric titrations
- IX. Reduction-oxidation titrations
- X. Spectrophotometry
- XI. Solvent extraction
- XII. Chromatography
- XII. Potentiometric titrations
- XIV. Electrolytic methods

**REQUIRED READING:**

Christian, Gary D. Analytical Chemistry. 5<sup>th</sup> Ed. New York: J. Wiley & Sons, 1994.

**SUGGESTED READING:** None

**REQUIRED WRITING:**

Advanced problem-solving exercises in stoichiometry, gravimetric, and volumetric analysis, spectrophotometry are more appropriate. Three to six paragraphs must be written in a laboratory notebook summarizing the purpose, procedure, and results of each experiment completed.

**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.**

**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):

Lecture Exams and Quizzes = 40 - 55%

Final Exam = 15 - 20%

Laboratory Results and Quizzes = 30 - 40%

**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 ON FILE**