LOS MEDANOS COLLEGE

Associate in Science in Chemistry for Transfer

**Criteria A. Appropriateness to Mission**

**Item 1. Statement of Program Goals and Objectives**

The objective of the Associate in Science in Chemistry for Transfer Degree is to facilitate the transfer of students from Los Medanos College to the CSUs to pursue an undergraduate degree in Chemistry. The Associate of Science in Chemistry for Transfer Degree is designed to provide educational experiences at the lower division level with depth, breadth and rigor to ensure that transfer students are well prepared to succeed in upper division work in Chemistry. This preparation is comparable to lower division work completed in the first two years in the California State University. The specific courses that comprise our Associate of Science in Chemistry for Transfer Degree were selected to meet the Transfer Model Curriculum and the lower division requirements for transfer to the California State University System baccalaureate degree programs in Chemistry.

The Program Level Students Learning Outcomes (PSLOs) for this degree are:

1. Applied scientific methodology, in all its explicit steps, to either:

• solve a complex problem posed in the classroom, or

• complete a significant laboratory analysis, or

• carry out an extensive study at one of LMC’s field stations.

2. Solved problems concerning the atomic and molecular structure of matter, using

the periodic table plus quantum mechanics as the organizing and predictive models for this analysis.

3. Solved stoichiometric problems, including those complicated by the presence of limiting reagents.

4. Correctly predicted the products of standard inorganic, organic, biochemical, or

nuclear reactions.

5. Applied the principles of thermodynamics and kinetics to solve problems:

• involving energy and entropy changes characteristic of chemical and physical reactions

• concerning rates and mechanisms of chemical reactions

• involving the principles of equilibrium

6. Demonstrated an understanding of electromagnetic radiation (i.e., light energy) and its interactions with matter, by carrying out spectroscopic analyses of atoms and compounds.

7. Conducted laboratory or field analyses using modern, professional technologies, selected from colorimetric, titrimetric, gravimetric, electrochemical, spectrometric, and chromatographic equipment and instruments.

8. Engaged in at least one hands-on research or restoration activity at a field site of LMC or a community partner, in order to utilize the distinct opportunity provided by having the California Delta in our backyard, and to appreciate the effort needed to act as good stewards of our local watersheds.

**Item 2. Catalog Description**

The Associate in Science in Chemistry for Transfer Degreeis designed for students desiring advanced degrees in Chemistry. The Los Medanos College Chemistry courses meet the lower division transfer requirements for Chemistry. The curriculum includes the first and second year requirements to prepare students to transfer and study at a California State University. Transferring and completing a baccalaureate degree in Chemistry can lead to careers as agricultural and food scientists; chemists and materials scientists; elementary, middle, and high school teachers; environmental scientists; forensic scientists; materials engineers; occupational health and safety specialists; research technicians; government laboratory technicians; medical technicians; petroleum chemists; pharmacists; scientific writers and/or artists.

To achieve the Associate in Science in Chemistry for Transfer Degree, students must (1) complete 60 semester units or 90 quarter units that are eligible for transfer to the California State University (2) fulfill the Intersegmental General Education Transfer Curriculum (IGETC) or the California State University General Education – Breadth Requirements (3) complete a minimum of 36 semester units or 54 quarter units in the major area of emphasis, as determined by the community college district (4) obtain a minimum grade point average of 2.0 (5) earn a “C” grade or better in all course required for the major area of emphasis. A “P” (Pass) grade is not acceptable grade for courses in the major.

Program Requirements:

Required Core: (36 units)

CHEM-25 General College Chemistry I 5

CHEM-26 General College Chemistry II 5

CHEM-28 Organic Chemistry I 5

CHEM-29 Organic Chemistry II 5

PHYS-040 Physics for Scientists & Engineers I 4

PHYS-041 Physics for Scientists & Engineers II 4

MATH-050 Calculus with Analytic Geometry I 4

MATH-060 Calculus with Analytic Geometry II 4

Total Units for the Major: 36

Total Units for the Degree: 60