and 1B or 3A), Organic Chemistry (CHEM 8 or 128A-B and 129A), and Quantitative Analysis (CHEM 105).

Those students requiring additional upper-division chemistry units may choose from courses such as the following: CHEM 125, 150, 153, 155, and 156.

Note: The Chemistry Minor also requires a 2.0 GPA and 6 upper-division units in residence.

Graduate Program

The mission of the graduate program in chemistry is guided by the mission of the university; it seeks to provide comprehensive undergraduate and graduate degree instruction for qualified students, and to contribute to the needs and well being of the people of the San Joaquin Valley and California.

The California State University, Fresno graduate program in chemistry is primarily oriented toward two groups of students: students who are preparing themselves for employment in chemistry-based occupations (including teaching) and students interested in additional training in chemistry and biochemistry to prepare for advanced Ph.D. graduate work.

For students in the first category, the program stresses strengthening the student's chemistry background while also providing advanced training in both theory and research — training that is very beneficial in today's competitive job market. Furthermore, the program also strives to meet local and regional needs for individuals with advanced training in chemistry and biochemistry, needs that are strongly tied to the agricultural nature of the valley.

For students in the second category, the program's emphasis on improving chemistry background and basic research skills prepares students for work at the Ph.D. level and enhances their chances for success.

Master of Science Degree Requirements

The Master of Science degree program in Chemistry assumes undergraduate preparation equivalent to a California State University, Fresno B.S. in chemistry. Each new student is required to take the Diagnostic Placement Examinations in four fields of chemistry (physical, organic, analytical, and inorganic or biochemistry) to provide a basis for program planning. These are taken at the beginning of the first semester of residence. Twenty-one of the 30 units required for the degree must be in chemistry.

(See also *Admission to Graduate Standing, Advancement to Candidacy, Program Requirements,* and *Criteria for Thesis and Project.)*

Graduate-Level Writing Proficiency Requirement

The completion of the following two components will satisfy the writing requirement:

1. successful completion of CHEM 260 with a grade of ***B*** or better, and
2. completion of a formal paper on the student's research to be submitted at the beginning of the fall semester of the second year. The paper should be of sufficient length (at least 2,000 words) to allow proper evaluation by a two-member review committee that includes the research director.

Master of Science Program Development

Under the direction of a graduate adviser, each student prepares and submits a coherent program individually designed according to Plan A or Plan B listed in the copy that follows. Other courses may be specified after examination of the student's record and performance on the departmental diagnostic examinations.

Plan A - M.S. with Thesis	*Units*
Courses in chemistry, including at least 24 units in 200 series (see *specific requirements)*	**24**
Approved electives in chemistry or related fields	**6**
Total	**30**

Specific requirements: CHEM 201 (1 unit); 280 (at least 2 units); 295 (2 units); 299 (4 units); and 3 units each from 4 of the 5 following groupings: (i) CHEM 211 or 215, (ii) 220 or 222, (iii) 225, 226, or 227, (iv) 230 or 235, (v) 241A or 242. CHEM 260 recommended.

Other courses may be specified after examination of the student's record and his or her performance on the departmental diagnostic examinations.

Plan B - M.S. with Comprehensive Examination	*Units*
Courses in chemistry, including at least 24 units in 200 series (see *specific requirements)*	**24**
Approved courses in chemistry or related fields may include biology, engineering, geology, mathematics, physics, etc.) according to the student's objective	**6**
Total	**30**

Specific requirements: CHEM 201 (1 unit); 280 (at least 2 units); 295 (2 units); and 3 units each from 4 of the 5 following groupings: (i) CHEM 211 or 215, (ii) 220 or 222, (iii) 225 or 227, (iv) 230 or 235, (v) 241A or 242.

Other courses may be specified after examination of the student's record and his or her performance on the departmental diagnostic examinations.

Instead of a thesis, a student must successfully complete a final comprehensive examination consisting of two parts: (a) a general written examination in chemistry; (b) an examination dealing with a specific area of chemistry. See department for *Policy Statement — Plan B Comprehensive Examination.*

Professional Science Master's Program in Forensic Science

Forensic science is a multidisciplinary endeavor that increasingly requires employees who are fluent in broad areas of the natural sciences (chemistry, biology, physics, and mathematics) and social sciences such as criminology and law. This broad training enables the development of new technologies and products based on the unique applications of the crime laboratory. The professional master's degree in forensic science offers students who are fundamentally educated in various scientific disciplines opportunities to acquire the knowledge, skills, and abilities required in the field. Students will comprehend and implement these emerging technologies and provide reliable evaluation of evidence and testimony for domestic and international justice systems.

Admission Requirements. Advisement is required by the Department of Chemistry to ensure prerequisites and admission standards are met. Students must complete university postbaccalaureate admission requirements; have an earned bachelor's degree in a physical or life science; and complete the program prerequisites listed below. A minimum GPA of 3.0 in all science and mathematics coursework in the baccalaureate preparation and prerequisites is required.

Program Prerequisites. The following prerequisite courses or their equivalents are required and must be completed prior