

Item 1. Program Goals and Objectives

Fresno City College's chemistry department is proposing a new Chemistry Certificate of Achievement program. The goal of this program is to provide the community with an educational program that will allow a person to gain the chemistry skills and knowledge required for a job as a laboratory technician. The certificate program is a two year learning experience that will teach students the specific skills in order to gain employment as a laboratory technician. The courses continually build on each other, utilizing the skills from a previous course in the current course, creating a cohesive package of courses within chemistry and related fields. By teaching these students a specific vocational trade, they will be able to enter the workforce and a productive citizen. This will greatly benefit the community. Fresno currently has an unemployment rate of 12.5% (Employment Development Department, Labor Market Information Division, December, 2013, <http://www.calmis.ca.gov/file/lfmonth/countyur-400c.pdf>), which is higher than the state of California (unemployment rate of 8.3%) and more than double the unemployment rate of the country (the current unemployment rate for the nation is 6.6%).

The educational philosophy of the faculty is to help the students meet their educational goals and prepare them for the next step in their journey. This program embodies the philosophy. The students will not only be learning valuable skills and important chemistry concepts, but it is preparing them for a specific career.

The proposed program has the following student learning outcomes (SLOs):

1. As a result of the program, students will demonstrate laboratory skills to be successful in subsequent courses and/or on the job.
2. As a result of the program, students will master concept and content to be successful in subsequent courses and/or on the job.
3. As a result of the program, students will master computational skills to be successful in subsequent courses and/or on the job.
4. As a result of the program, students will effectively communicate the results of chemistry laboratory investigations.

The student learning outcomes state that student will gain laboratory skills, master the concepts, content, and computational skills, and communicate effectively in order to be successful in subsequent courses and on the job. When a student graduates from the proposed program they will be able to work as a laboratory technician.

The program is consistent with the mission of the community colleges as established by the Legislature in Education Code section 66010.4, specifically paragraph a, 1, which states that community colleges "shall, as a primary mission, offer . . . vocational instruction at the lower division." This program directly applies to both of those points. It will be a vocational certificate; training for a specific trade or career. Also, all of the required courses are at first or second year college level, which is appropriate for community college students. The proposed program is also consistent with paragraph a, 3, which states that the primary mission "is to advance California's economic growth . . . through education, training, and services that contribute to continuous work force improvement." The proposed program is providing students with an occupational skill. The students will be trained to have the appropriate skills to work as a laboratory technician.

This program meets community needs while also being in direct connection to the college's mission statement. The program is training students to be productive members of society and teaching

them a valuable, vocational skill that can be of use in our region. This helps students meet their educational goals as well as enhancing the economic and social aspects of the area.

Fresno City College is an open enrollment campus, and so is this proposed program. There are not any entry criteria and there will not be a selection process for the program or the courses within the program. There are also not any additional fees that the students will have to pay. They will of course be responsible for buying their books and any class supplies (lab coat and safety goggles). The proposed program is in compliance with Title 5, sections 55201 and 58106.

Item 2. Catalog Description

The following is the catalog description for the proposed chemistry certificate program:

Chemistry is often called the "central science" since it draws from mathematics and physics and forms a necessary background for quality control programs in industry and agriculture, and criminal evidence analysis in forensics. To earn the Certificate in Chemistry, students must complete a minimum of 47-53 required semester units of program required classes. Students must maintain a minimum 2.0 GPA, including grades of B or higher in General Chemistry and a C or higher in the other courses taken to fulfill the certificate. This is not a transfer degree program. Students should consult with a counselor when planning to complete the certificate for more information. After earning a chemistry certificate, students will have the knowledge and skills required to enter the workforce as a chemical technician. These will include laboratory skills, computational skills, and communication skills. There are currently no other similar programs within the State Center Community College District. There are not any enrollment limitations. The prerequisite courses vary for each individual class. For the first semester, these include MATH 103, and eligibility for CHEM 1A and ENGL 1A.

Item 3. Program Requirements

During the development of the proposed program, the faculty was in communication with the chemistry department at California State University, Fresno. Dr. Saeed Attar, the chemistry department chair at Fresno State, is a member of the advisory committee.

The advisory committee for the proposed program has provided various recommendations. The discussions have included which classes should be required, which techniques and skills the students should learn, and what topics should be taught in the new courses. (Please see the attached minutes for the full discussion)

The recommendation was to have new quantitative analysis (lecture and lab) and organic chemistry (lab only) classes added to the department to serve this proposed program. The committee wanted to see these courses teach lab techniques that would be applicable on the job. The proposed program includes the recommended courses and the course outline was written to reflect the techniques and skills recommended by the committee.

The committee also discussed the importance of internships. The recommendation was that a student should be able to do the internship after the first year, but at any time during that year because many of the laboratories are seasonal (many are based on agriculture). They also wanted a letter grade assigned to the student as opposed to pass/fail because they felt that students would be more motivated. These recommendations have been incorporated into the program. There are not

any prerequisites for the internship, so students are able to take this course at any time and the student will receive a letter grade for the course.

Another discussion involved the courses for the program outside of the chemistry department. The committee felt that the students needed physics, but the calculus based series was not necessary. The proposed program requires PHYS 2A and 2B, an algebra based physics series. The committee also thought that a statistics background would be useful, so the proposed program has included MATH 11, Elementary Statistics, as one of the required courses.

Requirements	Dept. Name/#	Name	Units	Sequence
Required Core (38-42 units)	CHEM 1A	General Chemistry	5	Yr 1, Fall
	ENGL 1A	Reading and Composition	4	Yr 1, Fall
	MATH 11	Elementary Statistics	4	Yr 1, Fall
	PHYS 2A	General Physics I	4	Yr 1, Spring
	CHEM 1B	General Chemistry and Qualitative Analysis	5	Yr 1, Spring
	CHEM 8A	Elementary Organic Chemistry	3	Yr 2, Fall
	CHEM 18L	Elementary Organic Chemistry Lab	2	Yr 2, Fall
	PHYS 2B	General Physics II	4	Yr 2, Fall
	CHEM 100I	Chemical Laboratory Internship	2 - 6	Yr 2, Spring
	CHEM 20	Practical Quantitative Analysis	5	Yr 2, Spring
Three Electives (9- 11 units)	COMM 2	Interpersonal Communication	3	Yr 1, Spring
	BT 5	Workplace Communication	3	Yr 1, Spring
	GEOL 4	Geology of California	3	Yr 2, Fall
	BIOL 7	Field Biology	4	Yr 2, Fall
	BA 18	Business and the Legal Environment	4	Yr 2, Spring
	CRIM 3	Legal Aspects of Evidence	3	Yr 2, Spring

Required Core Total: 38 – 42 units

TOTAL UNITS: 47 – 53 units

Proposed Sequence:

Year 1, Fall = 13 units

Year 1, Spring = 12 units

Year 2, Fall = 12 – 13 units

Year 2, Spring = 10 – 15 units

TOTAL UNITS = 47 – 53 units

The following are Fresno City College's requirements for a certificate of achievement (obtained from the 2012 – 2014 catalog):

CERTIFICATE AND DEGREE REQUIREMENTS

Catalog Rights

A student may elect to meet the requirements for the associate degree from:

1. The catalog in effect at the time of the student's graduation, or
2. The catalog in effect at the time the student began continuous enrollment leading to graduation.

For this regulation, a student shall be considered to have continuous enrollment if enrolled and active in any graded class at the census point (20%) of the semester. If a student misses 24 consecutive months, the student loses his/her original catalog rights and is not continuously enrolled.

Certificates

Certificates for a course or a series of courses may be offered by disciplines/departments/divisions. A certificate may be awarded with a minimum of "C" average for finishing a course or courses leading to specific competencies. These certificates will not appear on a student's transcript.

See page 81 for a list of certificates.

Certificate of Achievement

A certificate of achievement shall be awarded to students who successfully complete a specified curriculum (minimum of 12 units) with a minimum "C" grade in each required course. The specific courses required for the certificate of achievement are identified in each occupational degree program where such certificates are awarded.

In order to receive the certificate of achievement, the student shall apply for the certificate with Admissions and Records upon completion of the requirements.

See page 81 for a list of certificates of achievement.

Certificate of Completion

A certificate of completion may be awarded after meeting the designated competencies in non-credit courses.

See page 81 for a list of certificates of completion.

Course Classification

Pursuant to revisions to the California Administrative Code, Title 5, Sections 55002 and 55062, all courses listed within the college catalog fall into one of the following classifications:

- Credit, Degree Applicable
- Credit, Nondegree Applicable
- Noncredit

See Course Classification System, page 191, for a list of credit, nondegree applicable and noncredit courses.

Graduation Requirements

It is the student's responsibility to be aware of degree and certificate requirements and of the student's standing in regard to those requirements. Students are urged to consult a counselor regarding any questions about degree or certificate requirements for the catalog year the student selects.

Exceptions to any of the regulations which follow will be judged by the "Rule of Equity" which requires that any waiver of standards be determined on the merit of the individual case.

Item 4. Master Planning

The proposed program came about because the faculty wanted to provide the students with a chemistry education that was an alternative to a transfer degree. Fresno City College serves a low income, high unemployment area. This program will teach students a vocational trade that will allow them to enter the workforce. There are multiple laboratories in the San Joaquin Valley that

graduates would be able to work at. The faculty have received letters of support from the Dean of the School of Natural Sciences and Program Director of Physical Sciences at Fresno Pacific University, the chemistry Department Chair at Fresno State, and a Research Chemist from Research, Education, Economics, and Agricultural Research Services at the United States Department of Agriculture (see attached). This program is unique because there are not any schools within commuting distance that offer anything similar.

This is consistent with the mission of the community colleges as established by the Legislature in Education Code section 66010.4, which is described in Item 1.

The mission of Fresno City College states “Fresno City College is a comprehensive community college offering innovative instructional programs in anticipation of and responsive to the life-long learning needs of our diverse population. Fresno City College provides a wide variety of quality services to support student success by engaging our students in achieving their educational goals. Moreover, we are dedicated to working collaboratively with our community to enhance the economic and social development of the region.”

The mission of the State Center Community College District states “State Center Community College District is committed to lifelong learning and success for all students by providing accountable, accessible, innovative and quality educational programs and services that enable productive citizenship in a diverse, global society.”

The proposed program is in line with the mission statements of the college and district as well. The college’s mission includes offering innovative, instructional programs aimed at the life-long learning needs of our students, helping the students meet their educational goals, and enhancing the economic and social development of the region. The proposed program will accomplish all of these points. By providing students with an instructional program, it helps them to reach their educational goals, allowing them to apply for jobs in the area which will continue to build economic and social aspects of the region. The proposed program is also in line with the district’s mission statement. The program is accessible to all, it is an innovative program with quality education, and it will help students develop into productive citizens by teaching them a vocational skill.

The proposed program is also in alignment with the Strategic Planning Goals listed in the Fresno City College and State Center Community College District Educational Master Plans. Both of these documents emphasize quality services that help students successfully compete their educational objectives as well as forming partnerships with local businesses. The certificate program is a quality service that will provide students with an education objective. The formation for the program as well as its continuation are based on a relationship with local laboratories through the advisory committee and the internship class. The program is also in compliance with Title 5, specifically 55130(b)(6) and (7) which state that the proposed program must fit in the district master plan and that the program meets the objective and conditions of the higher education in California. The objective of higher education for the state of California correlate to the program as well. These include offering vocation instruction and admitting any student.

The proposed program also meets the Accreditation Standards of the Accrediting Commission for Community and Junior Colleges of the Western Association of Schools and Colleges. These standards includes establishing student learning programs that are aligned with the purpose of the college and providing high quality instructional programs developed by faculty and advisory committees, with SLOS, that lead to a certificate. The proposed program fits all of these criteria.

The need for this program is evident from the following. According to the California Labor Market and Economic Analysis, jobs that fall into the scientific field are considered to have an economic advantage and have importance and are labeled as high-demand occupations. During the last two years, this field increased 16.6% and the trend is expected to continue. Also, it is expected that there will be 40,000 new job openings during the upcoming year, which included scientific positions. This shows that there is an immediate need for this program, because there will be a rise of jobs in this field. In terms of long term need, scientific jobs are also projected to grow long-term because of structural trends in the state's economy. It is projected that there will be an additional 50,000 jobs by 2018 in the top ten high demand occupations, which include the scientific field. This accounts for over half of the job growth in the state of California. Again, this shows the need for the program on a long term basis. (Statistics from the State of California Employment Development Department Labor Market Info Website).

The proposed Chemistry Certificate is not replacing any existing programs and there are not any similar programs at Fresno City College or within State Center Community College District, therefore it will not be creating any competition. It will fill a current need by teaching students a skill that will make them more employable and help them enter the workforce.

The proposed program has also received the support of the Program Review Committee at Fresno City College. The minutes from the meeting are attached.

The proposed program will work in cooperation with various employers (members of the advisory committee and laboratories in the local area). They will continue to provide advisement and recommendations for the program, provide locations for internships, and hire graduates. This relationship is in compliance with the open enrollment requirements for California community college courses (Title 5, section 51006 and 58100-58108).

Item 5. Enrollment and Completer Projections

Course Department Number	Course Title	Year 1 (Fall '11 - Spring '12)		Year 2 (Fall '12 - Spring '13)	
		Annual Number of Sections	Annual Enrollment Total	Annual Number of Sections	Annual Enrollment Total
BA-18	Business and the Legal Environment	20	370	20	384
BIOL-7	Field Biology	1	12	1	13
BT-5	Workplace Communication	5	32	4	20
CHEM-1A	General Chemistry	21	213	21	212
CHEM-1B	General Chemistry and Qualitative Analysis	11	95	11	113

CHEM-8A	Elementary Organic Chemistry	2	28	2	20
COMM-2	Interpersonal Communication	90	1489	87	1577
CRIM-3	Legal Aspects of Evidence	6	97	4	98
ENGL-1A	Reading and Composition	179	2421	185	2782
GEOL-4	Geology of California	1	26	1	29
MATH-11	Elementary Statistics	40	587	44	685
PHYS-2A	General Physics I	6	84	7	110
PHYS-2B	General Physics II	4	13	4	25

*No data is available for CHEM 18L, 100I, and 20 because they were newly created for this program and have not yet been taught.

According to the California Labor Market and Economic Analysis, jobs that fall into the scientific field are considered to have an economic advantage and have importance and are labeled as high-demand occupations. The jobs in this field are expected to increase and this was discussed.

Item 6. Place of Program in Curriculum/Similar Programs

The addition of the proposed programs with no cause any other program to be inactive, change, or scaled down. There are not any related programs within the college's service area.

Item 7. Similar Programs at Other Colleges in Service Area

There are not any similar programs within commuting distance. According to the California Community College Curriculum Inventory, the only similar programs in state are at East LA Community College (195 miles away), Fullerton College (245 miles away), San Diego Miramar College (335 miles away), San Diego Mesa College (335 miles away), San Diego City College (340 miles away), Grossmont College (345 miles away), and Palomar College (346 miles away).