FOOTHILL COLLEGE
Program Planning and Review
(650) 949-7240 | http://www.foothill.edu/staff/irs/

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I. Department/Program Mission	
1. State the department name and everyone who participated in creating the comprehensive program plan.	Chemistry (Richard Daley, Londa Larson, Kathy Armstrong, Joy Crevier, Amanda Norick, Victor Tam, Anna Wu, Peter Murray)
2. State the program's mission. If you don't have one, create one.	Provide undergraduate education founded on a rigorous, applied treatment of chemistry fundamentals coupled with modern analytic equipment and techniques.
3. Explain how the program/department mission is aligned with the college mission?	The department commits itself to providing access to outstanding educational opportunities for all of our students.

II. Department and Program Description & Data

1. What are your hours of operation? 08:00 – 23:00	Our offices open at: Closed for Lunch: No ☒ or Yes ☐ If yes, when: Our offices closed at:			
2. What types of classes do you offer, at what locations, and at what times? **Most classes are face-to-face on FH main campus.**	Times offered: ☒Morning (6AM-12PM) ☒Afternoon (12PM-4PM) ☒Evening (4PM-10PM)	Locations offered: ☒FH Main Campus ☐Middlefield ☐Off campus	Types Offered: ☒In Person ☐Hybrid ☐Distance	Status Offered: ☒Credit ☐Non-credit

3. List current positions and descriptions for all personnel in your area on the chart below (include position titles only, not individual names).

Faculty Positions by Discipline	**Full-time Headcount**	**Part-time Headcount**	**Brief Description of duties**
Chemistry	4 (from sheet)	7	Instruct & COR Development
Position Title	0	0	Hazmat
Position Title	0	0	
Position Title	0	0	
Position Title	0	0	
Position Title	0	0	
Management and Classified Positions	**Full-time Headcount**	**Part-time Headcount**	**Brief Description of duties**
Lab Technician	1.0	.25	Lab Prep + Hazmat
Position Title	0	0	
Position Title	0	0	
Position Title	0	0	
Student Worker Positions	**Hours per Week**	**Months per Year**	**Brief Description of duties**
Lab Assistant	8	10	Assist at window
PSME Graduate Student	24	8	Summer limited support
Position Title	0.00	0	

4. Given the data, describe the trends in enrollment, FTES, and Average Class size. What are the implications for your department?	Chemistry FTES is increasing at a constant rate of about 7% year-over-year. The PSME 2006-7 is an aberration and not consistent with the YOY growth. Much of the growth is in the transfer level Chem 1 and 12 series. Class size is fixed by lab size and safety.
5. Student Achievement: Given the data, describe the trends in overall success rates, retention rates, and degrees and certificates awarded. What are the implications for your department?	The retention rates are higher than expected based on the level of prerequisites and difficulty of the course material. The success is improving but is much lower than what faculty would like to achieve. What is not shown is the course sequence success, which needs to be increased. Also the entry level students are underprepared and need additional support.
6. Student Equity: Given the data, describe the trends with respect to underrepresented students. How will your program address the needs/challenges indicated by the data?	The majority of students are Asian, white, Hispanic or none which match the physics 4 series populations. The department will create a pathway going forward by working with counseling and Outreach to encourage students in STEM pathways.
7. Given the data, discuss how the FTEF trends and FTEF/FTES ratio will impact your program. Include any need for increasing or reducing your program faculty. What are the implications for your department?	The number of Chemistry course offerings will increase until 2012F and when PSEC opens will increase even more. The FTEF/FTES ratio is too low. Is has become very difficult to hire & retain good PT. The FT faculty are stretched thin revising labs and course materials for micro-chemistry (green) and online student support.
8. Given the data for distance learning, describe the trends related to success, retention, and student satisfaction. Discuss solutions to ensure that rates match or exceed those of comparable traditional format courses.	The online is limited to th use of technology augment in class teaching and homework.
9. Optional: Provide any additional data relevant to your program. (Indicate the source of the data).	2003 Report by Johnstone; http://research.fhda.edu/researchreports/file_library/B17%20-%20Sequence%20Course-Grade-Success%20v4.0.pdf
10. Are you seeing trends that are not reflected in the data cited above? If yes, please explain.	The student success is the course sequence is much lower than desired. Chem25/1A/B/C, Chem 12A/B/C and Chem 30A/B.

Summary of Planning Goals & Action Plans				
11. Identify 3-6 operational goals and link them to one or more college strategic initiatives or to your operations.				
Department Operational Goals	**College Strategic Initiatives**			
Identify 3-6 operational goals	Building a Community of Scholars	Putting Access into Action	Promoting a Collaborative Decision-making Environment	Operations Planning
Increase student success in sequence courses.	☒	☒	☐	☒
Expand course offerings	☒	☒	☐	☒
Improve teaching consistency	☒	☒	☐	☐
New Learning Technologies	☒	☐	☐	☒
Develop K-12 Teachers	☒	☒	☐	☒
Lower book costs. Adopt an open source text?	☒	☒	☐	☒

12. What is your plan for accomplishing your goals?		
Department Operational Goals	**Activities**	
Increase student success in sequence courses. Improve teaching consistency	• Expand and strengthen the core lecture and lab sequence. The lectures need to reduce the time students take notes and expand the time to understand concepts and develop chemistry literacy. Goals are: o The students will be exposed to a variety of learning environments that are conductive to Foothill's multicultural student population. o The students will increase their self-esteem and confidence in their knowledge and ability in chemistry. o The students will learn to value chemistry and will become aware of the use of chemistry in various careers and possible future vocations. o The students will understand and use chemical vocabulary and symbolic	• Increase FT Faculty required • Release time for FT faculty

	notation to represent and communicate ideas. o The students will use appropriate technology throughout the course including computers for data acquisition and analysis, sophisticated instrumentation, and software models.		
Develop K-12 Teachers	• Strengthen the Silicon Valley K-12 science programs. Foothill will encourage students to become teachers and also provide direct support to science teachers with a Foothill Student Learning program.	• Requires funding for student stipends.	
Expand course offerings	• Interdisciplinary blending of Science, Technology, Engineering and Mathematics (STEM) to provide the students an appreciation for symbiotic relationships and not view them as separate disciplines. Research has shown the best predictor for a student's success in science is their math competency. Also the chemistry program will introduce students to other disciplines such as nanoscience, biology and environmental sciences; each requires unique instrumentation.	• Release time for faculty • Capital equipment budget for instrumentation	
New Learning Technologies	• The students will need access to a wide range of equipment based on the approach for solving the generic problem.	• Requires release time (.111) per quarter to update courses to be scenario based.	

13. Are additional resources needed to accomplish your department operational goals? If yes, identify the resource, as well as the purpose and rationale for each resource.

Identified Resource	Purpose	If requesting funding, provide a rationale of how each request **supports one or more college strategic initiative and/or supports student learning.**

III. Curriculum	
Curriculum Overview	
1. How does your curriculum address the needs of diverse learners?	The instruction has shifted to inquiry based versus the traditional lecture. Alternate materials provided to supplement existing materials. A diversified approach to learning in the lecture sessions is key to reaching quiet/struggling/ESL students, that is to say, less lecturing and more hands-on activities that engage the students and gives them ownership of their success.

2. How does your curriculum respond to changing community, student, and employer needs?	The courses are being updated and revised to meet student needs. potential new course offerings: (1) a 1 or 2 unit chemistry honors seminar with rotating topics as different faculty teach it-supposedly the honors institute is very eager for this to happen and is guaranteeing enrollment due to a recently offered and very popular biology seminar (the demand is NOT for something that is just advanced chemistry, but rather topics like Chemistry for Californians or The Chemistry of Cooking (2) team teaching with physics to offer a course targeted at high school science teachers who need to refresh their content knowledge (many teachers have a general science background and are thrown into teaching courses outside of their specialty or degree, or perhaps it has just been a long time and they would like a refresher course) (3) An Environmental Chemistry course might work within the context of a GE transfer course and with Sustainable Engineering. Perhaps the ideas could be piloted in the honors seminar before attempting a more survey-like freshman GE course. Any additional course offerings would come at a cost to our core curriculum. This will require release time to develop the course, the limited unit count minimizes the strain on Full time commitments and it may attract more strong students to our campus
3. How does your curriculum support the needs of other certificates or majors?	Chem 30A and 30B directly support nursing and the Allied Health programs. The Chem 1 & 12 series support the science and PreMed students.

4. Do your courses for the major align with transfer institutions?	Yes. Our curriculum and course content in general chemistry is set by the ACS and cannot be modified ad hoc. Minor changes can be made but the core material needs to be covered adequately especially for students that are moving into organic chemistry or that are going to take a standardized exam like the MCAT or DSAT. The American Chemical Society must dictate our course content since articulation demands it (not to mention the fact that the curriculum guidelines are very well thought out). ACS has made recent changes to allow for greater flexibility in the programming of the content (content is mostly intact, but organization can be altered). These changes lead to a restructuring of the General Chem in freshman year Organic Chem in Sophomore year at some four-year institutions. If that becomes widespread, we will have to respond to it
5. Do your courses have appropriate and necessary prerequisites? Identify any challenges and plans to address the challenges.	Chem 25 and Chem 1A may increase the math requirement to raise student preparedness.
6. Review the attached curriculum report for currency. What is your plan to address the deficiencies? (Consider: Title V, course deactivation, updated prerequisites, cross-listed courses, measuring student learning outcomes, curriculum sheets, certificates and degrees).	The courses are current.
7. Does your program offer distance education courses?	No. Just for supplements and homework.
8. If you offer distance education courses, list one or two short examples of how your distance education courses provide for effective interaction between students and faculty.	
9. If you offer distance education courses, list one or two short examples of how your distance education courses provide for effective interaction among students.	

College Skills (Pre-collegiate) Overview (Data Available Fall 2009-filling out this section is optional)	
10. What college skills should a student have before entering your program?	Chemistry in HS, study skills, and strong foundation in math (algebra).

11. Given the data, comment on the effectiveness of the assessment and placement of college skills students into your program.	Looking at the data our success in chemistry is very good given the difficulty and time demands of the subject matter. We are consistently in the 70-75% range overall. Our success with the underrepresented (minority) groups falls by 10-20% compared to the average, not inconsistent with the rest of the campus. Since the data does not give retention and success rates for each sequence as asked in the question, it is assumed the average of 76% for 2008-09 fiscal maps into a sequence like 1A to 1C. **However, most students that do not succeed in general chemistry fail because of inadequate math skills or too little time outside of class to study.** Average (C) students have an unrealistic expectation of their own success in the core science classes, They have already shown by their C average they are not ready for a prime-time core science curriculum. To improve success in general chemistry we propose five items 1) add a math advisory of precalculus to chemistry 1A, 2) develop a math test to adequately gauge a students math skills entering 1A and 1B, 3) stress to the students the time commitment needed in chemistry for success and 4) counsel each student that appears to be at risk mathematically or cannot commit the necessary time, and 5) keep class sizes small. This push for all double lectures surely hurts retention and success for the students. The word "Community" needs to be reflected in the classroom size. Maybe the first week or two of 1A (and 1B) lab could be used to individually address the students that appear at risk to the instructors. Curriculum changes may help as well, it is still unclear if the Mastering Chemistry program has increased success or is simply another thing students feel they have to just get done, and don't see it as a learning tool.

12. In what ways are you addressing the needs of the college skills students in your program?		
13. How are faculty in your program collaborating with other disciplines and services to meet the needs of college skills students?		
Program Mapping		
14. If applicable, identify any sequence of courses that are part of your program. List in the order that they should be taken by students.	Chem 25, 1A-C, 12A-C Chem 30A-B	
15. For your courses that are part of a sequence – are the student learning outcomes well aligned with the next course in the sequence? Please work with the college researcher to answer this question - once your sequence of courses is identified.	The SLOs are aligned in as sequence.	
16. If applicable, describe any capstone course, signature assignment (project, service learning, portfolio), or exam that demonstrates knowledge, skills, and abilities, indicating successful program completion?		
Course Scheduling & Consistency		
17. Given available data, describe the trends in the scheduling of morning, afternoon, and evening classes, as well as Friday, Weekend, and distance education classes. Comment on the feasibility of offering classes at non-standard times.	The lecture classes can be scheduled anytime. The lab classes a best offered in the afternoons.	
18. Are required courses scheduled in appropriate sequence to permit students to complete the program in the prescribed length of time? If yes, describe the rationale upon which the sequence is based. If no, what is the plan to change the scheduling pattern? What are the barriers that prohibit implementation of the changes? Explain.	Yes. The courses are in the PSME Tracks.	
19. How does the department determine that classes are taught consistently with the course outline of record?	The courses are closely monitored by the Dean. The faculty need release time to assist with PT monitoring, especially in the evenings. The large turnover in PT faculty has caused both a mentoring and monitoring issue.	
Summary of Planning Goals and Action Plans		

20. What are your goals with respect to curriculum and how will those goals be measured?			
21. Are additional resources needed to accomplish your curriculum goals? If yes, identify the resource, as well as the purpose and rationale for each resource.			
Identified Resource	Purpose	If requesting funding, provide a rationale for how each request **supports one or more college strategic initiative and/or supports student learning.**	
Release Time	Course development and update	Supports scholars and student learning	
Release Time	Monitor and Mentor PT Faculty	Supports scholars and student learning	
New FTEF	Maintain course quality and increase number of sections.	Supports scholars and student learning	

IV. Learning Outcomes

Student Learning Outcome and Program Learning Outcomes Assessment

1. Be sure and complete your **course-level student learning outcomes** assessment for each course through the C3MS system.
2. **Program Learning Outcomes** in this section will be updated annually and posted on the Learning Outcomes webpage.

• Intended Program Outcome 1: **Knowledge of current theories and applications in the field of chemistry**

This Program Learning Outcome meets the Core College Mission of:	Basic Skills ☐	Transfer ☒	Workforce ☒
Relationship to Institutional Learning Outcomes • *Communication* • *Computation* • *Critical Thinking* • *Community and Global Consciousness*	Means of Assessment/Criteria for Success *What are the criteria for success? What tools will be used to establish and measure success?*	Summary of Data: December 2011 *Summarize the findings. How close were the results to the criteria for success?*	Use of Results: July 2011 *What do the data tell us about our process? What, if anything, do we need to do to our program or department to improve? What resources are necessary?*
Computation & Critical Thinking		**Chem 1A, starting Fall 2011 and ongoing Standardized Achievement and Self-Report Tests: Students will be tested on six core topics in chemistry that correlate to topics used in later assessments** **Chem 1C, starting Spring 2012 and ongoing Standardized Achievement Test: ACS General Chemistry Exam (or equivalent)** **Chem 12C, starting Spring**	**The Chem 30A and Chem 30B starting Fall 2011 and ongoing Standardized Achievement and Self-Report Tests. Since these are terminal courses for the Allied Health programs, the courses will be assessed individually.**

		2013 and ongoing Standardized Achievement Test: ACS Organic Chemistry Exam	
• Intended Program Outcome 2: Skill in problem solving and critical thinking			
This Program Learning Outcome meets the Core College Mission of:	Basic Skills ☐	Transfer ☒	Workforce ☒
Relationship to Institutional Learning Outcomes • *Communication* • *Computation* • *Critical Thinking* • *Community and Global Consciousness*	Means of Assessment/Criteria for Success *What are the criteria for success? What tools will be used to establish and measure success?*	Summary of Data: December 2011 *Summarize the findings. How close were the results to the criteria for success?*	Use of Results: June 2011 *What do the data tell us about our process? What, if anything, do we need to do to our program or department to improve? What resources are necessary?*
		Chem 1A, starting Fall 2011 and ongoing Standardized Achievement and Self-Report Tests: Students will be tested on six core topics in chemistry that correlate to topics used in later assessments **Chem 1C, starting Spring 2012 and ongoing Standardized Achievement Test: ACS General Chemistry Exam (or equivalent)** **Chem 12C, starting Spring 2013 and ongoing**	**The individual classes will be evaluated to determine if a portion or elements of a course are not providing the foundation for the subsequent courses. This could include both student success skills as well as math descriptors.**

		Standardized Achievement Test: ACS Organic Chemistry Exam	

• Intended Program Outcome 3: Facility in the safe handling of chemicals and the execution of common laboratory techniques

This Program Learning Outcome meets the Core College Mission of:	Basic Skills ☐	Transfer ☒	Workforce ☒
Relationship to Institutional Learning Outcomes • *Communication* • *Computation* • *Critical Thinking* • *Community and Global Consciousness*	Means of Assessment/Criteria for Success *What are the criteria for success? What tools will be used to establish and measure success?*	Summary of Data: December 2011 *Summarize the findings. How close were the results to the criteria for success?*	Use of Results: June 2011 *What do the data tell us about our process? What, if anything, do we need to do to our program or department to improve? What resources are necessary?*
		Chem 1A, starting Fall 2011 and ongoing Standardized Achievement: Laboratory safety quizzes will be administered at the beginning of the quarter. Observations: Demonstration of achecklist of laboratory skills based on the successful completion of key experiments **Chem 1C, starting Spring 2012 and ongoing Matrices: Evaluation of student's laboratory notebook that**	**The Chem 30A and Chem 30B starting Fall 2011 and ongoing Standardized Achievement: Laboratorysafety quizzes will be administered at the beginning of the quarter**

		should contain safety information on the handling and disposal of hazardous waste. **Observations: Demonstration of a checklist of laboratory skills based on the successful completion of key experiments with increasing complexity** **Chem 12C, starting Spring 2013 and ongoing** **Standardized Achievement: Laboratory safety quiz on advanced organic techniques** **Matrices: Evaluation of student's laboratory notebook that should contain safety information on the handling and disposal of hazardous waste** **Observations: Demonstration of a checklist of laboratory skills based on the successful completion of key experiments with increasing complexity**		

V. Departmental Engagement		
1. What standing committees, if any, does your department maintain? What are the committee charges and membership?	There are regular department meetings, HAZMAT training and PSEC coordination. A safety committee that meets once a quarter.	
2. What interdepartmental collaboration beyond college skills has your department been involved in during the past 4 years?	The chemistry, physics , math and biology coordinate and collaborate on scheduling, articulation and grants. The sciences are very collaborative and often work together.	
3. What has your department done since its last program review to establish connections with schools, institutions, organizations, businesses, and corporations in the community?	Working with local K-12 schools. Participate in CSUEB and SJSU articulation meeting.	
4. In what ways if any, are you or have you worked with area high schools to align curriculum from the high school to your course?	This is not possible since the chemistry courses need to articulate with 4 year colleges.	
5. In what ways if any, are you working with CSUs, UCs, private, or out-of-state institutions to align courses and develop articulation agreements?	This is complete for Chemistry.	
Summary of Planning Goals and Action Plans		
6. What are your goals with respect to departmental engagement and how will those goals be measured?	The department needs to continue doing cooperative work such as scheduling and internships at Stanford.	
7. Are additional resources needed to accomplish departmental engagement goals? If yes, identify the resource, as well as the purpose and rationale for each resource.		

Identified Resource	Purpose	If requesting funding, provide a rationale for how each request **supports one or more college strategic initiative and/or supports student learning.**	
Release time	HAZMAT training and documentation for PT faculty.	SAFETY	

VI. Professional Development	
1. List a sampling of professional development activities that faculty and staff have engaged in during the last two years.	Most of the faculty have attended one or more sessions of the Edward Teller Symposiums conducted at Lawrence Livermore National Laboratories. These symposia focus on brining current research on energy, chemistry, biology, etc. into the college curriculum. Other activities include courses on web design and classroom observation of exemplary faculty
2. What opportunities does your department take to share professional development experiences with colleagues?	This is where mandatory HAZMAT and Chemical Hygiene Plan training would be necessary. Requiring PAID HAZMAT training for new hires should be a priority.
3. In what ways have faculty shared, discussed, and used professional development activities to improve program effectiveness?	The FT faculty share their online web information. The FT Faculty have developed a series of 10 minicourses to assist PT faculty in student limitations.
4. In what ways have staff shared, discussed, and used professional development activities to improve program effectiveness? What professional development needs do you have in the coming years?	SEE BELOW
5. Are there unmet or upcoming professional development needs among faculty in this program? If yes, then please explain a proposed plan of action for addressing this need and any necessary resources.	The ACS (American Chemical Society) Conference is in San Francisco this coming March 2010 during part of finals week. Although it'll be hectic, I think if a team of us went, it'll start to get things flowing where we can really see new teaching methods presented that can be incorporated into our own classrooms and labs. We discussed maybe paying for a safety expert (someone in education) to come and give the FT faculty a deep training day; we can call it a safety summit? We also thought it would be a great idea to mandate safety training for all new PT faculty each quarter, for which everyone would be paid (say $100, similar to the PT orientation), including the trainer, which would be a FT faculty member (just back from their safety summit)!
Summary of Planning Goals and Action Plans	

VI. Professional Development			
6. What are your goals with respect to professional development and how will those goals be measured?		HAZMAT inspection results minimized PT faculty have adequate support materials and training.	
7. Are additional resources needed to accomplish professional development goals? If yes, identify the resource, as well as the purpose and rationale for each resource.			
Identified Resource	Purpose	If requesting funding, provide a rationale for how each request supports one or more college strategic initiative and/or supports student learning.	
Release Time + $5K for consultant.	**HAZMAT Training**	**Operations and Student Success + SAFETY**	
$3K	**ACS (American Chemical Society)**	**Building a Community of Scholars**	

VII. Support Services		
Support Services		
Consider the support services needed by your program when reflecting over the following questions		Comments or explanations of barriers and solutions.
1. Is there adequate clerical or administrative support for this program?	**Yes** | No	Use the PSME shared resources.
2. Are there sufficient college and departmental computer labs available to support this program?	Yes | **No**	Requires PSEC. The number and variety of classes are currently restricted in 5600.
3. Are the library and media resources provided by the college sufficient to support up-to-date program instruction?	**Yes** | No	Could use access to digital engineering databases
4. Are adequate services provided in compliance with program needs for meeting health and safety guidelines?	Yes **| No**	Require more HAZMAT Training.
5. Are the custodial services to this program in compliance with program needs for meeting health and safety guidelines?	**Yes** | No	
6. Are accommodations for students with disabilities adequate, including alternative media, testing, and tutorial?	**Yes** | No	
7. Are general tutorial services adequate?	Yes | **No**	Need funding for graduate students with degrees in chemistry.
8. Are academic counseling and advising services available and/or adequate to support students enrolled in the program?	Yes | **No**	Counseling is unfamiliar with chemistry courses and transfer. The student's class plans don't use the tracks so students can complete all their courses in a timely fashion.
9. Do students have access to and can they effectively use appropriate information resources?	**Yes** | No	
10. Specifically related to distance learning, do you have appropriate faculty support services and/or effective training for faculty teaching online?	Yes | No	NA
Marketing & Outreach		

11. What impact do you feel the college catalog, class schedule, and online schedule of classes have on marketing your program? Does the marketing accurately reflect your program, requirements, and services available?		They are very important to making students aware. The development of class schedules for marketing is too inflexible. If we can get the Honors Institute courses/seminars running, then I feel we should market aggressively to the campus community (and not just our chemistry students). Chemistry always gets a "bad reputation" when it comes to the sciences. Considering we're the central science, we need to prove that to our college
12. What impact does the college or departmental website have on marketing your program?		This will become more important when updated.
13. Is there any additional assistance from marketing that would benefit your program? If yes, explain.		No. Need for fund raising.
14. If you were to collaborate with the Outreach staff, what activities would be beneficial in reaching new students?		No. They are ineffective.
Programs, clubs, organizations, and special activities for students		
15. List the clubs that are designed specifically for students in this program. Describe their significant accomplishments.		
16. List any awards, honors, scholarships, or other notable accomplishments of students in this program.		Annual PSME Awards
Summary of Planning Goals and Action Plans		
17. What are your goals with respect to support services and how will those goals be measured?		Need to establish PSME STEM unique student services.
18. Are additional resources needed to accomplish your support services goals? If yes, identify the resource, as well as the purpose and rationale for each resource.		
Identified Resource	Purpose	If requesting funding, provide a rationale for how each request **supports one or more college strategic initiative and/or supports student learning.**

VIII. Career and Technical Education Programs	
Response to Labor Market Demand	
1. How does your program meet labor market demand? Cite specific examples and sources.	**DOES NOT APPLY**
2. Given the number of enrollments projected for the program and necessary to support the program, are there enough openings locally to permit placement of the expected number of graduates?	
3. Has the job market been: declining slowly? steady? growing slowly? growing rapidly? newly emerging?	
4. What is the average starting salary a student can expect to make after completing a certificate or degree?	
5. What is the projected average percentage of salary increase in 2 years? 4 years?	
Response to Program Credibility/Viability	
6. If advanced degrees are typically needed for career advancement, will the courses required for this program transfer towards completion of the requirements for those degrees?	
7. If yes, are the courses in your program aligned and/or articulated with the four-year institutions.	
8. Will this preparation permit students to stay current in their field? Does the program teach basic principles and theory, as well as applications? Is it current? Is it of sufficient rigor to assure the capacity to continue to follow the literature and learn new techniques? Is it of sufficient generality to allow for later shifts in career?	

9. Does this preparation provide a significant secondary expertise to primary careers? If yes, explain the purpose of the training – is it designed primarily or in part to meet the needs of those already employed for upward mobility, entrepreneurship, or other career upgrade?		
10. Describe any pre-collegiate or noncredit pathways that exist to direct students into the program?		
11. How does this program prepare students for competitive employment?		
Advisory Board		
12. List your advisory board members. The list of advisory board members should include their job titles as well as their affiliations, and an accompanying explanation should make clear that the professionals on this committee represent those within the industry who would hire graduates of a proposed CTE program.		
13. List the dates and number of members attending of your most recent advisory board meetings.		
14. What have been the major outcomes of your advisory board meetings? Of those outcomes, which have been acted upon, and what is your plan of action with regard to other outcomes discussed?		
Program Accreditation		
15. Is this program subject to approval by specialized state, regional, or national accrediting agencies?		
16. What is the program's accreditation status?		
17. Indicate recommendations of the most recent accreditation evaluation of the program and corrective actions taken or planned. Most recent accreditation report and all additional pertinent documentation and explanations should be available on site for consultant review.		
18. Provide a brief analysis of student performance on licensure or board exams on first attempt.		

19. What indicators does your program use to determine success of our students after completion?			
20. Does your program survey employers for satisfaction of our students who have earned a degree/certificate? Provide brief analysis of employer satisfaction.			
21. Does the department's analysis of labor market demand, advisory board recommendations, and accreditation status (if applicable) reflect the data?			
22. Have any/all issues been identified in the program plan and are they adequately addressed with appropriate action plans? Explain.			
Summary of Planning Goals and Action Plans			
23. What are your 4-year goals based on areas identified in the Career and Technical Education section of the program plan and how will those goals be measured?			
24. Are additional resources needed to accomplish career and technical education goals? If yes, identify the resource, as well as the purpose and rationale for each resource.			
Identified Resource	Purpose	If requesting funding, provide a rationale for how each request **supports one or more college strategic initiative and/or supports student learning.**	

IX. Resource Planning: Personnel, Technology, Facilities, and Budget	
Faculty	
1. How does your PT/FT ratio impact the program?	Will require a FT Faculty in next year.
2. What staffing needs do you anticipate over the next four years. (Consider: retirements, PDL, reassigned time, turnover, growth or reduction of the program)	Require 1 FTEF in 2011-12 to sustain the current program and any growth. Chemistry wait lists are large indicating a student demand. It has become much more difficult to hire and retain PT Chemistry faculty. 7 PT faculty have not been rehired or found FT positions in the last year. If enrollments continue to increase, we need another FT faculty. We are only running at just over 50% FTEF without FT faculty on sabbatical, only 36% FTEF last year and probably only 40% this year. Considering this is a lab science with major safety and HAZMAT concerns this is quite frankly a ridiculous ow level of FT staffing. At CCSF they run at about 80% FTEF - they understand that to maintain an effective science department you need FT faculty. In addition, they hire PT faculty on a FT basis to replace FT faculty on sabbatical! Our constant ever-changing PT faculty pool really hurts the continuity of the department and limits our effectiveness as a whole. The FT faculty spend way too much time on PT faculty issues.
Classified Staff	

3. What staffing needs do you anticipate over the next four years. (Consider: retirements, PDL, reassigned time, turnover, growth or reduction of the program)	Will require additional PT Classified Lab Tech if the number of sections increase. This will definitely be required in PSEC. Need graduate students in PSME Center. Estimate is $15K/year. TAs in teaching the 32 capacity INTRODUCTORY courses. It was such a help to me in teaching 25 to have another person (a previous excellent student of mine) in the lab to answer the nonstop questions and to keep us all safe because I can only do so much and be in one place at a time! I think all of the courses in general chemistry could benefit; organic is less clear to me as it seems very specialized and would be difficult to recruit a past student?
Technology and Equipment	
4. Are the existing equipment and supplies adequate for meeting the needs of the instructional program?	Hopefully funded in PSEC. *Organic HPLC *New GC with digital connection to a computer and printer (versus the 1970's plotter we have now). *UV-Vis Spectrometer for the organic chemistry lab *IR Spectroscopy for probing reactions in situ *ChemDraw Software Site License Require B-Budget funding for equipment maintenance.
5. Do you have adequate resources to support ADA needs in your physical and/or online courses and classrooms?	Yes.
6. Is the technology used in your distance education courses appropriate to the nature and objectives of your courses? Please explain how it is appropriate or what changes are underway to make it appropriate. Explain.	NA
Technology & Equipment Definitions	
• **Non-instructional Equipment and Supplies:** includes equipment for "office use" that is non-instructional and that is not used in a lab or classroom – it includes non-programmatic equipment for individual instructors and staff, such as a desktop computer for office use. Desktop technology (computers, printers, scanners, faxes) and software requests are processed through your Dean or Director. • **Need a PDF scanner .**	

• **Instructional Equipment and Supplies:** includes technology, software, and supplies used in courses or labs, including occupational program equipment. Instructional program equipment requests are prioritized by the department and then by the Dean or Director. • **Need laptop computers for PT faculty for course development and presentation. The faculty take the laptops into the lecture rooms and labs which just have projectors and NO desktop computers.**		
• **Durable Equipment and Furniture:** includes non-instructional, non-technology equipment (chairs, tables, filing cabinets, vehicles, etc.) necessary to improve the operational functioning of the program/department.		
• **Note:** It is recommended that divisions perform and maintain an inventory of all their technology and equipment.		
Facilities		
7. Are your facilities accessible to students with disabilities?	**Yes**	
8. List needs for upgrades for existing spaces	**NA**	
9. List any new spaces that are needed		
10. Identify any long-term maintenance needs.		
11. Are available general use facilities, such as classrooms, laboratories, and faculty office/work space adequate to support the program? Please explain.		
12. Are work orders, repairs, and support from district maintenance adequate and timely? Please explain.		
Budget		
13. Are the A-budget and B-budget allocations sufficient to meet student needs in your department?	**Need A budget for additional FT and PT faculty.** **Need B-Budget for PSME Center Graduate Students & HAZMAT.** **If Lottery $ remains, B-Budget is adequate in these tight times.**	
14. Describe areas where your budget may be inadequate to fulfill program goals and mission.	**Funding for HAZMAT resources.**	
15. Are there ways to use existing funds differently within your department to meet changing needs?	**The amount is too small to reallocate.**	
Summary of Planning Goals and Action Plans		
16. What are your goals with respect to resource planning and how will those goals be measured?		
17. Are additional resources needed to accomplish your resource planning goals? If yes, identify the resource, as well as the purpose and rationale for each resource.		
Identified Resource	Purpose	If requesting funding, provide a rationale for how each request supports one or more college strategic initiative and/or supports student learning.

Equipment Maintenance	**Keep existing equipment functioning.**	**Required for student learning and meeting articulation requirements. $7K/Year; NMR, GC, GC/MS, FIR.**	

X. Final Summary of Goals, Commitments to Action, and Resource Requests

1. Upon review of this program plan, provide a comprehensive summary of goals met or in progress and resources awarded from the previous program plan.

Goal /Purpose – Met or In Progress	Resource(s) Awarded	Related Learning Outcomes	Related Strategic Initiative or Core Mission
• Increase student success in sequence courses and improve teaching consistency.			
○ Mentor and monitor PT faculty, in particular the evening sections. Create consistency in level of teaching.	**Faculty Release time to mentor PT faculty as well as work on new pedagogy**	**PLO 1&2**	**Transfer Work Force**
○ Develop a math test to determine the preparedness for chemistry	**Not completed- Part of STEMway**		**Transfer Work Force**
○ Create booster classes (workshops) and gateway testing in PSME Center to raise student's foundational skills	**Not completed- Part of STEMway**		**Transfer Work Force**
○ Continually (at least once per year) update the SLOs and modify the courses accordingly	**Done and continuing**		**Transfer Work Force**
○ TAs in large labs for both safety and pedagogical	**Not funded**		

reasons. ○ Add a math advisory of precalculus to chemistry 1A	**Rejected by Articulation Officed**		**Transfer Work Force**	
○ Develop a math test to adequately gauge a students math skills entering 1A and 1B	**Not completed- Part of STEMway**		**Transfer Work Force**	
○ Stress to the students the time commitment needed in chemistry for success and	**Added in Green Sheets**		**Transfer Work Force**	
○ Counsel each student that appears to be at risk mathematically or cannot commit the necessary time,	**Done**		**Transfer Work Force**	
• Keep class sizes small. This push for all double lectures surely hurts retention and success for the students. The word "Community" needs to be reflected in the classroom size. Maybe the first week or two of 1A (and 1B) lab could be used to individually address the students that appear at risk to the instructors.	**Enrollment increased 7% over prior year. Curriculum changes may help as well, it is still unclear if the Mastering Chemistry program has increased success or is simply another thing students feel they have to just get done, and don't see it as a learning tool.**	**PLO 1, 2 & 3**	**Transfer Work Force**	

• PSME's Aurora K-12 Aurora programs promote interest in the fields of science education by developing and disseminating programs designed to teach students about educational requirements. • Contract a safety expert (HAZMAT) to train the FT (deep learning) o Provide PT training each year	**Require external funding to continue program. Hopefully from the Foundation.** **Training developed by Faculty member, Richard Daley**	**PLO 1, 2** **PLO 3**	**Work Force** **Transfer** **Work Force**

2. Upon review of this program plan, provide a summary of current or continuing goals and resources needed.

Note: If you are requesting resources this year, these items have to be included in your current program review. If you want the college to understand your full range of need, list every current and upcoming resource need in this section.

Goal/Purpose – Current or Continuing	Resource(s) Requested (Costs need to be included)	Related Learning Outcomes	Related Strategic Initiative or Core Mission
All Prior goals are continuing	**All Prior goals are continuing**		
1. **1 FTEF**	**Completed 2011 Fall hire THANKS.**	**1 ,2 3, 4 from above**	**Transfer** **Work Force**
2. **Hazmat Safety and expansion of evening Chemistry class**	**This request is to replace the evening PT technician with a FT technician that**	**1, 2, 4 from above**	**Transfer** **Work Force**

offerings	**would work in the afternoons and evenings. The additional FT laboratory technician is required in order for the department to continue growing and still meet current OSHA/ HAZMAT guidelines.**			
3. **Counselors, career counselor and outreach counselor dedicated to PSME**	**Provide knowledgeable counseling and advice to students.**	**Students recruited to come to FH for STEM, to be placed (assessed) correctly, given schedules that will permit they to be successful in the minimum amount of time, and have multiple options when leaving FH.**	**Transfer Work Force**	
4. **Coordinator/Mentor Release time**	**Continued release time of one lab period. Has been past practice since 1995.**	**1,2 4 above**	**Transfer Work Force**	
5. **Additional Lottery Funding for chemicals and glassware**	**The labs are being redesigned to meet PLOs as well as more "green". Request $10,000 additional.**	**1,2 4 above**	**Transfer Work Force**	
6. **PSME Center Graduate Tutors**	**PSME Center B-Budget funding of $35K for Graduate Students in the PSME Center.**	**1,2 above**	**Transfer Work Force**	

Supervising Administrator Signature			*Completion Date*	