Santa Rosa Junior College
Program Resource Planning Process

Chemistry 2014

1.1a Mission

The mission of the Chemistry program (now part of the Department of Chemistry and Physics) at Santa Rosa Junior College is to provide a comprehensive program for general education, transfer, and career and technical education students, and to engage in community outreach. The program emphasizes the teaching and practice of chemistry in a manner that fosters student success, is safe and environmentally responsible, and prudently manages available resources.

1.1b Mission Alignment

The Chemistry program's mission is in keeping with the College's mission. Specifically, we focus on preparing students forSTEM transfer and CTE disciplines that require Chemistry.

In terms of Strategic Planning Goals, the Chemistry program is directly involved in the following:

B. We foster learning and academic excellence by hiring and mentoring outstanding faculty, and offering rigorous, relevant, and up-to-date curriculum.
C. We strive to serve our diverse community through our program.
E. We contribute toward a culture of sustainability by having an awareness of of the impact of running our program on the environment and choosing responsible and sustainable practices and experiments.

1.1c Description

The Chemistry program is housed within the Department of Chemistry and Physics and provides rigorous preparation for STEM transfer and CTE students.

The program is staffed by six full-time and several adjunct (part-time) instructors who have great enthusiasm for teaching. The program offers day, evening, and weekend classes at the Santa Rosa and Petaluma campuses. The program maintains high educational standards and places primary emphasis on quality undergraduate instruction.

The Chemistry program takes pride in well-maintained and equipped laboratories that include a network of over 40 computerized data acquisition stations in addition to the typical laboratory equipment. Modern instruments regularly used by students include a GC/MS, NMR, FTIR, Fast Sequential AA, and several UV-VIS spectrometers.

The program is staffed by two full-time laboratory technicians who ensure that reagents, supplies and equipment are available and in good working order for all experiments.

High standards for environmental health and safety are diligently maintained.

1.1d Hours of Office Operation and Service by Location

At the Santa Rosa campus, the chemistry program offers classes from 7:30 am until 6:00 pm Monday, Tuesday, Wednesday and Friday, and 7:30 am until 10:00 pm Thursday, and on Saturdays from 9:00 am until 3:00 pm. At the Petaluma campus, the program offers two courses (5 sections total) of Chemistry for the Allied Health Sciences and Basic Chemistry Skills, Monday through Thursday. During all hours of operation on both campuses, a Coordinator of Science Labs, a Science Lab Instructional Assistant or a Science Lab Technician is on duty. An AAII staffs the Santa Rosa campus 28 hours per week.

1.2 Program/Unit Context and Environmental Scan

The chemistry department is staffed by energetic and dynamic individuals, dedicated to fulfilling our mission by providing a comprehensive program for transfer and CTE students. Although a relatively small percentage of our students go on to a bachelor's program in Chemistry, our program serves those pursuing degrees in the Life Sciences, Physical Sciences, Engineering, and pre-professional programs such as the medical, dental, and veterinary fields. Our Chemistry 60 course serves as an entry point for students who wish to enroll in the nursing and dental hygeine programs. We also have a basic skills course offering, Chem 100, which helps to prepare students for a transfer or CTE path that requires more advanced chemistry courses.

There is currently no TMC (Transfer Model Curriculum) for Chemistry, but when that is developed and approved, it is possible that the department will need to modify curriculum, scheduling and/or the A.S. Chemistry major itself. Otherwise, there are no trends evident in any social, industrial, technological or educational context that would impact the department's program.

2.1a Budget Needs

SANTA ROSA CAMPUS

In the following discussions we do not include our 4391 budget since it is a student fee based account used to purchase aprons and goggles that are provided to the students. We purchase these items and provide them to students at our cost in return for their student fee. We really have no control over how this account functions. We also don't consider one-time augmentations since they are not on-going funding.

At this writing we have not had any reductions to our 4000 or 5000 accounts and we are projecting that we will use all the funds.

We are normally quite frugal with our funds, and try to bid every item we purchase, rather than only when it is required by purchasing regulations.

How do your budget statistics compare to the district-wide range?

The department had expenditures in 2011-12 of about $1.2 million, accounting for 1.07% of the total District budget. The expenditures for the department dropped between 09/10 and 10/11 by 0.27%. Total faculty payroll was about $690,000 (1.83% of the district total), classified payroll was about $87,000 (0.48%) and management payroll was $27,000 (0.29%). Total non-personnel costs were almost $77,000 (0.55% of the district total).

Describe areas where your budget might be inadequate to fulfill your program/unit's goals and purposes.

Our supplies and services allotment will need to be examined on a year-to-year basis. It is very likely that our budget will need to increase periodically in order to keep pace with the constantly-rising costs of chemicals and glassware. Our (nonexistent) instructional equipment budget must be restored before our aging analytical instruments cease to operate, compromising our program.

If you need additional funds, please explain.

The lack of instructional equipment funding is bringing the department closer to a tipping point, in terms of losing the use of our pedagogically necessary analytical instrumentation.

PETALUMA CAMPUS
The department is currently offering four sections of Chem 60 in Petaluma, and this is the only chemistry lab course currently offered. Four is the maximum number of sections that we can realistically offer, given the facility.

Describe areas where your budget might be inadequate to fulfill your program/unit's goals and purposes.

Our supplies and services allotment will need to be examined on a year-to-year basis. It is very likely that our budget will need to increase periodically in order to keep pace with the constantly-rising costs of chemicals and glassware. Additional funds for our requested staffing increases will also be required.

2.1b Budget Requests

Rank	RS	ACTV	Object	Location	SP	M	Amount	Brief Rationale
0001	73	0000	4390	ALL	00	00	$0.00	Periodic increases due to rising costs of chemicals and supplies. Specific amount undetermined at this point
0002	73	0000	2000	ALL	00	00	$0.00	Increase required when staffing requests are fulfilled. Amount to be determined

2.2a Current Classifed Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Coordinator Science Labs	40	12	Coordinate the laboratory operations of the department at Santa Rosa and Petaluma.
Science Lab Instructional Assistant	40	12	Performs technical duties in support of the department at Santa Rosa and Petaluma.
Adminstrative Assistant II	28	12	This position provides administrative support for the department.

2.2b Current Management/Confidential Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Department Chair	12	10	Supervision of the department

2.2c Current STNC/Student Worker Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Student Laboratory Assistants	30	11.5	Cleaning laboratories, cleaning glassware, assisting

			Coordinator, Science Labs and Science Laboratory Instructional Assistant.
STNC - Science Laboratory Instructional Assistant	25	9.5	An STNC is currently working at both the Petaluma campus (2 days per week) and the Santa Rosa campus (2 days per week)

2.2d Adequacy and Effectiveness of Staffing

Does your program/unit have any unfilled vacancies or positions that have been placed "on hold?" If so, how are you accomplishing the work that must be performed? What impact does it have on your program/unit?

No.

Does the program have adequate classified, management, STNC staff, and student workers to support its needs? No.

SANTA ROSA

The department continues to request a Science Laboratory Instructional Assistant (SLIA) (1.0FTE/12 Month) to assist instructors with instruction in the student laboratories. Last year's request is below (in italics, with underlined changes). The rationale remains the same.

PETALUMA

Currently, the department is offering 4 lab sections of Chem 60 on the Petaluma campus, and the lab is staffed by an STNC Science Lab Instructional Assistant. There is a serious need at the Petaluma campus for a permanent Science Lab Instructional Assistant. The STNC cannot work enough days or hours to be effective.

Are current classified and management employees being used effectively? Yes.

2.2e Classified, STNC, Management Staffing Requests

Rank	RS	ACTV	Location	SP	M	Current Title	Proposed Title	Hrly	Type	Salary Increase	Benefits Increase	Total Increase
0001	73	0000	Santa Rosa	00	00	Science Laboratory Instructional Asst, 20hrs STNC	Science Laboratory Instruc Asst: 20hrs Classified	$22.37	Classified	$5,778.00	$13,210.00	$18,988.00
0001	73	0000	Petaluma	00	00	Science Laboratory Instructional Asst, 20hrs STNC	Science Laboratory Instruc Asst, 20hrs Classified	$22.37	Classified	$5,778.00	$13,210.00	$18,988.00

2.3a Current Contract Faculty Positions

Position	Description
Full Time Chemistry Instructor (x6)	The program currently has six full-time instructors. One of them is a new hire in tenure review, and one of them teaches 50% and receives reassign time for chair and AFA duties.

2.3b Full-Time and Part-Time Ratios

Discipline	FTEF Reg	% Reg Load	FTEF Adj	% Adj Load	Description
Chemistry	5.2000	35.0000	9.4000	65.0000	The data provided for 2012-2013 is incorrect. During 12-13, one full time faculty member served as interim dean, and one full time faculty member was on leave for Spring 2013. A third was serving as department chair. Manual caclulations show the Reg FTEF as 5.2. This year, 2014-2015, we have 6 full time faculty, one of whom is teaching only 53%, resulting in 5.5 FTEF for Regular faculty. We currently employ 2 adjunct faculty in Petaluma, and 7 adjunct faculty in Santa Rosa.

2.3c Faculty Within Retirement Range

We do not anticipate any retirements in the next three years.

2.3d Analysis of Faculty Staffing Needs and Rationale to Support Requests

The Chemistry Department is requesting one regular faculty position for Fall 2015. In 2013, one of our faculty retired and another resigned, and only one of those positions has been replaced beginning in Fall 2014. The Chemistry program understands that replcements are not automatic, but the fact that our program continues to grow and to be impacted, and the difficulty in recruiting and retaining qualified adjunct faculty in our displine surely necessitates that any vacated position be replaced immediately, and may even necessitate a growth position in the future.

A major part of our rationale for this positions is that regular faculty members should be replaced unless a program is in decline. The Chemistry program is not in decline. We have scrambled to patch together a schedule to serve our students using adjuncts, but this is not acceptable in the long term. Quality adjunct instructors continue to be very difficult to find, largely due to the lack of a feeder industry or major research university (common sources for chemistry adjunct faculty) in our area. Currently, we have 9 adjunct faculty employed by the chemistry department. For Fall 2014, regular faculty are scheduled to teach 35% of our sections, down from an average of over 70% in the preceding decade. AB1725 clearly states the goal of a 75:25 ratio of full-time to part-time teaching assignments.

The American Chemical Society's Guidelines for Chemistry in Two-Year College Programs expressly states that "Full-time, permanent faculty should be sufficient in number to teach the full range of courses on a regular basis, with the number of credit hours taught by permanent faculty exceeding 75% of the total chemistry offerings." The College is in danger of jeopardizing the SRJC Chemistry program's reputation among our transfer institutions of our transferring students' superior preparation for upper-division coursework and research. If the claims of a commitment to excellence are to be believed, a commitment to maximizing full-time faculty is absolutely necessary. Additionally, it will not be possible to staff the Petaluma campus with a full-time faculty member unless both of the positions are filled. We generally have a rotating position in Petaluma since we only offer one type of lab course there, and this position was occupied by Shirley Hino at the time she resigned.

2.3e Faculty Staffing Requests

Rank	RS	ACTV	Location	SP	M	Discipline	SLO Assessment Rationale
0001	73	0000	Santa Rosa	02	01	Chemistry	Full time faculty are essential to the completion of Departmental and District service which includes the tracking and development of SLO Assessments.

2.4b Rational for Instructional and Non-Instructional Equipment, Technology, and Software

Justification for items on the Instructional Equipment Request spreadsheet:
(1) This is a redundant request for replacement of our very old student computer (laptop) workstations in our laboratories. The request has been made to ITG as well.
(1) This is a redundant request for replacement of our Molecular Modeling software (Scigress) with Hyperchem. This request has already been tentatively approved by the ITG. Our license for Scigress expires in Fall 2013, and the software itself is inferior. The replacement software (Hyperchem) is much more powerful and versatile, and we plan to expand its use to most of our other courses. The department will be responsible for annual maintenance of the license (~$1000 per year).
(1) Currently, one of our 3 instructional labs contain separate hotplate and stirrers. However, many experiments call for stirring and heating to happen simultaneously. These newer units would allow this. Our other 2 labs have these units and they work very well.
(2) The water baths are needed for many experiments for multiple chemistry courses. The experiments call for measurements to be made at various temperatures. Currently, we have outdated water immersion heaters that are difficult to work with and don't fit well on the carts that we roll into the labs. Also, the immersion heaters are reaching the end of their usable life.
(3) We have 2 classes that use these electrodes to measure the amount of fluoride in toothpaste. Currently, we have only 5 electrodes so students have to share. This would allow us to have enough for a full class.
(4) We have 2 classes that use these electrodes to measure the amount of copper in a copper oxide unknown. Currently, we have only 5 electrodes so students have to share. This would allow us to have enough for a full class.
(5) This item is for our Gas Chromatography/Mass Spectrometry (GC/MS) instrument. It will allow the instrument to be connected to a newer computer. Currently, the instrument is connected to a 10+ year old computer which Information Technology has trouble maintaining because it is hard to find parts and the operating software is ridiculously obsolete. It is also hard to find printers that work with the old computer as well. Updating the software will also allow us to have the most up to date version of the operating software and increase through-put of student users. The department is willing to match funds using our Foundation account money to pay for this item.

What is the highest priority for equipment over the next three years?

Replace critical instruments before they cease to operate.

Have you found any way(s) to share equipment with other programs/units and/or to save money repairing or repurposing equipment? If so, explain.

Our department has always had a good attitude about sharing resources across programs. Our department routinely works with Physics and Life Sciences to share not only equipment, but also staff knowledge. We have in the past hosted in our labs part of a Wine 55A/55B (Laboratory Analysis of Wines) class offered through Agriculture/Natural Resources. This involves taking on much of the preparation as if it were one of our normal chemistry lab classes.

With regard to repairing equipment we have always done our best to repair any of our equipment in house prior to going to an outside repair option. We have a good track record of repairing and maintaining our equipment to ensure a long and useful life. However, we are slowly beginning

to see a backlog of unrepaired equipment. Hiring an additional SLIA would improve this situation.

We also have a good track record of repurposing equipment. If there is any useful life in something that we have the opportunity to replace, we will seek to place the item within our cluster, the District, or when possible to donate the equipment to local public high schools.

2.4c Instructional Equipment Requests

Rank	RS	ACTV	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	73	1905	Santa Rosa	00	00	Ocean Opt/Vernier Visible Range Spectrophotometers	7	$1,400.00	$9,800.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0002	73	1905	Santa Rosa	00	00	Gas Chromatogrphy-Mass Spectrometry System	1	$70,000.00	$70,000.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0003	73	1905	Santa Rosa	00	00	Replace student computer workstations in labs	45	$500.00	$22,500.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0004	73	1905	Santa Rosa	00	00	Gas Chromatograph, Miniature	3	$2,200.00	$6,600.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0005	73	1905	Santa Rosa	00	00	Circulating Water Aspirator	11	$1,200.00	$13,200.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0006	73	1905	Santa Rosa	00	00	Directattach integrated sampling sys, UV-VISsource	7	$1,800.00	$12,600.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0007	73	1905	Santa Rosa	00	00	Vernier LabQuest 2 Sensor Interface	14	$350.00	$4,900.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0008	73	1905	Santa Rosa	00	00	Vernier Polarimeter	2	$550.00	$1,100.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0009	73	1905	Santa Rosa	00	00	Variable Micropipet	14	$70.00	$980.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0010	73	1905	Santa Rosa	00	00	Corning PC-420D Hotplate Stirrer	6	$500.00	$3,000.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0011	73	1905	Santa Rosa	00	00	10A, 120V Variable Transformer, Glas-Col PowrTrol	30	$200.00	$6,000.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0012	73	1905	Santa Rosa	00	00	Visual Presentation System (ELMO P30S)	2	$3,000.00	$6,000.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0013	73	1905	Santa Rosa	00	00	Platinum Electrode	9	$2,000.00	$18,000.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0014	73	1905	Santa Rosa	00	00	Balance, Analytical, Ohaus Discovery	1	$3,000.00	$3,000.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth
0015	73	1905	Santa Rosa	00	00	Gas Chromatograph, Packed Column/Capillary Column	2	$30,000.00	$60,000.00	Karen Frindell Teuscher	Bech Hall	Bill Cusworth

2.4d Non-Instructional Equipment and Technology Requests

Rank	RS	ACTV	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0002	73	1905	Santa Rosa	00	00	Mobile ADA Lab Station	1	$10,000.00	$10,000.00	Karen Frindell Teuscher	1955 Bech Hall	Bill Cusworth

2.4e Safety, Utility, and ADA Impacts

There are some major safety and ADA issues with Bech Hall. There is a lack of air conditioning in one lecture room (1910) and all the laboratories (1948, 1960, 1980), and a lack of adequate working space. A lack of air conditioning in the labs is a safety hazard, because during warm weather, volatile chemicals cannot be used at the student workstations, and that creates a very crowded and potentially dangerous workspace in the fume hoods. Additionally, warm weather causes safety goggles to fog, limiting their eyesight and causing the students to constantly remove their goggles to de-fog them. The ADA issues relate to wheelchair access to student benches, safety equipment, and laboratory fume hoods. Some of these issues (work space and ADA access) can only be addressed in a new science building, but the air conditioning issue should be addressed now.

2.5a Minor Facilities Requests

Rank	RS	ACTV	Location	SP	M	Time Frame	Building	Room Number	Est. Cost	Description
0002	73	1905	Santa Rosa	00	00	Urgent	Bech Hall	1948, 1960, 1980 (Labs)	$45,000.00	Air condition building. Laboratories are too hot for students wearing aprons and goggles creating a safety hazard.
0003	73	1905	Santa Rosa	00	00	1 Year	Bech Hall	1955A	$10,000.00	Replace exhaust ducting for Room 1955A. Corrosion is penetrating to the outside of the stainless steel duct.
0004	73	1905	Santa Rosa	00	00	1 Year	Bech Hall	1948. 1955, 1960, and 1980	$150,000.00	Install building vacuum system in the laboratories. Aspirators on water faucets are currently used to provide vacuum for experiments, using significant quantities of water and running the risk of chemicals being sucked into the sink.

2.5b Analysis of Existing Facilities

The Chemistry department on the Santa Rosa Campus is located in Bech Hall. The facility includes:

- Two 88-person lecture halls and one 30-person seminar room equipped with new computer/video projection systems and network connections. The halls also have tables designed for use by students with disabilities and assistive audio systems for students with hearing impairment.
- Two 28-person general chemistry labs with a shared analytical balance room. Each general chemistry lab is equipped with 14 computer workstations and four fume hoods. The balance room houses 13+ electronic analytical balances for student use.
- One 26-person organic chemistry with an adjacent instrument room. The lab is equipped similarly to the general chemistry labs, and the instrument room has most of the large instruments in the department. The stools for this laboratory are stored in stacks in the front of the room. A separate storage space or solution is needed to clear this space.
- A portable laboratory station for use by students with disabilities is available for students who need accommodation in the laboratory. However, the unit is too big, and a disabled student has no easy access to fume hoods in the laboratories.
- A stockroom with storage space for laboratory equipment and chemicals, and limited space for preparing and staging materials for laboratory experiments, which are kept on carts and moved into to the laboratory just before each lab period. The stockroom has very limited (approx. 90 sq. ft) office space for two full-time stockroom employees and a number of part-time student workers.
- Seven offices for full-time faculty.
- A new space is needed for students to be able to work and study together. Currently, students are confined to the hallways and entryway of the building when not in class.
- A departmental office with space for our administrative assistant, mailboxes, a conference table for meetings, office supplies storage and most of our office equipment. A separate conference/break room for meetings would allow for more flexibility in the use of this space. Perhaps this space could serve as a combined conference room/student work area.
- An equipment room behind the instrument room which is currently used for storage and for administering exams.
- Six storage closets, two used for lab stool storage, two for equipment, and two for utilities/custodial supplies.
- One toilet for staff use.
- There are no student restrooms in the building. Student restrooms are needed.
- The building has no air conditioning outside of the lecture halls. During hot weather, students lab goggles fog up and students tend to remove them, creating an ongoing laboratory safety issue.

The Chemistry Department is located in Bech Hall, a sixteen-sided, 12,000 square-foot building that is now forty years old. The facility is showing its age and is at its maximum carrying capacity, yet the staff maintains it with great pride. The Department is anticipating the future construction of a new science building which will alleviate the space constraints felt in the stockroom, adjunct faculty office, department office/conference room, student study areas and laboratories, as well as provided needed upgrades to restroom availability, HVAC, and natural light availability. Nonetheless, given that a new building is still in the distant future, there are a

number of improvements that can be made now to the current facility that will improve it in a worthwhile way.

On the Petaluma campus, the Chemistry laboratory is in Kathleen Doyle Hall. It has lab space for 27 students per section. We offer 4 sections of Chemistry 60 at Petaluma. There is an adjacent stockroom, which has some access issues. Instructors are forced to enter the classroom through the stockroom, which is not good practice. Instructors should be provided with a key to the classroom, preventing the need to walk through a chemical storage area when uneccessary and without safety glasses. This especially applies to instructors who are not trained in hazardous materials safety.

There is only a single fume hood in the Chemistry laboratory. More advanced Chemistry classes require one fume hood for every three students. The Chemistry lecture classes in Petaluma are taught in whichever classrooms are available, usually in Doyle hall.

3.1 Diversify Funding - Grants/Contracts

The Chemistry program is interested in grants that will help us update and add to the instrumentation we use in our laboratory curriculum. We are facing a problem of aging, broken, and outdated instruments.

3.2 Cultural Competency

The Department continues to support a diverse workforce. The Department follows all procedures and guidelines set forth by Human Resources in the hiring of faculty and staff.

3.3 Professional Development

The chemistry program fully embraces the professional development of all members of the department including classified staff. We would like to develop more discipline specific workshops for FLEX and on PDA Day.

3.4 Safety and Emergency Preparedness

Our department safety leaders are Joe Fassler and Bill Cusworth.

3.5 Sustainable Practices

The greatest potential for a direct environmental impact of the chemistry department arises from its laboratory instruction program. To that effect, the department is deeply committed to teaching labs that are safe and achieve the desired learning outcomes while minimizing the use of toxic, dangerous, rare, and/or expensive chemicals. Whenever possible, any environmentally risky experiments are performed on a microscale, which uses less than a 1/100 of the resources used by more traditional experiments. Even the more benign experiments are conducted on the smallest scale that is practical, in order to preserve natural resources and minimize cost.

We continue to make significant improvements in the area of reducing the amount of paper we

use. We proactively work with textbook publishers to minimize the number of textbook desk copies sent to the individual instructors. A majority of the instructors assign online homework, instead of collecting paper copies; all student handouts (syllabus, reading assignments) are shared with students electronically. The only mass printing is done for exams and, currently, about 50% of those are copied double sided.

4.1a Course Student Learning Outcomes Assessment

The Chemisty Department started its first six-year cycle of assessment in Fall 2010. Since then, all outcomes in all courses have been assessed multiple times, with the exception of one outcome in one course, which will be completed in Spring 2015. The next six-year cycle will begin in Fall 2016.

Summary of Chemistry Program SLO assessments

	SLOs assessed since Fall 2010	Total SLOs	Done Until Fall 2016	Needed
Chem 1A	1, 2, 3	3	YES	none
Chem 1B	1, 2, 3, 4	4	YES	none
Chem 4A	1, 2, 3, 4	4	YES	none
Chem 4B	1, 2, 3, 4	5	YES	none
Chem 12A	1, 2	2	YES	none
Chem 12B	1, 2	2	YES	none
Chem 42	1, 2, 3, 4	4	YES	none
Chem 60	1, 2, 3, 4	4	YES	none
Chem 8	2, 3, 4	4		1
Chem 100	1,2, 3	3	YES	none

The Chemistry faculty continue to discuss these assessments and use them to improve our teaching and curriculum.

4.1b Program Student Learning Outcomes Assessment

Program-level Student Learning Outcomes – Chemistry Major

A successful Chemistry major matriculating from the SRJC Chemistry Department will be able to

1. relate observable phenomena to molecular events according to prevailing chemical theories.

2. identify, synthesize, and predict and explain the structure of a variety of compounds, both inorganic and organic.

3. accurately and safely obtain and analyze data from experimental sources, including traditional laboratory methods, computer-interfaced data collection devices, and advanced analytical instrumentation.

4. use critical thinking skills to analyze “real-world” applications of chemical knowledge and theories.

5. communicate effectively the results of laboratory experiments, including error analysis.

We will assess these program outcomes through the assessment of Chem 12B, the program's capstone course.

4.1c Student Learning Outcomes Reporting

Type	Name	SLO Identified	SLOs on Web	Assessment Methodology Identified	Student Assessment Implemented	Assessment Results Analyzed	Change Implemented
Course	Chem 100	N/A	N/A	N/A	Fall 2010	Spring 2011	N/A
Course	Chem 12A	N/A	N/A	N/A	Fall 2010	Spring 2011	N/A
Course	Chem 1A	N/A	N/A	N/A	Fall 2010	Spring 2011	N/A
Course	Chem 1B	N/A	N/A	N/A	Fall 2010	Spring 2011	N/A
Course	Chem 42	N/A	N/A	N/A	Fall 2010	Spring 2011	N/A
Course	Chem 4A	N/A	N/A	N/A	Fall 2010	Spring 2011	N/A
Course	Chem 60	N/A	N/A	N/A	Fall 2010	Spring 2011	N/A
Course	Chem 8	N/A	N/A	N/A	Fall 2010	Spring 2011	N/A
Course	Chem 100	Fall 2009	Fall 2010	Fall 2010	Fall 2011	Spring 2012	N/A
Course	Chem 12A	Spring 2008	Fall 2009	Fall 2010	Fall 2011	Spring 2012	N/A
Course	Chem 12A	N/A	N/A	N/A	Spring 2011	Summer 2011	N/A
Course	Chem 12B	Fall 2009	Fall 2010	Fall 2010	Fall 2011	Spring 2012	N/A
Course	Chem 12B	Fall 2006	Spring 2008	Spring 2011	Spring 2011	Summer 2011	N/A
Course	Chem 1A	N/A	N/A	N/A	Spring 2011	Summer 2011	N/A
Course	Chem 1A	Fall 2009	Fall 2009	Fall 2010	Fall 2011	Spring 2012	N/A
Course	Chem 1B	Fall 2009	Spring 2010	Fall 2010	Fall 2011	Spring 2012	N/A
Course	Chem 1B	Fall 2009	Fall 2010	Fall 2010	Spring 2011	Summer 2011	N/A
Course	Chem 42	N/A	N/A	N/A	Spring 2011	Summer 2011	N/A
Course	Chem 42	Fall 2009	Fall 2010	Fall 2010	Fall 2011	Spring 2012	Spring 2011
Course	Chem 4A	Spring 2008	Spring 2008	Fall 2010	Fall 2011	Spring 2012	Spring 2011
Course	Chem 4B	Spring 2008	Spring 2008	Spring 2011	Spring 2011	Summer 2011	N/A
Course	Chem 60	N/A	N/A	N/A	Spring 2011	Summer 2011	N/A
Course	Chem 60	Summer 2008	Fall 2008	Fall 2009	Fall 2011	Spring 2012	N/A
Course	Chem 8	N/A	N/A	N/A	Spring 2011	Summer 2011	N/A
Course	Chem 8	Fall 2009	Fall 2010	Fall 2010	Fall 2011	Spring 2012	Spring 2011
Course	Chem 100	N/A	N/A	N/A	Spring 2012	Summer 2012	N/A
Course	Chem 1A	N/A	N/A	N/A	Spring 2012	Summer 2012	N/A
Course	Chem 1B	Fall 2008	Fall 2008	Fall 2008	Spring 2012	Summer 2012	N/A
Course	Chem 42	N/A	N/A	N/A	Spring 2012	Summer 2012	N/A
Course	Chem 4A	N/A	N/A	N/A	Fall 2012	Spring 2013	N/A
Course	Chem 4B	Fall 2009	Fall 2010	Fall 2010	Spring 2012	Summer 2012	N/A
Course	Chem 60	N/A	N/A	N/A	Spring 2012	Summer 2012	N/A
Course	Chem 8	N/A	N/A	N/A	Spring 2012	Summer 2012	N/A
Course	Chem 4B	N/A	N/A	N/A	Spring 2013	N/A	N/A
Course	Chem 8	N/A	N/A	N/A	Spring 2013	N/A	N/A

4.2a Key Courses or Services that address Institutional Outcomes

Course/Service	1a	1b	1c	2a	2b	2c	2d	3a	3b	4a	4b	5	6a	6b	6c	7
Chem 12A/B	X	X	X					X		X	X	X				X
Chem 1A/B	X	X	X					X		X	X	X				X
Chem 42	X	X	X	X			X	X		X	X	X	X			X
Chem 4A/B	X	X	X					X		X	X	X				X
Chem 5	X	X	X					X		X	X	X				X

4.2b Narrative (Optional)

5.0 Performance Measures

Not applicable.

5.1 Effective Class Schedule: Course Offerings, Times, Locations, and Delivery Modes (annual)

The Department feels that it's offering a schedule that is as balanced and convenient as possible, given the constraints of the facility and staffing. Bech Hall has three laboratories, which limits the number of lab sections that we can schedule. On the Petaluma Campus the Chemistry Department is limited by the fact that the laboratory facility is only suitable for one of our courses.

In 2009, the Chemistry department created a rotation plan to ensure that students will be able to get through our program in a timely manner. For example, our summer offerings are designed to enable students who need all five semesters of our program to finish the program in two years. We also offer an evening sequence for the first three semesters as well as for Chem 60. This year, we are offering a Saturday section as well. Lately, the problem has been that all sections of our core program courses have been filling up soon after registration opens. It appears that we could add more sections of Chem 42, Chem 1A, Chem 1B, and Chem 60 each semester and they would fill, and only be limited by lack of space or staffing.

5.2a Enrollment Efficiency

The Chemistry Department's average enrollment efficiency iswell over 100%, exceeding the district goal of 90%. Chem 60, Chem 42, Chem 1A, Chem 1B, Chem 12A and Chem 100 sections are traditionally filled to the maximum (or beyond) by first census; this helps maintain the average efficiency at close to 100%. STEM courses continue to be in high demand, even as other the enrollment in courses is declining. The only way to alleviate the efficiencies that are >100% is to offer more sections, which could prove difficult due to the limitations of the facility.

Enrollment Efficiency	Chemistry
F13	112.9%
S13	114.7%
F12	108.8%

5.2b Average Class Size

The average class size for courses in the Chemistry Department has been consistent over the last five years. This trend will very likely continue in the coming years. As mentioned in 5.1, the department is bound to the confines of the building and available laboratory stations to meet safety requirements. Our laboratory facilities limit us to a maximum of between 20 and 28 students per section, depending on the room and the course.

Average Class Size	Chemistry
F13	26.2
S13	26.8
F12	25.6

5.3 Instructional Productivity

The instructional productivity of the Chemistry Department has averaged well above the college-wide goal for the past five years. This higher-than-average productivity (19.2 over the last five years) should be maintained, although perhaps not at quite as high a level as has been observed. This level of productivity is maintained by careful and thoughtful scheduling.

Instructional Productivity	Chemistry
F13	19.76
S13	19.37
F12	19.52

5.4 Curriculum Currency

Is the curriculum current?
Yes. All of the course outlines are current and have SLOs.

The Chemistry Department seeks to continue to improve enrollment, provide courses that will transfer to CSU and UC, and to follow the trends that have been set at CSU and UC campuses regarding course offerings. The Chemistry Department has changed the course content in Chemistry 1B to accompany the prerequisite requirement change for Chemistry 12A. These changes are to reflect the trends that have been seen at the UC campuses, such as Berkeley and Davis. For Chemistry 1B, the lab contact hours are now increased and the content incorporates quantitative analysis in the lab component. Chemistry 5 is currently not being offered due to budget cuts. The changes in course content and prerequisite requirements have increased the enrollment for Chemistry 12A.

How does the program encourage students to complete certificates, licenses, or majors?
The chemistry department provides prerequisite courses for numerous Associate degrees.

The Chemistry Department received approval for the Associates of Science Chemistry Major in April 2008. The curriculum is up to date.

5.5 Successful Program Completion

The Chemistry department has set up a rotation plan designed to help students complete our program in a timely manner. For a chemistry major, life science, or pre-med student, there is a five-semester sequence that needs to be completed: Chem 42-Chem 1A or 4A-Chem 1B or 4B-Chem 12A-Chem 12B. Students who pass the placement test can skip Chem 42 and complete the program in 4 semesters, but the majority of our students begin the sequence at Chem 42. For this reason, we have scheduled our summer session to accomodate the extra semester. We offer Chem 42, Chem 1A, and Chem 1B in the summer so that a student can still complete Chem 12B at the end of the fourth (non-summer) term. We also offer an evening sequence for Chem 42-Chem1A-Chem 1B for those students who work during the day. We also offer Chem 60 in the evening 3 out of every 4 semesters.

The Chemistry Department has awarded a total of 14 associates degrees since the degree was approved in 2008 - 4 in 2009-2010, 2 in 2010-2011, and 8 in 2012-2013. These figures are not entirely surprising, since our department's main function is to serve students in a wide variety of STEM and health related majors. Approximately 50 students complete Chem 12B each Spring, and this number better represents the number of students that complete our program. Also, the number of students who complete Chem 1A or Chem 1B as their final chemistry course requirement for engineering, physics, or other science majors have technically completed the short version of our program. We would like to increase the number of students who major in Chemistry, and in Fall 2014, we have started a small PR campaign to attract more students to the Chemistry major.

5.6 Student Success

It appears that, within stastistical boundaries, the retention and course completion data for the chemistry department closely matches the district averages. The average GPA of our students tends to be slighlty lower, but the number of rigorous science and math courses that our students generally have to take tend to have that effect on their collective GPA.

Retention:

Retention	Chemistry
F13	79.1%
S13	79.2%
F12	77.5%

Course Completion/Success:

Course Completion	Chemistry
F13	73.9%
S13	71.6%
F12	71.4%

GPA:

Grade Point Average	Chemistry
F13	2.57
S13	2.52
F12	2.45

5.7 Student Access

The Chemistry Department continues to maintain a diverse student population in keeping with the District percentages through it's relationship with MESA and participation in community outreach programs.

Ethnicity	Dept. 10/11	13/14
White	59.0	53.2
Asian	5.8	6.0
Black	2.3	1.9
Hispanic	12.6	26.9
Native American	1.5	0.7
Pacific Islander	0.6	0.1
Filipino	1.1	1.6
Other Non White	0.0	5.4
Decline to State	17.1	4.2

Gender	10/11	13/14
Male	43.9%	43.3%
Female	54.8%	54.0%
Unknown	1.3%	2.8%

5.8 Curriculum Offered Within Reasonable Time Frame

Our general chemistry sequence (1A - 1B) is offered in Fall-Spring, Spring-Fall, Summer-Fall and Spring-Summer patterns. Our alternative general chemistry sequence (4A-4B) is offered each year in a Fall-Spring pattern. The organic chemistry sequence is offered each year in a Fall-Spring pattern. Chem 60 and Chem 42 are offered every semester.

5.9a Curriculum Responsiveness

We have one General Ed. course, Chemistry 42. It is a one semester general chemistry course with a laboratory. It is taught in compliance with the CSU/UC requirements. It is also a pre-requisite for those students who are not prepared for Chem 1A, and therefore serves science and engineering programs and majors.

Chemistry serves mostly as a support program for almost all STEM majors. We serve over 700 students each semester. The majority of our students transfer as STEM majors to four-year universities, and the remainder go on to certificates and degree programs in the allied health fields.

5.9b Alignment with High Schools (Tech-Prep ONLY)

5.10 Alignment with Transfer Institutions (Transfer Majors ONLY)

The Chemistry major at SRJC matches the lower-division requirements at Sonoma State University, UC Davis and UC Berkeley (the three most common transfer institutions for chemistry majors), as well as virtually all other CSU and UC campuses.

5.11a Labor Market Demand (Occupational Programs ONLY)

5.11b Academic Standards

The department monitors and discusses academic standards on a regular basis, through the evaluation process and curriculum updates. Student Learning Outcome assessments are performed on a regular basis, and the results are used to maintain our high academic standards.

6.1 Progress and Accomplishments Since Last Program/Unit Review

Rank	Location	SP	M	Goal	Objective	Time Frame	Progress to Date
0001	ALL	00	00	Restore our regular faculty positions	This document. Faculty staffing request.	2014-2015	We have restored one of two vacant positions to date.
0002	ALL	00	00	Extend interdepartmental cooperation and efficiency	Explore possible mergers	ongoing	The Chemistry and Physics programs have merged to form the department of Chemistry and Physics.

6.2a Program/Unit Conclusions

Location	Focus Areas & Questions
Other	

6.2b PRPP Editor Feedback - Optional

6.3a Annual Unit Plan

Rank	Location	SP	M	Goal	Objective	Time Frame	Resources Required
0001	ALL	00	00	Restore our regular faculty positions	This document. Faculty staffing request.	2014-2015	Cooperation
0002	ALL	00	00	Extend interdepartmental cooperation and efficiency	Explore possible mergers	ongoing	Cooperation