

# Santa Rosa Junior College

## Program Resource Planning Process

### Life Sciences 2015

#### 1.1a Mission

##### **Mission of Life Sciences Department:**

To provide students with an education in the biological sciences as preparation for college or university transfer, entrance into professional programs in the health sciences, or general education. Faculty strive to provide a conceptual framework from which students will develop an appreciation and understanding of the unity and diversity of the earth's life forms.

#### 1.1b Mission Alignment

Our mission matches the new mission statement of the college, developed through the strategic planning process. The Life Sciences Department prepares students for transfer as biology majors, transfer to allied health programs, and we offer GE transfer level sciences classes, both with and without a lab. We offer a developmental biology course to help students succeed in college level biology classes. We contribute to environmental stewardship by offering an ecology course that teaches the fundamental principles of ecology and "their application to problems of renewable resources, resource management, conservation, and global environmental issues".

The Life Sciences Department makes contributions that serve the college and our students and are aligned with the new Strategic Planning goals.

**A) Support Student Success** The Life Sciences Department has developed relationships with Bodega Marine Lab, Pepperwood Preserve, the Buck Institute and UCSF to provide internships for our biology majors. Experience doing research in professional research labs is the most effective way to support retention and success for biology majors.

The Department has several ways of supporting the retention and success of pre-allied health majors. The department offers a shadow anatomy course to increase the number of slots for ANAT 1 without increasing lecture or cadaver costs. Pre-allied health majors are offered the opportunity to study in the anatomy lab every Saturday, with a tutor from College Skills. The department has enlisted many students who have successfully completed rigorous science classes to mentor current students during lab time as part of our BIO 49, independent study course. The department collaborates with a local high school to offer a credit by exam option which will be given at the high school for the ANAT 140 course.

The Department conducts several outreach activities. Local high school A&P classes, as well as the Summer Health Careers Institute students, are given the opportunity to tour the anatomy lab. Several instructors go to local grade schools with 'show and tell' biology specimens to engage younger students in science.

**B) Foster Learning and Academic Excellence** The Life Sciences Department is well known for the academic rigor of our courses. Two full-time faculty members have taken

sabbaticals to study new ideas in the teaching of undergraduate biology. They have given seminars available to all members of the department to share their findings. One has posted numerous resource materials online. All Introductory Biology classes (GE), biology major classes, botany classes and the ecology class offer local field trips. Being in the biological world is the best way to engage students in the study of biology.

c) **Serve Our Diverse Communities** The Life Sciences Department prepares students to transfer to Allied Health programs such as nursing and dental hygiene. Students who successfully complete these programs can earn decent salaries. They also provide essential services to the community and thus contribute to the economic vitality of this region. Two full time faculty members have studied extensively to become fluent in Spanish since they joined SRJC. One of these faculty members has developed a Spanish language tour of the local water treatment plant. This tour helps to educate the local Latino population on environmental issues and provides outreach and engagement with the community.

D) **Improve Facilities and Technology** The Life Sciences Department plans to be actively engaged in the design and building of a new STEM facility on campus. Some of the current STEM facilities were appropriately described by Dr. Chong as 'third world'. The HVAC system in Baker Hall is a disaster and must be contributing to excessive energy consumption and cost.

E) **Establish a Strong Culture of Sustainability** The Department can best contribute to this goal by our input to the new STEM building design, and inclusion of sustainability principles as part of the curriculum of biology and ecology courses.

F) **Cultivate a Healthy Organization** The Life Sciences Department has focused on collegiality in our hiring practices for the past ten years. We rarely all agree on many topics, but have always focused on reaching consensus in an atmosphere of respect for one another. We have extensive and time consuming hiring practices that help ensure that we hire outstanding faculty. The Department has participated in several lab safety trainings, and have a designated emergency coordinator.

G) **Develop Financial Resources** Individual members of the Department have written 3 different grants that were funded. Two allowed the purchase of \$20,000 worth of equipment for biology major labs. The third grant supported student success in the Introductory Biology course. The shadow anatomy section helps to maximize apportionment funding for that heavily impacted course.

H) **Improve Institutional Effectiveness** This goal seems larger than what an individual department can contribute to. However, the Life Sciences Department has developed a regularly distributed Newsletter that ensures all members of the Department are kept informed on a variety of department and campus issues.

## 1.1c Description

We provide courses and instruction that serve three groups of students: those needing general biology or a laboratory science to transfer to a four year institution; those preparing to transfer to four year institutions as biology majors; those intending to enter professional allied health programs. One of our former goals was to offer courses for students who wished to study the natural world for personal enrichment, and in these troubled budget times, those kinds of courses have been inactivated. The Department hopes to restore a few of these classes and/or develop new classes to serve life-long learners as the budgetary times improve. The Department offers two related courses that prepare students to be Pepperwood preserve stewards (BIO 85.1 & 85.2)

### 1.1d Hours of Office Operation and Service by Location

Life Sciences is open (faculty are here, courses are being taught) during regular teaching hours: Monday through Friday, from 7:30 AM until 5 PM, and until 8-10PM on nights when there are night courses taught (MTWThF). This is true for both SR and P campuses. The department office is in SR and is staffed by an administrative assistant for 30 hours/week and a science lab coordinator, who works 40 hours/week. The AA works flexible hours, but generally aims to be here in the middle of the day. The SLC is here for a regular work day, but is often working in labs, not in the office.

The Petaluma Life Science program offers day and evening courses. The Coordinator of Science Labs has an office in the laboratory prep area and is present during operational hours, M-F, 8:30am-4:30pm.

### 1.2 Program/Unit Context and Environmental Scan

The Life Sciences Department is currently thriving. There is great demand for our courses: the core introductory course, BIO 10, has 26 sections/semester; the 22 sections of allied health pre-requisite courses are filled to greater than 100% capacity at the start of every semester; we have added sections for biology majors to meet an increased demand. Our students are successful, at four year transfer schools and in allied health professional programs. It is important to note that many of our pre-allied health students have been accepted in a variety of schools, including Samuel Merritt University, USF, and John Hopkins. This is significant because there are limited seats available in the SRJC pre-allied health programs, but our students are well aware of this and are successfully applying to many other schools. Our faculty are known for their academic expertise and rigor, their contributions to the department and the college, their devotion to helping students succeed. The department is also well known for our successful effort to establish a collegial and highly functioning department.

A recent challenge is the institution of Transfer Model Curriculum majors. The TMC biology major was defined, recanted, and defined a second time and more recently a third time. It is clear that a biology major does not fit easily into the new mantra of completion asap. The Life Sciences Department is still in the process of deciding how and if we can introduce a TMC biology degree. The challenges we face is that the strict unit limit with these majors forces us to not include our current Introductory Biology pre-req for the biology majors courses. The omission of this pre-req would seriously jeopardize student success. In addition, while the TMC major allows students to take 5 unit chemistry courses, they have limited the biology major courses to 4 units! This

translates to only one lab / week. The department does not feel it is in the best interest of students or student success to change our majors courses from 5 to 4 unit courses. The department is working closely with the dean of Liberal Arts and Sciences and the Curriculum dean to resolve these issues. The department is committed to helping students transfer in a timely manner, to providing a degree that will ensure enrollment in impacted CSUs, AND ensuring that students are well prepared to succeed as juniors in a 4 year university. Ultimately, most of our majors transfer to UCs, and very few to the local CSU. Therefore it may not be essential that the department develop a TMC if it really does not serve students.

Another major change facing all colleges in California (and therefore this department) is meeting the recommendations of the Student Success Act. Many of these recommendations can only be implemented at the State level. I believe there are ways that the Life Sciences department can continue to improve OUR students' success without state intervention. One idea was to implement a required pre-req of appropriate math and English courses (replacing recommended pre-reqs) for the core biology and pre-allied health major courses. This was implemented at the start of Fall 2012. The department feels strongly that this is an important step in notifying students about the level of skills needed to succeed in these courses, and encouraging students to get these required courses completed early in their educational pathway. Sadly it has been the experience of Life Sciences instructors that many students with passing grades in ENGL 1A still cannot write a sentence in correct English while taking in-class essay exams. Some members of the English Department are sensitive to this challenge and are making changes in the kind of work they require in ENGL 1A. We are currently offering a section of BIO 2.1 in summer to help biology majors complete their required classes in a timely manner.

There has been a major trend in education in the biological sciences. A set of recommendations has been published by AAAS. These recommendations encourage more problem solving and analytical work in biology lab courses, and less memorization. There is also a list of core concepts that all students leaving a biology course must be familiar with. One member of the department spent a sabbatical studying these changes in biological education and has presented several workshops for the Life Sciences faculty, helping all of us to incorporate these changes into our classrooms and teaching styles. Another member of the department was on sabbatical in Fall 2013 and has also presented the results of her study to the Department.

In terms of reaching out to the community, a department member attended a few Cal-Pass meetings, but we are not yet actively engaged. We are much more engaged in outreach to local high schools, and have actively participated in the Bay Area Science Festival for the past three years. Our outreach to local K-12 schools includes having many different local high schools tour the anatomy lab, and having FT faculty bring their expertise and fun biological specimens to local grade schools to give presentations on biology.

The Department has established relationships with Bodega Marine Labs, the Buck Institute, Pepperwood Preserve and UCSF to obtain internship experiences for our biology majors.

## 2.1a Budget Needs

**Have you implemented any cost savings measures that saved the district money?**

We have implemented many cost saving measures. Biology classes are expensive to teach and the demand for our classes remains very high. The Department has increased the number of FTES by 18% since 2000/2001. At the same time our budget for supplies and equipment repair has declined by 35 and 26% respectively. Clearly we have been saving the District money! AND this is not sustainable. We were successful in the opposite approach to money problems. Two faculty members wrote successful grant applications that brought in \$20,000 to buy equipment.

**Describe areas where your budget might be inadequate to fulfill your programs goals and purposes.**

Consumable and live lab supplies are one of our largest annual expenses. The department utilizes various cost-saving measures to keep costs down, however due to cost increases over time, in particular shipping costs, it is difficult to replicate each years purchasing so that we are able to be able to provide the same lab experiences without an increase of funding.

Furthermore, conscientious instructors have made efforts to keep lab experiences up to date, exposing students to more current experiments and techniques. The new experiments have added to the cost of supplies, but are essential to prepare students for transfer to 4-year universities.

The supplies budget (4390) is not adequate. There has been a 35% reduction in this budget category accompanying an 18% increase in FTES. The department will run out of supply money this semester. We desperately need an increase. An increase of \$13, 500 will return us to 2001 funding level. \$20,000 increase would be needed to return us to 2001 / FTES funding level. \$5000 increase is the bare minimum that we must have.

The services budget (5652) is not adequate. Most of the essential equipment used in biology labs or to prepare solutions and other lab supplies needs routine maintenance. There are sets of 24-30 microscopes in 8 labs. These need regular maintenance and eventual replacement. It is remarkably like having a car. If one spends \$50,000 for a set of microscopes or a nice car, and then never does any maintenance, one will end up with a pile of metal / plastic parts that do not focus / move. We need an increase of \$10,000 to provide adequate maintenance for our microscopes and other pieces of equipment. We have 6 sets of these on the Santa Rosa campus and ONE replacement set costs \$30-40,000, so \$10,000 is well spent money.

The equipment repair budget has decreased by 26% relative to what the Department had in 2001. The decrease if calculated per FTES is a 37% decrease. We are requesting an additional \$4000.

Cadaver cost (5690) - we usually see a small increase in cadavers fees each year and very likely to have a 3- 5% increase for this year (about \$1000) since we did not have one this past year.

Student Workers - the department is requesting additional funds for student workers. We have had a 28% reduction in student worker hours comparing this year with 2001. We are requesting a \$2000 increase in this budget. Student workers provide much needed assistance with chores such as animal feeding, plant watering, dish washing, plate pouring. It is far more economical to have students doing this kind of work vs much higher paid SLIAs and SLCs. In addition these jobs are a wonderful resource and learning experience for students, helping them to be completers! They will have enough money to eat!

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

Our disciplines are expensive to teach and unfortunately, the lab exercises that are done in our classes are necessary to cover the concepts of our approved curriculum.

The Life Sciences budget must cover a great deal of items beyond those typical to most academic departments, things such as live cultures, consumable supplies for labs, and equipment maintenance.

The following data are copied directly from the PRPP Writer's Guide!

- *Life Sciences has annual expenditures of \$1.75 million, 1.52% of the District total*
- *Life Sciences has a faculty payroll of about \$1.18 million, 2.53% of the District's total faculty payroll.*
- *Life Sciences has an annual classified payroll of \$191,902, about 1.03% of the District's total classified expenditures.*
- *Life Sciences has a management payroll of \$44,819, which represents .61% of the District management payroll. This is the cost of chair reassigned time.*
- *Life Sciences has a total salary/benefits costs of \$1.68 million, 1.89% of the District total.*
- *Life Sciences has total non-personnel costs of \$67,043, about 0.59% of District non-personnel costs.*

Our overall salary costs (faculty, classified, department chair) = 1.89% of the district total. This seems reasonable for a department with 10 FT faculty, 20 adjunct faculty, and a department chair with close to 50% reassigned time.

## 2.1b Budget Requests

Rank	Location	SP	M	Amount	Brief Rationale
0001	Santa Rosa	01	01	\$5,000.00	These funds are required to cover the cost increase of our basic supplies and will ensure that we can have the required supplies for our labs.
0002	Santa Rosa	01	01	\$10,000.00	These funds are crucial to pay for the service contracts for our equipment. These costs increase 5-10% / year. The primary need is for regular servicing of microscopes.
0003	Santa Rosa	01	01	\$4,000.00	These funds are for equipment repair
0004	Santa Rosa	01	01	\$1,000.00	We did not see a cost increase last year for cadavers, we may see one this year, perhaps 3- 5%
0005	Santa Rosa	01	01	\$2,000.00	These funds are required to increase the number of student worker hours.

## 2.2a Current Classified Positions

Position	Hr/Wk	Mo/Yr	Job Duties
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Administrative Assistant II	30.00	12.00	Life Sci department office management, keyboard evaluations, monitor budget, source and purchase equipment and services, update website, provide departmental orientation for new employees, prepare PAF's, enter curriculum into CATS database. NOTE: Admin also serves the ESS dept with these hours
Science Lab Coordinator; SR	40.00	11.00	coordinate purchases and preparations for 40-50 sections of labs; maintain living cultures, order and receive supplies, maintain equipment, supervise student employees, serve as SLIA for cell & micro lab preparation
Science Lab Coordinator, Pet	40.00	12.00	coordinate purchases and preparations for student labs; maintain living organisms, order and receive supplies, maintain equipment; serve as SLIA for BIO 10 preparation, and for MICRO 60 preparation starting F10. NOTE - these 40 hrs also serve 3 other departments: chemistry, physics, earth /space sciences
SLIA Anatomy	40.00	10.00	prepare student labs: equipment, specimens, reagents; assist in lab instruction; dispose of hazardous waste; order/dispose of cadavers.
SLIA Physiology	40.00	10.00	prepare student labs: equipment, specimens, reagents; assist in lab instruction; maintain and repair equipment; provide biohazard training and supervision for blood labs.
SLIA Bio Majors/micro/botany	40.00	9.00	prepare student labs: equipment, specimens, reagents; assist in lab instruction, grade lab reports, gather botany specimens, maintain fruit flies for cell biology experiments
SLIA Intro Bio	19.00	10.00	prepare student labs: equipment, specimens, reagents; assist in lab instruction; conduct review sessions; assist in grading lab exams

## 2.2b Current Management/Confidential Positions

Position	Hr/Wk	Mo/Yr	Job Duties
department chair	20.00	11.00	manage department: budget, evaluations, program review, schedule, curriculum, hire, department meetings and communication; Life Sciences has a SR chair (.47) and a Petaluma co-chair (.05) = .52 FTE release time. This release time will decrease when the new chair formula is put into place.

## 2.2c Current STNC/Student Worker Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Student lab workers (2)	20.00	12.00	20 hours split by 2 workers. Wash dishes, feed animals, prepare specimens, clean labs, perform routine maintenance on microscopes.
student lab assistant, Petaluma	20.00	12.00	wash dishes, feed animals, prepare specimens, clean labs, perform routine maintenance on microscopes

## 2.2d Adequacy and Effectiveness of Staffing

The Department does not have adequate classified staff to support our needs.

### Santa Rosa Campus

One of our SLIAs has a 9 month position; all the others have 10 month positions. The department requests that this position be made comparable to all others, a 10 month position. This position serves all biology major courses, and a summer session of BIO 2.1. The increase of one month is essential in order to offer the summer section of Cell Biology. This cannot be done without adequate instructional support for lab set-up and take down, and instructional assistance during lab hours. The summer offering of BIO 2.1 has been very well received by

students in 2013 and 2014, and will be repeated this summer. This additional month of work has been added on for the last 2 years and must be made permanent.

Our Science Lab Coordinator is currently an 11 month position. This needs to be changed to a 12 month position. This person supports an extensive 8 week summer session, and is serving both as a SLC and the primary tech to prepare all the materials needed for the 2-3 sections of BIO 2.1 and 3-4 sections of microbiology taught each semester.

Our AA serves two departments and is 75% time. The department requests that eventually this be a 100% position if the position remains shared with Earth & Space Sciences department, or 75% completely devoted to Life Sciences.

Our student workers take care of many tasks that are integral to our classes but are in no way cost effective to have SLIAs perform, such as to the cleaning and upkeep of the lab equipment, care of living specimens, and organizing of supplies. We regularly run short on hours and end up having much higher paid staff performing these menial tasks.

### Petaluma Campus

Is currently hiring a 50% SLIA position, which has been needed for some time.

## 2.2e Classified, STNC, Management Staffing Requests

Rank	Location	SP	M	Current Title	Proposed Title	Type
0001	Santa Rosa	00	00	SLIA	increase from 161/ day to 217/day	Classified
0002	Santa Rosa	04	01	SLC science lab coordinator	increase from 11 mo to 12 mo	Classified
0003	Santa Rosa	01	01	AA II- 75%	Increase to FT , to stop regular accrual of OT	Classified
0004	Santa Rosa	00	00	Student lab workers	add 5 hrs/wk to student worker hours	Student

## 2.3a Current Contract Faculty Positions

Position	Description
Life Sciences Instructor	intro bio, ecology, botany, zoology, pepperwood field courses
Life Sciences Instructor	intro bio, developmental bio, botany
Life Sciences Instructor	intro bio, ecology, cell biology, anatomy, physiology
Life Sciences Instructor	intro bio, anatomy, physiology
Life Sciences Instructor	anatomy, zoology, tropical biology, human biology
Life Sciences Instructor	cell biology, microbiology
Life Sciences Instructor	intro biology, developmental biology, marine biology
Life Sciences Instructor	anatomy, physiology
Life Sciences Instructor	intro biology, botany, ecology

## 2.3b Full-Time and Part-Time Ratios

Discipline	FTEF Reg	% Reg Load	FTEF Adj	% Adj Load	Description
Anatomy	1.8700	43.0000	2.4900	57.0000	Note that FTEF Adj includes BOTH adjunct assignments (1.98) AND FT overload assignments (0.52).
Biology	5.0000	53.0000	4.3500	47.0000	This ratio suggests the need for more FT faculty teaching the biology courses. The % adjunct load will increase next year when adjuncts cover Nick Anast's BIO 2.2 class.
Botany	0.0000	0.0000	0.3300	100.0000	There are only two remaining BOTANY courses (we used to have 11). The faculty who end up teaching these courses, one in fall, one in spring, varies from year to year. last year the numbers were 100% FT, this year it is 100% adjunct. Because of the small number of botany courses the ratio here is not significant.
Microbiology	0.0000	0.0000	1.6900	100.0000	One FT colleague who taught microbiology courses died in Fall 2013. We hired a FT replacement faculty member who will not take up teaching microbiology courses until Fall 2015. In the interim, adjuncts have been 100% responsible for the microbiology courses.
Physiology	1.2000	60.0000	0.8000	40.0000	All of the "adjunct load" for this discipline has been taught by FT faculty as overload. In Spring 14 an adjunct instructor is teaching a small % of this load. Next year the adjunct % will increase as we find new adjunct faculty to take over the two sections of PHYSIO 1 taught by Nick Anast.

### 2.3c Faculty Within Retirement Range

Nine FT faculty are listed in section 2.3a. Until March 18, 2015 we had ten FT faculty. 6 current faculty are under 50, 1 is 50+ and 2 are 55+. Currently there are no FT faculty with plans to retire in the next two years. However, health issues present a realistic possibility of a change in this forecast.

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

The Life Sciences Department suffered a second tragic loss of a FT faculty member in less than two years. Nick Anast died March 18, 2015, very unexpectedly over spring break, in a kayaking accident. The department was already facing challenges to staff the Fall 2015 classes because a FT faculty member will be on sabbatical for the entire 2015/16 academic year. The department interviewed for the pool in early March and will interview again in May in order to fill Nick' Anast's classes next year.

In the past 6 years one contract faculty member retired and one died. We replaced the retiree in 2009 and replaced the person who died with a new colleague who began teaching in Fall 2014. Both of these positions are on the Santa Rosa Campus.

The Life Sciences Department knows that it can be difficult to find adjunct instructors for our various disciplines, and we have therefore interviewed for the adjunct pool every year, and sometimes every semester. We are usually able to add 1-3 people to the pool each time we interview. However, most candidates are only able to teach the introductory biology course, and many leave after teaching here for 1-4 semesters. We have found it particularly difficult to find adjunct instructors who can teach microbiology, and currently we have no one in the pool who can teach anatomy or physiology.

#### 1) Zoology / Physiology, Santa Rosa Campus

The highest priority for the Department is to replace the position we lost when Nick Anast died a few weeks ago. The courses that would be taught by this position include zoology (BIO 2.1) which is one of three courses in the biology majors series, and human physiology (PHYSIO 1) which is one of the 3 core pre-requisites for the nursing and dental hygiene programs, and part of our Pre-Allied health major. The number of biology majors who obtain an AS degree is low (9 last year) because few students wait to earn the AS degree in biology, but we have a very successful biology transfer program. The Pre-Allied health major had 72 students earning a degree last year. Only four majors have more than 100 completers, Two of these are nursing and Natural Sciences, majors that our courses directly support.

#### 2) Biology / Microbiology, Petaluma Campus

The Department would like to add an additional contract faculty member on the Petaluma campus, someone who can teach introductory biology and microbiology. Currently the Department has only one contract faculty member in Petaluma. This person was on sabbatical in Fall 2013, and so the numbers for FT vs. PT faculty showed that 100% of the teaching was done by adjunct faculty in Fall 2013. Even with the one FT faculty member present, the ratio is 1 FT to 6 part-time, indicating a strong need for a second FT position. In addition, the cell biology /microbiology lab is at capacity on the Santa Rosa campus. One way to expand these course offerings would be on the Petaluma campus. This position was approved in 2008 but no suitable candidate was found. Subsequently the budget crisis precluded considering this position again, but now appears to be a good time to add a second Life Sciences contract faculty position to the Petaluma campus. A second biology lab was built during the expansion and administration is now able to offer a technical and supply budget to support this position.

This person would teach the introductory biology course and microbiology. Microbiology is one of the three core courses in the pre-allied health major. The latter degree had 72 AS degrees awarded last year, a very high number of AS degrees. Only four majors have more than 100 students earning degrees in a year. Two of these are nursing and Natural Sciences. Our pre-allied health major includes most of the pre-requisites for admission to the nursing program, and many Natural Sciences majors have taken a biology course. We would advertise this position to also support the teaching of cell biology if the upgrade to the Petaluma chemistry lab appears to be a reality.

### 3) Cell and Microbiology, Santa Rosa Campus

The Department would like to add a growth position to the Santa Rosa faculty, in light of the demand for cell biology, microbiology and introductory biology. Other factors that support this request are that 3/10 FT faculty are 55+ and that FT faculty carry 30-50% of the hourly assignments on the Santa Rosa campus as overloads. These factors leave the department in a precarious position with respect to staffing all of our courses.

### 4) Anatomy / Physiology position, Santa Rosa campus

This position is listed here because it is expected that at least one of the three 55+ faculty will retire in the next few years. It is not a position that we are asking to fill in the immediate future. The position will be needed after the retirement for many reasons. It is very difficult to staff the more advanced anatomy and physiology courses with adjunct instructors. Close to 50% of the current members of our active adjunct faculty are 50+ years old. The release time for the department chair is 50%, and current department chair teaches a 40% overload which ensures adequate staffing of the advanced anatomy and physiology courses. Future chairs are unlikely to teach this much, contributing further to the need for positions on the Santa Rosa campus.

### 5) Botany / Biology position, Santa Rosa Campus

This position is listed only in anticipation that a second of the 55+ faculty will retire within the next 5 years.

## 2.3e Faculty Staffing Requests

Rank	Location	SP	M	Discipline	SLO Assessment Rationale
0001	Santa Rosa	02	01	Life Sciences: physiology / zoology	This person will routinely assess all SLOs in courses they will teach: BIO 10, BIO 2.2, PHYSIO 1
0002	Petaluma	02	01	Life Sciences: micro / intro bio / cell biology	This person will routinely assess all SLOs in courses they will teach: BIO 10, MICRO 5, MICRO 60, and possibly BIO 2.1
0003	Santa Rosa	02	01	micro / cell biology / intro bio	This person will routinely assess all SLOs in courses they will teach: MICRO 5 & 60, BIO 2.1, BIO 10
0004	Santa Rosa	02	01	Life Sciences: anatomy / physiology	This person will routinely assess SLOs in all courses they are assigned: ANAT 1, ANAT 40, ANAT 58, ANAT 140, PHYSIO 1, PHYSIO 58, BIO 10
0005	Santa Rosa	02	01	Life Sciences: botany, introductory biology	This person will routinely assess SLOs in any course they are assigned: BIO 2.3, BIO 10, BIO 12, BIO 100

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

No, existing equipment is not adequate for the instructional program. Primary needs include several sets of new microscopes, a starfish model for zoology students (real starfish are currently difficult to obtain for dissections), new equipment for biology experiments (a PCR and gel reader for the Petaluma campus), an incubator for cell and microbiology experiments, and a set of lab chairs for students.

The ice machine in the Chemistry department died this year and Life Sciences contributed to the replacement, as we share its use. A new STEM building could have a shared "chemical storage and preparation area" that would be used by both chemistry and biology. This would be far more efficient than our current prep areas.

A centrifuge was near death in Life Sciences and was replaced this year. Thank you!!!

In last year's PRPP there was a request for several pieces of equipment (thermocycler, gel boxes, gel power supply) that were purchased with the Foundation grant that one FT faculty member successfully wrote last year.

The department needs a replacement set of dissecting microscopes.

We are not an occupational program per se but we teach 7 courses that are requirements for the various allied health programs and our microbiology equipment is not up to 'industry' standards. Some new equipment was purchased a few years ago with grant money, and we were awarded a Foundation Grant this year to buy equipment, but we still have equipment needs to get up to current standards in this area. Conversely, to end on a brighter note, our anatomy lab is a model that other colleges visit as they plan for their upgrades.

Our last request is for a media upgrade to room 1872. This is a small lecture room and is rarely used by our department. The college needs to decide if the number and kinds of courses taught there warrant the expense. All the infrastructure for media was put in place during the remodel of the anatomy wing of Baker Hall. All that is needed is the media equipment. IF the district does not feel the lecture use of this small room does not justify this expense, the department would love to turn this room into a student study lounge - which might contribute significantly to student success by providing a convenient place to study between classes. A few small classes are taught here (College Skill classes), but perhaps they could be taught elsewhere.

## 2.4c Instructional Equipment and Software Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	Santa Rosa	01	01	set of microscopes	28	\$1,200.00	\$33,600.00	Susan Wilson	1869	Susan Wilson
0002	Santa Rosa	01	01	Somso starfish model	1	\$1,848.75	\$1,848.75	SR campus	1860	Susan Wilson
0003	Santa Rosa	02	01	incubator	1	\$3,471.00	\$3,471.00	Susan Wilson	1885	Susan Wilson
0004	Petaluma	00	00	PCR	1	\$3,500.00	\$3,500.00	Kirsten Swinstrom	Bio Lab Petaluma	Susan Wilson
0005	Petaluma	01	01	gel reader	1	\$1,200.00	\$1,200.00	Kirsten Swinstrom	1869	Susan Wilson
0006	Santa Rosa	01	01	student lab chairs	25	\$320.00	\$8,000.00	S Wilson	1885	Susan Wilson
0007	Santa Rosa	01	01	dissecting microcope	10	\$500.00	\$5,000.00	Susan Wilson	1869	Susan Wilson
0008	Santa Rosa	01	01	green house	1	\$2,000.00	\$2,000.00	SR campus	Baker Hall lawn	Susan Wilson

## 2.4d Non-Instructional Equipment, Software, and Technology Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0003	Santa Rosa	06	07	updated HVAC system	1	\$0.00	\$0.00	Susan Wilson	Baker Hall	Susan Wilson

## 2.5a Minor Facilities Requests

Rank	Location	SP	M	Time Frame	Building	Room Number	Est. Cost	Description
0001	Santa Rosa	04	07	Urgent	Baker	All	\$0.00	HVAC upgrade desperately needed for all areas of Baker Hall; refer to Analysis of Existing Facilities for details of impact on curriculum.
0002	Santa Rosa	04	00	2-3 Yr	Baker	All	\$0.00	fresh paint for most rooms (classrooms, labs, offices); building
0003	Santa Rosa	00	00	1 Year	Baker	1893 1894 1895	\$1,800.00	install solar tubes- offices have no windows; natural light improves productivity.

## 2.5b Analysis of Existing Facilities

1872 is a small lecture room primarily used by other departments but located in the Life Sciences building; the college must decide if it wants a media upgrade in this room. The department would like to convert this room to a student study lounge!

Baker Hall is 30 years old and needs fresh paint outside and in all unremodeled labs. It also needs a non-stop rat abatement program in place. Every wing of the building is infested with rats.

If we think big and big picture, Baker Hall needs to be completely replaced. The building is very old and completely outdated. Because of the building's age, it is undoubtedly more economical to relocate our facility in the new science building, rather than making fixes to the current building. The new science building will shortly be in the planning stages, and Life Sciences faculty are committed to being part of this process, and ensuring that the new building meets student, faculty and sustainability needs.

## 3.1 Develop Financial Resources

In 2013-2014 Life Sciences Department members applied for and were awarded two grants:

New Initiatives for Innovation  
Improvement of Fluency in Biology Courses  
grant from VPAA  
Scott Lorbeer (SLIA) and Kirtsen Swinstrom (faculty)  
BIO 10 students  
\$2000

Vision and Change in Biology Education  
SRJC Foundation  
Nick Anast, faculty  
Biology Major Students  
\$10,000

A Life Sciences faculty member received a grant from Women in Philanthropy and \$5000 was awarded to a student to complete an invaluable summer internship program in Summer 2015.

## 3.2 Serve our Diverse Communities

The recruiting of diverse candidates is primarily a function of HR. We confer with HR & DCO and support advertising in a diverse array of places, including traditional professional sites and Craig's list, for all of our positions: FT, adjunct, staff.

One way that the Life Sciences department promotes sensitivity to diversity is that two FT faculty members have become fluent in Spanish since being hired. One of these faculty members has developed a Spanish language tour of the Santa Rosa waste water treatment facility. Promoting an understanding and appreciation of this facility is one way to facilitate

environmental literacy among Santa Rosa citizens. Support of education about the environment is a major goal of our introductory biology course and our ecology course.

The Pre-Allied Health program in the department serves our diverse community in several ways. We offer pre-requisite courses at four levels: ANAT 140 for medical assisting, ANAT 40 for the paramedic program, ANAT 58 & PHYSIO 58 for LVN and Rad tech programs, and ANAT 1, PHYSIO 1, and MICRO 5 for the dental hygiene and nursing programs. Students in all of the Life Sciences classes are a very culturally diverse group, including many ESL students, veterans, and re-entry students. These courses prepare students for entry into allied health programs. If students get into these programs and successfully complete them, they are ready for numerous and well-paying jobs in Sonoma County.

### 3.3 Cultivate a Healthy Organization

The Life Sciences Department is known for the high level of collegiality among its members. We rarely all agree on any topic but there is always collegial respect and support. Many students have commented on how wonderful it is to take classes when the faculty all clearly like, respect and support one another.

We support classified staff requests to attend professional development activities; we support staff who wish to take on new tasks by giving training, mentoring. Several of our faculty have offered professional training activities.

It is not a "robust program" but stretch breaks are now incorporated into many classes. There is a culture of bringing one's own lunch to work, and the staff refrigerator is full of phenomenally healthy choices for lunch. One botanist produces an abundance of seedlings as part of her class and many of us take extras home for our gardens.

Our labs were recently evaluated to ensure that we meet safety standards. Quite a bit of relocation of materials were stored on the tops of cabinets, with no earthquake restraints. Most of these materials have been moved and earthquake restraints have been placed in relevant labs.

### 3.4 Safety and Emergency Preparedness

The Science Lab Coordinator, Scot Lorbeer, is the safety leader in Petaluma, E wing. The Science Lab Coordinator, Beth Johnstone, is the department safety leader in Santa Rosa, Baker Hall. The safety leaders attend safety committee meetings. Any critical information is reported at department meetings. Several years ago there was a safety training at a PDA day, and almost all Life Science faculty and staff attended.

### 3.5 Establish a Culture of Sustainability

I reviewed the website called Sustainable SRJC, and thought about the implications for Life Sciences. The most significant challenge, in my opinion, is that the heating and cooling mechanisms for Baker Hall need a drastic update. Faculty are routinely exposed to freezing office spaces, while lecturing in 1809 is like being in a sauna. The small 'prosection' room that is part of the anatomy lab (recently remodeled) is often 80 degrees and staff place hot tea kettles under the room thermostat to turn off the heat. These high temperatures are very bad for the anatomical specimens stored in that room and are very energy inefficient. The 'fixes' supplied by the college included baffles made out of cardboard! I doubt that in these reduced budget times anything will be done about these problems, but the HVAC system at Baker is NOT contributing to sustainability.

A second, more minor change, would be better upkeep of the trilogy recycle containers. These are wonderful, and placed in many convenient locations! Custodial services should ensure that the outsides are kept clean - filthy dirty recycle containers do not inspire one to walk the few extra steps. They also need repairs to the locks. I work at the college every Saturday and several times a semester report thieves cleaning out our recycle containers. It would also be helpful (but probably too labor intensive) to have a fourth container for organic wastes. Because Baker Hall is infested with rats at not infrequent intervals, organic wastes would have to be collected every day.

I wrote the above **three** years ago. I wish I could report that the very minor improvement of proper maintenance of the recycling containers had been addressed. It has not and if anything, things are worse.

Two faculty members who live near to the college commute by bicycle. They are personally contributing to sustainability and are excellent role models for students.

The Life Sciences faculty is strongly committed to serving on any relevant committee that will provide input to the design of the new STEM building, and oversight during construction, to ensure that sustainable principles are used for the design and construction of this building.

#### 4.1a Course Student Learning Outcomes Assessment

All of the Department's 21 active and regularly scheduled courses have had at least one SLO assessed. Half of the courses have had all SLOs assessed. All of the completed assessments have been entered into the Sharepoint web site. The department will complete assessments for all SLOs in all courses by the end of Fall 2014.

One outcome was a plan to change the way microscope use is taught, which should improve student learning of this vitally important skill. Many of the assessments suggested that current course material was appropriate and covered in a way that 70 to 90% of students were able to successfully answer assessment questions. Therefore very few changes have been made in courses due to currently completed assessments.

The department devoted a PDA workshop to ensuring the SLOs for sequenced courses in both majors were well aligned. Many SLOs were re-written in light of the department experience actually conducting assessments. The SLOs for BIO 10 do align with the SLOs for both major programs (biology and pre-allied health), for which it serves as a pre-requisite.

PLAN: The department has divided the 21 active courses into 5 per semester for assessment, which means that every course will have one SLO assessed every two years, and all courses will have all SLOs assessed in a six year cycle.

	SLO ##'s		1	2	3	4	5	6	comments
1 ANAT 1	3	mh, S13	sw, S11	dk, S13	sw, f13				to do Fall 14
2 ANAT 140	2	bn, F13	bn, F13						
3 ANAT 40	2	dk, S11	dk, F12						no SLOs
4 ANAT 58	2	jg, S14	mc, F12						
5 BIO 10	5	tg, rf, S11	az, F12	az, F12	az, F12	az, F12			
6 BIO 100	3	ks, S11	rf, F11	rf, F10					
7 BIO 12	4	sb, F13	jp, S14	jp, S14	jp, S14				
8 BIO 13	6	dk, S12		dk, S13					COR to be revised
9 BIO 2.1	4	tg, S11	cs, F10	tg, S12					
10 BIO 2.2	5		sb, S12						
11 BIO 2.3	5	rf, F10	az, S11	az, F12	az, F13	rf, S11			
12 BIO 25	5	ks, S13	jw, F13	jw, F13	jw, F13				
13 BIO 26	6								revise to BIO 27
14 BIO 49	1	sw, F12							
15 BIO 85.2	5	jw, S14	jw, S14	jw, S14	sb, S11				
16 BOTANY 10	5		sb, F11						
17 BOTANY 60	3	sb, S11	jp, S14	jp, S14					
18 BOTANY 64	3								taught summer 14
19 MICRO 5	6	ko, S14	cs, F12	rc, S14	cs, X12; rc S14	rc, S14	rc, S 14		
20 MICRO 60	5	ms, S14	ms, S14	nk, F12	ms, S14	nk, F12			
21 PHYSIO 1	2	sw, F13	sw, F13	na, S14					
22 PHYSIO 58	2	xx, F11	mh, F12						

#### 4.1b Program Student Learning Outcomes Assessment

Program Outcomes have been written and are posted on the web for the two department majors: biology and pre-allied health. The program assessment for both the biology and pre-allied health majors were added to the Sharepoint website in March, 2014. The department completed these program assessments using the cumulative assessment approach.

It is important to note that the high pass rate of SRJC students on nursing and dental hygiene board exams reflects very well on the preparation given these students in the department's anatomy, physiology & microbiology courses (the pre-allied health major). Anecdotal information (communication from former students as they complete 4 year degrees or allied health programs in other schools) supports the success of both our biology major and pre-allied health major programs.

#### 4.1c Student Learning Outcomes Reporting

Type	Name	Student Assessment Implemented	Assessment Results Analyzed	Change Implemented
Course	ANAT 1	Fall 2013	Fall 2013	Fall 2013
Course	ANAT 40	Fall 2012	Fall 2012	Fall 2012
Course	ANAT 58	Fall 2012	Fall 2012	Fall 2012
Course	ANAT 140	Fall 2013	Fall 2013	Fall 2013
Course	BIO 10	Fall 2012	Fall 2012	Fall 2012
Course	BIO 12	Fall 2013	Fall 2013	Fall 2013
Course	BIO 13	Spring 2013	Fall 2012	Spring 2013
Course	BIO 2.1	Spring 2013	Spring 2013	Fall 2013
Course	BIO 2.2	Spring 2013	Spring 2013	Fall 2013
Course	BIO 2.3	Fall 2013	Fall 2013	Fall 2013
Course	BIO 25	Fall 2013	Fall 2013	Fall 2013
Course	BIO 26	Spring 2010	Spring 2010	Spring 2011
Course	BIO 49	Fall 2012	Fall 2012	Fall 2012
Course	BIO 85.2	Spring 2011	Fall 2011	Spring 2012
Course	BIO 100	Fall 2012	Fall 2012	Fall 2012
Course	BOTANY 10	Fall 2011	Fall 2011	Spring 2012
Course	BOTANY 60	Spring 2011	Spring 2011	Spring 2012
Course	MICRO 5	Fall 2012	Fall 2012	Fall 2012
Course	MICRO 60	Spring 2014	Spring 2014	Spring 2014
Course	PHYSIO 1	Spring 2014	Spring 2014	Spring 2014
Course	PHYSIO 58	Spring 2012	Spring 2012	Fall 2012
Certificate/Major	BIOLOGY MAJOR	Spring 2014	Fall 2014	Fall 2014
Certificate/Major	PreAllied Health Major	Spring 2014	Fall 2014	Fall 2014

#### 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
Bio 10	X	X	X	X	X	X	X	X	X	X	X			X		X
Bio 110	X	X	X	X	X			X		X	X			X		X
Bio 12			X	X	X	X	X	X	X	X	X			X		X
BIO major	X	X	X	X	X		X	X	X	X	X	X		X		X
Pre-Allied health major	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X

#### 4.2b Narrative (Optional)

The courses in our program are very rigorous. Students must apply and therefore practice foundational skills, time management, and critical thinking in almost all Life Sciences courses. In some courses oral reports are required (communication). In many of our majors courses there are many international students and significant interaction with peers is a routine part of all laboratory courses. Introductory biology and ecology courses provide in depth instruction in the basis for environmental responsibility. Many students who succeed in the allied health pre-reqs state that the most valuable thing they learn is new depths of personal capability – they can succeed beyond anything they thought possible in a very challenging course. It gives them the confidence to pursue their career goals in allied health occupations.

#### 5.0 Performance Measures

The most important performance measure for the two Life Sciences Department majors, Biology and Pre-Allied Health, would be the number of students who transfer to four year schools or are admitted to allied health programs. Unfortunately, the JC does not collect these kind of data. If these data were available, as well as data on successful completion of bachelor degrees in biology or successful passing of NCLEX and dental hygiene board exams, our performance measures would be outstanding. To partially compensate for the lack of relevant performance measures for our programs, the department has begun the practice of surveying all biology students each semester to ascertain if they have been accepted into a 4 year program. In 2014 7 students received an AS degree in biology but over 40 students transferred to 4 year universities as biology majors.

The data that are collected by the JC includes the number of majors granted in our two programs. The number of **biology majors** for the last 4 years are 5, 3, 9, 7. These numbers are very small, most likely because an AS in biology serves no academic purpose other than noting achievement and completion. Almost no students apply for this degree, they want the BA / BS in biology. Furthermore, most transfer before completing all of the AS requirements. The department has modified this major, eliminating the BIO 55 requirement and the elective requirement. We hope that this change, and a stronger emphasis to students on the value of actually completing this degree, will increase these numbers.

The number of **pre-allied health majors** for the past 4 years are: 58, 56, 60, 72. These numbers are very impressive for several reasons. First, most students in this major are taking pre-requisite courses for nursing or dental hygiene, and they usually get their AA degree in these disciplines. These numbers may mean that students are increasingly aware of some value to the AA degree even in the pre-requisite discipline.

It is of great interest to review the data supplied for AS degrees awarded in 2013/2014. If we add the degrees awarded in both of our majors, - biology and the physiology / pre-allied health major, as well as all other degrees for which Life Sciences courses are essential pre-requisites: EMT, medical assisting, vocational nursing, radiologic technology, nursing, dental hygiene, 258 AS degrees were awarded related to Life Sciences, which equals 36% of all AS degrees awarded.. If one adds in degrees awarded in Natural Sciences the number rises to 71%. The department teaches courses that students value, need, and that lead to degree completion.

It is also important to notice the following about degrees awarded at SRJC. There are only four majors that grant more than 100 AA/AS degrees: Humanities, Social & Behavioral Sciences, Natural Sciences, and Nursing. Life Sciences contributes to the latter two degrees, and only Nursing is a specific degree, a degree in a defined discipline, a degree that leads to a job. These numbers are further testimonials to the major contributions Life Sciences makes to degree completion at SRJC. Another performance measure would be the number of students who successfully complete their science GE requirement in our introductory biology course. These data are not available as this course includes students heading for the Biology or Pre- Allied Health degrees, as well as GE students.

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

We are constrained by the lab component of most of our classes. We do use Fridays for some sections; there are evening sections for all the high demand A, M & P classes. There are currently no regularly scheduled weekend classes except the shadow anatomy section that meets on Saturdays. The Department offered a section of introductory biology as part of the weekend college in spring 2015 on a Friday/Saturday schedule. It is noteworthy that while the class filled, there were no weekend college students enrolled.

We offer our full range of classes in SR. General biology, marine biology, basic skills biology and microbiology are all offered in Petaluma. The opportunity to offer microbiology in Petaluma has made it possible to offer almost enough microbiology courses. The department teaches both micro and cell in the same lab in Santa Rosa, and the labs are filled to capacity. A&P classes will remain solely in SR due to cost of lab construction and outfitting. One deficit in the schedule is that there are no night sections of MICRO 5, only of MICRO 60. The department added an evening section of MICRO 5 and we are still waiting for an augmentation of our supplies budget.

The department believes strongly that lab courses must be taught in a lab, not online. The demand for lecture only biology courses has not merited the development of an online version of any of these offerings. Note that many nursing and graduate programs will only accept face-to-face lab courses.

There is a tremendous demand for anatomy, physiology, microbiology classes. Given the constraints of lab size and supplies costs we will not attempt to offer more sections of these courses, even though they would fill. Our goal is therefore to maintain our current offerings of 6 sections / semester (plus one of each in summer) of the anatomy, physiology, and microbiology courses required for nursing and dental hygiene. This number of sections does not meet student need, 20 students were turned away from ANAT 1 in Spring 2015. However, additional offerings would not significantly help students as there will be no expansion of the SRJC allied health programs. Further, the department schedules a shadow anatomy section every semester that allows an additional 30 students to enroll at minimal cost to the college.

The best solution to meeting student demand for pre-allied health courses would be a change in priority registration policies. Every semester students enroll in the anatomy, physiology, microbiology courses who are significantly under-prepared. There are also many students who repeat these classes two and three times. Higher priority for students who have seen a counselor and completed their English, math and LIR requirements, as well as a lifting of the constraints placed on students with BAs who need to "re-train" would allow even higher completion rates in these classes. It appears that these 'reforms' are close to becoming a reality due to changes in progress at the State level. Our collaboration with the HOPE center and the college skills 770 course with on-site tutors in the anatomy and physiology labs has been a very successful effort to better serve students receive help during open lab study times.

A review of the **Student Headcount data** shows that numbers have declined slightly in the past 2 years, 5-12%. This is a trend seen across all disciplines and I do not believe reflects specifically on the Life Sciences programs or course offerings.

i

## 5.2a Enrollment Efficiency

On the Santa Rosa campus, in all disciplines except botany, in fall and spring, for the past three academic years and the Fall 2014 semester, the department has exceeded 95% and most

sections are greater than 100% efficiency. When one includes data from the Petaluma campus, and summer enrollments there are lower efficiencies, 75-108%.

On average, these numbers exceed excellent!

The department's efficiency numbers are outstanding. We achieve these results by over-enrolling almost every class. We know that not every student can complete these classes. Our goal is to end the semester with 85% enrollment.

The numbers also indicate that much of our program is impacted, especially the Pre-Allied Health major which prepares students for entry into allied health programs. The department has met the need for more of these courses in several ways: teaching almost all sections as double lecture sections, and offering a "shadow" anatomy class. The department cannot offer more sections due to building, staff, instructor and supply constraints. We also do not think we need to offer more sections. There are better ways to meet student needs. One is to realize that the nursing demand is not unlimited. Students graduating from the JC RN program recently have had difficulty finding jobs in Sonoma County. We do not do students a favor by teaching ever expanding numbers of courses without analyzing the job market saturation. The most important thing we could do is a better job of counseling. If only students really prepared for A&P courses enrolled in them, we would have a seat for every student that wanted to take our pre-req science classes. A change in priority registration policies and required counseling would be the best ways to address this problem. The department has invited the counseling department to address all pre-allied health classes next fall.

## 5.2b Average Class Size

Class size for most of our courses is dictated by lab size which is 24 (28 for physiology). Any numbers above 24 reflect overfilling of classes by dedicated instructors. Scanning the numbers shows that in most cases we are at 24 or above. The numbers for biology in Petaluma are lower and this matches an overall lower demand for classes on the Petaluma campus, rather than any problem specific to Life Sciences.

## 5.3 Instructional Productivity

The stated goal of the college is 18.7. A general overview indicates that the majority of the FTES/FTEF values for Life Science classes are well above this goal in fall and spring semesters at both campuses. There is a consistent pattern of this value being below 18.5 in summer sessions. For the most part summer sessions are taught as single sections, not the usual double sections that can be offered in the fall and spring semesters, and this lowers our numbers.

The botany values are consistently slightly below 18.7, this is because the botany class is always taught as single sections. Microbiology values are low in Fall 2013, in part because the MICRO 5 section was a single section. In addition, two sections of BIO 10 were cancelled on the Petaluma campus, leaving 2 single sections, and the FTES/FTEF was 14.82. An explanation for the reduced demand for BIO 10 in Petaluma is not clear. The department reduced the number of sections offered in Spring 14 and will reduce the number for Fall 14 and Spring 2015 as well.

This productivity on both campuses is maintained by optimizing course offerings and schedule times to meet student needs, and teaching double sections of our introductory biology courses and most of the A, P, and M courses, whenever possible.

## 5.4 Curriculum Currency

Since the last PRPP, the department has inactivated any course that does not meet our core mission as a response to the budget crisis. Two years ago we offered 38 courses, last year 30, and currently we have inactivated more and offer 25. All of these courses have current CORs and we have initiated a regular cycle of 5 year review for all of these courses. Five course outlines were submitted to CRC in Fall 2015 for updates to the CORs.

## 5.5 Successful Program Completion

The number of AS degrees awarded in biology for the last 3 years are: 3, 9, 7. These very low numbers are not surprising or in any way discouraging. Completion of an AS degree in biology is not useful for almost any of our students.

Most students with a serious enough interest in biology to take any or all of our biology majors series (BIO 2.1, 2.2, 2.3) are planning to transfer to a 4 year university and earn a BA/BS in biology. These students know that a BS in biology is the bare minimum to do any kind of professional work in this discipline. An AS degree in biology does not provide entry into any job or career with which I am familiar. Furthermore, they are so focused on transfer that they do not always complete all lower division courses here, but fit in as much as they can before transfer. Thus they may not complete all requirements for an AS degree. The department collects information from students every spring semester about whether they are transferring to a 4 year school. In spring 2012 fifty biology major students were transferring to a 4 year school. This is an excellent number, suggesting that our biology major is very successful in terms of completion.

The number of AS degrees in our physiology / pre-allied health major are relatively high in the same last three years: 65, 72, 83. This is especially impressive since the majority of these students go on to earn an AS degree in dental hygiene or nursing. These numbers may indicate that students have become more aware of the value in getting a degree at each academic landmark, they may also reflect the increasing number of students who do not get into the JC programs and continue their education elsewhere, but want a record of their achievement here.

As a department we try to make sure that we minimize the barriers to successful completion of our majors courses. We coordinate scheduling of the Biology Major's courses with Chemistry and Physics departments. We ensure that courses are offered frequently enough for students to complete other programs (Botany 10 for viticulture students, Biology 12 for environmental studies students). Shadow Anatomy sections are offered to ensure that as many students as possible have the chance to take Anatomy 1 in preparation for the nursing program. We also have prepared rotation plans that show students how to complete our majors in a two year time frame.

## 5.6 Student Success

Student success data were supplied for retention, course completion and grade point average.

### **Retention**

Retention rates for the college ranged from 74.5 to 84.9%. District-wide retention is higher in summer session than either regular semester. Retention rates for ALL Life Sciences disciplines on both campuses ranged from 75.1 to 87.8%. Thus our retention rate equals or exceeds that of the district. These are especially noteworthy retention rates since many of these courses are notoriously difficult for students. Looking at retention rates in individual disciplines there is a consistent pattern of higher retention in the summer. One hypothesis is that summer classes enroll more students with completed BA degrees and more committed students. It is also true that summer provides more total immersion course work, which favors higher success rates. There are a few numbers below 70% - for 2/6 last times a botany section was offered; and the last 2 semesters of anatomy. Anatomy includes ANAT 140 which enrolls many extremely underprepared students and therefore has a high attrition rate. The department is initiating a discussion about pre-reqs for this course.

### **Successful Course Completion**

The range for the college is 69.9 - 82.5%. The Life Sciences data for all disciplines/ both campuses falls from 68.7 to 82.8%, excellent agreement with college data. In general the biology data for Petaluma are a little lower than for SR. It is very difficult to draw any conclusions since the courses taught as BIO courses in SR include all of the Biology majors courses, which are not offered in Petaluma.

Completion rates for the anatomy and physiology courses in fall and spring are generally 65-68%, reflecting both the difficulty of these classes and the significant number of underprepared students. Completion rates are much higher for microbiology courses and my hypothesis is that most of these students have already completed anatomy and physiology, and are not the underprepared students!

The data are very low for the one physiology course taught in Petaluma (45.5 and 42.9 in two different semesters). This course has been inactivated and will no longer be taught in Life Sciences. The content (exercise physiology) is now part of a new KAD course.

### **GPA**

The district data range from 2.713 - 3.049; Life Sciences overall data range from 2.43 - 2.78. Life Sciences data matches the overall values seen in the STEM cluster - slightly lower than the district average. This is not surprising, since Life Sciences classes are very demanding science classes.

There are some appropriate general comments one could make about the student success data. It is striking to note the retention and successful completion data for summer courses - the numbers are better than for fall and spring semesters. This suggests that students taking science classes greatly benefit from classes that are offered 4 days a week vs the usual two days per week. Within the regular semester there are two anatomy instructors who teach double sections, half the class meets for lab on the same day as lecture, half on alternate days (ie 4 days of class/week). Both instructors note every semester close to a 10% point difference in grade distribution - more time spent on task in the classroom translates directly to better grades!

The department feels that reasons for any low retention and successful completion rates include the following:

- \* students who do not yet know their academic goals and/or are not ready for academic courses
- \* poor study, time management, reading and writing skills
- \* outside school demands of family and work responsibilities
- \* lack of financial support
- \* increasingly poor preparation in English and critical thinking skills in our student population, even in students who managed to earn a passing grade in ENGL 1A!!!!!!

The department feels it can make a contribution to retention and successful completion. Interventions currently in place to help students succeed include:

- \* developmental course to help students with bio 10 (bio 100)
- \* an educational campaign to alert students to preparation needed for Anat 1 and Physio and MICRO 5 (web site info & memos to counselors) 1
- \* the use of CSKLS tutors and student tutors in labs

## 5.7 Student Access

The most striking data in this section is the increased % of Hispanic students in all of our disciplines. In anatomy the change is 19.5% for 2012/13 to 34.8% for 2013/14. In biology it is 16.4% to 28.8%; in microbiology it is 11.7% to 25.8%; in physiology it is 12.9% to 25.3%. There was even an increase in botany: 8.3% to 17.4%. I think that a major part of this change is that many more students are willing to list their ethnicity, as the numbers for "declined to state" has dropped dramatically.

There are significantly more females than males in all of the Pre-Allied Health courses, 75:25%, but this is expected. There have always been fewer males in nursing and dental hygiene professions, this is reflected in the gender data for our allied health pre-reqs. Having 25% males is actually a good number!

There are several outreach efforts to bring in students for the pre-allied health programs and therefore our pre-requisites. Our department outreach for this program is primarily allowing several high school classes to visit the anatomy lab every semester.

The Life Sciences department offers two courses at the 100 level to serve students who might have English and socioeconomic challenges: ANAT 140 and BIO 100.

## 5.8 Curriculum Offered Within Reasonable Time Frame

All of the department's core courses are taught every semester, high demand courses are taught in multiple sections and differing day/time slots, when possible. Starting in Fall 2014 we offered all pre-allied health courses with at least one section at night. A few courses with lower demand (BIO 26, BOTANY 10 & 60) are taught in alternate semesters. BIO 13 is alternated each semester between the SR and Pet campuses.

## 5.9a Curriculum Responsiveness

Most of our curriculum is standard, and the same courses have been needed, required, taught for the past 50 years.

Our curriculum is current and in compliance with UC/CSU requirements. Our curriculum provides the essential pre-requisites for all of the allied health programs. BIO 10 is required for many GE students. To a minor extent we also support viticulture and environmental students.

We added a new course, which will be offered for the first time in Fall 2016, BIO 16 - Introductory Biology through Current Issues. This course is designed for non-biology majors and will emphasize the core concepts of biology linked to current issues. It should be a more

engaging course for non-majors, and one that will better prepare them to be better informed citizens with respect to science, the environment and sustainability.

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

NA

### 5.10 Alignment with Transfer Institutions (Transfer Majors ONLY)

Yes. Our biology majors curriculum is aligned with most CSU and UC major programs. The core topics taught in the first two years of a 4 year biology major include: cell biology, botany, ecology, zoology, evolution. These topics can be arranged in different ways in different transfer institutions. Some pair botany with ecology and zoology with evolution (as we do at SRJC) and some teach organismal biology (botany with zoology) and ecology with evolution. It is therefore imperative that biology majors at SRJC take all three of our biology major classes (BIO 2.1, 2.2 and 2.3) before transferring.

### 5.11a Labor Market Demand (Occupational Programs ONLY)

NA

### 5.11b Academic Standards

The grade distribution is reasonably aligned. If one examines more detailed data than in the summaries, the ANAT 1 sections that meet 4x / week have consistently higher GPA than the sections that meet 2x / week. Similarly the summer sections often have a higher GPA. The conclusion is simple and obvious - if students spend more time / week in class they perform better, even if the hours are longer. However, it is important to note that the vast majority of students failing the A, P & M courses drop either with or without a W grade.

Faculty for each of the courses with multiple sections meet once a year to discuss the course. FT faculty are in agreement about holding to high academic standards, while simultaneously doing everything possible to help students succeed. We hold monthly department meetings and this issue is discussed at regular intervals. The department has put a lot of weight on this issue in decisions about hiring, evaluating and retaining adjunct faculty.

## 6.1 Progress and Accomplishments Since Last Program/Unit Review

Rank	Location	SP	M	Goal	Objective	Time Frame	Progress to Date
0001	Santa Rosa	02	01	build new science / STEM building. all current STEM buildings are very old, with multiple problems: poor energy efficiency, rats, are built to sprawl vs conserving space, 4 buildings vs. one	participate in STEM cluster planning meetings	4 years	millions of dollars, a new bond
0002	Santa Rosa	01	01	provide internship opportunities	biology majors are more successful in transfer institutions if they have had internship opportunities	next year; ongoing	this is on ongoing effort, and has been very successful to date; it continues to be our #2 priority, after a new STEM building
0003	Santa Rosa	03	05	increase outreach to Latino community	research best ways to do this	4 years	tours of waste water treatment facility are provided in Spanish
0004	Santa Rosa	02	01	build greenhouse to provide space for student research projects	obtain permission to use part of one lawn to build a small greenhouse in the near future; wait for STEM building which should include a greenhouse	2 years	funds to purchase greenhouse; permission to use lawn space

## 6.2a Program/Unit Conclusions

Location	Program/Unit Conclusions
ALL	<p>1) Life Sciences programs, biology major &amp; pre-allied health major, have been kept current, provide excellent preparation for transfer and success in nursing &amp; dental hygiene programs. Life sciences courses that serve these majors and GE students are in great demand, most fill within 24 hours.</p> <p>2) The department is making changes in accord with AAAS recommendations, primarily in BIO 10, to focus on core concepts and active learning. A new course, BIO 16, may serve non-biology major students more effectively than bio 10. It will be offered for the first time in Fall 16</p> <p>3) Department data supports intensive courses (summer) and more time/ week (4 class meetings/week) as valuable ways to increase student retention and success.</p> <p>4) The biggest barriers to completion and success in Life Sciences courses are poor English skills and the life challenges common to CC students. Adding English pre-reqs is our contribution to problem #1, we can't solve life challenges!</p> <p>5) A vital way to enhance success is to provide internship experiences for biology majors; the department is actively developing our internship program.</p> <p>6) Open access is both a fundamental value of CCs, and a major barrier to student success and course/degree completion. The department supports the changes to repetition and priority registration that will support students who are prepared for college work, prepared to finish courses the first time taken, prepared to sign up for an education plan, prepared to master English before moving on to courses required to complete an academic major.</p>

## 6.2b PRPP Editor Feedback - Optional

RS . EOF

### 6.3a Annual Unit Plan

Rank	Location	SP	M	Goal	Objective	Time Frame	Resources Required
0001	Santa Rosa	02	01	build new science / STEM building. all current STEM buildings are very old, with multiple problems: poor energy efficiency, rats, are built to sprawl vs conserving space, 4 buildings vs. one	participate in STEM cluster planning meetings; support a Bond if approved	4 years	millions of dollars, a new bond
0002	Santa Rosa	02	01	prepare Life Science biology demo loaner boxes; provide resources for local K-12 schools, improve outreach	collect materials and boxes	2 years	funds to purchase boxes and some contents; most contents will come from Life Sciences collections
0003	Santa Rosa	02	01	build greenhouse to provide space for student research projects	obtain permission to use part of one lawn to build a small greenhouse in the near future; wait for STEM building which should include a greenhouse	2 years	funds to purchase greenhouse; permission to use lawn space
0005	Santa Rosa	03	05	increase outreach to Latino community	research best ways to do this	4 years	