

Santa Rosa Junior College

Program Resource Planning Process

Biological Sciences 2021

1.1a Mission

Mission of Biological 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, general education, or general interest and lifelong learning. 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 aligns well with the mission statement of the college, developed through the strategic planning process. The Biological 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".

Our department mission also aligns with the college's **Strategic Planning Goals**. We **support student success and foster learning and academic excellence** by hiring and mentoring outstanding faculty, offering rigorous and up-to-date curriculum, and by building relationships with a variety of organizations who provide internships to our students. We strive to **serve our diverse community** through our varied course offerings and by our outreach activities. We help to support **a strong culture of sustainability**

with our curriculum. We **develop financial resources** through grant writing and robust enrollment in our courses. Our department members **improve institutional effectiveness** by serving on numerous committees, the academic senate, and AFA.

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, and those intending to enter professional allied health programs. The Department also offers two related courses that prepare students to be Pepperwood preserve stewards (BIO 85.1 & 85.2) 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. It is our hope that when budgets improve some of these courses will be reinstated.

1.1d Hours of Office Operation and Service by Location

The Biological Sciences Department 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 8-10 PM on nights when there are night courses taught (MTWTh). This is true for both Santa Rosa and Petaluma campuses. The department office is in Santa Rosa 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 Campus Biology program offers day and evening courses M-Th. The Coordinator of Science Labs has an office next to the biology labs and is present during operational hours, M-F, 8:30am-4:30pm.

1.2 Program/Unit Context and Environmental Scan

There have not been any major changes to transfer requirements for students majoring in the Biological Sciences. 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.

There has been a major trend in general education in the biological sciences. A set of recommendations has been published by the American Association for the Advancement of Science (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. A member of the department spent a sabbatical studying these changes in biological education and has presented several workshops for our faculty. We have begun to make changes to our courses applying these recommendations.

The Biological Sciences Department has developed partnerships with Bodega Marine Lab, Point Blue, Landpaths, Audubon Canyon Ranch, the Jewish Free Clinic and The Buck Institute for Research on Ageing to obtain paid and unpaid internship experiences for our biology majors.

2.1a Budget Needs

If you need additional funds, please explain.

Over the last few years, the Biological Sciences budget has been cut by over \$12,000 in supplies and graphics alone, a 40% decrease. Our department has high enrollment efficiency (ranging from 95% to 107% over the last three years) and we turn away many students at the beginning of each semester. In order to try to meet student demand we were told not to cut sections to match the lowered budget. However, we do not have the resources we need to run our classes at the most basic level. Not surprisingly, this time last year we had a \$12,600 budget deficit. Given the impact of COVID-19 on the college over the past year, I chose to reference the 2019/2020 budget given that it most accurately represents the department's needs for a standard, in-person year.

The Biological Sciences budget must cover a great deal of items beyond those typical to most academic departments, such as live cultures, consumable supplies for labs, and equipment maintenance. The lab exercises performed in our courses are necessary to cover the concepts of our approved curriculum, and many of these courses prepare students for transfer into either 4-year universities or pre-allied health programs. In addition, as science is ever progressing, lab activities need to be updated periodically in order to provide relevant experiences for our students.

If the college cannot restore our budget then some difficult decisions need to be made about which high demand courses to cut, as we've already maximized all possible efficiency strategies.

Physiology, Anatomy, Microbiology, and Cell Biology are the most expensive courses to teach per section, they are also the most impacted. While cutting these courses would save some money in the short term, these kinds of cuts would also have the largest impact on transfer, certificate and degree completion. In addition to decreasing completion in our own department, the loss of these courses would impact the number of students who complete Nursing and other Allied Health degrees, which are among the most numerous in the college.

4510: graphics

Requesting increase of **\$2,500.00**

During the three years prior to the COVID-19 pandemic, we went into the red on our graphics budget.

5690: cadavers

Requesting increase of **\$1,500.00**

Cadaver prices went up in 2016, and every year they increase the mileage and service charge (from the funeral home that transports them). Cadaver dissection is an integral part of our pre-allied health program.

5620: field trips

Requesting increase of **\$1,300.00**

Field trips are an integral part of a biology curriculum. These funds are needed to pay for van mileage.

5652: Contract Maintenance

Requesting an increase of **\$2500.00**. The maintenance contracts for the water system and the autoclave have increased by 4-5%. These two contracts equal \$900.00 for July 2020's new

contracts. As of April 2021, we have a -\$4,822 balance. If we got \$1,200 increase each year then we would have enough to cover some microscope maintenance. If we got \$2500 then four labs could have their scopes all done per year as well. This does not count any problems arising with other equipment (i.e. the cryofreezer).

4390: general supplies

Requesting increase of **\$12,500.00**

Consumable and live lab supplies are one of our largest annual expenses. The department utilizes numerous cost-saving measures, however due to cost increases over time (including shipping costs), it is difficult to replicate each year's purchasing so that we are able to provide the same lab experiences without an increase of funding. In addition, in order to train our students in modern biological techniques, we need to update our labs overtime. For example, adding biotechnology experiments.

2.1b Budget Requests

Rank	Location	SP	M	Amount	Brief Rationale
0001	Santa Rosa	01	01	\$12,500.00	These funds are required to cover the cost of basic supplies (4390) for our lab classes
0002	Santa Rosa	01	01	\$2,500.00	These funds are for increased costs of maintenance contracts
0003	Santa Rosa	01	01	\$1,500.00	These funds will cover the ever-increasing cost of cadavers (5690).
0004	Santa Rosa	01	01	\$1,300.00	Funding to cover the cost of field trips (5620), which are a part of laboratory curriculum. Funds cover the cost of mileage related to use of campus vans. Field trip locations each semester include Sonoma Mountain, Bodega Bay, Armstrong Redwood State Park, Safari West.
0005	Santa Rosa	01	01	\$2,500.00	These funds are for graphics (4510)

2.2a Current Classified Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Administrative Assistant II	40.00	12.00	This position has been vacant for over a year, but we expect to hire soon. Bio Sci department office management, type evaluations, monitor budget, source and purchase equipment and services, update website, provide departmental orientation for new employees, prepare PAF's, enter curriculum into SIS database. NOTE: Admin also serves the E&SS department, Chemistry and Physics with these hours
Science Lab Coordinator; SR	40.00	12.00	manage budgets, coordinate purchases and preparations for 50 lab sections; maintain living organisms, order and receive supplies, maintain equipment, supervise student employees, work with SLIA's on BIO 10, Majors Bio, Physiology, Anatomy and all other Bio classes preparations. Attempts to fill the gap for the absence of a microbiology lab SLIA which requires working from 7 AM to 7 PM on some days. NOTE - These 40 hours also work with suppling the Ag department with plates and the Petaluma campus Bio Sci with live bacterial cultures.
Science Lab Coordinator, Petaluma	40.00	12.00	manage budgets, coordinate purchases and preparations for student labs; maintain living organisms, order and receive supplies, maintain equipment; work with SLIA on MICRO 60 and 5 preparations, and BIO 10 and 100 when needed. NOTE - these 40 hours also coordinate other science courses (and their budgets) using lab facilities at the Petaluma campus: chemistry, earth/space science, physics, wastewater chemistry, animal health, viticulture, etc.
SLIA Anatomy and Microbiology	40.00	10.00	prepare student labs: equipment, specimens, reagents; assist in lab instruction; assign, oversee, and score dissections; dispose of hazardous waste; order/maintain/dispose of cadavers.
SLIA Physiology and Introductory Biology	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	40.00	10.00	prepare student labs: equipment, specimens, reagents; assist in lab instruction, gather botany specimens, maintain living cultures for labs
SLIA evening, Santa Rosa	18.00	10.00	prepare student labs: equipment, specimens, reagents; assist in lab instruction
SLIA Introductory Biology, Micro, Petaluma	20.00	12.00	prepare student labs: equipment, specimens, reagents; assist in lab instruction
	0.00	0.00	

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, hiring, department meetings and communication; Biological Sciences has a SR chair (.48) and a Petaluma co-chair (.03) = .51 FTE release time. This release time does not accurately reflect the time spent to do the job.

2.2c Current STNC/Student Worker Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Student Lab Assistant (2)	20.00	12.00	20 hours split by 2 workers. Care for animals, wash dishes, prepare solutions, media, and cultures, clean labs and microscopes
Student Lab Assistant, Petaluma	8.00	12.00	Care for animals, wash dishes, prepare solutions and media, clean labs and microscopes

2.2d Adequacy and Effectiveness of Staffing

The Biological Sciences Department does not have adequate staffing to support our needs.

Rank 1: One of our SLIAs (Bio Majors) has a 10 month position. The department requests that this position be made an 11 month position. This position serves all biology major courses, and a summer session of BIO 2.1 (cell biology). Offering BIO 2.1 in the summer allows our Biology majors to transfer in a timely manner. This cannot be done without adequate instructional support for lab set-up and take-down, as well as instructional assistance during lab hours.

Rank 2: Increase hours for evening Physio/Intro Bio SLIA from 18 to 30 hours per week. This position assists with several different courses that are taught in the late afternoon and evening, additional time is needed to adequately perform all duties.

Rank 3: Increase hours for Santa Rosa Student Lab Assistants. Our student lab assistants take care of many tasks that are integral to our classes and are in no way cost effective to have SLIAs perform, such as cleaning and upkeep of lab equipment, care of living specimens, and organizing supplies. We regularly run short on hours and end up having higher paid staff performing these menial tasks.

Rank 4: Increase hours for Petaluma Student Lab Assistant. Our student lab assistant takes care of many tasks that are integral to our classes and are in no way cost effective to have our SLIAs perform, such as cleaning and upkeep of lab equipment, care of living specimens, and organizing supplies. We regularly run short on hours and end up having higher paid staff performing these menial tasks. In addition, our student workers are science students who move

on with their education away from the Petaluma Campus. An increase from eight to twelve hours per week would allow one experienced student, who is getting ready to move on, to work with and train an incoming student worker.

Rank 5: Petaluma SLIA hours increased from 27.5 to 30 hours per week. Adding any additional classes (such as more microbiology) will not be possible without increased staff at this location.

2.2e Classified, STNC, Management Staffing Requests

Rank	Location	SP	M	Current Title	Proposed Title	Type
0001	Santa Rosa	01	01	SLIA Bio Majors (10 month)	SLIA BIO Majors (11 months)	Classified
0003	Santa Rosa	01	01	SLIA, Evening, 18 hours/week	SLIA, evening, 30 hours per week	Classified
0004	Santa Rosa	01	01	Student Lab Assistant	funding to increase from 20 to 25 hrs/week	Student
0005	Petaluma	01	01	Student Lab Assistant	funding to increase from 8 to 12 hrs/week	Student
0006	Petaluma	01	01	SLIA Biology	increase from 27.5 to 30 hrs/week	Classified

2.3a Current Contract Faculty Positions

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

2.3b Full-Time and Part-Time Ratios

Discipline	FTEF Reg	% Reg Load	FTEF Adj	% Adj Load	Description
Anatomy	2.3100	47.4000	2.5600	52.6000	This ratio will be affected by the planned hire of a full-time faculty teaching Anatomy/Physiology.
Biology	5.8600	49.6000	5.9500	50.4000	This ratio is affected by the implementation of lab equity and, temporarily, by leaves granted due to the pandemic.
Botany	0.4000	100.0000	0.0000	0.0000	There are only two remaining Botany courses (we used to have 11). We recently hired a full-time faculty to anchor these courses.
Microbiology	1.8000	75.0000	0.6000	25.0000	Last year's hire of a full-time faculty qualified to teach Microbiology should stabilize this ratio.
Physiology	0.9000	31.8000	1.9300	68.2000	This ratio was impacted by the retirement of a full-time faculty and the implementation of lab equity. The planned hire of a full-time faculty qualified to teach Anatomy/Physiology should stabilize this ratio moving forward.

2.3c Faculty Within Retirement Range

Twelve full time faculty are listed in section 2.3a. According to data provided by the college 5 current faculty are under 50, 2 are 50-54 and 3 are 55+. However, this only accounts for 10 of our 12 faculty. Two faculty are new and may not be included in the data. Both are under 50.

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

It is difficult to find adjunct instructors for our various disciplines, and we often struggle to fill openings. The recent contract change, which gave parity to lab and lecture (Fall 2020), has dramatically impacted our FT to PT ratios. For example, in Fall 2019 58 of our 62 sections have a lab. When lab equity went into effect the load for each lab section increased from 0.75 to 1.00. This increase in load will typically be covered by adjunct or overload faculty, significantly decreasing our ratios.

1. Our top priority is to add a full-time instructor to teach our general biology courses (BIO 10, BIO 19, and BIO 100). Currently we lack a dedicated full-time faculty to anchor these courses.

2.3e Faculty Staffing Requests

Rank	Location	SP	M	Discipline	SLO Assessment Rationale
0001	Santa Rosa	02	01	Bio. Sciences: general biology	Because of the implementation of lab equity, most full-time load is covered by teaching majors courses (Anatomy, Physiology, Microbiology, and biology major courses). The consequence of this is very few full-time instructors will be teaching our non-majors courses (BIO 10 and BIO 16). The lack of an anchoring faculty within these courses has resulted in poor coordination and inconsistencies among sections.

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

Existing equipment and technology are not adequate for our instructional program. Primary needs include several items that will preserve our priceless specimen collection (both taxodermic and herbarium), including a **walk-in freezer** and **museum-quality display cabinets**. Some specimen loss has already occurred, and last year we came close to losing many more. My understanding is that both the freezer and cabinets will be included in the remodel project currently underway with RFD (with Measure H funds), but having been warned to "put everything in the PRPP," I thought it prudent to include them here as well.

The **binocular compound microscopes** in the physiology lab are old and many no longer focus properly. These are only ranked as low priority because they are quite expensive, and the physiology students don't use them very often compared to many of our other courses.

Microscope cell phone adaptors would allow the students to easily photograph slides in lab, and can also functionally "add an ocular" to monocular microscopes.

Smart Board will be used by students in study/work groups for all Biology, Anatomy, Physiology and Microbiology classes.

Insect lights: will be used the zoology students for their insect collecting assignment

Nanodrop: this is used by microbiology students in lab

Meter tape set: these are used for field investigations in Botany and general Biology courses

LED Grow lights: these are used for student experiments in BIO 16 and in Botany classes

HOBOS: These are used by students for experiments in the major's series.

DH tapes: these are used for field investigations in Botany

Cadaver table lights: this is to allow students to better observe the cadaver when it is being displayed using the camera system. The camera system is being overhauled as part of the Baker Hall Remodel project, but the lights are not. Only 1 of the 4 light systems still functions. It is paramount that the lights be replaced along with the cameras to ensure compatibility.

Bones for Anatomy: these are to augment the anatomy collection for anatomy labs

Set of Botany Slides: This is to replace a decades old set of slides in the botany classes which are no longer functional

Zoology specimen: We currently have a large number of irreplaceable zoology specimens that are owned by a retired professor. We would like to purchase them so we don't lose them when he leaves the college.

Knee pads: These will be used by students in BIO 2.2, 16, 10, and 25 during field trips to the rocky intertidal.

Quadrants: These will be used by students in BIO 2.2, 16, 10, and 25 during field trips for rocky intertidal monitoring.

50um plankton nets: This will be used by students in BIO 2.2, 16, 10, 25 for marine field trips.

Agarose gel imaging system: This is used by BIO 2.1 and MICRO 5 to analyze DNA work. The current imaging setup (desktop computer, camera and UV light source) is old and needs replacing soon. The current system was produced by a company no longer in existence, thus upgrades and repairs are not possible.

2.4c Instructional Equipment Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	Santa Rosa	01	01	LED Grow Lights	1	\$1,000.00	\$1,000.00	Tony Graziani	1840	Abigail Zoger
0002	Santa Rosa	01	01	Insect Lights	3	\$100.00	\$300.00	Tony Graziani	1860	Shawn Brumbaugh
0003	Santa Rosa	01	01	DBH Tapes	12	\$42.00	\$500.00	Tony Graziani	1840	Jennifer Palladini
0004	Santa Rosa	01	01	Bones for Anatomy (type and quantity vary)	0	\$0.00	\$8,000.00	Tony Graziani	1837	Mike Lindh
0005	Santa Rosa	01	01	Meter Tape Set	12	\$40.00	\$480.00	Tony Graziani	1840	Jennifer Palladini
0006	Santa Rosa	01	01	50 um plankton net	1	\$550.00	\$550.00	Tony Graziani	1860	Kirsten Swinstrom
0007	Santa Rosa	01	01	Cadaver Table Light	4	\$800.00	\$3,200.00	Tony Graziani	1837	Danielle King
0008	Santa Rosa	01	01	HOBOS	0	\$0.00	\$0.00	Tony Graziani	1840	Abigail Zoger
0009	Santa Rosa	01	01	Set of Botany Slides	0	\$0.00	\$0.00	Tony Graziani	1840	Abigail Zoger
0010	Santa Rosa	01	01	Zoology Specimens	0	\$0.00	\$0.00	Tony Graziani	1860	
0011	Santa Rosa	01	01	Nanodrop	1	\$6,000.00	\$6,000.00	Tony Graziani	1885	Katy Jamshidi
0012	Santa Rosa	01	01	Quadrants for intertidal monitoring	1	\$400.00	\$400.00	Tony Graziani	1860	Kirsten Swinstrom
0013	Santa Rosa	01	01	Smart Board	1	\$2,500.00	\$2,500.00	Tony Graziani	1872	Kirsten Swinstrom
0014	Santa Rosa	01	01	Agarose gel imaging station	1	\$11,000.00	\$11,000.00	Tony Graziani	1885	Tony Graziani
0015	Santa Rosa	01	01	knee pads for rocky intertidal field trips	1	\$400.00	\$400.00	Tony Graziani	1860	Kirsten Swinstrom
0016	Santa Rosa	01	01	set of microscope cell phone adapters	1	\$480.00	\$480.00	Tony Graziani	1850	Abigail Zoger
0017	Santa Rosa	01	01	binocular compound microscopes	30	\$1,160.00	\$35,000.00	Tony Graziani	1879	Kirsten Swinstrom

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0018	Santa Rosa	01	01	MEAS H: museum-quality specimen cases (2) displays	10	\$2,000.00	\$20,000.00	Tony Graziani	Baker	Shawn Brumbaugh
0019	Santa Rosa	01	01	(MEAS H)large specimen freezer	1	\$10,000.00	\$10,000.00	Tony Graziani	1805	Shawn Brumbaugh

2.4d Non-Instructional Equipment and Technology Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	Santa Rosa	04	07	ITG BOND FUNDS: Color printer with scanner	2	\$800.00	\$1,600.00	Tony Graziani	1805 and 1850	Tony Graziani

2.4f Instructional/Non-Instructional Software Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
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2.5a Minor Facilities Requests

Rank	Location	SP	M	Time Frame	Building	Room Number	Est. Cost	Description
0001	Santa Rosa	04	07	Urgent	Baker	1874, 1875	\$0.00	Faculty offices need update - health and safety
0002	Santa Rosa	04	07	Urgent	Baker	1809	\$0.00	New combination chalk board/white board
0003	Santa Rosa	04	07	Urgent	Baker	1801	\$0.00	New White Board
0004	Santa Rosa	04	07	Urgent	Baker	1885A	\$0.00	Reposition the sink on the west side of 1885A to fix ergonomic issues
0005	Santa Rosa	01	01	Urgent	Baker	1829	\$0.00	Add light switch near the door that opens into 1837
0006	Santa Rosa	04	07	1 Year	Baker	1840, 1849, 1869, 1879	\$0.00	Dimmer Switches at instructor stations
0007	Santa Rosa	01	01	1 Year	Baker	1869	\$0.00	Antiglare window coverings or external sunscreen
0008	Santa Rosa	01	01	1 Year	Baker	external	\$0.00	Fix pocket doors into 1850 from all 4 offices
0009	Santa Rosa	01	01	1 Year	Baker	external	\$0.00	Fenced experimental garden (off 1805 or on lawn outside the C wing)
0010	Santa Rosa	04	07	2-3 Yr	Baker	1850	\$0.00	Install dermestid beetle box

2.5b Analysis of Existing Facilities

Baker Hall Critical Needs Prioritization List

- **Office updates for Baker 1874 and 1875.** These old faculty offices will be occupied by recently hired FT faculty beginning Fall 2021. Due to health and safety issues, the flooring (carpet) and wall material (carpet) need replacement. Also, electrical and internet connectivity needs updating. All non-operating vents (plumbing and HVAC) need covers.
- **Chalk board and white board for 1801/1809.** The current chalkboards in these rooms are virtually unreadable by students and need to be replaced immediately (especially 1801)
- **Reposition the sink on the west side of 1885A**
Justification: The depth of the sink is good for washing large glassware, but there is a large (6") expanse of counter to reach over, resulting in terrible ergonomics and a consistently aching back for the staff.
- **Dimmer Switches added to instructor station in labs 1840, 1849, 1869 and 1879.**
- **Fenced experimental garden (off 1805 or on lawn outside the C wing)**
Justification: It is normal for plants grown in greenhouse facilities to move between indoor and outdoor space as part of their developmental process or for experimental reasons. We have outfitted Baker 1805 with grow lights in order to mimic the indoor growing space of a greenhouse but lack any outdoor space. Fencing in some of the outdoor areas would be an inexpensive way to mimic the growing conditions normally provided in biology departments.
- **Add light switch near the door that opens into 1837**
Justification: There is currently only one light switch in the cadaver lab, and it cannot be accessed from the doors into either the Anat 1 or Anat 58 anatomy lab. Students have to walk across a dark room, with a potentially slippery floor, to reach the only light switch (which is on the wall backing the hallway).
- **Antiglare window covering on room 1869**
It is very difficult for students to see the projection screen on sunny days.
- **Fix pocket doors into 1850 from all four offices**
Justification: None of these doors will open or close easily; there is nothing to grip to open them. Faculty and staff must use their keys as a lever, which ends up bending all their keys.
- **Install dermestid beetle box**
Justification: This is required for preparation of vertebrate skeleton specimens, but must be located at a far, safe distance from existing specimens because just one escaped beetle can ravage a collection.

3.1 Develop Financial Resources

The Biological Sciences Department has contributed to the financial resources of the college in several ways. One of our faculty members has

been awarded two National Science Foundation grants: The NSF EAGER grant for CUREs and a NSF SSTEM grant focusing on mentorship.

In addition, we contribute to the financial resources of the college with robust enrollment in our courses. We overfill our lab sections and teach double sections so that we have high efficiencies. To further increase our efficiency, we offer "Shadow" Anatomy sections: these sections are for students who want to add Anatomy 1. Students come on Friday and Saturday for lab and attend the regular lecture sections during the week. When someone drops from the lecture section the student is moved into the regular section, in this way we preserve enrollment and ensure more students have access to the classes they need.

Some department members even donate royalties they receive from textbook authorship to support student internships and to purchase equipment for the department.

3.2 Serve our Diverse Communities

The Biological Sciences Department has taken several steps to address the diverse community that we serve:

1. Two full time faculty members have studied extensively to become fluent in Spanish since they joined SRJC. One of these faculty members has made and posted videos in Spanish on our department website to make information more readily available to our students and their families.

2. We have developed new courses to meet the needs of our student body:

Biology 16 Non-Major's Biology: in order to serve the large number of students who need a GE science with a lab course, we have developed this course. The course teaches the principles of biology through current issues. As a result of this structure the material is more accessible to our students and can be tailored to their particular interests. For example, cell and molecular biology can be taught via the diabetes pandemic, which disproportionately impacts Latino populations.

Biology 7: Careers in STEM: as part of an NSF SSTEM grant that focuses on mentorship, we have developed a career development class. Students start by doing self-assessments of their skills and preferences, move on to exploring career options, learn job search skills such as how to use LinkedIn, write a resume and cover letter and finish with creating a career plan that encompasses their

coursework, skills and networking needs to achieve their long-term goal. This type of information is especially important for first generation college students.

Bio 27 Marine Mammals: to meet the needs of students who prefer, or need, online courses, we have recently developed our first fully online biology course.

3. In addition to language and cultural diversity we are also aware of the economic diversity in our student body. Since most of our students work as well as go to school, they are unable to take the time for an internship. As part of a \$300,000 NSF grant, the department has developed CUREs in Biology 2.3, Biology 10 and Microbiology 5. CUREs move that experience into the classroom to increase access to these vital experiences for students' professional development. An additional NSF SSTEM grant specifically provides funds for students with high academic achievement and low financial resources.

4. Biology Club: The club is a venue for building connections and community amongst our students while they develop leadership skills. The club has focused on bringing in speakers to help students learn about career planning, internships and alumni connections. It is important that students maximize the social and cultural capital that they already have as they develop more.

5. 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 Biological 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 well-paying jobs in Sonoma County.

3.3 Cultivate a Healthy Organization

The Biological Sciences Department has focused on collegiality in our hiring practices for the past fifteen 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 hiring practices that help ensure that we

hire outstanding faculty. The Department has participated in several lab safety trainings and has a designated emergency coordinator on both campuses.

3.4 Safety and Emergency Preparedness

The Petaluma Science Lab Coordinator, Scott Lorbeer, is the safety leader in Petaluma, E wing. Beth Johnstone, Science Lab Coordinator, 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.

3.5 Establish a Culture of Sustainability

The Biological Sciences Department contributes to this goal by our input to the Baker Hall renovations and the pollination garden on the Petaluma Campus. In addition, we include sustainability principles as part of the curriculum in our biology and ecology courses. One faculty member from our department has organized an event this semester which brings together students and local representatives to address climate change.

4.1a Course Student Learning Outcomes Assessment

All of the Department's active and regularly scheduled courses have had at least one SLO assessed. More than half of the courses have had all SLOs assessed. Thirty-two SLO assessments have been completed in the last three years. All of the completed assessments have been entered into the Sharepoint web site. Ten additional SLO assessments are in process this semester

Response: Many of the assessments suggest that current course material is appropriate and covered in a way that 70 to 90% of students were able to successfully answer assessment questions. Therefore, few changes were warranted. However, in rare cases where assessment criteria were not met, department dialogue resulted in course improvements for individual instructors.

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.

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 100	X	X	X	X	X		X	X		X	X			X		X
Bio 12			X	X	X	X	X	X	X	X	X			X		X
Bio 13			X	X	X	X	X	X	X	X	X			X		X
Bio 16	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Bio 25	X	X	X	X	X		X	X	X	X	X			X		X
Bio 27		X	X	X	X		X	X	X	X	X			X		X
Biology Major	X	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 Biology 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

Not Applicable

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

We offer day and evening sections for all Introductory Biology, Anatomy, Microbiology, and Physiology classes. There are currently no regularly scheduled weekend classes except the shadow anatomy section which meets on Saturdays. We offer some sections on Friday. We also use Friday as a day to open our labs to students who need extra study time with lab materials.

We offer our full range of classes on the Santa Rosa Campus. Introductory biology, non-major's biology, human biology, marine mammals, basic skills biology and microbiology are all offered on the Petaluma Campus. We could potentially offer more microbiology in Petaluma, but this would require more staff, more faculty, and a larger supplies budget. Anatomy and Physiology classes are taught solely on the Santa Rosa Campus due to cost of lab construction and outfitting.

The department has recently added one online lecture course, Bio 27, Biology of Marine Mammals, and we will be offering it for the first time in summer 2019. However, the department feels strongly that lab courses must be taught in a lab, not online. Note that many nursing and graduate programs will only accept face-to-face lab courses.

There is a tremendous demand for Introductory Biology, Anatomy, Physiology, and Microbiology classes. Given the constraints of lab size, faculty availability, and supplies budget we will not attempt to offer more sections of these courses, even though they would fill. Our goal is to maintain our current offerings of 5-6 sections per semester (plus one of each in summer) of the anatomy, physiology, and microbiology courses required for nursing and dental hygiene. In order to accommodate as many students as possible the department schedules a shadow anatomy section every semester that allows an additional 30 students to enroll at minimal cost to the college. Additional offerings would not significantly help students as there will be no expansion of the SRJC allied health programs.

A review of the **Student Headcount data** shows that enrollment increased from 2015 to 2017 by ~4% for spring and fall and by 18% for summer. Fall 2018 showed a decrease in enrollment of 12% compared to Fall 2017, this is due in part to mandated section reductions and is also a trend seen across all disciplines.

5.2a Enrollment Efficiency

Efficiencies across all disciplines for Biological Sciences has been outstanding, ranging from 91% to 107% over the last three years. Efficiency numbers on both the Petaluma and Santa Rosa Campuses are usually above 100%.

We achieve these results by over-enrolling our sections because we know that not every student can complete these challenging classes. We also teach many laboratory courses as a "double-section" teaching twice as many students in lecture as in lab. We also offer a "shadow" anatomy class, allowing many students to add as students drop in the first few weeks.

These numbers indicate that much of our program is impacted. In addition to the efficiency methods mentioned above, the department has added some additional microbiology sections to meet demand but cannot generally increase our course offerings due to building, staff, instructor and/or supply budget constraints. However, we feel there are other ways to meet student needs. 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. A change in priority registration policies and required counseling would be the best ways to address this problem.

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 our classes usually have 23-26 students per class with the lowest numbers in summer session.

5.3 Instructional Productivity

The majority of Biological Sciences classes are at or above the 17.5 FTES/FTEF ratio goal in fall and spring semesters at both campuses. There is a consistent pattern of a ratio below 17.5 in summer sessions. Summer sessions are usually taught as single sections, not the usual double sections offered in fall and spring semesters, and this lowers the ratio given that laboratory classes are limited to 24 students.

Of the five subdisciplines in our department, Physiology has particularly high productivity, each spring and fall semester in the last three years have a ratio above 20, with Fall of 2016 being the best at 27.

Microbiology also has high numbers, particularly on the Petaluma campus where we offer a double section of Micro 60. The average of all locations is above 17.5 for all spring and fall semesters, and above 20 for many.

Biology also has values above 17.5 for all fall and spring semester except fall 2018 when our ratio fell to 17.26.

Anatomy has somewhat lower numbers ranging between 15.41 to 18.3. Some Anatomy sections must be taught as single sections to allow a greater diversity of time options for students.

The botany values are consistently below 17.5, this is due to the botany class being taught as a single section.

Productivity on both campuses is maintained by optimizing schedule times to meet student needs and teaching double sections of our laboratory courses whenever possible.

5.4 Curriculum Currency

All of our courses have current CORs and we have initiated a regular cycle of 5-year review for all courses.

5.5 Successful Program Completion

In order to minimize barriers to successful completion we coordinate scheduling of the Biology Major's courses with the Chemistry and Physics departments. We offer the first course in our major's sequence, Bio 2.1, in the summer as well as Fall and Spring to allow students to complete all three courses required for the biology major within one year. 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 and Pre-Allied Health major. We also have prepared rotation plans that show students how to complete our majors within two years.

Biology Degrees Awarded:
2015/16: 18

2016/17: 13

2017/18: 21

2018/19: 6

While these numbers are not large, they are double what they were in the last PRPP cycle. We believe this may be due to changes we've made in the major including eliminating the elective requirement. However, the primary reason that these numbers are low is that an AS in biology serves no academic purpose other than noting achievement and completion. Few students apply for this degree because they want the BA / BS in biology, which is usually considered a minimum requirement for acquiring a job in this field. Furthermore, most students do not want to complete the LIR course in addition to the already high unit demand of this major, and often transfer before completing all of the AS requirements. However, the increase in degrees awarded clearly shows that students are beginning to see the value of marking this level of achievement.

A performance measure missing from this analysis is the number of students who transfer to 4-year institutions as biology majors. We are hopeful these data will become available in the future as it is a better indicator of our success in preparing students for a biology career than the number of students who earn an AA or AS.

Pre-allied Health Degrees Awarded:

2015/16: 59

2016/17: 87

2017/18: 86

2018/19: 43

These numbers have increased since the last PRPP and are impressive given that 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. The increase in these numbers may mean that students are increasingly aware of some value to the AA degree even in the pre-requisite discipline.

5.6 Student Success

Retention

Retention rates for the college ranged from 72.2% to 83.47%. Retention rates for all Biological Sciences disciplines on both campuses ranged from 76.3 to 92.2%. Thus, our retention rate equals or exceeds that of the district. These are noteworthy retention rates since many of these courses are notoriously difficult for students. There is a consistent pattern of higher retention in the summer, as is true for the college as a whole.

There are a few retention rates below 70% - for 3/6 botany sections; and the last 4/6 semesters in anatomy. Anatomy includes ANAT 140 which enrolls many extremely underprepared students and therefore has a high attrition rate. In addition, Anatomy 1 is usually the first in a series of very challenging prerequisite courses for the pre-allied health students. Students are often unprepared for the demands of this course. However, the subsequent courses, Physiology and Microbiology, have higher retention rates, thanks in part to the preparation they received by eventually succeeding in Anatomy.

Successful Course Completion

The range for the college is 68.10% to 80.96 %. The Biological Sciences data for all disciplines is 70.2% to 88.7%. Successful completion rates among the subdisciplines mirrors retention rates.

GPA

The district data range from 2.75 to 3.051; Biological Sciences overall data range is 2.54 - 2.88. This lower value is consistent with the STEM cluster in general, which makes sense given that STEM classes are typically very demanding.

Equity Data:

No clear pattern of increasing or decreasing success is seen for any particular subgroup. Comparisons between groups is not meaningful given the differences in sample size.

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

- * faculty focus on pedagogy practices including embedding research and study skills into our courses
- * offering a developmental course to help students with bio 10 (bio 100)
- * an educational campaign to alert students to preparation needed for Anat 1 and Physio 1 and MICRO 5 (web site info & memos to counselors)
- * the use of CSKLS tutors and peer tutors in labs
- * open lab time on Fridays to increase student access to study materials

5.7 Student Access

The number of Hispanic students continues to rise steadily in all biological sciences subdisciplines. For example, in Anatomy, the proportion of Hispanic students rose from 31.8% to 42.3% over the last three years, exceeding the percentage of white students for the first time. In all of our subdisciplines the proportion of white students is slowly declining as the Hispanic proportion increases. There is no clear pattern of increase or decrease for any other ethnic group.

It is interesting to note that the number of students who choose, "decline to state" has dramatically increased in the last three years. For example, in 2015/16 only

0.7% of Anatomy students declined to state their ethnicity, in 2018/19 that number is 5.2%.

There are significantly more females than males in all of our subdisciplines with the exception of Botany, where the ratio is close to 50/50. In Anatomy, Biology, Microbiology, and Physiology, 16 – 32% of our students are male. This is not surprising given that many of our students are entering allied health fields, which traditionally have been dominated by women. Given that the number of nurses who are men in this country is only ~10%, our enrollment of 16-32% males shows some progress in this area. Outreach by the allied health departments to male students may be useful to increase these numbers. Our department outreach for this program is primarily allowing several high school classes to visit the anatomy lab every semester.

The Biological Sciences department offers two courses at the 100 level to serve students who might have language and/or 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. A few courses with lower demand (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, and 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 environmental and agriculture students.

We recently added a new course, BIO 16 Non-Majors Biology. This course is designed for non-biology majors and emphasizes the core concepts of biology linked to current issues. It is a more engaging course for non-majors, and one that will 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)

Our biology major curriculum is aligned with 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.

5.11a Labor Market Demand (Occupational Programs ONLY)

NA

5.11b Academic Standards

The department monitors and discusses academic standards on a regular basis, through the evaluation process and curriculum updates. Faculty for each of the courses with multiple sections meet every year to discuss the course. 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	Santa Rosa	04	01	Remodel Baker Hall and replace lawn by C wing with tables and benches.	Make shared spaces more integrated and effective for students, faculty, and staff	1 year	Funding from measure H have been confirmed, however, no funds to repair damage caused by roofing and HVAC work has been identified. More meetings with architects will be needed when we get closer to the summer 2020 start date. We still need funding to replace lawn by C wing with tables and benches.
0002	Santa Rosa	08	01	Examine support staff allocation: key staff are retiring and this gives us an opportunity to reexamine how we allocate staff; which classes need what type of support. Address the lack of support for night classes.	Ensure adequate support for all of our courses	1 year	Replacement of retiring staff will be critical. Discussions among faculty and staff will be needed to allocate staff time.
0003	Santa Rosa	08	01	Bring our course offerings in line with our budgetary and staff support from the college.	Ensure adequate lab funding and support staff coverage of all labs to provide a safe and effective program for our students.	1 year	Discussions with administration and among faculty to decide which courses to cut given the ongoing lack of supply funds and staff support for our courses.
0004	ALL	02	01	STEM visioning and integration across disciplines and campuses	Stay active in the planning process for the 2nd phase of the STEM cluster building in coordination with other STEM departments. Participate in the design of the new pollinator garden on the Petaluma Campus.	ongoing	The department chair has open and productive communication with the dean in Petaluma. We'll require inclusive planning meetings involving STEM departments and Petaluma faculty, staff, and administrators. This goal is also tied to planning of the outdoor spaces between Baker and the new STEM building. We'd like to discuss possibly collaboration around art, geology, anthropology, Ag (demo garden?), etc.
0005	Santa Rosa	01	01	foster critical thinking in students, across disciplines	Develop a critical thinking course in collaboration with the Philosophy Department	2 years	We require grant funding to develop this course.
0006	Santa Rosa	03	05	continue K-12 outreach	encourage K-12 students to enter STEM disciplines	ongoing	We plan to continue what we're already doing, especially supporting the Bio Club (see Section 6.1). In order to expand our efforts, we would require release time or a stipend/PGI/flex credit for faculty to oversee this.

6.2b PRPP Editor Feedback - Optional

Summarizes well the Biological Sciences Departments' needs, efforts towards student success, and contributions to the District.

6.3a Annual Unit Plan

Rank	Location	SP	M	Goal	Objective	Time Frame	Resources Required
0001	Santa Rosa	04	01	Remodel Baker Hall and replace lawn by C wing with tables and benches.	Make shared spaces more integrated and effective for students, faculty, and staff	1 year	Funding from measure H have been confirmed, however, no funds to repair damage caused by roofing and HVAC work has been identified. More meetings with architects will be needed when we get closer to the summer 2020 start date. We still need funding to replace lawn by C wing with tables and benches.
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