

# Santa Rosa Junior College

## Program Resource Planning Process

### Earth and Space Sciences 2019

#### 1.1a Mission

##### Updated Spring 2019

The primary purpose of the Earth and Space Sciences' (ESS) varied programs is to provide an interdisciplinary approach to studying the Earth, Earth processes, the environment, and astronomical bodies and phenomena. We strive to promote awareness of the human impact on our surroundings and the relevance of ESS disciplines to our lives.

We strive to generate interest in science and to provide a foundation in the Earth and Space Sciences which students can ultimately apply towards an ESS-related major, GE-transfer, and/or towards pursuing personal interest goals.

Finally, ESS courses attempt to connect the academic realm with the real world, providing students with the theoretical and hands-on skills and knowledge to take what they learn in the classroom and apply it to their daily lives. We work to ensure that our students become responsible and informed global citizens.

The ideals that the ESS Department endeavors to attain include:

- Academic excellence from students and faculty
- A wide range of course offerings district-wide
- Faculty who maintain currency in their field(s)
- Providing high quality educational opportunities
- Attracting and serving a diverse student body and fostering diversity within our department

#### 1.1b Mission Alignment

##### Updated Spring 2019

*How is the program/unit mission consistent with the District's Mission and Strategic Plan Goals?*

The ESS Department Mission is consistent with the District's Mission, Institutional Goals and College Initiatives in that we are committed to promoting student learning in order to serve our diverse community. See *Ideals* above.

This aligns with Goal C of the strategic plan:

##### **Goal C: Serve our Diverse Communities**

Serve our diverse communities and strengthen our connections through engagement, collaboration, partnerships, innovation, and leadership.

- Identify the educational needs of our changing demographics and develop appropriate and innovative programs and services with a focus on the increasing Latino/a population.
- Contribute the richness of our multicultural community by promoting cultural initiatives that complement academics and encourage the advancement and appreciation of the arts.
- Meet the lifelong educational and career needs of our communities (e.g. seniors, merging populations, veterans, re-entry students).
- Provide relevant career and technical education that meets the needs of the region and sustains economic vitality.

## 1.1c Description

### Updated Spring 2019

The ESS Department houses multiple disciplines, including Astronomy, Earth Science, Environmental Science, Geography, Geology, Meteorology, and Physical Science. The department primarily serves general education (GE) transfer students.

Courses are offered in several different formats. Lecture, laboratory, hybrid, web-enhanced (blended) and field-based courses are offered to serve transfer students, students seeking a two year degree, students working towards professional development (including teachers), and self-enrichment students. The department has developed online options for several courses. We plan to deliver courses fully online within the next two years. We seek to successfully prepare students who intend to major in Earth or space science fields.

The ESS Department has 5 full time faculty: 3 at the Santa Rosa campus and 2 at the Petaluma campus. The department has between 10 and 12 adjunct faculty teaching per semester. The Department is committed to offering a wide variety of GE transfer classes at the Santa Rosa and Petaluma campuses, and online.

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

### Updated Spring 2019

#### Santa Rosa Campus:

Earth and Space Sciences instructor hours vary, but typically Monday through Thursday from 9 AM to 5 PM, and most evenings in the ESS Department offices. Typically administrative support is available Monday through Thursday from 10 AM to 5 PM, in 1813 Baker Hall. The ESS Department shares administrative support with the Life Sciences Department.

Equipment Technician is available Monday through Friday from 8 AM to 4 PM, in 2034 Lark Hall.

#### Petaluma Campus:

Earth and Space Sciences instructor hours vary, but typically Monday through Thursday from 9AM to 5 PM, and some evenings in the Call Building. Laboratory Coordinator is available Monday through Thursday from 9 AM to 3 PM, in Room 314A.

## 1.2 Program/Unit Context and Environmental Scan

### Updated Spring 2019

- Have there been any changes in the transfer requirements for this major, particularly at CSU or UC campuses or at other common transfer destinations in this discipline? If so, describe those.
- Are there trends in industry or technology that could affect this discipline or major?
- Are there new trends in general education or basic skills that affect courses in this discipline or major?
- What partnerships or cooperative ventures exist with local employers, transfer institutions, or other community colleges?

Courses within the ESS department primarily serve GE-transfer students. We are looking to improve our programs to better serve the student population by exploring alternate educational formats, such as increasing our online offerings and offering additional field trip opportunities. We see a growing need for knowledge and skills particularly in environmental and water-related subjects. All Earth science related disciplines provide necessary skills and knowledge for a variety of in-demand career fields. We hope to meet many of these trends by updating existing courses and developing new offerings, and creating ESS-related majors.

Have there been any changes in the transfer requirements for this major, particularly at CSU or UC campuses or at other common transfer destinations in this discipline? If so, describe those.

The ESS department houses the Environmental Studies major. We moving towards offering TMC majors for geography and environmental science. An ESS faculty member is serving as the lead reviewer for C-ID for environmental science.

Are there trends in industry or technology that could affect this discipline or major?

None

Are there new trends in general education or basic skills that affect courses in this discipline or major?

The statewide AB705 initiative may have an impact in the preparedness of students enrolling in our courses. All of our courses previously had advisories that are now obsolete due to AB705 changes.

What partnerships or cooperative ventures exist with local employers, transfer institutions, or other community colleges?

N/A

## 2.1a Budget Needs

Updated in Spring 2019

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

Our supply and graphics budget were slashed this year (2018-2019). We are on track to run out of money for graphics and go into the red on supplies as well. The amount that are budget was cut is totally unrealistic. We already practice very strict limits on copier usage. Instructors are encouraged to put documents online whenever possible and to utilize very narrow margins, limited whitespace, and double-sided copies for any documents that must be copied. Nevertheless we do not have sufficient funds to meet the graphics needs of our department.

We typically use the supply budget for office supplies and for replacement of various consumables and small demo equipment that breaks. We have been able to make it through this year without replacing things and by going through a backlog of extra supplies. We have foregone many small purchases, and people have purchased things with their own money that would normally be reimbursed. This is unsustainable in the long run, and our supply and graphics budgets need to be reinstated.

The study of Earth and Space is most effective when students experience the subject outside the classroom by attending field trips. Field trips are currently offered in several classes including geology, environmental science and astronomy. In most cases, students are required to provide their own transportation in order to participate in field trips. The Department would like to provide transportation for class field trips, in addition to expanding our field trip offerings. Additional funds are needed for vehicle expenses, which cannot be charged to students according to the California Code of Regulations.

The Department has a lot of older equipment, including telescopes and microscopes that need regular repair and maintenance. Half the telescopes are now out-of-date and the manufacturer no longer supports these models. In order to maintain our aging equipment and protect our investment in new equipment, we need to establish a maintenance and repair budget so that spare parts can be purchased and repairs can be made, as needed.

The department has 6-7 petrographic microscopes in need of refurbishment. Six of the 7 do not turn on at all, and all of them are out of visual alignment. Instructors would like to incorporate microscope based activities into laboratory for GEOL 1L, and currently these microscopes cannot be used at all.

If you need additional funds, please explain.

We need a restoration of supply and graphics to at or near our 2017-2018 levels.

Additional funds are needed to cover vehicle expenses and to augment student costs for existing and future field trips. A maintenance fund that could be used to maintain telescopes, microscopes and other equipment needs to be established.

## 2.1b Budget Requests

Rank	Location	SP	M	Amount	Brief Rationale
0001	Santa Rosa	06	01	\$2,000.00	Restoration of Budget, Supply, and Field Trip funds close to 2017-2018 levels. The cut made this year was unsustainable.

0002	ALL	02	01	\$2,000.00	Expand field trip offerings for ENVS 12, GEOL 1L, GEOL 7 (additional sections / different locations), GEOL 11, ASTRON 12 (different locations)
0003	ALL	04	01	\$2,000.00	Maintenance budget for telescope maintenance.

## 2.2a Current Classified Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Science Equipment Specialist	40.00	12.00	Maintains and repairs equipment, planetarium and greenhouse maintenance, circuitry/electronics, computer repair
Coordinator, Science Labs	15.00	12.00	Supply ordering, equipment organization, helps with facilities, lab, and classroom setup (Petaluma).
Administrative Assistant II	10.00	12.00	Purchasing/ordering, assists with curriculum, department meetings and student evaluations, faculty/department support, financial/budget/expenditures, etc.

## 2.2b Current Management/Confidential Positions

Position	Hr/Wk	Mo/Yr	Job Duties
Department Chair	14.40	10.00	Budget/financial, scheduling, hiring, faculty and staff evaluations, facilitate regular department meetings, coordinate adjunct faculty, etc.
Department Chair (summer)	2.90	2.00	Budget/financial, scheduling, hiring, faculty and staff evaluations, facilitate regular department meetings, coordinate adjunct faculty, etc.

## 2.2c Current STNC/Student Worker Positions

Position	Hr/Wk	Mo/Yr	Job Duties
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## 2.2d Adequacy and Effectiveness of Staffing

### Updated in Spring 2019

Does the program have adequate classified, management, STNC staff, and student workers to support its needs? If not, explain program/unit needs.

No. We wanted to hire a student worker or STNC to support our lab classes this year, but our budget was slashed.

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

No.

## 2.2e Classified, STNC, Management Staffing Requests

Rank	Location	SP	M	Current Title	Proposed Title	Type
0001	Santa Rosa	02	01		Astronomy Lab Assistant	Student

## 2.3a Current Contract Faculty Positions

<b>Position</b>	<b>Description</b>
Geology Instructor	Rebecca Perloth, GEOL at the Santa Rosa campus.
Geography / Environmental Science Instructor	Katie Gerber, GEOG and ENVS at the Santa Rosa campus.
Astronomy Instructor	Keith Waxman, ASTRON at the Santa Rosa campus.
Astronomy Instructor (Petaluma)	Laura Sparks, ASTRON at the Petaluma campus. Current department chair.
Earth Science Instructor (Petaluma)	David Kratzmann, GEOL and ENVS at the Petaluma campus.

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

Discipline	FTEF Reg	% Reg Load	FTEF Adj	% Adj Load	Description
ASTRON	1.5700	42.0000	2.2000	58.0000	Astronomy has two full time instructors, but one has 36% release time due to chair duties. Without chair duties, this ratio would be closer to 50/50. Both Astronomy FT instructors regularly perform overload assignments to attempt to staff our classes. We are constantly having difficulty finding enough adjunct instructors to staff our Astron classes.
ENVS	0.8100	67.0000	0.4000	33.0000	Two full time instructors each teach a few ENVS classes as part of their load.
ERTHS	0.2100	95.0000	0.0100	6.0000	There is only one ERTHS class, and it is usually taught by a full time instructor with an adjunct as a guest presenter for a few class meetings. Other unpaid independent study courses all supervised by FT faculty also fall under this heading.
GEOG	0.6100	38.0000	1.0000	62.0000	One full time instructor teaches a few geography classes as part of their contract load.
GEOL	1.5000	81.0000	0.3400	19.0000	Most geology classes are taught by full time instructors as part of their contract load.
METRO	0.0000	0.0000	0.2000	100.0000	All meteorology classes are taught by adjunct instructors. There is no full time instructor with meteorology subject matter expertise.
PHYSC	0.0000	0.0000	0.3400	100.0000	When Physical Science classes are taught, they are taught solely by adjunct instructors.

## 2.3c Faculty Within Retirement Range

### Updated in Spring 2019

No full-time faculty members are within retirement range. There are 5 adjunct faculty members within retirement range (55+ years).

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

### Updated in Spring 2019

**ASTRON** – Historically, it has been difficult to staff classes in this discipline due to a lack of available qualified instructors. Specifically, very few people possess a graduate degree in Astronomy and/or Physics, and SSU does not offer a graduate degree in these disciplines. We generally conduct adjunct interviews whenever a qualified candidate applies for the pool. Interviews were last conducted in April 2019 and no one was added to the pool due to a lack of qualified candidates. We currently have four adjunct astronomy instructors who regularly teach for us. One of them lives in San Mateo, and we went to great lengths to recruit them to come teach our weekend classes. Two of our current adjuncts are in retirement range. Additional adjunct interviews will be conducted whenever a qualified applicant applies.

**ENVS** – Both faculty members that teach ENVS have split assignments (e.g ENVS/ Geog or ENVS / Geol). The minimum qualifications for ENVS are broad and instructors in geology and geography are often able to teach ENVS as well. We currently have adequate adjuncts available for this discipline. Interviews were conducted in Spring 2018, and one new adjunct from this hiring round will be teaching for the first time with us in fall 2019.

**GEOG** – We currently have adequate staffing for geography, but 2 of our geography adjuncts are in retirement range. Adjunct interviews were last conducted in April 2019 and no one was added to the pool due to a lack of qualified candidates.

**GEOL** – Interviews were most recently conducted in April 2019 and no one was added to the pool due to a lack of qualified candidates. We currently have adequate staffing in this discipline.

**METRO** – We have no contract faculty in meteorology. Adjunct instructors in meteorology are largely working professionals, who are available to teach evening classes, but day classes are difficult to staff with adjuncts. Due to budget cuts and reduced meteorology offerings, we have adequate coverage with our existing meteorology pool. Adjunct interviews will be held in May 2019. In the future, we would like to have a full-time instructor to serve as coordinator for curriculum, faculty, facilities, equipment, and students in this important discipline.

### 2.3e Faculty Staffing Requests

<b>Rank</b>	<b>Location</b>	<b>SP</b>	<b>M</b>	<b>Discipline</b>	<b>SLO Assessment Rationale</b>
0001	Santa Rosa	02	01	ASTRON	An additional instructor will allow us to stop the cycle of cancelling classes due to lack of instructors in this high demand area.

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

Updated in Spring 2019

### INSTRUCTIONAL EQUIPMENT

#### ASTRONOMY

**Upgrade Planetarium.** The SRJC planetarium needs equipment upgrades and refurbishment. This facility is integral to the Astronomy program here at SRJC, and is regrettably no longer meeting its potential by serving the community. The planetarium is in disrepair due to long-standing neglect and starvation of resources.

**Change fixed chairs to rolling chairs.** Room 2039 is primarily used by our department for Astronomy lab classes. We would like to replace the stationary chairs with rolling chairs. Instructors often have students work in small groups and this would facilitate classroom activities. Students in Astronomy 12 classes use the room for up to 8 hours at a time. This classroom will be updated/converted when it is used as swing space for the Materials Engineering lab during STEM building construction. It will need to have new chairs at that point for certain as some of the tables will be replaced with high tables needing high stools. We are anticipating these upgrades to occur in Summer 2019.

**Telescopes for Astronomy labs.** The department has 10 fairly new telescopes that were purchased in 2017 and 10 outdated telescopes that are used for Astronomy lab classes at both campuses. In addition to breaking down, the older telescopes are becoming increasingly hard to repair. The telescope technology is outdated and in need of upgrading. We need funds to complete our transition from old outdated technology to new equipment.

**Personal solar telescopes for Astronomy labs.** Solar telescopes would enable us to view the Sun safely in our Astron 4L, Astron 3L, and Astron 12 labs without setting up the larger bulkier telescopes with a large footprint. Also, students could study solar features not visible in our current neutral density filters such as small prominences and photosphere granularity.

**Digital SLR Cameras for Astronomy labs.** A set of used Digital SLR cameras was purchased several years ago using funding from the Friends of the Petaluma Campus trust. Older, used cameras were purchased to save money. These will need to be replaced with newer models within the next five years as they become outdated and begin to fail. This supports Student Learning Outcomes for Astronomy. Four new cameras were purchased in 2018, so we still need seven more. Qty. 7 @ \$1,200 each = \$8,400

**Laptops for Astronomy labs.** Laptops are needed to support labs conducted with the digital cameras. This supports Student Learning Outcomes for Astronomy.

#### GEOLOGY

**New chairs for Geology Lab.** Room 2042 is primarily used for geology lecture and lab. The current chairs are not only outdated, they are dangerous because they regularly break while students are sitting in them. Some are damaged, and they are uncomfortable and unsafe for students.

**New Seismograph and Display.** Our current seismograph is obsolete as replacement parts cannot be obtained. We need seismograph and monitor/display technology to display real-time data.

## **PHYSICAL / EARTH SCIENCE**

### **GEOGRAPHY**

**Demonstration devices for geography and meteorology.** Various devices to demonstrate density, air flow, and condensation.

## **NON-INSTRUCTIONAL EQUIPMENT**

**Standing Desk or Standing Desk Adaptor for room 2022.** As part of the college's commitment to health and wellness, we need to provide standing desks for faculty who request them.

## 2.4c Instructional Equipment Requests

Rank	Location	SP	M	Item Description	Qty	Cost Each	Total Cost	Requestor	Room/Space	Contact
0001	Santa Rosa	04	01	Rolling chairs for room 2042	30	\$450.00	\$13,500.00	L. Sparks	Lark 2042	R. Perloth
0002	Santa Rosa	03	04	MEAS H: PLANETAR. Replace GOTO Star Projector	1	\$750,000.00	\$750,000.00	L. Sparks	Lark 2001	K. Waxman & L. Sparks
0003	Santa Rosa	03	04	MEAS H: PLANETAR. Add digital projection system	1	\$450,000.00	\$450,000.00	L. Sparks	Lark 2001	K. Waxman & L. Sparks
0004	Santa Rosa	02	01	Demonstration equipment (density, condensation)	1	\$1,000.00	\$1,000.00	L. Sparks	Lark 2049	K. Gerber
0005	ALL	02	01	Digital SLR Cameras (including modification)	7	\$1,200.00	\$8,400.00	L. Sparks	Lark Storage	K. Waxman & L. Sparks
0006	ALL	02	01	Replacement telescopes and accessories	11	\$2,500.00	\$27,500.00	L. Sparks	Lark Storage	K. Waxman & L. Sparks
0007	ALL	02	01	Coronado Personal Solar Telescopes	3	\$700.00	\$2,100.00	L. Sparks	Lark Storage	K. Waxman & L. Sparks
0008	Santa Rosa	04	01	MEAS H: Rolling chairs for room 2039	40	\$450.00	\$18,000.00	L. Sparks	Lark 2039	K. Waxman

## 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	06	04	Standing desk or standing desk adaptor	1	\$1,100.00	\$1,100.00	L. Sparks	2022	K. Gerber

## 2.5a Minor Facilities Requests

Rank	Location	SP	M	Time Frame	Building	Room Number	Est. Cost	Description
0001	Santa Rosa	06	07	Urgent	Lark Hall	all	\$0.00	Paint exterior and interior of building. Replace rotted wood trip.
0002	Santa Rosa	02	01	Urgent	Lark Hall	2009	\$0.00	Replace existing carpet and countertop,replace chair cushions and back wall material.
0003	Santa Rosa	03	05	Urgent	Lark Planetarium	Planetarium	\$0.00	(MEASURE H) Planetarium: Perform renovation to Planetarium space: Fix roof, fix ventilation, replace dome, knock out decorative interior wall, replace chairs in new layout, replace sound system and lighting system, redo electrical system.
0004	Santa Rosa	04	05	1 Year	Lark Hall	Lab/Storage space	\$0.00	Repair and replace SAREX equipment for communicating with Astronauts on board the International Space Station (used in outreach and potentially in planetarium shows)
0005	Santa Rosa	02	01	1 Year	Lark	2042, 2046	\$0.00	Replace existing display cases with ones with lighting and glass doors
0007	Santa Rosa	06	07	1 Year	Lark Hall	all areas	\$0.00	Update HVAC system. Allow greater control in classrooms and offices so that HVAC can be turned down or up as needed. Current system creates cold and hot areas and is not effective.
0008	Santa Rosa	02	06	Urgent	Lark Hall	2046	\$0.00	MEAS H:Create adequate and safe storage for telescopes in ESS work area. Needed as part of swing space renovation to house physics lab

								equipment during STEM building construction. Anticipated to be completed in summer 2019.
0009	Santa Rosa	02	01	Urgent	Lark Hall	Room 2030	\$0.00	MEAS H: Convert room to a demonstration classroom outfitted for interactive learning with movable tables and chairs. Anticipated to be completed in summer 2019.

## 2.5b Analysis of Existing Facilities

### Updated Spring 2019

The ESS Department is located in the southern wing of Lark Hall. Facilities that the Department regularly uses include a 90-person lecture hall (2009), four lab and or lab/lecture classrooms (2030, 2039, 2042, and 2049), and a storage and work area. The Department offices include 6 offices and an open work space. These offices are shared with Planetarium staff at times when the district employs them. Although there is adequate space at current staffing and class offering levels, the building and its associated equipment are out-of-date. Additionally, we will be sharing our space with Physics and Materials Engineering for the next 3-4 years. To accommodate the new personnel there are urgent upgrades.

**Bathrooms.** The Lark hall bathrooms resemble a dungeon. They often flood, have an unpleasant odor, and poor lighting. The feminine hygiene receptacles suffer from black mold and pose a hazard. There are intermittent water pressure failures. They do not feel safe; the floors pose a trip and slip hazard. They need to be demolished and replaced.

**Upgrade Planetarium.** The SRJC planetarium needs equipment upgrades and refurbishment. This facility is integral to the Astronomy program here at SRJC, as well as serving community outreach efforts, although community outreach has been suspended due to lack of financial support. It has become very difficult to find replacement parts for the outdated and obsolete equipment. We hope to obtain funding to renovate the planetarium in the near future. A planetarium upgrade can likely be completed for under 2 million dollars. When compared to the cost of building a new planetarium (in the neighborhood of 10 million dollars), this is a great deal.

**Lecture Classroom 2009:** This classroom is used for lecture-based courses by ESS and other departments. The Department would like to replace the existing carpet with either new carpet or some other form of flooring. The chair cushions also need replacement. The countertop is unsightly and badly worn and there are stains on the back walls. The room is in desperately urgent need of renovation.

**Telescope Storage:** Currently telescopes are stored in stacked boxes in the ESS work area. Because of the area design and fixed shelving, the telescopes are cumbersome to store. A better storage mechanism needs to be designed in the ESS work area. This would likely involve removing existing shelf storage.

**New Paint and Building Maintenance:** The outside of the building is in serious need of cleaning and painting. There are areas where the wood trim is decayed and needs to be replaced. The interior offices and classrooms are also in need of painting.

**HVAC controls:** The current HVAC system set up does not allow for adjustments within various sectors of the building. There are times when one side of the building is too cold and the other side is too hot. The HVAC system for the building needs to be reevaluated.

**Rock Displays.** New efforts are being made to beautify the ESS/Geology area as a result of recent donations. We would like to display and highlight the department's collection (especially the new fluorescing samples) in lighted display cases. These could be installed in 2042 to replace the existing display cases, and in 2046 to replace open shelves and to better utilize space.

**SAREX.** SAREX equipment is needed for communicating with Astronauts on board the International Space Station (used in outreach and potentially in planetarium shows)

## 3.1 Develop Financial Resources

### Updated Spring 2019

***Future funding:*** *What programs or concepts do you want to seek grant funding for?*

The ESS Department is interested in expanding funding for field programs, equipment, and facilities upgrades. Many of these items are also included within the budget request section.

Fund for Field Programs / Field Trips. ESS currently offers field trips and/or programs through geology, environmental science and astronomy classes. Because vehicle costs cannot be passed on to students, the Department pays for these costs out of our normal operating budget. In addition to providing funding for transportation, we would like to expand field trip offerings to other classes.

Astronomy Equipment upgrades. The Department needs to update our astronomy observational equipment, including telescopes, cameras and computer, to keep up with changes in technology.

Equipment for Lab classes. A long term goal of the Department is to develop lab components for Physical Geography (Geog 4) and Environmental Science (ENVS 12). The labs would require new equipment for the Department including weather related equipment (thermometers, sling psychrometers), mapping equipment (compasses), pollution testing equipment (water / air), energy related equipment (solar cells, other), etc.

Student Assistant funding. Readers are now being reinstated in some classrooms. Instructors that teach larger lecture classes are interested in having student assistants within the class to facilitate with group work and in-class activities. This would be different than reader funding.

Planetarium upgrades and operating expenses. The Planetarium is in need of serious upgrades to its facilities and equipment. If a renovation is funded by the district, we would like to pursue grant funding to launch new programs and aid with covering operating expenses for the first few years in the relaunched planetarium.

Expand the Outdoor classroom. Expanding the use of SRJC's facilities and grounds as outdoor classrooms would greatly enhance student learning. Ideas for this include the following.

- Install native plant gardens around the campus to study climate change (e.g. STEM / Pepperwood grant). These could be incorporated into physical geography, environmental science, and meteorology classes.
- Create geology structures on campus. David Kratmann at Petaluma is interested in installing rock features throughout the Petaluma campus that can be used to illustrate geologic structures. This would support geology lecture and labs.
- Sustainability campus map. Create a sustainability map for the campus that identifies the various sustainability features (e.g. solar panels, energy conservation, recycled materials, etc.). Katie Gerber regularly takes students on a sustainability tour of the Santa Rosa campus but would like to create signage and a more permanent map that can be posted on the school's webpage. .

***Current Grant Funding:*** *In order to capture SRJC's diverse partnerships and funding please provide the following information on funding or grant partnerships your department currently receives.*

None. The ESS Department does not have any existing grant funding.

## 3.2 Serve our Diverse Communities

**Updated Spring 2019**

### **Goal C: Serve our Diverse Communities**

Serve our diverse communities and strengthen our connections through engagement, collaboration, partnerships, innovation, and leadership.

- Identify the educational needs of our changing demographics and develop appropriate and innovative programs and services with a focus on the increasing Latino/a population.
- Contribute the richness of our multicultural community by promoting cultural initiatives that complement academics and encourage the advancement and appreciation of the arts.
- Meet the lifelong educational and career needs of our communities (e.g. seniors, merging populations, veterans, re-entry students).
- Provide relevant career and technical education that meets the needs of the region and sustains economic vitality.

Our position announcements (both faculty and staff) stress the importance of sensitivity to diversity. During our screening and interview processes, we strive to assess each candidate's sensitivity and experience with diversity.

Lack of diversity is an issue within the sciences in general. Progress has been made in encouraging greater participation by women in science. The composition of our Department is indicative of that change. Currently there are three full time female instructors and several female adjunct instructors. Although progress has been made with gender diversity, there traditionally has not been a lot of ethnic or cultural diversity within our fields. There are organizations that are working on the national and regional level to encourage greater participating in the science from other cultural and ethnic groups.

## 3.3 Cultivate a Healthy Organization

***Not needed until Spring 2017 (according to PRPP instructions) - not updated S15***

### **Goal F: Cultivate a Healthy Organization**

*Cultivate an inclusive and diverse organizational culture that promotes employee engagement, growth, and collegiality.*

- Foster an environment focused on collegiality and mutual respect in regards to cultural and individual perspectives.
- Recruit and hire outstanding faculty and staff and implement an exemplary Professional Development Program for all employees.
- Establish robust programs to improve the health and wellness of students and employees.
- Increase safety planning, awareness, and overall emergency preparedness.

The department supports professional development of our staff by encouraging them to complete health, hazards, and safety trainings. In 2019 the Earth & Space Sciences department fielded a fitness team and participated in the six-week fitness challenge. This spurred many conversations about health

and wellness. We have also had discussions in department meetings and through email about the Illness and Injury Prevention Program.

### 3.4 Safety and Emergency Preparedness

**Updated Spring 2019**

#### **Injury and Illness Prevention Program (IIPP)**

*The District's Injury and Illness Prevention Program is found in District Policy 6.8.2 and Procedure 6.8.2P. This program needs to be reviewed with each employee at least once per year. Identify the steps that have been taken to review this program with employees in your department this year. Contact Environmental Health and Safety if you need assistance (524-1654).*

The ESS Department discussed the IIPP Policy and Procedure during a department meeting on March 29, 2019. The department chair sent out the policy for all employees to review on March 9th, 2019.

#### **Safety Trainings**

*Per the District Injury and Illness Prevention Program (IIPP), what safety trainings does your department require? Contact Environmental Health and Safety if you need assistance (524-1654).*

The Department conducts off campus courses and field trip courses that are offered in remote locations. CPR and First Aid Training should be required for instructors that participate in field trips and off campus courses. Ideally the District would offer training to faculty and staff or provide reimbursement for such programs.

Training. Several faculty members have been trained in First Aid and CPR although their training is not necessarily up-to-date. This includes Laura Sparks (Spring 2018), Michael Healy (2017), Rebecca Perlroth (6/2013) and Katie Gerber (6/2013). In addition, Rebecca and Katie participated in a Wilderness First Aid Training course in February of 2016.

First Aid Kits. The Department is in need of wilderness first aid kits that are more robust than the vehicle based first aid kits provided for our field based programs. These kits need to be portable so they can be taken on hikes in remote areas. The previous EHS Department Director indicated that they would be willing to put together or purchase several portable first aid kits for the Department.

Emergency Procedures. There is a need to develop emergency procedures for classes that travel to remote areas. With the Geology 7 field trip course we travel on back roads and hike in areas where we do not have cell coverage. The Department would assist EHS with the development of these procedures.

#### **Building and Area Safety Coordinators**

List your Building and Area Safety Coordinators below. Include Name, Building, Building Safety Coordinator (BSC) Area, Area Safety Coordinators (ASC) Area, Department, and any specific areas of responsibility.

ESS is not aware of having an active BSC or ASC.

<b>Building</b>	<b>BSC Area</b>	<b>ASC Area</b>	<b>Name</b>	<b>Department</b>	<b>Responsible Area</b>	<b>Management Support</b>
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Lark Hall	B-20	8	Don Dalby	Earth & Space Sciences	BSC / Southern Lark	STEM Dean / ESS Dept Chair
Lark Hall	B-20	8	Debbie Eakins	Agriculture & Natural Resources	BSC / Northern Lark	Ag / NR Dean / Dept Chair
Lark Hall	B-20	8	Maddie Giltner	Agriculture & Natural Resources	ASC	Ag / NR Dean / Dept Chair

### 3.5 Establish a Culture of Sustainability

#### Updated Spring 2019

In this section, list anything that your program/unit has done in 2013-14 or 2014-15 in support of the following Strategic Plan Goal and strategic objectives:

#### **Goal E: Establish a Strong Culture of Sustainability**

Establish a culture of sustainability that promotes environmental stewardship, economic vitality, and social equity.

- Expand, support, and monitor district-wide sustainability practices and initiatives.
- Infuse sustainability across the curriculum and promote awareness throughout District operations.
- Promote social and economic equity in the communities we serve.
- Ensure economic sustainability by leveraging resources, partnering with our

Describe and quantify how your department, program, or unit contributes to SRJC's Sustainability Goal. Consider curriculum, office practices, purchasing, building operations and maintenance, and other green practices. When specific budget, staffing, facilities, equipment or technology resources are required, please submit those requests in Section 2: Resources. For more information go to: [www.santarosa.edu/sustainability](http://www.santarosa.edu/sustainability).

The ESS Departments continues to address sustainability within our offices and classrooms by reducing paper use, recycling in our office area and in select ESS classrooms, and buying recycled office products when available. Below is an update of Department efforts over the past year.

Reducing Paper Use: The ESS Department encourages faculty to reduce their paper use in response to budget cuts. The Department sends out a list of paper reduction ideas to faculty at the beginning of each semester. Our network printer is set up to print double-sided and faculty is encouraged to use this function. In addition, we encourage the use of reused paper in the printer for draft copies.

Office Supplies: The department gives preference to products made with recycled content including paper products, manila folders, hanging file folders, staplers, scissors and even tape. In general, the department is frugal in their buying habits and does not buy unnecessary goods.

Recycling. The Department participates in the campus recycling program for office paper, cardboard, and bottles and cans. Other recycling opportunities both on campus and off are also utilized by department staff. Batteries, toner cartridges, old compact discs are collected and

recycled. An ESS Department member takes home plastic bags and certain other recyclables to recycle at home.

Curriculum: Environmental topics such as water, resource use, energy, climate, and human impact on the environment are a natural fit within many of the Earth Science courses. These topics are discussed to varying degrees in Astronomy, Environmental Science, Geography, Geology and Meteorology. Environmental Science is one of the core courses in the Environmental Studies major. Our new Climate Change course (ENVS 8) will be added to the major as a core course in Fall 2019. Although it is an interdisciplinary major, ESS faculty traditionally coordinate the major and advise students. An ESS faculty member currently teaches the Environmental Forum (ENVST 40) course in the major as well.

Involvement with District Sustainability: Katie Gerber serves on the District's Sustainability Committee at the Santa Rosa campus. In addition, David Kratzmann has been involved with the Petaluma Sustainability Task Force at the Petaluma campus. During Fall 2019, the Department will apply for the Green Office Certification program through the Sustainability Committee.

## 4.1a Course Student Learning Outcomes Assessment

### Updated Spring 2019

- SLO assessments are now archived in Formstacks and are available for viewing at slo.santarosa.edu.
- **How have course SLO assessment results over the past three years, including the current year, been used to improve student learning at the course level? (Note: All assessments should be documented in the SLO Assessment Tracking System in SharePoint.)**

SLO assessments are used by individual instructors to monitor their classes and to make changes as needed. In some cases the assessments provide baseline data and no specific changes are made. In other cases, the instructor is attempting to assess a particular technique or topic and uses the information to make changes within their classes. The Department discusses SLO Assessments regularly at department meetings. Instructors within individual disciplines engage in regular, ongoing discussions about improving course content and assessment techniques based on the results of SLO assessments.

- **If the curriculum is sequenced through prerequisite relationships, do course SLOs align from one course to the next in the sequence? Has this sequence or any part of a sequence been assessed in the past three years, including the current year? If so, describe how the results have been used to improve student learning.**

The ESS Department has prerequisite or concurrent enrollment requirements for lab classes. The SLOs of lab courses align with the related lecture. There are no sequenced courses within the department.

- **ACCJC Accreditation Standards require an ongoing, systematic cycle of assessment of all courses. At SRJC, our cycle is that at least one SLO in every course must be assessed every six years. In the text block provided, describe your six-year cycle of assessment. You can copy and paste into the text block a chart or a spreadsheet, which might be the easiest thing to do.**

Based on changes to ACCJC's expectations regarding SLOs, the department currently plans to assess all SLOs in all courses taught by full time faculty every year. The department plans to assess all SLOs in courses taught only by adjuncts at least once every three years on a case-by-case basis as funding for adjunct SLO assessment is made available.

## 4.1b Program Student Learning Outcomes Assessment

Updated Spring 2019

- **In the text block provided, describe your department/discipline six-year cycle of assessment.**

We plan to assess the Environmental Studies major once every three years, starting in the 2019-2020 academic year.

- **What certificates/majors(s) has the program/unit assessed over the past three years?**

We have not assessed any majors in the past three years.

- **How have the results been used to improve student learning at the certificate/major level?**

Although we have not formally compiled the course SLO assessment results into a major assessment, we have participated in an ongoing dialog about ways to improve the Environmental Studies major. We have added a new course, Global Climate Change, to our department's offerings in response to these discussions. We plan to add this course to the major shortly.

## 4.1c Student Learning Outcomes Reporting

Type	Name	Student Assessment Implemented	Assessment Results Analyzed	Change Implemented
Course	ASTRON 3 - #1 (LS)	Fall 2012	Spring 2013	Fall 2012
Course	ASTRON 3 - #1 (LS)	Fall 2013	Spring 2014	Spring 2014
Course	ASTRON 3 - #2 (LS)	Spring 2011	Spring 2011	Fall 2011
Course	ASTRON 3 - #2	Spring 2014	Summer 2014	Fall 2014
Course	ASTRON 3 - #2 (KW)	Fall 2015	Spring 2016	N/A
Course	ASTRON 3 - #3 (LS)	Fall 2010	Fall 2010	N/A
Course	ASTRON 3 - #3 (LS)	Fall 2011	Spring 2012	Spring 2012
Course	ASTRON 3 - #3 (KW)	Fall 2011	Fall 2011	N/A
Course	ASTRON 3 - #3 (KW)	Fall 2014	Fall 2014	N/A
Course	ASTRON 3L - #1	Spring 2014	Spring 2014	Fall 2014
Course	ASTRON 3L - #2	Spring 2014	Spring 2014	Fall 2014
Course	ASTRON 3L - #3	Spring 2014	Spring 2014	Fall 2014
Course	ASTRON 3L - #3	Fall 2013	Fall 2013	Spring 2014
Course	ASTRON 3L - #3	Fall 2013	Fall 2013	Spring 2014
Course	ASTRON 4 - Waxman	Spring 2009	Spring 2009	Spring 2010
Course	ASTRON 4 - #1 (LS)	Spring 2013	Summer 2013	Fall 2013
Course	ASTRON 4 - #2	Fall 2014	Fall 2014	Spring 2015
Course	ASTRON 4 - #3	Spring 2014	Spring 2014	Fall 2014
Course	ASTRON 4 - #4 (LS)	Fall 2010	Fall 2010	Spring 2011
Course	ASTRON 4 - #4 (LS)	Spring 2011	Summer 2011	Fall 2011
Course	ASTRON 4 - #4 (LS)	Fall 2011	Spring 2012	Spring 2012
Course	ASTRON 4L - #1 (LS)	Spring 2011	N/A	N/A
Course	ASTRON 4L - #2 (AP)	Fall 2014	Fall 2014	N/A
Course	ASTRON 4L - #2 (AP)	Fall 2014	Spring 2015	Fall 2015
Course	ASTRON 12 - #1 (LS)	Spring 2011	Summer 2011	N/A
Course	ASTRON 12 - #1 (KW)	Spring 2011	Summer 2011	N/A
Course	ASTRON 12 - #1 (KW)	Fall 2011	Spring 2012	Spring 2012
Course	ASTRON 12 - #1 (LS/JF)	Fall 2011	Spring 2012	Spring 2012
Course	ASTRON 12 - #2 (KW)	Fall 2012	Fall 2012	N/A
Course	ASTRON 12 - #3 (LS)	Fall 2013	Fall 2013	Spring 2014
Course	ASTRON 12 - #4	Spring 2014	Spring 2014	Fall 2014
Course	ASTRON 12 - #5	Spring 2014	Spring 2014	Fall 2014
Course	ASTRON 12 - #5 (LS)	Fall 2014	Fall 2014	Spring 2015

Course	ENVS 12 - #1	Fall 2013	Spring 2014	Spring 2015
Course	ENVS 12 - #2	Fall 2013	Spring 2014	Spring 2014
Course	ENVS 12 - #3	Spring 2014	Summer 2014	Fall 2014
Course	ENVS 12 - #4	Fall 2013	Spring 2014	Spring 2014
Course	ENVS 12 - #5	Spring 2014	Summer 2014	Fall 2014
Course	ENVST 40 - #1	Spring 2014	Summer 2014	Spring 2015
Course	ERTHS 49	Spring 2014	N/A	N/A
Course	ERTHS 85.1 - #1	Fall 2014	Fall 2014	Fall 2015
Course	ERTHS 85.1 - #2	Fall 2013	Fall 2013	Fall 2014
Course	ERTHS 85.1 - #3	Fall 2014	Fall 2014	Fall 2015
Course	ERTHS 85.1 - #4	Fall 2012	Spring 2013	Fall 2013
Course	ERTHS 85.1 - #5	Fall 2014	Fall 2014	Fall 2015
Course	ERTHS 85.2 - #1	Spring 2014	Spring 2014	Spring 2015
Course	ERTHS 85.2 - #2	Spring 2014	Spring 2014	Spring 2015
Course	ERTHS 85.2 - #3	Spring 2014	Spring 2014	Spring 2015
Course	ERTHS 85.2 - #4	Spring 2011	Spring 2011	Spring 2012
Course	GEOG 3 - #2	Fall 2015	Spring 2016	N/A
Course	GEOG 3 - #5	Fall 2014	Fall 2014	Spring 2015
Course	GEOG 4 - #2	Spring 2014	Summer 2014	Fall 2014
Course	GEOG 4 - #3	Spring 2010	N/A	N/A
Course	GEOG 4 - #3	Spring 2011	Summer 2011	Fall 2011
Course	GEOG 4 - #3	Spring 2011	Summer 2011	Fall 2011
Course	GEOG 4 - #4	Fall 2013	Spring 2014	Fall 2014
Course	GEOG 4 - #5	Spring 2014	Summer 2014	Fall 2014
Course	GEOG 7 - #1	Spring 2014	Spring 2014	N/A
Course	GEOG 7 - #2	Fall 2014	Spring 2015	Fall 2015
Course	GEOG 7 - #3	Fall 2014	Spring 2015	Fall 2015
Course	GEOG 7 - #4	Spring 2014	Spring 2014	N/A
Course	GEOG 7 - #5	Fall 2014	Spring 2015	Fall 2015
Course	GEOL 1 - #1	Spring 2014	Spring 2014	Fall 2014
Course	GEOL 1 - #2	Fall 2013	Fall 2013	Spring 2014
Course	GEOL 1 - #3	Spring 2012	Summer 2012	Fall 2012
Course	GEOL 1 - #4	Spring 2014	Summer 2014	Fall 2014
Course	GEOL 1L - #1	Spring 2012	Spring 2012	Fall 2012
Course	GEOL 1L - #1	Spring 2012	Spring 2012	Fall 2012
Course	GEOL 1L - #2	Spring 2011	Spring 2011	Fall 2011
Course	GEOL 1L - #2	Fall 2011	Summer 2011	Spring 2012
Course	GEOL 1L - #2	Spring 2013	Spring 2013	Fall 2013
Course	GEOL 1L - #3	Spring 2014	Summer 2014	Fall 2014
Course	GEOL 1L - #4	Spring 2014	Summer 2014	Fall 2014
Course	GEOL 11 - #1	Fall 2014	Spring 2015	Spring 2015
Course	GEOL 11 - #2	Fall 2013	Fall 2013	Spring 2014
Course	GEOL 11 - #3	Fall 2012	Fall 2012	Spring 2013
Course	GEOL 11 - #4	Fall 2014	Fall 2014	N/A
Course	GEOL 11 - #5	Fall 2014	Fall 2014	Fall 2015
Course	GEOL 7 - #1	Summer 2014	Summer 2014	Summer 2015
Course	GEOL 20	N/A	N/A	N/A
Course	METRO 10 - #1	Fall 2014	Fall 2014	N/A
Course	METRO 10 - #3	Fall 2014	Fall 2014	N/A
Course	METRO 10 - #4	Spring 2014	Spring 2014	Fall 2014
Course	METRO 10 - #5	Fall 2015	Spring 2016	N/A
Course	METRO 10L	N/A	N/A	N/A
Course	PHYSC 21 - #1	Spring 2015	Spring 2015	Spring 2016
Course	PHYSC 21 - #4	Spring 2015	Spring 2015	Spring 2016
Certificate/Major	Environmental Studies	Fall 2014	Fall 2014	Fall 2015
Certificate/Major	Natural Sciences	Fall 2014	Fall 2014	Fall 2015

## 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
ASTRON 12	X	X	X				X	X		X	X			X		
ASTRON 3			X				X	X		X	X					
ASTRON 3L	X	X	X				X	X		X	X			X		
ASTRON 4			X				X	X		X	X					
ASTRON 4L	X	X	X				X	X		X	X			X		
ENVS 12			X	X			X	X		X	X	X	X	X		X
ENVS 8			X	X			X	X		X	X	X	X	X		X
ENVST 40			X	X	X		X	X		X		X	X			X
ENVT STUDIES MAJOR			X	X			X	X		X	X	X	X	X	X	X
ERTHS 85.1			X	X			X	X	X	X		X		X	X	X
ERTHS 85.2			X	X			X	X	X	X		X		X		X

GEOG 3			X	X			X	X		X			X		X	
GEOG 4			X				X	X		X	X					
GEOG 7			X	X			X	X		X	X		X		X	
GEOL 1			X				X	X		X	X					
GEOL 11			X				X	X		X	X					
GEOL 1L	X		X				X	X		X	X			X		
GEOL 20			X				X	X		X	X	X				
GEOL 7			X				X	X		X		X		X		X
METRO 10			X				X	X		X	X					
METRO 10L		X	X				X	X		X	X			X		
PHYS 21	X		X				X	X		X	X			X		

## 4.2b Narrative (Optional)

We have discussed our SLO assessment plan and how our course SLOs align with institutional SLOs at multiple department meetings. This has led to rich conversations about improving our teaching.

## 5.0 Performance Measures

### Updated Spring 2019

Not Applicable - no non-academic data elements.

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

### Updated Spring 2019

- Is the program offering a **balanced** class schedule convenient to students with day, evening, Friday, and weekend courses, as needed? Explain.

All Earth & Space Sciences disciplines offer a balanced schedule Monday-Thursday, with a variety of evening courses available. A few geology and astronomy classes are offered on Fridays. We also offer weekend astronomy labs. In the future we could do a better job offering some Saturday classes if we had more staffing.

- Is the program offering a good **geographic distribution** of classes, at Santa Rosa, Petaluma, Public Safety Training Center, and other sites? Explain.

Yes, over the past three years 27.1% of students in the duplicated headcount measure were at Petaluma, while the rest were at Santa Rosa. Our department has robust offerings on the Petaluma campus. We have very few offerings on the Petaluma Campus during summer school because the demand is much stronger in Santa Rosa.

- Does the program effectively use **alternative delivery modes** when appropriate such as online, online hybrid, or video transmission? Explain.

We have very few hybrid courses and no fully online courses at this time. We are in the process of preparing many of our face-to-face courses to be taught in the hybrid format, and a preparing a few to be offered fully online.

- Is there demand for specific courses that is not being met? If so, what is the plan to address this?

Yes, there are currently four classes that are frequently overenrolled: Astron 3L, Astron 4L, Astron 12, and ENVS 12. We do not have enough Astron 3L or Astron 4L due to limited adjunct staffing and difficulty recruiting adjuncts. In order to increase our staffing for Astron 3L and 4L, one member of our department is taking a full-year sabbatical to write an open-source laboratory manual. This will allow a new instructor to take on the class with very little preparation, and make it easier to staff. For Astron 12,

we are developing a hybrid delivery format for this course to enable us to staff it more easily and offer more sections. For ENVS 12, we are considering opening an extended lecture section of this course.

- Could the program do a better job of serving students, and if so, how? State specific recommendations.

Yes, we can improve in two areas. First, we should be offering more sections of Astronomy lab as discussed above. Second, in the past few years some students have found their classes cut at the last minute due to low enrollment. We have made deep cuts and are hopeful that no more last-minute class section cuts will be required.

- If the program/unit has a pattern or trend of declining or unstable enrollments over the past four years, what adjustment of course scheduling has the program implemented to address this? (For example, changing times of day, block scheduling, online offerings, short courses, adjusting frequency and number of sections, open entry-open exit classes, or rotation plans.)

Much of our declining enrollment comes from cutting class sections that would have filled. We have cut them due to external/budgetary mandates from the college as well as staffing issues due to the improving economy. Specifically it is very difficult to recruit and retain qualified astronomy adjuncts in high cost of living Sonoma County. For a few courses, there has been softening demand. We have addressed this by cutting sections in the case of Geography, and by reducing the frequency of course offerings in two cases. We now offer Metro 10L (Meteorology Lab) only once every three semesters instead of once per year. We offer Geography 7 (Human Geography) once per year instead of once per semester.

- Are course offerings being scheduled frequently enough or in rotation to assure that students can complete the program within the stated duration of the program or within a "reasonable" time frame (often interpreted to be two years, but it could be longer)?

Yes. The only degree we currently offer is the Environmental Studies interdisciplinary major. Unfortunately many of the electives in this major are controlled by other departments and are not offered very frequently or at enough times. However, we have been able to provide suitable course substitution offerings to students so that they are able to complete their degrees quickly.

- Describe any marketing efforts or outreach activities geared to increasing enrollments, if applicable.

We used to have the Planetarium, which was instrumental in generating enthusiasm and excitement within our department. However the college has cut all of its funding.

## 5.2a Enrollment Efficiency

### Updated Spring 2019

Our overall enrolment efficiency has ranged from 93.1%-97.3% during the past four years of spring/fall. Our summer efficiency is somewhat lower, ranging from 82.4% - 90.3%. However, these summer figures are not too concerning because they mostly reflect extra seats available in extended lecture courses which are still more financially sustainable than smaller classes even with lower efficiency numbers.

Our enrollment efficiency within particular disciplines has dropped below 85% a few times. Various Earth Science classes (e.g. meteorology, geology, geography) have occasionally been inefficient, and Geography in particular has struggled on the Petaluma Campus.

We believe that we have largely addressed many of the inefficiency issues by cutting sections and moving to a rotation on a few classes. Starting spring 2018, geology's efficiency has improved markedly, ranging from 88.2-98.8% during the past year. Meteorology's efficiency rose to 106.7% last semester, and geography has remained over 85% during the past year as well.

Many courses could benefit from being delivered in the hybrid or fully online formats. We are in the process of preparing many of our lower-efficiency courses for delivery online.

Astronomy and Environmental Science both have efficiencies that are very near 100%.

Astronomy is impacted by a lack of instructors. However we do not have any hope of being awarded a new full time faculty member in this budget climate.

Environmental Science is more efficient and higher demand than some of our other areas, but we believe that sacrificing other areas to increase our number of Astronomy and Environmental Science sections would be short-sighted and would deprive students of opportunities to meet their educational goals. We are hoping to relieve some demand for Environmental Science courses by offering our other lower-enrolled courses in online or hybrid delivery formats. This would enable us to maintain a wide variety of offerings for students.

Our courses are not impacted by a lack of space.

## 5.2b Average Class Size

### Updated Spring 2019

- Explain any trends in average class size, whether increasing or decreasing.

Our class sizes vary considerable by discipline and by class type (lecture vs. lab vs. field class). Most of the fluctuations in class size seen in the data are due to varying amounts of lab sections vs. lecture sections offered in a given semester. When taking this into account, the class sizes among similar types of classes in a discipline have remained fairly constant.

- Explain any limits on class size, such as pedagogical limits, regulatory mandates, or facilities constraints.

Our two main Earth Science classrooms on the Santa Rosa campus are fairly small. Room 2042 can only seat 25 students, while room 2049 can seat 30. Our main classroom on the Petaluma campus can seat 30-40 students depending on the furniture configuration. It is hard to seat more than 30 comfortably for an interactive class. Our field classes are limited by safety concerns. We only feel it is safe to be out in the field with 20 students per instructor. We offer some double sections with 2 instructors for 40 students. Some of our astronomy classes are offered in extended lecture format with class sizes from 90 up to 198.

## 5.3 Instructional Productivity

### Updated Spring 2019

- If your program's productivity ratio is **17.5 or higher**, describe how you maintain that productivity.

Astronomy has high productivity, ranging from 20.09 to 23.41 during the past four spring/fall semesters, with somewhat lower numbers during the summer. This productivity is maintained by offering a several extended lecture courses with class limits of 198 and 90.

- If your program's productivity ratio is **lower than 17.5**, explain any circumstances that contribute, such as limitations of facilities, regulations, special pedagogy, or scheduling challenges.

The other disciplines are all under 17.5. There are two main factors limiting the productivity. First, we offer many lab science classes. For pedagogical reasons, labs need to have small class sizes because instructors give one-on-one feedback and attention during class as well as supervising the hands-on use of equipment. Second, our lecture classrooms are fairly small as mentioned in section 5.2b.

- Explain any trends that you see in productivity.

Productivity has remained fairly stable. We have cut sections when enrollments were low to boost productivity over the past years. Thus our productivity numbers have not changed much despite declining enrollment.

- Recommend ways the program could improve productivity.

By offering some hybrid/online sections we hope to boost enrollment and thus productivity in a few courses that sometimes struggle to fill. If the college tied load and pay in extended lecture to the exact number of students at census (rather than tying it to tiered thresholds) then more instructors would be incentivized to work in extended lecture format, boosting productivity greatly. I believe this is an important step the district could take that would have positive implications for productivity district-wide.

## 5.4 Curriculum Currency

### Updated Spring 2019

As of May 2019, all ESS curriculum is up-to-date. We keep track of courses and update as they come up for six-year review.

## 5.5 Successful Program Completion

### Updated Spring 2019

The Environmental Studies major is an interdisciplinary major. Several of the core courses for this major are housed within our department.

- Describe any course sequencing or course rotation plans that allow a student to complete their certificate/degree/major in a reasonable time frame.

The required course ENVST 40 - Environmental Forum is offered every spring semester. Students can complete the required 1 unit of work experience or community engagement on a flexible schedule.

An additional 12 units must be completed from a set of 7 core courses. Among these, we only have control over one course: ENVS 12 - Introduction to Environmental Science. This class is offered every semester in multiple time slots and locations, including evening and Petaluma campus sections. We have found that students have recently had some difficulties completing the core requirements because other core classes are not offered frequently enough or are offered at times that some students cannot attend. To get a glimpse of how frequently these courses are offered in the current budget climate, here is the status of each core course going back to Summer 2018.

BIO 12: Offered once per semester fall and spring on S.R. campus, day sections only, plus summer and study abroad sections occasionally

ECON 12: Has not been offered at all

ENGL 10: Has not been offered at all

ENVS 12: 4-5 sections offered each fall and spring, day and evening on Pet. and SR campuses.  
NRM 12: Online sections offered most semesters, including summer. Occasional face-to-face classes offered.  
PHIL 12: One section offered Spring 2019, day, SR campus.  
SOC 12: Has not been offered at all

Since ECON 12, ENGL 10, and SOC 12 are effectively no longer offered, students currently must take each of BIO 12, ENVS 12, NRM 12, and PHIL 12 in order to complete the core requirements. This can pose a hardship if there are schedule conflicts with PHIL 12 and BIO 12 which are not offered in a variety of time slots.

To help improve the situation, our department is adding ENVS 8 - Global Climate Change to the core requirements in Fall 2019.

- Does the program offer support or services to help students complete certificates, licensure, or majors? If so, describe those.

We are very flexible in arranging course substitutions and independent studies to help students complete the major if they are having trouble making the core courses fit into their schedules. Individual instructors help students to find suitable community involvement / work experience placement, including working in the Petaluma Campus Garden.

- Review the trends in numbers of degrees or certificates awarded, and, if possible, explain the trend. Data are posted on the PRPP web site: [www.santarosa.edu/prpp](http://www.santarosa.edu/prpp).

In 2014-2015 the number of students who completed this major jumped to 10. In subsequent years it was 11, 7, and 7. There is not enough data to establish a significant trend, but it seems to be holding steady in the high single digits.

- If available and applicable, provide data about student success rates on licensure exams or external/industry examinations or certifications. (Note: you can copy and paste that information into this text block.) If applicable, recommend ways to improve certificate, licensure and major completion overall and by targeted groups, as appropriate. "Targeted groups" could be defined by gender, age, ethnicity, disability status and income.

Not applicable.

- If these data are available, what has been the history of employment or job placement following the certificate or majors in your program/unit? What is the employment outlook over the next three years? If applicable, recommend ways to improve employment or job placement.

Data not available.

## 5.6 Student Success

### Updated Spring 2019

The data we have received is highly suspect and I think there are problems with the data. Some semesters show 0% retention for all disciplines which is clearly incorrect. Sometimes there are massive jumps in retention from one semester to the next, which seems impossible because of our fairly consistent anecdotal experiences over a large number of classes and students. This whole analysis should therefore be taken with a huge grain of salt. The numbers for the most recent year look accurate, excluding summer, so I have used these for the analysis.

How does student retention at the discipline level compare to the overall District **retention** rate?

	Retention %	
	S 2018	F 2018
ASTRON	78.4	70.4
ERTHS	100	100
ENVS	77.2	72.9
GEOG	73.4	
GEOL	76.9	83.5
METRO	83.3	84.4
PHYSC	-	95.7

Overall: 78.7 Spring, 78.8 Fall

The overall district retention rate was 78% for spring and 77.36% for fall. Our department retention rates are in line with the district retention rates. The retention rate for PHYSC is high because it includes data for only one intensive 6 hour per week course. This is a highly motivated group of students. The retention rate for ERTHS is high because it includes highly motivated independent study students. The retention rate for astronomy is a bit low due to the large class sizes in astronomy.

How does student success at the discipline level compare to the overall District **success** rate?

	Success %	
	S 2018	F 2018
ASTRON	71.2	70.4
ERTHS	100	100
ENVS	77.2	72.9
GEOG	73.4	70.8
GEOL	74.1	77.7
METRO	72.2	78.1
PHYSC	-	95.7

Overall: 72.7 Spring, 72.4 Fall

The overall district success rate was 74.42 for spring and 73.31 for fall. Our department success rates are in line with the district averages. See above for reasoning for high success rates in ERTHS and PHYSC.

How does the average student GPA at the discipline level (total units/grade points) compare to the overall District GPA? If there is a difference (either above or below), can you explain that?

	GPA	
	S 2018	F 2018
ASTRON	2.40	2.46
ERTHS	4.00	4.00

ENVS	2.67	2.63
GEOG	2.52	2.47
GEOL	2.52	2.42
METRO	2.87	2.79
PHYSC	-	3.59

Overall: 2.47 Spring, 2.52 Fall

The overall district average GPA was 2.838 in spring and 2.788 in fall.

The GPA of our students has, by and large, been lower than the district average. It is our opinion that students taking ESS classes are underprepared for college-level science courses when compared to other disciplines within the district. We also maintain rigorous academic standards.

## 5.7 Student Access

### Updated Spring 2019

Do students from diverse ethnic backgrounds enroll in the disciplines at rates equal to their participation rates in the District as a whole?

I am unable to answer this question. I have the data for our disciplines and have requested the data for the District as a whole (over two weeks ago). As of today, I have not been furnished with District data.

Do male or female students constitute 75% or more in this discipline? If so, what strategies are being used or planned to increase enrollment of the non-traditional gender?

No – none of the ESS disciplines have male or females students accounting for more than 75%. The numbers vary significantly by discipline and by year. There have been some recent trends, however. Astronomy seems to be relatively even over the last 4 years with about 2% higher male enrollment. Geology has fluctuated with about a +/- 10% variation in 2015-16 and 2016-17, and then has had about 3% more males the last 2 years. Geography was relatively even in 2015-16, had 10% more females in 2016-17, and then has flipped to 15% more males the last 2 years. Environmental Science has enrolled 12-30% more females than males over each of the last 4 years while the ENVST 40 course has fluctuated wildly by +/- 30% females/males. Meteorology has had more males by 12%, 3%, 10%, and 31% from 2015-16 to 2018-19.

Has the program/unit experienced changes to its student population or changes in the needs of students in the last four years?

Our students have followed district-wide trends, with an increased proportion of under-prepared students.

What types of outreach or retention efforts are occurring or should be implemented to better serve underserved or under-represented populations in this program?

To date, no efforts have been made to increase the enrollment of under-represented populations. These populations have historically been under-represented in science disciplines in other academic settings as well as the professional realm. These discussion are occurring at the state and national level within professional organizations.

How does this program/unit serve students that are often underrepresented in college including various ethnic groups, lower socioeconomic groups, English language learners?

Multiple faculty have undergone training in reading apprenticeship to better serve students with poor academic English reading skills. Faculty have attended affective learning workshops as well. Multiple instructors use Open Educational Resources (OER) to better serve and provide access to economically disadvantaged students.

## 5.8 Curriculum Offered Within Reasonable Time Frame

### Updated Spring 2019

Are all courses in certificates and majors offered on a regular or rotational basis so that students can complete their programs within a reasonable time frame?

The Environmental Studies major includes a variety of courses that students can take to meet the core requirements. Students are required to take 4 of the 7 core courses. We have found that students have recently had some difficulties completing the core requirements because other core classes are not offered frequently enough or are offered at times that some students cannot attend. To get a glimpse of how frequently these courses are offered in the current budget climate, here is the status of each core course going back to Summer 2018.

BIO 12: Offered once per semester fall and spring on S.R. campus, day sections only, plus summer and study abroad sections occasionally

ECON 12: Has not been offered at all

ENGL 10: Has not been offered at all

ENVS 12: 4-5 sections offered each fall and spring, day and evening on Pet. and SR campuses.

NRM 12: Online sections offered most semesters, including summer. Occasional face-to-face classes offered.

PHIL 12: One section offered Spring 2019, day, SR campus.

SOC 12: Has not been offered at all

To improve students' ability to complete the program in a reasonable time frame we are adding ENVS 8 - Global Climate Change to the list of core courses in Fall 2019.

Are your course sequences (program maps) current on the majors/certificate website? If not, plan to update those.

There is a recommended sequence on the majors/certificate website.

## 5.9a Curriculum Responsiveness

### Updated Spring 2019

How does the program/unit curriculum respond to changing student, community, and employer needs?

We attempt to offer a variety of courses that students can take to meet their GE requirements that include lecture and lab components. As budgets and staffing allow, we are adding back in sections of in-demand courses such as environmental science.

Has your program/unit fully complied with the State requirement that every general education course that transfers to a CSU or UC campus must include objectives (content) related to gender, global perspectives, and American cultural diversity? If not, describe the plan to bring the curriculum into compliance.

As we continue to update curriculum, we will ensure that these GE objectives are included.

How does the curriculum support the needs of other programs, certificates, or majors?

Several of our courses are included as parts of other majors, or electives for certificates. Specifically many of our courses are included in the Environmental Studies major and the Natural Sciences major. Our primary focus is on helping students to complete their GE science requirements, including laboratory science.

Offer recommendations and describe plans for new directions in the curriculum.

We are offering a new Global Climate Change course in Fall 2019. We are exploring offering Oceanography and possibly Astrobiology in the future.

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

**Updated Spring 2019**

Not applicable.

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

**Updated Spring 2019**

- Do transfer majors align with (75% overlap of units) the lower division required courses at common transfer destinations? If not, what is the plan to bring the major into alignment?
- Do transfer majors align with (50% overlap with) the lower division required courses at common transfer destinations? If not, what is the plan to bring the major into alignment?

We are working on the creation of Associate Degrees for Transfer (AA-T) for geography and environmental science. We expect these to be completed in Fall 2019. Once completed, there should be a 75% overlap of units.

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

**Updated Spring 2019**

Not applicable.

## 5.11b Academic Standards

**Updated Spring 2019**

Does the program regularly engage in dialogue about academic standards? If so, describe any conclusions or plans.

Within our individual disciplines, there is dialogue between instructors regarding academic standards, grading, assignments, etc. We are fortunate that instructors agree on academic rigor, and course standards. At the department level, we had discussions in the past year about whether to retain course advisories given the changes to English and Math placement in light of AB 705. We are concerned about challenges we will face as more underprepared students might enter our courses since our advisories have been rendered meaningless. We plan to monitor the situation and adjust as necessary in the coming year.

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

Rank	Location	SP	M	Goal	Objective	Time Frame	Progress to Date
0001	ALL	02	01	Geography TMC major	Align SRJC major with Geography TMC. Finalize major SLO's; identify structure of the major, including relevant courses; submit paperwork.	Fall 2017	In Spring 2019 we worked with Adrienne Leahy to complete this. We anticipate completion of the Geography ADT in Fall 2019.
0003	ALL	02	01	ENVS TMC major	Align SRJC major with ENVS TMC. Finalize major SLO's; identify structure of the major, including relevant courses; submit paperwork.	Fall 2017	In Spring 2019 we worked with Adrienne Leahy to complete this. We anticipate completion of the ENVS ADT in Fall 2019.
0005	ALL	02	06	Develop lab components for GEOG 4	Develop SLO's and objectives, write COR, submit paperwork.	2017-2018	We have purchased some lab supplies that can be used to support this course.
0006	ALL	02	06	Develop online / hybrid courses in GEOG 3, ENVS 12, and Astron 12	Submit paperwork for distance education. Develop courses.	2017-2020	We have engaged in multiple planning discussions and rich conversations regarding Astron 12 hybridization. We completed distance education and curriculum paperwork to offer these courses in hybrid and fully online formats.
0007	ALL	02	01	Explore additional ESS course offerings to meet student needs (astrobiology, astrophysics, oceanography, climate change)	Develop format, SLO's and COR for new courses.	2017-2020	We created a climate change course which will be offered in Fall 2019. We submitted distance education paperwork so that this course can be offered in hybrid or online formats in the future. We have started researching oceanography curriculum.

## 6.2b PRPP Editor Feedback - Optional

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### 6.3a Annual Unit Plan

Rank	Location	SP	M	Goal	Objective	Time Frame	Resources Required
0001	ALL	02	01	Geography TMC major	Finalize major SLO's; identify structure of the major, including relevant courses; submit paperwork.	Fall 2019 - Spring 2020	Staff time.
0002	ALL	02	01	ENVS TMC major	Finalize major SLO's; identify structure of the major, including relevant courses; submit paperwork.	Fall 2019 - Spring 2020	Staff time.
0003	ALL	02	06	Develop lab components for GEOG 4	Develop SLO's and objectives, write COR, submit paperwork.	2021-2022	Staff time. Supplies and Equipment for labs (~\$5,000).
0004	ALL	02	01	Explore additional ESS course offerings to meet student needs (astrobiology, oceanography)	Develop format, SLO's and COR for new courses.	2020-2024	Staff time. Lab equipment supplies.