

Santa Rosa Junior College

Program Resource Planning Process

Earth and Space Sciences 2015

1.1a Mission

Updated every third spring; 2017, 2020, 2023 – not updated in 2015

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)
- Making available equipment and high quality educational opportunities
- Attracting and serving a diverse student body and fostering diversity within our department

1.1b Mission Alignment

Updated every third spring; 2017, 2020, 2023 – not updated in 2015

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. The Department is developing strategies to support the District's Strategic Plan this academic year.

1.1c Description

Updated every third spring; 2017, 2020, 2023 – not updated in 2015

The ESS Department houses multiple disciplines, including Astronomy, Environmental Science, Geography, Geology, and Meteorology. Up until Fall 2011, the Department also included Aeronautics. However due to budget cuts the remaining aeronautics classes were transferred to the Community Education Department. The department primarily serves general education (GE) transfer students. During the 2012-13 AY, 4289 students enrolled in ESS classes. This represents a 5% decrease from the 2011-12 academic year and is likely related to District-wide cuts. The majority of these classes were GE science transfer primarily taken by non-science majors.

Courses are offered in several different formats. Lecture, laboratory, online, 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. We also 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 12 and 15 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 every third spring; 2017, 2020, 2023 – not updated in 2015

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. The former AAll left SRJC employment in Spring 14. Hiring is in process and a new employee will be starting in September 2014.

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 8 AM 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 every third spring; 2017, 2020, 2023 – not updated in 2015

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.

Currently the ESS Department does not have any majors or programs. The Department would like to develop an Earth Science transfer major and will verify transfer requirements at both CSU and UC before finalizing the major. TMC majors have been finalized at the state level for geography and geology. We are moving forward with a geography major as we currently offer the required courses. We are currently not moving forward with the geology TMC major, as we do not offer all of the required courses and do not foresee being able to add them in the near future. A TMC major for environmental science is in development at the state-level. An ESS faculty member is serving in the C-ID Faculty Discipline Review Group (FDRG) 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 Department is developing Earth Science / Physical Science curriculum to support the Elementary Teacher Education TMC major that was finalized in April 2012. The Department created an Earth Science course (PHYSC 21) that was approved in September 2013. It is anticipated that we will begin offering this course in Spring 2014.

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

N/A

2.1a Budget Needs

Updated in Spring 2015

Below are the expenditures for the Earth & Space Sciences Department for 2013-14. Areas where our budget increased significantly included total expenditures (+15%), faculty payroll (+18%), and salary/benefit costs (+16%). The ESS Department began restoring classes that were previously cut and these increases likely are responsible for increases in total expenditures, faculty payroll and benefits costs. Total non-personnel costs were reduced by approximately 21%. This decrease may be a result of the ESS Department not receiving instructional equipment funds during 2013-14.

Expenditure Totals – 2013/14

| Expenditure Category | Amount | Change from 2012-13 | District Total | % of District Total |
|-----------------------------|--------------|---------------------|------------------|---------------------|
| Total Expenditures | \$950,121.19 | 14.45% | \$120,253,860.49 | 0.79% |
| Total Faculty Payroll | \$632,283.69 | 17.91% | \$43,245,546.66 | 1.46% |
| Total Classified Payroll | \$100,085.52 | 5.59% | \$19,181,736.44 | 0.52% |
| Total Management Payroll | \$24,228.40 | 7.50% | \$8,511,170.13 | 0.28% |
| Total Salary/Benefits Costs | \$930,037.82 | 15.57% | \$90,311,305.65 | 1.03% |
| Total Non-Personnel Costs | \$20,083.37 | -20.86% | \$15,816,837.66 | 0.13% |

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

The Earth and Space Sciences Department budget makes up a relatively small portion of the District total. In all categories, the ESS budget is less than 1.5% of the District total (see table above). The highest component compared to the District total is faculty payroll. In several areas, including classified payroll, management payroll and non-personnel costs, the percentage is below 0.55% of the District total.

Have you implemented any cost savings measures during this academic year that have saved the District money? If so, describe those. (Do not address schedule reductions, as those are reflected in section 5.)

The Department continues to attempt to reduce costs, particularly those associated with printing and other supplies. We also have been very conservative with ordering instructional supplies from our regular budget.

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

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. The telescopes that are used for Astronomy lab range in age from 10 – 25 years. These telescopes are out-of-date and the manufacturer no longer supports these models. In order to maintain our 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.

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 | ALL | 00 | 00 | \$2,000.00 | 2,000 per year. Expand field trip offerings for ENVS 12, GEOL 1L, GEOL 7 (additional sections / different locations), GEOL 11, ASTRON 12 (different locations) |
| 0002 | ALL | 00 | 00 | \$2,000.00 | 2000 per year. Maintenance budget for telescope maintenance. |
| 0003 | Santa Rosa | 00 | 00 | \$1,000.00 | Repair of petrographic microscopes for GEOL lab activities. |

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 | 13.60 | 10.00 | Budget/financial, scheduling, hiring, faculty and staff evaluations, facilitate regular department meetings, coordinate adjunct faculty, etc. |
| Department Chair (summer) | 2.50 | 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 |
|--------------------------------|-------|-------|---|
| ASTRON Lab Assistant (student) | 3.00 | 12.00 | Monitor equipment, instruct students in use of ASTRON equipment |

2.2d Adequacy and Effectiveness of Staffing

Updated in Spring 2015

How do your program/unit staffing ratios compare to the district-wide range?

Below are the program /unit staffing ratios for the ESS Department.

Areas where the ratios are below the District totals include:

- Support Staff to Management (FTE-SS: FTE-M) – 90%
- Average Faculty Salary per FTE-F – 76%.
- Total unit cost per FTE-S – 34%.
- Total unit cost per student served / enrolled – 6%.

Explanation: The full-time faculty in the ESS Department are relatively new to SRJC and the longest serving full-time faculty member is only in their 11th year. As a result, ESS faculty are likely to be placed lower on the pay schedule than faculty that have taught at SRJC for a long time. Based on the data, the total unit costs per FTE-S and student served student are much lower than the District as a whole.

Areas where the ratios are between 100% and 200% of the District total include:

- Student to Faculty ratio (FTE-S: FTE-F) – 121%
- Adjunct faculty to Contract faculty (FTE-AF: FTE-CF) – 109%
- Classified salary per FTE-C – 142%
- Management salary per FTE-M – 105%
- Salary/Benefit cost as a % of total budget – 130%

Explanation: ESS offers both medium and large lecture format classes in astronomy and geology. This may explain why our student to faculty ratio (FTE-S: FTE-F) is higher than the District. At 1.6, our adjunct faculty to contract faculty ratio (FTE-AF: FTE-CF) is only slightly higher than the District average of 1.47.

Areas where the Departments ratios are more than 200% of the District total include the following.

- Faculty to Staffing (FTE-F: FTE-SS) - 786%.
- Faculty to Management (FTE-F – FTE-M) – 709%
- Total Unit Cost for Classified (FTE-C) – 215%
- Total Unit Cost for Management (FTE-M) – 293%

Explanation: As a small Department, we are provided with sufficient classified staffing. However these positions are shared positions that are not accurately represented in the PRPP data. For example, the science equipment systems specialist is shown as 100% in our Department. However he is shared with the Planetarium and the Greenhouse, which are in separate departments.

| Data Element | Value | Change from 2012-13 | District Total | % of District Total |
|---|----------------|---------------------|----------------|---------------------|
| FTE-S : FTE-F | 32.5004 | -4.79% | 26.9336 | 120.67% |
| FTE-AF : FTE-CF | 1.6032 | -25.71% | 1.4727 | 108.86% |
| FTE-F : FTE-SS | 8.2466 | 22.53% | 1.0495 | 785.74% |
| FTE-F : FTE-M | 41.9877 | 3.04% | 5.9201 | 709.24% |
| FTE-SS : FTE-M | 5.0915 | -15.91% | 5.6406 | 90.26% |
| FTE-ST : FTE-C | 0.0000 | 0.00% | 0.1567 | 0.00% |
| Average Faculty Salary per FTE-F | \$48,576.71 | 14.43% | \$63,631.61 | 76.34% |
| Average Classified Salary per FTE-C | \$66,723.68 | 5.59% | \$47,086.12 | 141.71% |
| Average Management Salary per FTE-M | \$78,156.13 | 7.50% | \$74,139.11 | 105.42% |
| Salary/Benefit costs as a % of total budget | 97.89% | 0.97% | 75.10% | 130.34% |
| Non-Personnel \$ as a % of total budget | 2.11% | -30.86% | 13.15% | 16.07% |
| Restricted Funds as a % of total budget | 0.00% | 0.00% | 11.75% | 0.00% |
| Total Unit Cost per FTE-F | \$72,995.34 | 11.08% | \$176,941.86 | 41.25% |
| Total Unit Cost per FTE-C | \$633,414.13 | 14.45% | \$295,191.61 | 214.58% |
| Total Unit Cost per FTE-M | \$3,064,907.06 | 14.45% | \$1,047,507.50 | 292.59% |
| Total Unit Cost per FTE-S | \$2,245.98 | 16.66% | \$6,569.56 | 34.19% |
| Total Unit Cost per student served/enrolled | \$247.69 | 23.61% | \$4,008.46 | 6.18% |

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

Yes.

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?

None

2.2e Classified, STNC, Management Staffing Requests

| Rank | Location | SP | M | Current Title | Proposed Title | Type |
|------|----------|----|---|---------------|----------------|------|
|------|----------|----|---|---------------|----------------|------|

2.3a Current Contract Faculty Positions

| Position | Description |
|--|---|
| Geology Instructor | Rebecca Perloth, GEOL at the Santa Rosa campus. |
| Geography / Environmental Science Instructor | Katie Gerber, GEOG and ENVS at the Santa Rosa campus. Current department chair. |
| Astronomy Instructor | Keith Waxman, ASTRON at the Santa Rosa campus. |
| Astronomy Instructor (Petaluma) | Laura Sparks, ASTRON at the Petaluma campus. |
| 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 | 2.0000 | 51.4800 | 1.9400 | 48.5200 | Astronomy FT/PT ratio is 1.02 compared to district average 0.68. Astronomy is one area where we could consider hiring an additional full time faculty member. |
| ENVS | 0.7000 | 77.5000 | 0.2000 | 22.5000 | The ENVS FT/PT ratio is 3.5. The Department hired a full time replacement for ENVS and GEOL at the Petaluma campus in August 2013. |
| GEOG | 0.3000 | 16.6700 | 1.5000 | 83.3300 | Geography FT/PT ratio is 0.2. The current department chair is split between geography and environmental science, and teaches fewer geography classes because of department chair and other release time. |
| GEOL | 1.5300 | 92.5900 | 0.1300 | 7.4100 | Geology FT/PT ratio is 11.50 compared to district average 0.68. See comment above about new earth science faculty member above. We have enough full time coverage to accommodate our geology offerings. |
| METRO | 0.0000 | 0.0000 | 0.7300 | 100.0000 | Meteorology FT/PT ratio is 0, compared to district average 0.68. All METRO classes are taught by adjunct instructors. |

2.3c Faculty Within Retirement Range

Updated in Spring 2015

No full-time faculty members are within retirement range. There are 2 adjunct faculty members within retirement range (55+ years).

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

Updated in Spring 2015

ASTRON – Historically, it has been *extremely* 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 Fall 2013 and we were able to add one applicant to our pool. Currently we have four adjunct astronomy instructors that regularly teach for us. If we increase our offerings or if any of our adjunct instructors leave, we will need to find additional astronomers to add to our adjunct pool.

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.

GEOG –Sections of geography were cut due to the budget and we were able to staff all offered sections with existing faculty. Adjunct interviews were last conducted in Fall 2013 and we were able to add three candidates to our pool.

GEOL – Interviews were most recently conducted in Summer 2014 and two people were added to the geology pool. With the new earth science instructor and our existing geology adjuncts we 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 were last conducted in Summer 2005. 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

| Rank | Location | SP | M | Discipline | SLO Assessment Rationale |
|------|----------|----|---|------------|--------------------------|
|------|----------|----|---|------------|--------------------------|

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

Updated in Spring 2015

INSTRUCTIONAL EQUIPMENT

ASTRONOMY

Camera lenses and accessories for existing digital cameras. Cameras were purchased at the Petaluma campus to support our Astronomy lab classes in Petaluma. These cameras however still need lenses and accessories to make them fully functional for astronomy labs.

Telescopes for Astronomy labs. The Department has 18 functioning telescopes that are used for Astronomy lab classes at both campuses. Telescopes range in age from 10 – 25 years. In addition to breaking down, the telescopes are becoming increasingly hard to repair. In addition, the telescope technology is outdated and in need of upgrading. Unfortunately the current scopes require regular repair and replacement parts are getting hard to find. We need funds to replace the entire set.

Laptops for Astronomy labs. Astronomy recently upgraded to Digital SLR cameras at the Petaluma campus. Laptops are needed to support labs conducted with the digital cameras. This supports Student Learning Outcomes for Astronomy.

Digital SLR Cameras for Astronomy labs at the Santa Rosa campus. Astronomy needs to update to Digital SLR cameras at the Santa Rosa campus. Digital cameras will allow students to do scientific experiments with high quality data in our astronomy lab classes. Currently students must use simulated data for many of these topics, and digital cameras would open the door to a more authentic experience. Ideally we would like 10 additional Digital SRL cameras and laptops to be used by courses at both campuses. These cameras will also need to be modified for astrophotography. The modification price is included in the estimate. This supports Student Learning Outcomes for Astronomy. \$10@1,100 = \$11,000

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.

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. Planetarium technology in general is beginning a transition from analog to digital. As this occurs over the coming years the ability to obtain replacement parts for the older analog technology will become more difficult to the point of requiring the purchase of newer replacement units.

GEOLOGY

Rock/mineral thin sections needed to accompany rock and mineral studies for Geology 1 and 1L, for use with polarizing petrographic microscopes. David needs them for Petaluma.

Lab Stools for room 2049. Replace the existing lab stools with stools with back support.

PHYSICAL / EARTH SCIENCE

Lab Equipment for Physical Science 21 (Earth Science lecture and lab): Miscellaneous lab equipment for physical Science lab / lecture course including digital scales, beakers, thermometers, sling psychrometers, heat lamps and clamps, and other demonstration equipment.

Cloud wheels: For use in identifying cloud types for Physical Science and Geography / Meteorology.

Reusable Star Wheels: For use in identifying constellations for Earth Science.

GEOGRAPHY

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

GENERAL CLASSROOM

Replace lab stools. We are looking to replace the stools in room 2030. The room is equipped with high lab tables and high stools. The stools lack back support and are very uncomfortable for students. Besides not being conducive to student learning, it can also be a hazard. In April 2007, a student fell from the same style of stool in 2049 and hit her head on the ground during class (an incident report was filed).

Weather Station. ESS maintains a weather station that is used to support its meteorology and geography courses. The weather station is antiquated and parts are increasingly difficult to find or to repair.

NON-INSTRUCTIONAL EQUIPMENT

None at this time

2.4c Instructional Equipment and Software Requests

| Rank | Location | SP | M | Item Description | Qty | Cost Each | Total Cost | Requestor | Room/Space | Contact |
|------|------------|----|----|---|-----|--------------|--------------|-----------|------------|-----------------------|
| 0001 | ALL | 04 | 01 | Digital SLR Camera Lenses & Accessories | 10 | \$1,100.00 | \$11,000.00 | K. Gerber | | K. Waxman & L. Sparks |
| 0002 | ALL | 04 | 01 | Telescopes to replace outdated scopes | 20 | \$2,000.00 | \$40,000.00 | K. Gerber | Lark | K. Waxman |
| 0003 | ALL | 04 | 01 | Laptop computers for Astron 12 labs | 11 | \$1,000.00 | \$11,000.00 | K. Gerber | | K. Waxman & L. Sparks |
| 0004 | ALL | 04 | 01 | Digital SLR Cameras (including modification) | 10 | \$1,100.00 | \$11,000.00 | K. Gerber | | K. Waxman & L. Sparks |
| 0005 | Santa Rosa | 02 | 01 | Lab Equipment (scales, beakers, thermometers) | 10 | \$500.00 | \$5,000.00 | K. Gerber | Lark | K. Gerber |
| 0006 | Santa Rosa | 02 | 01 | Star Wheels | 30 | \$13.00 | \$390.00 | K. Gerber | Lark | K. Gerber |
| 0007 | Santa Rosa | 02 | 01 | Cloud Wheels | 20 | \$10.00 | \$200.00 | K. Gerber | Lark | K. Gerber |
| 0008 | Santa Rosa | 04 | 06 | Rolling chairs for room 2039 | 30 | \$250.00 | \$7,500.00 | K. Gerber | Lark 2030 | K. Waxman |
| 0009 | Santa Rosa | 04 | 06 | Lab stools with backs room 2030 (31) & 2042 (4) | 35 | \$300.00 | \$10,500.00 | K. Gerber | Lark 2030 | K. Gerber |
| 0010 | Santa Rosa | 04 | 01 | Set of rock/ mineral thin selections | 2 | \$1,760.00 | \$3,520.00 | K. Gerber | Lark 2042 | R. Perlroth |
| 0011 | Santa Rosa | 04 | 01 | Weather Station | 1 | \$15,000.00 | \$15,000.00 | K. Gerber | Lark | K. Gerber |
| 0012 | Santa Rosa | 04 | 01 | Demonstration equipment (density, condensation) | 1 | \$1,000.00 | \$1,000.00 | K. Gerber | Lark 2049 | K. Gerber |
| 0013 | Santa Rosa | 03 | 04 | Planetarium: Upgrade to digital projection | 1 | \$200,000.00 | \$200,000.00 | K. Gerber | Lark | E. Megill |
| 0014 | Santa Rosa | 03 | 04 | Planetarium: Replace GOTO Star Projector | 1 | \$650,000.00 | \$650,000.00 | K. Gerber | Lark | E. Megill |
| 0015 | Santa Rosa | 03 | 04 | Planetarium: Replace and upgrade console wiring | 1 | \$400,000.00 | \$400,000.00 | K. Gerber | Lark | E. Megill |

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

| Rank | Location | SP | M | Item Description | Qty | Cost Each | Total Cost | Requestor | Room/Space | Contact |
|------|----------|----|---|------------------|-----|-----------|------------|-----------|------------|---------|
|------|----------|----|---|------------------|-----|-----------|------------|-----------|------------|---------|

2.5a Minor Facilities Requests

| Rank | Location | SP | M | Time Frame | Building | Room Number | Est. Cost | Description |
|------|------------|----|----|------------|---------------------|-------------|-------------|--|
| 0001 | Santa Rosa | 03 | 05 | Urgent | Lark Planetarium | | \$0.00 | Planetarium: Remove existing wiring and rewire for replacement console. |
| 0002 | Santa Rosa | 03 | 05 | Urgent | Lark Planetarium | | \$0.00 | Planetarium: Remove existing wiring and rewire for replacment projector. |
| 0003 | Santa Rosa | 02 | 01 | 1 Year | Lark | 2042, 2046 | \$0.00 | Replace existing display cases with ones with lighting and glass doors |
| 0004 | Santa Rosa | 06 | 07 | 1 Year | Lark Hall | all | \$0.00 | Paint exterior and interior of building. Replace rotted wood trip. |
| 0005 | Santa Rosa | 06 | 04 | 1 Year | Lark Hall - offices | 2021-2030 | \$8,000.00 | Install solar tubes to provide natural light inside ESS offices and work area. 8 solar tubes at ~\$1000 per tube. |
| 0006 | Santa Rosa | 02 | 01 | 1 Year | Lark Hall | 2009 | \$0.00 | Replace existing carpet and create ventialation to remediate persistent unpleasant smells. |
| 0007 | Santa Rosa | 02 | 06 | Urgent | Lark Hall | 2046 | \$0.00 | Create adequate and safe storage for telescopes in ESS work area. |
| 0008 | 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. |
| 0009 | Santa Rosa | 02 | 01 | 1 Year | Weather Station | | \$15,000.00 | Replace existing weather station. Opportunity to partner with Facilities. |

2.5b Analysis of Existing Facilities

Updated Spring 2015

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. Although there is adequate space at current staffing and class offering levels, the building and its associated equipment are out-of-date. The ESS Department would like to be included in the STEM science building(s). However planning and construction of the new facilities will take many years. With that in mind, there are upgrades that the Department would like to make in the meantime.

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. Planetarium technology in general is beginning a transition from analog to digital. As this occurs over the coming years the ability to obtain replacement parts for the older analog technology will become more difficult to the point of requiring the purchase of newer replacement units. Consider including Planetarium a Planetarium within the new STEM buildings or incorporate upgrades to the existing facility as part of the STEM upgrades.

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.

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.

Natural Daylighting: The ESS offices and classrooms have limited or no access to natural daylight. There are studies that link access to natural light with increased productivity for both workers and students. Installing solar tubes within the ESS offices would be a relatively inexpensive method of providing access to some level of natural light within the offices. To incorporate natural light in the classroom would likely require extensive classroom renovations.

Lecture Classroom 2009: This classroom is used for lecture-based courses by ESS and other departments. The classroom lacks adequate ventilation and smells. The smell may be attributed to the carpet. The Department would like to replace the existing carpet with either new carpet or some other form of flooring.

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 mechanisms needs to be designed in the ESS work area. This would likely involve removing existing shelf storage.

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.

Weather Station. ESS maintains a weather station that is used to support its meteorology and geography courses. The weather station is antiquated and parts are increasingly difficult to find or to

repair. ESS would like to partner with Facilities to install a new weather station on the Santa Rosa campus. Facilities could use the weather station for their water management system.

Are your facilities (including furniture, equipment, and technology) accessible to disabled students and staff, as appropriate? If not, please comment on problem areas.

Are facilities are considered accessible. It is difficult for students in wheelchairs to maneuver in 2049. High stools without backs like those in 2030 are very uncomfortable and are not conducive to student learning.

3.1 Develop Financial Resources

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

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. We recently switched to using digital cameras for astrophotography. In order to complete that transition, the camera's need to be retrofit to remove an infrared filter. In addition, the Department needs to upgrade its telescopes.

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. The Planetarium is in need of serious upgrades to its facilities and equipment.

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.

- Student-run garden. David Kratzmann is interested in establishing a student-run garden at the Petaluma campus. He submitted a grant to the State Fund Youth Advisory Board in Spring 14 but has not yet heard back from them.

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. David Kratzmann at the Petaluma campus has submitted two grants.

3.2 Serve our Diverse Communities

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

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.

SRJC is committed to serving our diverse communities. One way to do this is by having a workforce of persons from diverse backgrounds that are sensitive to the diversity of our students and culturally competent and responsive.

How does the program/unit recruit faculty and/or staff, who are sensitive to the diversity of our students?

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.

What 'best practices' does the program/unit use to affirmatively attract a diverse pool of candidates for openings?

The Department follows best practices outlined through the Human Resources Department.

In what other ways does the program/unit promote cultural competence and responsiveness among faculty and staff?

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. Up until nine years ago, there were no full-time female instructors in the Department. Currently there are three 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.

What is your program/unit doing to support the professional development of your classified staff, faculty, and/or managers?

The department supports professional development of our staff by encouraging them to complete health, hazards, and safety trainings.

What professional development activities would be of benefit to your program/unit?

Professional development related to teaching pedagogy and technology.

3.4 Safety and Emergency Preparedness

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

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 (524-1656).

Will be addressed in a Department meeting in 15/16 Academic Year.

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 (524-1656).

The Department offers 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. In June of 2013, two faculty members, Katie Gerber and Rebecca Perlroth, participated in First Aid and CPR Training through the District prior to leaving on a geology field course.

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.

| Building | BSC Area | ASC Area | Name | Department | Responsible Area | Management Support |
|-----------------|-----------------|-----------------|-------------|------------------------|-------------------------|---------------------------|
| Lark Hall | | | | Earth & Space Sciences | | STEM Dean |
| | | | | | | |

3.5 Establish a Culture of 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. An effort is underway to quantify paper reductions within the Department. 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. In addition, members of the department have adopted recycling bins for three classrooms. These are emptied by faculty and students on a regular basis into the outside recycling containers around campus. 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. Although not housed in the department, an ESS of faculty member oversees the Environmental Studies major and advises students. Currently the same faculty member teaches the Environmental Forum (ENVST 40) class.

Involvement with District Sustainability: A faculty member from the department is involved with environmental committees on campus including the Institute for Environmental Education (IEE) and the Integrated Environmental Planning Committee (IEPC). As a result they are involved with District-wide sustainability initiatives at both campuses.

4.1a Course Student Learning Outcomes Assessment

Updated Spring 2015

All SLO assessments that have been finalized as of June, 2015 are posted on the SLO Share Point site. The Department currently has 81 SLO assessments on the Share Point website. The ESS Department has assessed at least one SLO in all classes that are currently offered. SLO assessments are completed for 13 of the 22 classes offered in the Department (see list below).

Classes with all SLO assessments completed as of 6/8/15: Astron 3, Astron 3L, Astron 4, Astron 4L, Astron 12, ENVS 12, ERTHS 49, ERTHS 85.2/BIO 85.2, Geog 7, Geol 1, Geol 1L, and Geol 11.

Classes where at least one SLO has been assessed as of 6/8/15: ERTHS 85.1/BIO 85.1 (3 of 5), ENVST 40 (1 of 3), Geog 3 (1 of 5), Geog 4 (4 of 5), Geol 7 (1 of 5), Metro 10 (3 of 5).

Majors assessment: Environmental Studies (Fall 2014) and Natural Sciences (Fall 2014)

The classes that are behind in SLO assessments are generally those that are taught exclusively by adjunct instructors. We are working with our adjuncts to assess SLO's. These classes taught exclusively by adjuncts include: Geog 3, Geog 7, Metro 10, Metro 10L, and ERTHS 85.2 (BIO 85.32).

How have course SLO assessment results last year and this current year been used to improve student learning at the course level?

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. One of the ESS full-time faculty members, Rebecca Perlroth, is serving as an SLO coordinator and engages the Department in regular SLO discussions.

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 year and this 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.

6-Year SLO Assessment Plan (plan created in Spring 2012). SLO's assessed prior to the 2012/13 academic year are indicated by semester in Year 1. All SLO's indicated with an X (or prior date) are completed and posted on the Share Point website. SLO's indicated by P are planned for future semesters. SLO's indicated with a W were completed but have not yet been written up and posted.

| | | Year 1 2012-13 | | Year 2 2013-14 | | Year 3 2014-15 | | Year 4 2015-16 | | Year 5 2016-17 | | Year 6 2017-18 | |
|---|---|-------------------|-----|-------------------|---|-------------------|---|-------------------|---|-------------------|---|-------------------|---|
| Course | SLO | F | S | F | S | F | S | F | S | F | S | F | S |
| ASTRON 3 | 1. Critically analyze arguments ... | X | | X | | | | | | | | | |
| | 2. Recognize, differentiate, and ... | S11 | | | X | | | P | | | | | |
| | 3. Summarize the processes which ... | F11 | | | | X | | | | P | | P | |
| ASTRON 3L | 1. Describe methods used to ... | | | | X | | | | | P | | P | |
| | 2. Use astronomical tools to make ... | | | | | P | | P | | | | | |
| | 3. Employ critical thinking to ... | | | X | X | | | | | | | | |
| ASTRON 4 | 1. Critically analyze arguments ... | | X | | | | | | | | | | |
| | 2. Recognize, differentiate, ... | | | | | X | P | | P | | | | |
| | 3. Explain why some astronomical ... | | | | X | | | | | P | P | | |
| | 4. Recognize the factors affecting ... | F11 | S11 | | | | | | | | | P | P |
| ASTRON 4L | 1. Describe and use methods to ... | S11 | | | | | | | | | P | | |
| | 2. Use astronomical tools to make ... | | | | | X | | | | | | | |
| | 3. Employ critical thinking to ... | | | | | X | | | | | | | |
| ASTRON 12 | 1. Calculate properties | F11 | S11 | | | P | P | | | | | | |
| | 2. Explain the difference between ... | X | | | | | | | | | | P | P |
| | 3. Explain terrestrial and celestial ... | | | X | | | | | | | | | |
| | 4. Utilize the right ascension and ... | | | | X | | | P | P | | | | |
| | 5. Utilize small aperture telescopes, ... | | | | X | X | | | | P | P | | |
| BIO / ERTHS 85.1 (Fall) | 1. Describe the role of science in .. | | | | | X | | | | | | P | |
| | 2. Relate knowledge of natural ... | | | X | | | | | | P | | | |
| | 3. Integrate knowledge about ... | | | | | X | | | | | | | |
| | 4. Demonstrate skills in making .. | X | | | | | | P | | | | P | |
| | 5. Apply knowledge of the Pepper.... | | | | | X | | SLO removed | | | | | |
| BIO / ERTHS 85.2 (Spring) Life Sci | 1. Describe the role of science .. | | | | X | | | | P | | | | |
| | 2. Relate knowledge of natural ... | | | | X | | | | | | P | | |
| | 3. Integrate knowledge about ... | | | | X | | | | | | | | P |
| | 4. Demonstrate skills in making .. | | S11 | | | | P | | | | | | |
| ENVS 12 | 1. Identify and describe major ... | | | X | | | P | | | | | | |
| | 2. Analyze the scientific basis of ... | | | X | | | | P | P | | | | |
| | 3. Show relationships between ... | | | | X | | | | | | | P | P |
| | 4. Use scientific methodologies ... | | | X | | | | | | P | P | | |
| | 5. Correctly use information ... | | | | X | | P | | P | | | | |

| | | | | | | | | | | | |
|--|---|--|--|--|--|---|---|--|---|--|--|
| Not offered as of S15 | 3. Compare and contrast ... | | | | | | | | | | |
| | 4. Examine how geography affects | | | | | | | | | | |
| PHYS 21 (Spring only) | 1. Apply scientific techniques to .. | | | | | X | | | | | |
| | 2. Relate concepts, principles and.. | | | | | | P | | | | |
| | 3. Practically apply concepts of .. | | | | | | | | P | | |
| | 4. Differentiate among and classify .. | | | | | X | | | | | |
| | 5. Identify and characterize surface .. | | | | | | | | P | | |
| | 6. Interpret how the universe, .. | | | | | | P | | | | |
| | 7. Communicate complex course .. | | | | | | | | P | | |
| X – completed during semester W – Assessment completed, write up pending. P – Planned for semester indicated. F11 or S11 - completed during F or S semester of 2011 (or other date) | | | | | | | | | | | |

4.1b Program Student Learning Outcomes Assessment

Updated Spring 15

What programs (certificates, majors, pathways, or student services) has the program/unit assessed over the past three years?

Assessments were completed for the Environmental Studies and Natural Science majors by ESS faculty. Both majors are interdisciplinary and include courses across departments and clusters.

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 - #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 - #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 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 3 | X | | X | | | | | X | | X | X | | | | | |
| ASTRON 4 | X | | X | | | | | X | | X | X | | | | | |
| ENVS 12 | X | | X | X | | | X | X | X | X | X | X | X | | | X |
| GEOG 4 | X | X | X | | | | | X | X | X | X | | | | | X |
| GEOL 1 | | X | X | | | | | X | | X | X | | | | | X |

4.2b Narrative (Optional)

The courses listed above are highly enrolled, GE transferrable courses. These seek to meet the fundamental critical analysis and foundational skills based portions of the institutional learning outcomes.

5.0 Performance Measures

Not Applicable.

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

Update every third spring 2014, 2017, 2010 – data below was updated in 2013

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

The ESS department traditionally offers an array of day and evening sections within each of our disciplines. In Fall 2014, we are offering an Astronomy lab on Friday's and a 30 student section of Astronomy 3 on Saturday, as part of the Weekend College.

Is the program offering a good geographic distribution of classes, at Santa Rosa, Petaluma, and other sites? Explain.

Our department is committed to offering courses in all disciplines but Meteorology at both the Petaluma and Santa Rosa campuses. We have offered Meteorology at the Petaluma campus in the past but cut classes because of budget cuts and staffing. In the 12-13 AY, 27.1% of ESS students were enrolled at the Petaluma campus (according to student headcount), the remainder were in Santa Rosa or online. This represents a value higher than the district average of 19.3% for the 12-13 academic year. The Department also offers two courses at the Pepperwood Preserve: ERTHS 85.1/85.2. In addition, field courses are offered in astronomy and geology, in Sonoma County and the Sierra Nevada.

Does the program effectively use alternative delivery modes such as online, online hybrid, or telecast? Explain.

Currently Meteorology 10 and 10L are the only classes that are offered online. Other courses (GEOG 3 and ENVS 12) are being considered for online delivery but have not been developed. The Department could consider hybrid courses. Under current budget constraints, any increase in online offerings would require a decrease in in-person offerings.

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

Beginning in Fall 2013, the Department began rebuilding the schedule to better meet student demand. Additional sections were offered in astronomy lab, environmental science and world regional geography.

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

Improvements that could be made to better serve students:

- Offer Friday and/or weekend sections to serve working students.
- Offer more courses in an online or hybrid format.
- Re-establish sections impacted by budget cuts, as warranted to meet demand.

- Offer additional laboratory options district-wide.

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

Our classes are generally taken for GE transfer or as part of a major. The Department has not made an effort to additionally market the classes. Classes are full and additional could be offered.

5.2a Enrollment Efficiency

Update every third spring 2014, 2017, 2010 –updated in 2014

Overall efficiency for all ESS disciplines at all locations was 104.5% in Fall 2012 and 101.3% in Spring 2013. All but one of our disciplines were above the 95% efficiency goal for the District. During Spring 2013, geology dipped to 93.8%. Classes at the Petaluma campus generally have lower efficiency than at the Santa Rosa campus. Overall efficiency for the Department at the Petaluma campus was 96% in Fall 2012 and 97.5% in Spring 2013.

Summer efficiency was 92.5% for 2012 and 78.8% for 2013. The summer 2013 figures are below the District goal of 85%. In this case, Santa Rosa sections were all 90% and above. Efficiency in Petaluma was down significantly from previous summers (49.2%).

These classes are all GE transfer classes and are generally highly enrolled. We continually make adjustments to our schedule as enrollments and budgets warrant. The Department added sections of environmental science and world regional geography to meet increased demand. Sections of physical geography and astronomy were reduced.

If your enrollment efficiency is above the efficiency goal, explain briefly how you maintain that efficiency.

Like most departments, ESS was forced to cut classes which increased overall efficiency. As we add classes back into the schedule, our efficiency is likely to decrease.

If your enrollment efficiency is **very near 100% or over 100%**, it is quite possible that courses or programs are impacted. Consider the following questions:

Because our enrollment efficiency is over 100%, it appears that our classes are impacted. Environmental Science had an efficiency of 140% during Fall 2012 and 125.5% during Spring 2013 at the Santa Rosa campus. The Department added a section of ENVS 12 to meet demand.

Can more courses be added to serve student needs? Yes. ESS is rebuilding their schedule to better meet students' needs.

Is the discipline impacted for lack of instructors? No. ESS hired an additional full time earth science faculty member in Petaluma in 2013.

Is the discipline impacted for lack of space? No.

Is the discipline impacted because it is a high demand field? Our courses fulfill GE transfer requirements, and are therefore in demand across the district for transfer students.

5.2b Average Class Size

Update every third spring 2014, 2017, 2010 – data below was updated in 2014

Class sizes in the Department range from 25 to 200. Astronomy and Geology lecture sections generally have larger class limits, particularly at the Santa Rosa campus. The Department offers two large sections of Astronomy, one at each campus. Lab classes typically have enrollments of less than 30. Environmental Science, Geography and Meteorology have limits of 30 at both campuses. ESS instructors generally add students on waiting lists and attempt to accommodate additional students.

Average enrollment for 12-13 AY:

| | SR & Online | Pet | All Locations |
|--------|-------------|------|---------------|
| ASTRON | 80.3 | 63.3 | 74.4 |
| ENVS | 34.8 | 30.5 | 32.2 |
| GEOG | 31.8 | 32.0 | 31.9 |
| GEOL | 48.1 | 26.5 | 40.5 |
| METRO | 34.3 | 0.0 | 34.3 |

Note that the Santa Rosa campus and online classes are combined. The data provided did not accurately separate out online sections from Santa Rosa data. The few online classes we offer generally maintain their maximum class size of 35.

5.3 Instructional Productivity

Update every third spring 2014, 2017, 2010 –updated 2014

If your program's productivity ratio is **lower than 18.7**, explain any circumstances that contribute, such as limitations of facilities, regulations, special pedagogy, or scheduling challenges.

Environmental Science, Geography and Metrology generally have lower productivity than other ESS classes because they have lower class limits. These classes have limits of 30 and a wait list of 4 at both campuses. Based on this class size, these disciplines will never attain the 18.7 productivity goal for the District.

ENVS had a productivity ratio of 17.0 for the 12-13 AY. Although these classes are below the productivity goal, they are however efficient. We increased the number of sections of ENVS over the years and this impacts productivity as well.

Productivity figures for GEOG increased to 16.7 for the 12-13 AY. We reduced the total number of geography sections at both campuses to account for changes in enrollment and to also offset adding an additional section of environmental science. The class limit for geography is 30 at both campuses. These classes are held in the same rooms as the ENVS classes and hold a maximum of 34 students.

METRO consistently has productivity below the District goal and had an average productivity of 15.8 during the 12-13 AY. These classes are typically small, averaging 30 students (for lecture and lab), and enrollments have been increasing. Because we have no full-time anchor faculty, there is no one to coordinate the program, mentor students, or advocate for the needs of the program.

While we recognize that increasing class limit would increase productivity for all of these classes, pedagogically, we are opposed to doing so.

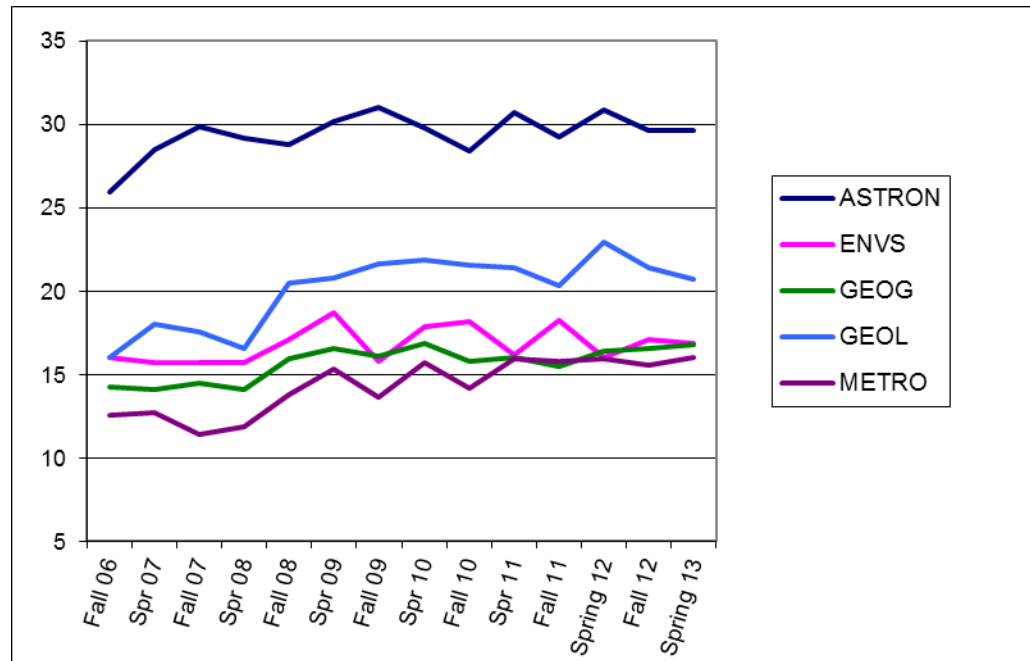
If your program's productivity ratio is **18.7 or higher**, describe how you maintain that productivity.

ASTRON has high productivity. Lecture class limits are high for astronomy (90 for most sections, 198 for two sections). The average productivity for 12-13 AY was 29.6 district-wide which was down slightly from the previous year.

GEOL productivity was 21.1 for the 12-13 AY, which is slightly lower than the previous year. Class sizes in geology range from 25 to 90. We offer lecture classes with up to 90 students at the Santa Rosa during the day. Lab classes, night classes and Petaluma classes all have limits ranging between 25 and 30. These class limits are based on classroom size.

Explain any trends that you see in productivity.

Productivity has increased across all disciplines since Fall 2006 (see chart below). This is due to a reduced number of sections serving an increased number of students. There have been fluctuations in productivity over the past three years. This is likely due to cuts in offerings District-wide. We continue to make adjustments to our class offerings and any additions or cuts affect productivity.



Recommend ways the program could improve productivity.

- Better coordinate Petaluma and Santa Rosa class offerings.
- Consider increased class sizes (would require using different rooms)
- Work with instructors to increase retention.
- Hire anchor faculty for METRO

5.4 Curriculum Currency

Update every third spring 2014, 2017, 2010 –updated 2014

As of Spring 2014, 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

Update every third spring 2014, 2017, 2010 –updated 2014

The ESS department does not currently have any majors.

5.6 Student Success

Update every third spring 2014, 2017, 2010 – not updated 2013

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

Retention rates vary by discipline (see chart below). Department averages are above the district average of 77.3% for both Fall 2012 Spring 2013.

| | Retention % | |
|--------|-------------|-------|
| | F2012 | S2013 |
| ASTRON | 80.3 | 80.0 |
| ERTHS | 70.0 | 75.0 |
| ENVS | 82.1 | 70.4 |
| GEOG | 81.2 | 75.3 |
| GEOL | 82.7 | 76.6 |
| METRO | 80.4 | 89.3 |
| ALL | 81.0 | 78.4 |

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

The chart below shows success rates for each of the ESS disciplines. Overall ESS success rates were 73.2% in Fall 2012 and 70.1% in Spring 2013. For Fall 2012, ESS rates were slightly higher than the District average of 72.6%. However ESS rates in Spring 2013 were lower than the District average of 72.0% in Spring 2013. In most cases, ESS saw a decrease in success between fall and spring that was only somewhat evident in the District average.

| | Success % | |
|--------|-----------|-------|
| | F2010 | S2011 |
| ASTRON | 71.0 | 69.1 |

| | | |
|-------|------|------|
| ERTHS | 70.0 | 75.0 |
| ENVS | 73.5 | 63.0 |
| GEOG | 75.8 | 71.8 |
| GEOL | 75.7 | 69.8 |
| METRO | 78.3 | 85.0 |
| ALL | 73.2 | 70.1 |

How does the average student GPA within your discipline compare to the overall District GPA?

The chart below shows the each discipline in the ESS department with GPA for the past academic year. The District GPA was 2.64 in Fall, and 2.63 in Spring. 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.

| | GPA | |
|--------|-------|-------|
| | F2010 | S2011 |
| ASTRON | 2.28 | 2.21 |
| ERTHS | 2.00 | 3.67 |
| ENVS | 2.42 | 2.41 |
| GEOG | 2.71 | 2.43 |
| GEOL | 2.35 | 2.26 |
| METRO | 2.73 | 2.93 |
| ALL | 2.39 | 2.32 |

5.7 Student Access

Update every third spring 2014, 2017, 2010 –updated 2014

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

As a general trend, our science-based classes are dominated by students who claim “white” as their ethnic background. The “white” enrollment in our classes ranged from 58-68% during the 2012-13 academic year. This percentage is higher than the district-wide average of 53% in Spring 2013. Based on data in the *SRJC Factbook 2013*, the number of students claiming “white” as their ethnicity is declining within the District while the number of students identifying as Hispanic is increasing.

The rate of growth in Hispanic students in the District has increased significantly and was approximately 30% in Spring 2013. ESS enrollments of Hispanic students are lower than the District average, ranging from 10.1% (meteorology) to 17.1 (astronomy). Although lower than the District average, the number of Hispanic students taken ESS classes, particularly GE transfer classes, has increased. There are a few specialized classes (e.g. Pepperwood class and Environmental Forum) that have lower enrolment of Hispanic students.

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% of the class. The numbers vary significantly and by year. Astronomy, Geology and Geography had slightly more males than females during 2012-13 while Environmental Science and Meteorology had greater numbers of females.

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

No

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?

To date, no efforts have been made to better serve under-represented populations.

5.8 Curriculum Offered Within Reasonable Time Frame

Update every third spring 2014, 2017, 2010 –updated 2014

Within the ESS Department, we do not currently have majors. As a result, this question is not applicable.

The Environmental Studies major includes a variety of courses that students can take to meet the core requirements. It is being updated in Fall 14 to include additional courses. Students are required to take 4 of the 7 core courses. Most of these courses are offered every semester with two exceptions. SOCS 12 is offered every spring and ENGL 10 is not currently being offered due to budget cuts.

5.9a Curriculum Responsiveness

Update every third spring 2014, 2017, 2010 –updated 2014

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.

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

We offer standard science curriculum, however, we are looking for ways to expand our curriculum so that it better aligns with certificates in other departments.

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

Update every third spring 2014, 2017, 2010 – updated 2014

Not applicable.

5.10 Alignment with Transfer Institutions (Transfer Majors ONLY)

Update every third spring 2014, 2017, 2010 – updated 2014

We do not have a major, so this is not currently applicable. We are working on Transfer Model Curriculum for geography and environmental science majors. These majors will line up with C-ID and TMC guidelines.

5.11a Labor Market Demand (Occupational Programs ONLY)

Update every third spring 2014, 2017, 2010 – updated 2014

Not applicable.

5.11b Academic Standards

Update every third spring 2014, 2017, 2010 – updated 2014

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.

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. | Spring 2015 | Very little: need to create Geog 4L and awaiting C-ID review of GIS course for inclusion in major. |
| 0002 | ALL | 02 | 06 | Participate in ENVS TMC at state-level | Work with the State Academic Senate to establish a ENVS-TMC major. | 2014-15 | The FDIRG began work in Spring 2015. Anticipated completion = Fall 2015 |
| 0003 | ALL | 02 | 01 | ENVS TMC major | Align SRJC major with ENVS TMC (once completed). Finalize major SLO's; identify structure of the major, including relevant courses; submit paperwork. | 2015 | Awaiting results of TMC major. Once approved at state level, will create SRJC version. |
| 0004 | ALL | 02 | 01 | Update and revive Physical Science curriculum. | Develop format, SLO's and COR for Physical Science 20 course. | 2014-15 | None. |
| 0005 | ALL | 02 | 06 | Develop lab components for GEOG 4 and ENVS 12 | Develop SLO's and objectives, write COR, submit paperwork. | 2015-16 | Geog 4 in development. ENVS 12 on hold. |
| 0006 | ALL | 02 | 06 | Develop online / hybrid courses in GEOG 3 and ENVS 12 | Submit paperwork for distance education. Develop courses. | 2014-15 | Nothing to date |
| 0007 | ALL | 02 | 01 | Explore additional ESS course offerings to meet student needs (astrobiology, astrophysics, oceanography) | Develop format, SLO's and COR for new courses. | 2015-2017 | None. |

6.2a Program/Unit Conclusions

| Location | Program/Unit Conclusions |
|----------|--------------------------|
| Other | |

6.2b PRPP Editor Feedback - Optional

6.3a Annual Unit Plan

| Rank | Location | SP | M | Goal | Objective | Time Frame | Resources Required |
|------|----------|----|----|--|---|-------------|---|
| 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. | Spring 2016 | Staff time. |
| 0002 | ALL | 02 | 06 | Participate in ENVS TMC at state-level | Work with the State Academic Senate to establish a ENVS-TMC major. | Fall 2015 | Staff time. |
| 0003 | ALL | 02 | 01 | ENVS TMC major | Align SRJC major with ENVS TMC (once completed). Finalize major SLO's; identify structure of the major, including relevant courses; submit paperwork. | Spring 2016 | Staff time. |
| 0004 | ALL | 02 | 01 | Update and revive Physical Science curriculum. | Develop format, SLO's and COR for Physical Science 20 course. | 2015-16 | Staff time. |
| 0005 | ALL | 02 | 06 | Develop lab components for GEOG 4 and ENVS 12 | Develop SLO's and objectives, write COR, submit paperwork. | 2015-16 | Staff time. Supplies and Equipment for labs (~\$5,000). |
| 0006 | ALL | 02 | 06 | Develop online / hybrid courses in GEOG 3 and ENVS 12 | Submit paperwork for distance education. Develop courses. | 2015-16 | Staff time. |
| 0007 | ALL | 02 | 01 | Explore additional ESS course offerings to meet student needs (astrobiology, astrophysics, oceanography) | Develop format, SLO's and COR for new courses. | 2015-2017 | Staff time. Lab equipment supplies. |