

Comprehensive Program Review Report



Program Review - Earth Science

Program Summary

2022-2023

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What are the strengths of your area?: Earth Science Program Overview: 1) Staffing, the program is staffed by one adjunct faculty with more than 25 years of college teaching experience as well as research in the field of geoscience, and related experience with NASA in the areas of remote sensing and planetary geology.

Earth science course offers students opportunities to do microteaching in the classroom, prepare lesson plans and be ready for their next step: completing their degree and applying for credentials to be able to teach in the classroom. This class uses STEM-based focus with infusions of NASA research and applications of earth's monitoring from space, as well as astronomy units. The course strength relies in the faculty's education and experience in the classroom, bilingual skills, and her previous work with NASA in many areas from planetary science to remote sensing and oceanography, areas covered in the course. The success rate has improved since the first time the adjunct faculty came to the college, having degrees in education and science have been a tremendous shift in how the class was taught in the past and how it is being taught now: more interactions in the classroom, hand-on-minds-on activities and labs which have equipped the students with the necessary tools to be successful in the classroom. The course also uses interactive websites with visualizations added to the teaching, to improve learning and incorporation of these materials into their teaching examples are: as google earth where students learn about remote sensing and satellite images incorporated in the site for example when studying volcanos, by using the coordinates such as latitude and longitude, students can observe a volcano in 3D and study its morphology and eruption type; the course also uses a website for seismic monitoring of earthquakes around the world, this interactive website allows students to map earthquakes per geographic regions and around the world in real-time data; students use NOAA t track storms especially during hurricane season and rack their development from a small scale storms to a hurricanes or typhoon, and their impacts in human lives; also, students use the USGS to track natural disasters around them globe such as flood, tsunamis, etc., and relate them to the class and lesson plans. Students had the opportunity in the past to see the Lunar and meteorite samples from the moon, loaned from NASA, this was total new experience for the college, and it is the hope of the earth science faculty to bring the samples back to the college.

Success and enrollment by gender:

	019-20	2020-21	2021-22
Grand total	91.5%	88.3%	89.4%
Females	96.0%	89.9%	92.8%
Males	68.4%	80.0%	77.8%

Analysis of the data: The class is for those students who will be teachers, we all know that the number of female teachers is higher than the number male students, this is a trend seeing in several courses across the science division such as engineering, physics, physical science, chemistry, where more males are taking these classes as opposed to females, Efforts have been made to attract more male students to the teaching profession, but we cannot predict the number male's vs females of students enrolled in the class from semester to semester.

Success and enrollment: Age groups.

	2019-20	2020-21	2021-22
Grand total	91.5%	88.3%	89.4%

<20 years old	84.4%	92.1%	94.1%
20-24 years old	92.3 %	85.1%	85.7%
25-29 years old	-	94.7%	-
30-49 years old	100%	90%	-

Analysis of the data: Age variation is since this class accepts students in the dual-enrollment program as well as regular and returning students. Overall, the class has kept a steady enrollment, and success through three academic years, which makes this class a successful one.

FTES fulltime equivalent students.

	2019-20	2020-21	2021-22
Dept ESCI26.77	34.34	20.80	
Course ESCI	24.60	34.34	20.80

Analysis of the data: Statistics for the course provides us with a better overview of the success rate of this course.

FTES fulltime equivalent faculty.

	2019-20	2020-21	2021-22
Dept ESCI1.28	1.71	1.0	
Course ESCI	1.0	1.71	1.0

The Geoscience program offers one class for transfer, Elementary Teacher Education AA-T. Most Education students transfer to universities to earn a Bachelor of Arts in Liberal Studies degree and apply to a California teaching credential program. Included here are the impacts some of the classes such as earth science have in the teacher preparation on our college students. Program awards for the Associates in Arts in Elementary Teacher Education for Transfer AA-T Elementary education have continued to grow. 46 degrees were awarded in 2018/2019, 73 awards in 2019/2020, and 88 in the 2020/2021 academic year. Additionally, the college offers an AA in University Studies in Elementary Teaching Preparation for Transfer. In 2018/2019 ADY 183 degrees were awarded, 293 in the 2019/2020 academic year, and 192 in the 2020/2021 academic year.

ESCI success enrollment by year: 2019-20: 91.5%; 2020-21:88.3 %; 2021-22: 89.4%. Before the pandemic success rate was high compared to other disciplines in the overall science division. Switching from face-to-face to online instruction, caused the differences between the previous year and 2019-20. During 2021-22 the success rate increased due to changing the teaching modality from on-line to face-to-face again. Many students and faculty as well did not adjust well to the online instruction and that is one factor we can consider, especially when this is a class with a lab. This course is only taught at the Visalia campus.

Success Rates: ESCI courses. Excludes EW

	2019-20	2020-21	2021-22	Multi year
Total	89.9%	88.3%	89.4%	89.6%
ESCI 001	91.5	88.0%	89.0%	89.6%

Success Rates: ESCI courses.

	2019-20	2020-21	2021-22
Total	89.9%	88.3%	89.4%
ESCI 001	92.0%	88.0%	89.0%
ESCI 155	73%	-	-

Success and enrollment co-factor: race and ethnicity.

	2019-20	2020-21	2021-22
Grand total	91.5 %	88.3%	89.4%

Hispanics	91.2%	90.2%	87.7%
Whites	90.0%	87.1%	96.7%
Other races	-	-	-

Analysis of the data: the class meets the requirement for an AA in liberal studies- Teacher education – The data still show a higher success in enrollment and completion in the class, as compared with other courses in the science division which are below 80%.

Success and enrollment by gender:

	2019-20	2020-21	2021-22
Grand total		91.5%	88.3% 89.4%
Females	96.0%	89.9%	92.8%
Males	68.4%	80.0%	77.8%

Analysis of the data: The class is for those students who will be teachers, we all know that the number of female teachers is higher than the number male students, this is a trend seeing in several courses across the science division such as engineering, physics, physical science, chemistry, where more males are taking these classes as opposed to females, Efforts have been made to attract more male students to the teaching profession, but we cannot predict the number male's vs females of students enrolled in the class from semester to semester.

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25-29 years old		-	94.7% -
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Analysis of the data: Age variation is since this class accepts students in the dual-enrollment program as well as regular and returning students. Overall, the class has kept a steady enrollment, and success through three academic years, which makes this class a successful one.

FTES fulltime equivalent students.

	2019-20	2020-21	2021-22
Dept ESCI26.77		34.34	20.80
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Analysis of the data: Statistics for the course provides us with a better overview of the success rate of this course.

FTES fulltime equivalent faculty.

	2019-20	2020-21	2021-22
Dept ESCI1.28		1.71	1.0
Course ESCI		1.0	1.71 1.0

Analysis of the data: The course is almost as the same level as the department level (scores) a good sign of the effectiveness of the course.

What improvements are needed?: 1) Student success: It is anticipated that student's success may stay steady or increase, one thing I would like to see here is increasing the number of males taking the class as well as more teachers from local schools taking the class to improve their teaching skills in science.

2) Enrollment dropped since the pandemic, and class size decreased, we had to follow the CDC guidelines, many students took the class online, but there was a decline in the success rate as many did not attend class and got a non-passing grade, some students did not adapt well to the online format.

3) Tracking of student achievement of SLOs to identify low-achievement and provide intervention when needed, this is accomplished during office hours and during class instruction. Included here are those students with disabilities, tracking their progress is crucial for their success.

Efficiency rates: FTES/FTES Ratio 20.80

FTES: Efficiency rates have been over 17.5 consistently over the past three years in Visalia. Courses have had limited offerings in Tulare. Overall, the course is in high demand, with strong historical fill rates (above 80% by census), which in the future can lead to further growth.

4) Funding the course uses a hand on lab, where students are constantly doing labs, and supplies are an essential component of these labs, another issues we have here is the chairs in lab JM 222 which needs replacement, they are in serious decline and a replacement will allow students have a more comfortable chairs to do their labs.

Funds are needed for the class I am asking to have a budget for the class/year of \$3000 this will cover the costs of some materials and equipment. The lab is hands-on, and supplies are needed to continue preparing students who will be teachers with labs which will enhance their ability to teach science in the K-8 grade levels.

Some of the supply's needs are:

New chairs. This can be done from the college budget.

Schools supplies – these are used semester after semester - such as construction paper, glue sticks, scotch tape, markers, colored- card-stock, colored-pencils, special clay for fossils making, fossil sample kits, a fluorescent UV lamp, oil, flour, plastic containers, baking soda, regular glue, salt, ammonia, bluing, etc., these supplies are used for the classroom labs and activities and they are an important component of the success of the labs. Some of the supplies are replaced when depleted, and others are saved to be used next semester. The budget can be carried over the next year and this will ease the dean's budget which has been used to help make this class a great success.

Support to buy these supplies is greatly appreciated as the class prepares students to be K-8 teachers.

Describe any external opportunities or challenges.: There is demand for more sections of Earth Science, especially in earlier times. The challenge has been finding adjunct faculty members to teach the courses. Currently we only have a double section offered in the late afternoon/evening.

Overall SLO Achievement: Assessments achieve from last cycle.

17/21 (81%) of the students scored better than 70%.

100% of students met this outcome

100% of students met SLO expectations (Marin Sp 2016)

Changes Based on SLO Achievement: No change was completed.

Overall PLO Achievement: No PLO

Changes Based on PLO Achievement: No Change

Outcome cycle evaluation: ESCI 001 was scheduled for assessment for 2020-21; Unfortunately, the SLOS were not assessed. We will assess in Fall 2022

Action: 2022-2023 Update Lab Experience

Update labs with new lab kits, lab supplies and new small lab equipment.

Leave Blank:

Implementation Timeline: 2022 - 2023

Leave Blank:

Leave Blank:

Identify related course/program outcomes: 1. Describe and apply the methodologies of scientific inquiry

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4. Recognize and identify major geomorphic features on Earth (including features on land surfaces and on the sea floor).
5. Identify minerals and the three basic rock types.
8. Describe the basic elements of climate (insolation, temperature, pressure, wind, humidity, and precipitation) and their relationships with each other.
9. Explain the seasons, the phases of the moon, and the tides.
10. describe the location, relative sizes, and compositions of major bodies in the solar system.

Person(s) Responsible (Name and Position): Carlota Marin and Eric Hetherington

Rationale (With supporting data): The current chairs have lost bolts, are loose and unsafe.

Priority: High

Safety Issue: Yes

External Mandate: No

Safety/Mandate Explanation:

Resources Description

Equipment - Instructional - The purchase of earth science new lab supplies and new small equipment to develop lab kits for students. (Active)

Why is this resource required for this action?: The current earth science lab supplies are outdated and sets have missing components. Updating them with new hands on lab kits and equipment will assist with developing lab activities geared for various learning styles.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 3000

Link Actions to District Objectives

District Objectives: 2018-2021

District Objective 1.1 - The District will increase FTES by 1.75% over the three years

District Objective 2.2 - Increase the number of students who transfer to a four-year institution by 10 percent over three years

District Objective 2.4 - By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points

Action: 2022-2023 On-going lab supplies

Implement new hands-on lab activities and provide ongoing support.

Leave Blank:

Implementation Timeline: 2022 - 2023

Leave Blank:

Leave Blank:

Identify related course/program outcomes: 1. Describe and apply the methodologies of scientific inquiry

4. Recognize and identify major geomorphic features on Earth (including features on land surfaces and on the sea floor).

5. Identify minerals and the three basic rock types.

8. Describe the basic elements of climate (insolation, temperature, pressure, wind, humidity, and precipitation) and their relationships with each other.

9. Explain the seasons, the phases of the moon, and the tides.

10. describe the location, relative sizes, and compositions of major bodies in the solar system.

Person(s) Responsible (Name and Position): Carlota Marin and Francisco Banuelos

Rationale (With supporting data): Incorporate activities that address the 20% point equity success gap between females and males within ESCI 101.

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

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Resources Description

Adjustment to Base Budget - On-going budget to support Earth Science Labs. (Active)

Why is this resource required for this action?: Currently, there is NO budget allocation for Earth Science. Other departments or the Dean's budget support lab supplies and instructional materials.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 600

Link Actions to District Objectives

District Objectives: 2018-2021

District Objective 1.1 - The District will increase FTES by 1.75% over the three years

District Objective 2.2 - Increase the number of students who transfer to a four-year institution by 10 percent over three years

Action: 2022-2023 Improve Lab Environment

Improve the lab learning environment by replacing 35 lab chairs

Leave Blank:

Implementation Timeline: 2022 - 2023

Leave Blank:

Leave Blank:

Identify related course/program outcomes:

Person(s) Responsible (Name and Position): Carlota Marin and Eric Hetherington

Rationale (With supporting data): The current lab chairs are old, some broken with lose bolts

Priority: High

Safety Issue: Yes

External Mandate: No

Safety/Mandate Explanation:

Resources Description

Equipment - Non-Instructional - 35 Lab Chairs for JM 222 (Active)

Why is this resource required for this action?: The current lab chairs are either broken, have lose bolts.

Notes (optional):

Cost of Request (Nothing will be funded over the amount listed.): 29500

Action: 2022-2023 CI-D Transfer Analysis

Explore the CI-D and transfer curriculum to determine if ESCI 101 can be GE transferrable. Currently, the course is transferrable as an elective.

Leave Blank:

Implementation Timeline: 2022 - 2023

Leave Blank:

Leave Blank:

Identify related course/program outcomes: This action supports COS transfer objectives.

Person(s) Responsible (Name and Position): Carlota Marin and Eric Hetherington

Rationale (With supporting data): We should explore if this course can be GE transferrable, which would benefit our students and the COS. Thus, increasing the number of students who can take the class and complete their education when other courses are not available.

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

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Link Actions to District Objectives

District Objectives: 2018-2021
District Objective 1.1 - The District will increase FTES by 1.75% over the three years
District Objective 2.2 - Increase the number of students who transfer to a four-year institution by 10 percent over three years
District Objective 2.4 - By 2021, Increase the percentage of CTE students who achieve their employment objectives by 5 percentage points