

# Comprehensive Program Review Report



## Program Review - Earth Science

### Program Summary

#### 2023-2024

**Prepared by:** Francisco Banuelos and Carlota "Tibi" Marin

**What are the strengths of your area?:** 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.

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 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.

Also, I have included new approaches to the delivering of the class content: during lectures I have utilized new techniques to check for understanding such as a) pair-share; b) mind-map; c) KWL chart; d) ticket at the door. These new approaches have helped me understand how the material covered has been processed by students, the results have allowed me to make few changes in my teaching delivering approaches. For the labs I have developed new techniques to improve student's understanding of the process to investigate and create new approaches to teaching K-8 science in the classroom. Several new techniques include making a small content notebook to be used in the classroom, as well as a cube for research about minerals which can be used all across the curriculum.

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: 2018:100% - 2019:87.7 %; 2020: 90.1%; 2021 80.9%; 2022:90.7% 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

	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022	Grand Total
Total	100% 87.7 %	90.1%		80.9%		90.7%
ESCI 001	91.5 88.0%	89.0%			89.2%	89.2%

More thorough and disaggregated analysis has been uploaded to the documents.

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%. 2019 data for ethnicity=whites is zero -pandemic status. Hispanic students are still growing in number at the college, one reason is that we accept dual-enrollment and provide more financial support which in turn increases their numbers in classes across the college.

Overall, 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. 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.

statistics for the course provides us with a better overview of the success rate of this course. Success in the class has improved due to a variety of factors such a more funding, a variety of teaching strategies, new student's population, and schedule.

Success in the class is due to the type of class, this is science class for students which incorporates science and teaching sing a variety of approaches such as performance based class and laboratories which improve student's ability to study in depth science as well as their teaching ability, which is done through a series of lesson plans and microteaching opportunities throughout the semester, also included here are inquiry projects related to topics covered in class.

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/content skills in science. Perhaps creating a solo class for teachers during the weekends this way they will be able to improve their teaching strategies for K-8 and at the same time get credits for their school advancement. I am willing to teach this class during the weekends for one semester and see how this class goes.

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. If we get back to this situation a Pandemic, I am better equipped to teach the class, and I know others will be too.

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. I track my student's progress on a weekly basis and send emails reminding them to complete their assignments as well as meeting with them once a week. Students with disability have my devoted support.

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 char to do their labs. Funds are needed for the class I am asking to have a budget for the class/year of \$2500 this will cover the costs of some materials and equipment. Another suggestion is to have a lab fee to be added to the course starting in 2023-24, the fee will alleviate the need for constantly asking for money to cover the costs of supplies used in the lab. 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. The labs are all hands on, therefore continuing support increases the like hood of more students taking the class, being successful and using their knowledge and skills when they become teachers.

**Describe any external opportunities or challenges.:** The challenge with the course will be the CalGETC, has the list of approved transfer GE transfer courses for science. The course meets the degree requirements for Teachers, but we are not sure what the impact will be on enrollment once CalGETC is fully implemented.

**Overall SLO Achievement:** During the semester students were taught how to write a lesson plan, step by step, they presented activities in the class and each time an activity was presented an additional component of the lesson plan was added.

The capstone project which was their final presentation included a well written Leeson plan with objectives for teacher, student's performance objectives ( what they wanted students to know at the end of the lesson); content standards based on their grade level and topic selected; materials, procedures, and at the end they had to provide an assessment of the activity and

on how the lesson went and what areas need improvement, My feedback was on a rubric, which they had ahead of time.

98%/40 were successful on the lesson plan assignment.

**Changes Based on SLO Achievement:** Updated lab activities have been made recently.

**Overall PLO Achievement:** N/A

**Changes Based on PLO Achievement:** N/A

**Outcome cycle evaluation:** The last outcomes evaluation was in Spring 2018. One is due this year.

## Action: XXXX

XXXX

**Leave Blank:**

**Implementation Timeline:** 2023 - 2024

**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 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

District Objectives: 2021-2025

**District Objective 1.1** - The District will increase FTES 2% from 2021 to 2025.

**District Objective 2.4** - Increase the percentage of CTE students who achieve their employment objectives by five percentage points (job closely related to field of study and attainment of a livable wage) and the number of CTE students who successfully complete 9+ CTE units in a single year by 10% from 2021-2025.

# Program Review - Earth Science

## 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:**

### Update on Action

#### Updates

**Update Year:** 2023 - 2024

10/11/2023

**Status:** Action Completed

We were approved for a budget allocation. Have made lab purchases and updated lab activities.

**Impact on District Objectives/Unit Outcomes (Not Required):**

### 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:

# Program Review - Earth Science

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:

## Update on Action

### Updates

Update Year: 2023 - 2024

10/11/2023

Status: Action Completed

Lab chairs were purchased.

Impact on District Objectives/Unit Outcomes (Not Required):

## 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:

## Update on Action

### Updates

Update Year: 2023 - 2024

10/11/2023

Status: Continue Action Next Year

We are continuing to explore the transferability of ESCI 101. However, California is moving forward with the CalGETC transfer pathway, which might be very difficult for ESCI 101 to get approved.

Impact on District Objectives/Unit Outcomes (Not Required):

## Link Actions to District Objectives

# Program Review - Earth Science

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: XXXXXXXX**

XXXX

**Leave Blank:**

**Implementation Timeline:** 2023 - 2024

**Leave Blank:**

**Leave Blank:**

**Identify related course/program outcomes:**

**Person(s) Responsible (Name and Position):** XXXX

**Rationale (With supporting data):**

**Priority:** Medium

**Safety Issue:** Yes

**External Mandate:** Yes

**Safety/Mandate Explanation:**