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Instructional Program Review

General Information

1. Name of department (program) under review.

Earth Science

2. Who is the person(s) submitting the Program Review form?

Glen White

3. What is the current academic year (i.e. 2022-23)?

2022-2023

4. Please describe the department/program, its staff and faculty, etc.

Columbia offers fourteen courses in Earth Science, of which nine are field based. Courses directly support a degree in Geology and degrees in Forestry and Natural Resources and Education, among others. Courses are taught both online and in-person. The department currently has one full-time faculty member.

5. Please describe how this department's/program's mission relates to the college's [mission](#) and [strategic goals](#).

The Earth Science courses aim to take advantage of Columbia's foothill location and its easy access to a variety of geologic formations and processes from the Sierra Nevada mountains to the coast. Through outreach to various elementary schools using the StarLab (portable planetarium) students are introduced to the college and possible educational pathways. The intent is to inspire elementary students to pursue educational goals at Columbia and continue to be life-long learners.

Department Data Sheet

1. Review the Department Summary Data Table. What are the strengths? What are the challenges or areas of improvement? What is the impact on students? Respond to a minimum of three trends such as census enrollment, FTES/FTEF, course success rate, course retention rate, etc.

Strengths: The program is back up to ten active sections this school year serving 195 students. Course retention and success rates are still strong but could improve. Active participation in Starfish surveys may help, as students have been responding favorably to notifications.

Areas of Improvement: With the move to online teaching, it is more difficult to interact with students immediately. As more in-person courses are offered, it is hoped that enrollment numbers will increase. However, students are showing a preference for online courses, and it has increased the service area significantly.

Census enrollment is the highest it has been since the 2017-2018 school year and has more than doubled from the 2021-2022 school year. While the data do not show a trend in general, it does appear that the program is recovering from the significant drop in enrollment experienced during the pandemic.

The average fill rate is 73.3% which is nearly identical to the program's overall average of 73.6% over the 2015 to 2022 school years. This is also higher than the college's overall average fill rate of 66.4%.

Course retention rates have remained above 86% since the 2015-2016 school year, although rates for the current school year are not available. Course success rates hit a low of 73.3% during the 2021-2022 school year and had been as high as 96% the year prior. Data for the current school year are not available.

2. Review the Department Student Equity – Success Rates Data Table. What are the strengths? What are the challenges or areas of improvement? What is the impact on students?

Student success rates over the past three school years show an increase by age bracket from 71.3% for the 18- to 24-year-old students, 73.9% for the 25- to 29-year-olds, and 79.6% for the 30- to 39-year-olds. There is a significant drop to 60.5% success rate for students 40 or older. This may be related to more family or work obligations for the latter group, though no data is available to confirm this.

Female enrollment exceeds 70%, and the success rate gap for females is 1.6%. Since females are generally underrepresented in STEM fields, this is considered a very positive indicator that our courses are attracting students that traditionally may have shied away from STEM courses.

Hispanic students and males show a -6.1% and -6.0% success rate gap, respectively. Whether these two groups fully overlap is not revealed in the data. Determining why

there is a success rate gap in both groups should be prioritized to enable changes that would increase success rates.

3. Review the Program (Department) SLO Data Table. How does your department support ISLOs? What are the strengths and challenges? What is the impact on the college mission?

The Earth Science course SLO's have been mapped to five of the six ISLOs, with Culture/Community being the only one absent. For the five ISLOs supported by the department, the data indicate strong success for each, with values ranging from 83.3% for Career, and 94.9% for Knowledge. The two lowest percentages are associated with the smallest number of assessments so their impact on the overall analysis is therefore lessened. Communication (91.8%), Critical Thinking (89.2%), and Knowledge (94.9%) are key elements for successful students in the science fields, and the data indicate that the program is succeeding in that regard.

Award Data Sheet

1. Review both tables on the Award Data Sheet. What are the strengths? What are the challenges or areas of improvement? What is the impact on students?

The number of active declared students has declined significantly since the 2015-2016 school year. It is unknown if this is related to the decrease in the number of sections offered or simply mirroring the general decline in overall enrollment. From 2015 through 2022, three awards were granted. Whether declared students left the program or changed majors is not known.

Students tend to utilize the Earth Science courses to fulfill requirements in other majors, and the graduation of Geology majors is not a driving force for the department. However, connections are being established with four-year colleges and universities to aid in producing geology students for transfer.

Course Data Sheet

1. Review the Course Summary Data Table for each course. What are the trends for enrollment, retention, and success rates? What are the strengths? What are the challenges or areas of improvement? What is the impact on students?

The Introduction to the Earth course (ESC-33) has shown consistently strong enrollment with fill rates ranging from 108.3% to 129.2% since the 2017-2018 school year. Several field geology courses (ESC-35XX) were taught as on-your-own field trips starting in the spring 2022 semester. The two summer field geology courses were at 45% and 50% fill rates. Given that they have only been offered for the past three to five years may explain their lower enrollments. Conversely, the Geology of the Mother Lode and Geology of the Tuolumne River courses have been taught since at least the 2015-2016 school year and both showed fill rates of 100%. It is possible that as more people become familiar with these courses, enrollment will grow.

2. Review the Student Learning Outcomes Data Table for each course. What are the strengths and challenges? What is the impact on the college mission?

Student learning outcomes for the Introduction to the Earth course (ESC-33) indicated 100% success for both the 2019-2020 and 2020-2021 school years. The course was not offered in the 2021-2022 school year, and data are not yet available for this school year. These values show an increase from the last time this course was assessed in 2016-2017.

Curriculum Analysis

1. What courses and awards are due for 5-year review? To find this information, go to the [Curriculum Committee webpage](#) and click on the following links in the left menu bar: Course 5 Year Review Tracker link and Award 5 Year Review Tracker link.

No reviews are needed for the 5 Year Review of any Earth Science courses. No reviews are needed for the 5 Year Award for Geology (AS-T) degree.

Goal Setting

On the following pages, please establish goals for your department. Keep in mind the purpose of the Program Review to drive continuous improvement, as well as to help establish a need for funding or other support to achieve improved outcomes. **What sorts of things will the department be doing, or would like to be doing, to maintain, expand, or improve excellent instructional delivery?**

This template has space to establish up to three goals. If you wish to add more goals, additional forms are available in the Teams folder.

Goal 1

1. State the status of this goal (new, in-progress, or completed):

Completed

2. State this goal in one or two sentences?

Hire one permanent full-time tenure-track faculty member for the Earth Science/Geography position.

3. What is a short name for this goal?

Full-time Faculty Member

4. In what ways will achieving the goal support the college's mission and/or core values?

Supports and expands the existing program.

5. List the college-wide strategic goals that will be addressed by this goal (include all that apply and remove any that do not apply).

- Increase award completion
- Reduce barriers to completion
- Reduce equity gaps
- Increase transfer readiness
- Increase workforce readiness
- Maintain institutional stability

6. What steps are you going to take to achieve this goal?

Hiring process is currently taking place.

7. How are you going to measure completion of this goal?

Successful hiring of a full-time faculty member.

8. If this goal was completed or is in progress, please provide an update and summarize efforts.

Candidates are in the interview process, hiring should take place within the next two months.

9. Briefly describe or list the types of resources (staffing, equipment, technology, facilities, etc.) that are needed to support and achieve this goal. Then enter all resource requests through the Resource Allocation Requests link below.

Salary and benefits listed in resource request for last year.

Resource Allocation Requests

- Enter requests in the Program Review Resource Allocations Request Form (Secured – YCCD Login Required) located on the [Program Review webpage](#) under the Resource Allocation Requests heading.

Goal 2

1. State the status of this goal (new, in-progress, or completed):

In progress.

2. State this goal in one or two sentences?

Community outreach to elementary and middle school students by inviting students to the college campus and conducting various science activities.

3. What is a short name for this goal?

Elementary School Outreach.

4. In what ways will achieving the goal support the college's mission and/or core values?

Allows students to gain first-hand experiences on the college campus with the intent of having them become our students in the future.

5. List the college-wide strategic goals that will be addressed by this goal (include all that apply and remove any that do not apply).

- Increase award completion
- Reduce barriers to completion
- Reduce equity gaps
- Increase transfer readiness
- Maintain institutional stability

6. What steps are you going to take to achieve this goal?

Coordinated with Columbia Elementary to host an on-campus field trip in April 2022 with 50 sixth grade students.

Coordinated with Twain Harte Elementary to host a star night in May 2022 for about a dozen GATE students.

Brought the StarLab to Curtis Creek Elementary on two days in November and December 2022 and provided an astronomy experience for every class at the school.

Brought the StarLab to Sonora Elementary in February 2023 and provided an astronomy experience for eight classes from K through 2 and the after-school group.

Coordinating with Sonora Elementary to host about 90 fourth-grade students for an on-campus field trip.

Will host a table at the STEAM Expo on March 10 to introduce students to Columbia College.

Will bring the StarLab to Pine Grove Elementary in March for part of their Family Science Night.

Will continue to connect with teachers in the region to bring the StarLab to their schools, or students to our campus.

7. How are you going to measure completion of this goal?

Track each event that takes place.

8. If this goal was completed or is in progress, please provide an update and summarize efforts.

This is an ongoing goal and will continue.

9. Briefly describe or list the types of resources (staffing, equipment, technology, facilities, etc.) that are needed to support and achieve this goal. Then enter all resource requests through the Resource Allocation Requests link below.

No additional resources needed at this time.

Resource Allocation Requests

- Enter requests in the Program Review Resource Allocations Request Form (Secured – YCCD Login Required) located on the [Program Review webpage](#) under the Resource Allocation Requests heading.

Goal 3

1. State the status of this goal (new, in-progress, or completed):

New

2. State this goal in one or two sentences?

Repair/upgrade astronomy equipment in the observatory.

3. What is a short name for this goal?

Astronomy upgrades.

4. In what ways will achieving the goal support the college's mission and/or core values?

This equipment will not only support student learning but can also be used for community outreach events.

5. List the college-wide strategic goals that will be addressed by this goal (include all that apply and remove any that do not apply).

- Increase award completion
- Reduce barriers to completion
- Reduce equity gaps
- Increase transfer readiness
- Maintain institutional stability

6. What steps are you going to take to achieve this goal?

Obtain estimates to repair the large telescope and accessories.

7. How are you going to measure completion of this goal?

A fully functional mounted telescope.

8. If this goal was completed or is in progress, please provide an update and summarize efforts.

New goal.

9. Briefly describe or list the types of resources (staffing, equipment, technology, facilities, etc.) that are needed to support and achieve this goal. Then enter all resource requests through the Resource Allocation Requests link below.

Retain the services of a telescope professional, obtain needed parts and materials to complete the repairs.

Resource Allocation Requests

- Enter requests in the Program Review Resource Allocations Request Form (Secured – YCCD Login Required) located on the [Program Review webpage](#) under the Resource Allocation Requests heading.

Submit

- When you have completed all areas of the Program Review as outlined above, notify your dean by typing the @ symbol and your dean's name in the box below (e.g. @Sean Osborn, @Steve Amador, etc.).

[@Sean Osborn_](#)

[@Jeri Pourchot_](#)

Dean's Review and Feedback

Deans: Please review the form above and place any thoughts or feedback that you have in the space below. Feedback from AAC, counseling, industry, etc. can be included. When completed, please put the @ symbol and the faculty member name(s) at the end so that they will get notified when your review is completed.

Earth science is one discipline with the potential for growth. We now have a full-time faculty member. We also have numerous courses, which have been placed into a two-year rotation. We need to continue outreach efforts. We have also seen a drop in success rates, and it will be important to monitor the courses. Since we have a new full-time faculty, it will be important to focus on student success in the discipline.