

Comprehensive Program Review Report



Program Review - Geology

Program Summary

2023-2024

Prepared by: Eric Hetherington

What are the strengths of your area?: The geology/earth science department trades largely in rigorous general education science courses that are offered at all COS campuses. Average student success rates in geology classes reside in the middle range of the Science Division success rates (generally higher than Astronomy, Chemistry, Physical Science, and Physics but lower than Earth Science, Geography, Meteorology, and Natural Science). Geology and Earth Science FTES/FTEF ratios are approximately equivalent to those of the other lab-oriented departments (biology and chemistry), but lower than those of the non-lab science offerings. Field trip courses offer students experiential learning opportunities to explore the classic geology of California and the geological underpinnings of its population.

What improvements are needed?: 1. Student success:

Student success (including EWs) in geology courses dropped during emergency on-line instruction beginning in Spring semester 2020 and ending in Spring semester 2021: pre on-line rates averaged over the previous three years were 75%; whereas, success rates in emergency on-line classes averaged 53%. The average success in geology courses during 2022-2023 was 70.8%. This is not quite back up to pre-COVID success rates.

2. Enrollment:

Enrollment at the three campuses, augmented by on-line course enrollment, dropped from 335 students in 2019-20 to 306 in 2020-21 to 271 students in 2021-22. The 2022-23 enrollment was 316. which is 94.3% of pre-COVID levels.

3. Tracking of student achievement of SLOs is necessary to identify low-achieving objectives that require mitigation; these will be addressed with actions taken in individual courses.

4. Outreach to declared geology majors is desirable to encourage their progress.

Describe any external opportunities or challenges.: California has passed legislation, creating a new transfer general pattern, CalGETC. This change has not been implemented, but is moving forward into next year. The full impact on transfer courses will need to be assessed. This might impact enrollment in geology courses.

Overall SLO Achievement: Spring 2022 Assessment

GEOL 152:

Paleoenvironmental interpretation: Students scored 80% on the post-trip identification quiz. The items that scored the lowest were the questions that showed a sequence e.g., deep-sea muds overlain by mudflows.

The Tectonic Story of the Franciscan: 47% of students correctly identified the tectonic setting of the Franciscan on the plate profile.

The Franciscan Rocks: 80% of students recognized the Franciscan (100% for the pillows and bedded chert!)

GEOL 005:

The Geologic Time Scale: On a geologic time scale question asking students to recognize the timing and duration of major events in Earth's history, an average of 53% of students correctly identified the major events.

North America: Only 30% of students correctly identified the North American locations where Precambrian, Paleozoic, Mesozoic and Cenozoic events are recorded.

Carbon dioxide in the Phanerozoic: 43% of students correctly identified timing and events associated with carbon dioxide footprints in the carbon dioxide graphs question embedded on the final exam.

Changes Based on SLO Achievement: No Changes

Overall PLO Achievement: No Changes

Changes Based on PLO Achievement: No Changes

Outcome cycle evaluation: The Outcomes cycle is working well. We are on track with SLO assessments.

Action: 2023-2024 Additional Course Offerings

GEOL 12 was added to the Fall 2017 offerings; GEOG 1 is slated to be offered in Spring 2018. An additional GEOL 12 section was added to the Spring 2023 schedule. We have hired additional adjuncts and there is an opportunity to add sections in Tulare and Hanford.

Leave Blank: New Action

Implementation Timeline: 2022 - 2023, 2023 - 2024

Leave Blank: 08/14/2017

Leave Blank: 05/31/2018

Identify related course/program outcomes: The additional offerings contribute to District Objectives 1.1 and 2.1.

Person(s) Responsible (Name and Position): Eric Hetherington Geology Department Head

Rationale (With supporting data): By increasing general education science opportunities, the department can serve more students in need of general education science requirement- fulfilling courses.

Priority: Medium

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2023 - 2024

10/04/2023

Status: Continue Action Next Year

New adjunct-instructed GEOL 12 sections were added in both Fall 2023 and Spring 2024.

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

Update Year: 2022 - 2023

08/28/2022

Status: Continue Action Next Year

An additional section of adjunct-instructed GEOL12 has been added for Spring 2023. Communications with counselors to alert potential students to this exciting possibility are planned.

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

Link Actions to District Objectives

District Objectives: 2018-2021

District Objective 2.1 - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over 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 Objectives: 2015-2018

District Objectives - 1.1 - Increase overall enrollment by 1.75% annually

District Objectives - 2.1 - Increase the number of students who are transfer-prepared annually.

District Objectives - 2.2 - Increase the number of students who earn an associate degree or certificate annually.

District Objectives: 2021-2025

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

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District Objective 2.1 - Increase the number of students who earn an associate degree or certificate (CTE and non-CTE) by 5% from 2021-2025.

District Objective 2.2 - Increase the number of students who are transfer-ready by 15% and students who transfer to four-year institutions by 10% from 2021-2025.

Action: 2023-2024 Tulare Center Geo-education

Increase course offerings in geology and earth-science at the Tulare Center.

Leave Blank:

Implementation Timeline: 2019 - 2020, 2023 - 2024

Leave Blank:

Leave Blank:

Identify related course/program outcomes: This action supports the District Objectives of increasing enrollment, and increasing the numbers of students who are transfer-prepared.

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

Rationale (With supporting data): Fill rates of 100% or more in the science division at COS are generated in large part by non-STEM students taking science classes to fulfill their general education science requirements (e.g., see fill rates for anthropology, geography, and meteorology on the 2017 Faculty Growth Template). Additional general-education science offerings at the newly outfitted earth science classroom and lab at the Tulare Center can help serve these students. Anticipated new additions to the course offerings in Earth Science at COS include three courses in geographic information systems (GIS) that would constitute the core courses for a new Certificate of Achievement in GIS; general education science courses constitute electives for this anticipated certificate.

Priority: High

Safety Issue: No

External Mandate: No

Safety/Mandate Explanation:

Update on Action

Updates

Update Year: 2023 - 2024

10/04/2023

Status: Continue Action Next Year

GEOL 1 was offered at Tulare in both Fall 2022 and Spring 2023, with enrollments of 26/40 and 26/28.

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

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 2.1 - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over 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 2.3 - By 2021, increase the percentage of students who complete transfer-level English by 15 percentage points and transfer-level math by 10 percentage point with their first year.

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.

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