

Comprehensive Program Review Report



Program Review - Geology

Program Summary

2020-2021

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, Biology, Chemistry, and Physics, but lower than Earth Science, Geography, Meteorology, Natural Science and Physical 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?: Herd immunity and/or a vaccine.

1. Emergency on-line challenges:

Since the March of 2020 switch to emergency on-line delivery, faculty have been learning a lot about methods of on-line delivery. This education and the creation and assembly of virtual educational resources needs to continue.

2. Improvement in the student success rates in GEOL 5:

Student success rates vary considerably between courses (the field trip courses have very high success rates, while of the lecture/lab classes GEOL 5 has the lowest success rates) as well as annually within specific courses (e.g., GEOL 5 rates ranged from 29% to 83%, while GEOL 1 success rates ranged from 66% to 83%). The department will undertake steps to attempt to improve student success particularly in the general education Earth History course (GEOL 5). Low success rates in GEOL 5 with respect to other geology courses, may reflect the relatively dense content of that course (similar to, but easier than, some biology, chemistry and physics courses that have similar success rates). Improving success rates in GEOL 5 is an on-going priority for the department.

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 help encourage their progress.

Describe any external opportunities or challenges.:

Overall SLO Achievement: No SLO assessments were due for 2019-2020. The following assessment of SLO achievement for Geology and Earth Science courses is from Fall 2019:

1. students are more successful in achieving the SLOs in the Earth Science course than in the Geology courses;
2. achievement varies widely within individual courses; for example in GEOL 1 achievement ranges from 84% to 44% for the same SLO;
3. achievement is somewhat higher in the field trip courses than in the classroom courses;
4. the lowest achievement is associated with GEOL 5, the course in which students also have the lowest success rates.

A number of variables may influence student SLO achievement including the quality and effectiveness of instruction, the level of difficulty of the objective, and the difficulty of the measurement device (this is particularly true for courses taught exclusively by one instructor, for example ESCI 1 compared to the geology courses). From an instructional standpoint, it seems that the utility of SLOs lies in the formulation and measurement of specific objectives for each course. This is an on-going effort of instructors in the Geology/Earth Science program.

GEOL 1, 12, 154, ESCI 1 and the Geology Program are to be assessed during the 2020-2021 academic year.

Changes Based on SLO Achievement: No changes are planned.

Overall PLO Achievement: Changes that have been instituted at the SLO level, which by their linked nature, affect PLO achievement. The Geology Program is due for assessment during the 2020-2012 academic year.

Changes Based on PLO Achievement: No changes are planned

Outcome cycle evaluation: The Geology/Earth Science Program is up-to-date with the assessment cycle as described on the COS website, with the exception of GEOL 150 which has not been offered.

Action: Tulare Center Geo-education

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

Leave Blank: Nonessential/Nice to have

Implementation Timeline: 2019 - 2020

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: 2020 - 2021

10/01/2020

Status: Continue Action Next Year

GEOL 1 and ESCI 155 were both offered at the Tulare campus during the Spring 2020 semester. GEOL 1 filled to capacity, ESCI 155 was allowed to 'go' with low enrollment. We will offer both again this spring.

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