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1. For 2017-18 Submitted by:: Marek Cichanski
2. APRU Complete for: 2017-18
3. Program Mission Statement: The mission of the De Anza College Geology department is to give students an opportunity to successfully complete science coursework for transfer, Associate degree, or lifelong learning, with transfer being the primary goal of most Geology students.

As further noted first in the 2008-09 Comprehensive Program Review, the Geology department seeks to foster an awareness, understanding, and appreciation of the complexity of the planet that the students, faculty, staff, and all of humanity live on. Some of this drive stems from the desire to enable the students to be better-informed citizens of our increasingly crowded world, while some of it comes from the faculty's desire to draw the students into the sheer fascination of the Earth's dynamism and complexity.

In terms of concrete educational goals, the department expects to provide students with an opportunity to earn transferable general education credits. This outcome applies to the majority of the Geology 10 students, with smaller fractions of them taking the class for the A.A. Degree, personal interest, or lifelong learning.

4. I.A.1 What is the Primary Focus of Your Program?: Transfer
5. I.A.2 Choose a Secondary Focus of Your Program?: Personal Enrichment
6. I.B.1 Number Certificates of Achievement Awarded:
7. I.B.2 Number Certif of Achievement-Advanced Awarded:
8. I.B.3 #ADTs (Associate Degrees for Transfer) Awarded:
9. I.B.4 # AA and/or AS Degrees Awarded:
10. I.C.1. CTE Programs: Impact of External Trends:
11. I.C.2 CTE Programs: Advisory Board Input:
12. I.D.1 Academic Services & Learning Resources: #Faculty served:
13. I.D.2 Academic Services & Learning Resources: #Students served:
14. I.D.3 Academic Services & Learning Resources: #Staff Served:
15. I.E.1 Full time faculty (FTEF): 2
16. I.E.2 #Student Employees: 0
17. I.E.3 % Full-time : 0
18. I.E.4 #Staff Employees: 0
19. I.E.5 Changes in Employees/Resources: There has been a reduction in Geology department faculty. A long-term part-time instructor taught the TTh night section of Geology for many years. This instructor left the department in 2017-2018, citing a desire to retire from teaching. All sections of Geology are now taught by the two full-time instructors in the department.
20. II.A Enrollment Trends: During the last three school years (2014-15 through 2016-17), the unduplicated headcount in Geology has increased from 532 to 555. There was a peak of 624 in 2015-16. Part of the increase is due to the popularity of the online Oceanography class (GEOL 20). The department has addressed issues regarding oceanography's visibility in the schedule during the Spring enrollment for 2018. We will reassess the impact in enrollment going forward.

The Geology Department has been working with PSME's Division Dean to avoid unnecessary early cancellations of classes and we believe we will see increases in enrollments over the next year as a result. Historically, in a record going back several decades, geology classes tend to fill later in the enrollment process than others on campus. This probably reflects students' perceptions of rigor in these courses compared to others they might enroll in to try to fill their schedule.

21. II.B.1 Overall Success Rate: Our overall success rates in the last three years have been consistently in the high 70% range, with the 2016-17 academic year showing a 1% increase over the preceding year. The overall rates are strong in an area considered by many students as a moderately rigorous.
22. II.B.2 Plan if Success Rate of Program is Below 60%:
23. II.C Changes Imposed by Internal/External Regulations:
24. III.A Growth and Decline of Targeted Student Populations: Enrollment in "targeted populations" increased over the three academic years 2014-15 through 2016-17. Enrollment among the targeted groups went from 211 in 2014-15 to 240 in 2016-17, with a peak of 243 in 2015-16. The percentage of students enrolled in geology classes, in targeted populations, went from 39% in 2015-16 to 42% in 2016-17.
25. III.B Closing the Student Equity Gap: As we have noted in previous program reviews the department has been exploring new collaborative models for testing that have tracked with substantive increases in success rates among the targeted groups. The overall success rate for the targeted populations, over the last three years, has stayed at about 70% (with a high of 91% during 2015-16), with a slight drop from 73% to 67% when comparing 2016-17 with 2014-15. We think this is reflective a of similar drops in overall success rates as a result of a slightly different mix of classes and sessions compared to recent years.
26. III.C Plan if Success Rate of Targeted Group(s) is Below 60%:
27. III.D Departmental Equity Planning and Progress: Our increases in collaborative learning models in most of the classes in the department seems to have an impact on increasing success rates in targeted populations.
28. IV.A Cycle 2 PLOAC Summary (since June 30, 2014): 100%
29. IV.B Cycle 2 SLOAC Summary (since June 30, 2014): 825%
30. V.A Budget Trends: Budget requests from the previous APRU have largely been fulfilled. The department has acquired a new computer for data and image processing, along with a scanner that can be used for archiving the department's legacy collection of 35mm geology slides. Astronomy classes have also used images processed by this system in lectures and labs. Also we use color hardcopies printed to the color laser printer in the lab.

The department has an ongoing need for the replacement of laboratory equipment used by students, especially hand lenses. These are used in the rock and mineral identification lab exercises, which are an integral part of the built-in laboratory component of Geology 10. (This built-in laboratory component allows Geology 10 students to fulfill both their physical science requirement and their lab science requirement.)

The department received the requested toner cartridges for its laser printer, although there need to replenish them on a yearly basis.

31. V.B Funding Impact on Enrollment Trends: Not a problem with enrollment, but the critical needs in our classes is impacting our ability to keep students at the cutting edge.
32. V.C.1 Faculty Position(s) Needed: None Needed Unless Vacancy
33. V.C.2 Justification for Faculty Position(s):
34. V.D.1 Staff Position(s) Needed: None needed unless vacancy
35. V.D.2 Justification for Staff Position(s)::
36. V.E.1 Equipment Requests: Under \$1,000
37. V.E.2 Equipment Title, Description, and Quantity: Hand lenses for rock and mineral identification (30 hand lenses). This will replace broken and missing hand lenses from the existing collection, and allow each student to use a hand lens during the 30-person lab sessions.

Ongoing yearly replacement of toner cartridges for the department laser printer. The replacement toner cartridges support not only hands on learning in our geology laboratory sections, but in oceanography discussion activities, and supports the Astronomy Lab class offered by the Astronomy department.

Seismometer. The new seismometer will be surfaced-based and installed by students and will used telemetered data to limit the need for new cabling.

38. V.E.3 Equipment Justification: The other equipment and items are used by students directly in hands-on inquiry-based laboratories. These laboratories and the items mentioned above broadly support multiple SLOs and PLOs but specifically Geology 10 SLO 3.

The addition of a seismometer to our equipment has been in the planning stage for several years. This supports our core competencies including critical thinking and an understanding of the earth system a framework of understanding required for pursuing environmental justice.

39. V.F.1 Facility Request: No facility request.
40. V.F.2 Facility Justification:
41. V.G Equity Planning and Support: No
42. V.H.1 Other Needed Resources:
43. V.H.2 Other Needed Resources Justification:
44. V.J. "B" Budget Augmentation: B budgets in PSME are inadequate. Given the heavy emphasis in testing in the sciences and mathematics printing costs eat up most if not all of the B budget. Currently the Geology Department minimizes printing costs by sending digital copies of most materials directly to students. Please refer to Dean's summary for issues regarding B budgets in the Physical Sciences.

Restoration of B budget for Field Trip Buses, this item is recurrent from a previous program review:

Geology classes have field trips that are required for articulation. If the B budget were ever restored to a level that allowed us to once again hire buses for the field trips, then students would not have to drive their own vehicles. This would be particularly helpful in the quest to serve traditionally underrepresented students, who may not have as much access to private vehicles, and who may not have the same level of access to rides from other students as their classmates.

Restoration of yearly B budget money would allow the department to replace samples and equipment that get worn out from frequent use by large numbers of students who are taking lab courses in order to meet CSUGE and IGETC transfer GE requirements.

45. V.K.1 Staff Development Needs: Currently the Geology and Meteorology Departments are participating in the NSF funded project SAGE 2-YC promoting change and best practices in undergraduate geoscience education at 2-year colleges nationally. Two faculty members have been participating in workshops at College of William and Mary in Virginia and the University of Wisconsin Madison. Additional support for these and other faculty members to participate in the American Geophysical Union and Geological Society of America's national meetings would augment this drive in faculty development within the Earth Sciences at De Anza.
46. V.K.2 Staff Development Needs Justification: Lower-division general-education courses in the sciences, particularly in the Earth Sciences, have been identified as "gateway" courses that draw members of underrepresented populations into STEM majors. DiLeonardo has been very active over the last two decades in National Science Foundation and NASA supported projects intended to improve undergraduate Geoscience education and impact STEM education nationally. Most recently a push has been to seek and employ strategies defined by ongoing research nationally that support those goals and push to a further goal of increasing the participation and better serving underrepresented populations in STEM. Over the last three years implementations of these methods in instruction has seen a steady 3 to 4% increase per year in success rates in Geology classes for members of targeted populations (see discussion above). The department asks the College to support our continuing success by directly supporting involvement of our faculty in national meetings and symposium. The additional benefits, beyond efforts to close the equity gap on the De Anza campus include our department's ability to disseminate our testing of these methods to the larger college and university populations across the country.
47. V.L Closing the Loop: This equipment and items replaces instruments and materials that are integral to SLOs within the Geology curriculum. The computer equipment we received this year is used in support of activities, and laboratories in all of our classes and an integral part of instructional materials construction and data used in our online Oceanography class. Additionally Dr. Cichanski uses the computer in creating visuals in support of his Astronomy lectures and laboratory classes. The other equipment and items are used by students directly in hands-on inquiry-based laboratories. These laboratories and the items mentioned above

broadly support multiple SLOs and PLOs but specifically Geology 10 SLO 3.

The hand lenses are expected to last about a decade. The department also seeks to replace and augment the rock thin sections (a type of rock sample examined by students during the labs). With proper care (thin sections are delicate), these could last 20+ years.

The hands on work for which these items are required support core competencies including critical thinking and an understanding of the earth system a framework of understanding required for pursuing environmental justice.

For staff development, given the focus of success on the use of best practices in our departmental offerings, we intend to track our success rates in targeted populations specifically and overall within our classes.

48. For 2016-17 Submitted by: Christopher DiLeonardo, Ph.D.  
dileonardo@deanza.edu x8632

Marek Cichanski, Ph.D.  
cichanskimarek@deanza.edu x8664

49. Last Updated: 03/27/2018

50. #SLO STATEMENTS Archived from ECMS: