



College of Alameda

2023-24 Annual Program Update: **Geology**

Program Overview

Please provide your program's mission statement and program's learning outcomes

Geology addresses rocks, volcanoes, glaciers, landslides, earthquakes, etc. all in the context of the relatively new theory of plate tectonics describing how the Earth works. The geology of California is special since we live on the active San Andreas transform plate boundary (hence the earthquakes) which evolved from the previously existing subduction zone plate boundary (responsible for the California Coast Ranges and the Sierra Nevada).

Our mission includes:

- Preparing students for transfer and careers in Geology.
- Stimulating student curiosity about how the Earth works (earthquakes, volcanoes, tsunamis, hurricanes etc.) and why California is such an interesting place.
- Providing students with evidence about Earth processes so they can make informed choices about using resources.

The Geology Program Learning Outcomes are:

1. Demonstrate understanding of the scientific method as it relates to Earth Science

- Mapped to College of Alameda Institutional outcomes:
 - Solve problems and make decisions in life and work using critical thinking, quantitative reasoning, community resources, and civil engagement.
 - Use technology and written and oral communication to discover, develop, and relate critical ideas in multiple environments.

- Exhibit aesthetic reflection to promote, participate and contribute to human development, expression, creativity, and curiosity.

2. Demonstrate analytical and critical thinking skills required to understand Geological processes in the past and present with respect to future problems and solutions.

- Mapped to College of Alameda Institutional outcomes:
 - Solve problems and make decisions in life and work using critical thinking, quantitative reasoning, community resources, and civil engagement.
 - Use technology and written and oral communication to discover, develop, and relate critical ideas in multiple environments.
 - Accept personal, civic, social and environmental responsibility in order to become a productive local and global community member.

3. Describe and communicate physical and chemical Earth processes in preparation for transfer and/or employment in Geology or related fields.

- Mapped to College of Alameda Institutional outcomes:
 - Solve problems and make decisions in life and work using critical thinking, quantitative reasoning, community resources, and civil engagement.
 - Use technology and written and oral communication to discover, develop, and relate critical ideas in multiple environments.
 - Engage in respectful interpersonal communications, acknowledging ideas and values of diverse individuals that represent different ethnic, racial, cultural, and gender expressions.
 - Accept personal, civic, social and environmental responsibility in order to become a productive local and global community member.

List your program faculty and/or staff.

Stephen Self, P/T Instructor

Nidhi Patel, P/T when needed as back-up (Nidhi teaches primarily at Laney College)

Please note: there is no F/T instructor in this discipline at CoA, although hiring one was approved as a result of the 2022-2023 full program review submitted by CoA Geology faculty.

Describe your current utilization of facilities, including labs and other space.

Geology courses were taught entirely online during COVID-19 and continue to be offered online during 2022-2023 because there was no dedicated classroom space available for the GEOL/GEOG specimens collection necessary for in-person course delivery. Geology was promised a dedicated lecture room (D-114) and lab room (D-113), to be shared with Geography faculty members for spring 2023, but these did not materialize. Geology courses will have to continue to be offered online until this situation is resolved.

List your program goals from your most recent Program Review or APU. Then, provide an update on the status of the goal. Has your program achieved the goal? Have any of your goals been revised or are any still in progress? Lastly, make sure to discuss which College or District goal your program goal aligns to.

If no program goals exist or if this is your first program review, work to create 2-3 goals and align them with a College or District goal.

Program Goal #1	Expand Geology course semester offerings at CoA to support an integrated Earth Science Program (Geology, Geography and Chemistry) and STEM student success.
Status: In-Progress or Complete?	In progress (full program review goal 2022-2025).
Which college or district goal is aligned with your program goal?	Advance student access, equity and success. Advance COA teaching and learning. Build programs of distinction.

Program Goal #2	Participate in STEM outreach programs to expand student awareness of their potential to succeed in science-based careers.
Status: In-Progress or Complete?	In progress (full program review goal 2022-2025).
Which college or district goal is aligned with your program goal?	CoA Mission Statement: The mission of College of Alameda is to serve the educational needs of its diverse community by providing comprehensive and flexible programs and resources that empower students to achieve their goals.

Program Goal #3	Update and expand Geology lab specimens and equipment for analysis
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Status: In-Progress or Complete?	In progress (full program review goal 2022-2025).
Which college or district goal is aligned with your program goal?	CoA Institutional Learning Outcome number 5: Accept personal, civic, social and environmental responsibility in order to become a productive local and global community member.

Program Update

Using the dashboards, review and reflect upon the data for your program.

Course Completion and Retention Rates – Instructional Dashboard

Enrollment Trends and Productivity Dashboard

Degrees and Certificates Dashboard

Course Completion and Retention Rates

Academic year	CoA Completion Rate	GEOL Completion Rate	CoA Retention Rate	GEOL Retention Rate
2022-2023	69.7%	65.5% (online)	83%	69.0%
2021-2022	70.0%	63.9% (online)	85%	80.3%
2020-2021	72.6%	62.9% (online)	85.8%	77.1%
2019-2020	70.2%	61.0% (COVID spr 2020)	88.8%	89.8%
2018-2019	73.0%	80.4% (in person)	85%	82.6%

It is clear from the extrapolated information above that Geology completion rates and retention rates have fallen below rates for CoA as a whole precisely at the same time that Geology classes were relegated to being taught online. Geology is a hands-on science class best taught in person. Unfortunately, facilities have not been provided for access to Geology specimens or classroom presentations for 2022-2023. Access to in-person teaching facilities is likely to return this popular science class to previously higher rates of course completion and student retention.

Enrollment Trends

Academic year	CoA Enrollment/Productivity	GEOL Enrollment/Productivity
2022-2023	13.5%	14.2% (online)
2021-2022	11.9%	15.3% (online)
2020-2021	13.4%	17.0% (online)
2019-2020	14.7%	14.6% (COVID spr 2020)
2018-2019	14.7%	11.4% (in person)

Geology course enrollment and productivity has been relatively high and consistent compared with CoA averages for the past four years, indicating a high demand for this science class. Geology satisfies the

Physical Science Transfer Requirement for non-science majors and every section offered over the past four years fills with full wait lists.

Degrees and Certificates

Although Geology at CoA has had several degree and certificate programs since 2020, no certificates or degrees have been granted because Geology has not been allocated enough FTEFs to offer required courses for this major. We have received several requests from students who are interested in earning Geology AS-T or A.S. degrees and Geology Certificate of Achievement, but we cannot serve these students without higher FTEF allocations to support GEOL programs.

Describe any significant changes and discuss what the changes mean to your program. Consider whether performance gaps exist for disproportionality impacted students by using filters to disaggregate the data. Focus upon the most recent year and/or the years since your last comprehensive program review. Cite data points to support your reflection.

Small performance gaps exist between performance of students segregated by sex, ethnicity, and age, but these minor gaps are not statistically relevant. The student achievement levels appear to correlate with online vs. in-person course delivery mode, as noted in the analysis above. Geology is a hands-on learning discipline. We anticipate that the return to in-person instruction over the next three years will enhance student learning, completion and retention rates.

Over the next three years Geology faculty plan to create at least two new courses to serve student interests and community employment opportunities: Hydrogeology and Geochemistry, to partner with the planned Environmental Sciences program at CoA. Both courses will be excellent preparation for jobs in environmental studies, waste management systems, construction, mining, and other fields.

Describe the department's progress on Student Learning Outcomes (SLOs) and/or Service Area Outcomes (SAOs) since the last Program Review/APU.

Geology SLOs continue to be assessed regularly. Geology students at CoA continue to meet or surpass SLO assessment goals. PLOs cannot be assessed until we are able to offer the existing Geology programs to waiting students.

Describe the outcomes and accomplishments from previous year’s funded resource allocation request. If your program did not receive any allocations, leave the boxes blank.

Brief description of funded request	Source (any additional award outside your base allocation)	Total Award Amount	Outcome/Accomplishment
A full-time Geology instructor was requested and approved as one of the three new hires at CoA for fall 2023			The search was never posted. No hiring committee was formed. This approved request apparently has been ignored.

Rock sample collections, mineral sample collections, thin section sets, bathymetric map of the world, faulting models etc.	Instructional supplies funds 2022-2023	\$610.74	No orders were placed, as there was nowhere to house new specimens or other consumables for student use.
Renovations leading to dedicated lecture and lab teaching space to be shared by Geography and Geology	IELM funds 2022-2023 allocation	\$4,000.00	Not enacted in spite of numerous promises to get this project going.

Prioritized Resource Requests Summary

In the boxes below, please add resource requests for your program. If there are no resources requested, leave the boxes blank.

Resource Category	Description/Justification	Total Estimated Cost
Personnel: Classified Staff		
Personnel: Student Worker	At least one Student Worker is requested to tutor in-person students, help students in labs, help with lab set-up and clean-up, and to help faculty with field trip logistics.	Unknown personnel costs
Personnel: Part Time Faculty	In the event that a full-time Geology instructor is NOT hired as approved last year, a second part-time Geology instructor is needed immediately to teach the planned expansion of Geology courses. We highly recommend interviewing potential instructors NOW, rather than waiting. Having a ready pool of instructors is preferable to cancelling classes because last-minute instructors are not available.	Unknown personnel costs
Personnel: Full Time Faculty	Follow-up on the full-time Geology instructor hire approved last year, please.	Unknown personnel costs

Resource Category	Description/Justification	Total Estimated Cost
Professional Development: Department wide PD needed	Meetings and conferences: Faculty need to stay current in their fields of expertise and research. Travel and registration fees for these meetings need to be covered by COA.	\$5,000
Professional Development: Personal/Individual PD needed		

Supplies: Software	ESRI Arc-GIS license shared with Geography.	varies
Supplies: Books, Magazines, and/or Periodicals		
Supplies: Instructional Supplies	Rock sample collections, mineral sample collections, thin section sets, bathymetric map of the world, faulting models etc.	\$1,000 per funding cycle (Lottery funds)
Supplies: Non-Instructional Supplies		
Supplies: Library Collections		
Technology & Equipment	Petrographic microscopes for student use, scanning electron microscope to be shared with Chemistry and Geography.	To be advised. These items are standard equipment for any well-equipped Geology/Geography/Chemistry lab set-up
Library: Library materials/collections	Journal subscriptions to Geology, Geochemistry, Earth and Planetary Science Letters, Journal of Geophysical Research, etc.	\$500
Facilities: Classrooms/Labs	Dedicated smart-room classrooms for lecture (D-114) and laboratory (D-113) classes, to be shared with Geography programs until the new Science Building is built. These facilities were promised for active use starting in spring 2023 semester, but did not materialize.	
Facilities: Offices	Office space to be provided for GEOL instructor (or shared with Geography faculty) to hold in-person office hours and meet with students outside of the classroom.	
Facilities Other	Dedicated, locking storage space for Geology specimens, maps and teaching supplies. Can be shared with Geography program in D-113.	
Other	Use of CoA 15-passenger vans for field trips	Gas and insurance costs