Fullerton College

Self-study for Earth Science/Geology Program
2025

Section 1: Introduction

1. Briefly describe your program, make sure to include how your program helps the College achieve its mission.

TLDR version: The Earth Sciences Department, rich in learning resources and opportunities, provides wayfinding routes for all students. Staffing level decrease and ephemeral field trip funding prevents the Department from supporting students and the overall College mission despite offering several service roles to the campus community and beyond.

The Earth Sciences Department is a wayfinding beacon for students navigating their academic journey through the open ocean. The Department provides routes for general education students and majors in Geology, Earth Science, and now Meteorology and Oceanography. ESC has added routes for students in Oceanography (A.S.) and Meteorology (A.S.) to parallel routes in Geology (A.S., A.S.T.) and Earth Science (A.S.) programs. In addition, the Department has secured new technical and field equipment through a National Science Foundation (NSF) grant. Incorporating use of the technical equipment throughout field trips will engage students in field studies and careers related to Earth Science. Growth and new field equipment for instruction clearly demonstrate a robust program ready to effectively guide students along their academic

journey within the Department and within the College.

This includes supporting all students seeking transfer (FC equity) while creating a community of belonging and respect (FC values) through global systems awareness and critical thinking toward problem solving (FC goals). This support has come in the form of providing physical science and lab/field courses that satisfy local degree requirements and transfer students.
This is especially true for students who have yet to complete the math requirements for other physical sciences. In addition, the Departments' "No Student Left
Inside" philosophy offers experiential learning opportunities, but also broaden students' exposure and appreciation for the natural world. Afterall, we only have one Blue Planet.

Did you know? The Earth Sciences Department has chaired the campus Sustainability Committee for the past 3+ years which has coordinated the Earth Day Symposium, Adopt-a-Channel clean ups and other campus events. In addition, the Department served as the Division Distance Ed Rep (DEDR) and serves on the Institutional Research Board (IRB). The Department also hosts a CCC Chancellor's Office Climate Fellow through 2027.

Section 2: Students

2.1 Student Demographics and Enrollment Trends

1. Using the data provided by the OIE, describe the student population your department serves. Which demographic groups have the most enrollments in your program? Which student groups are underrepresented in your program? Has the demographic profile of your program changed over the last four years?

The department serves students that are consistent with the campus demographics.

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2. Briefly describe course-level enrollment trends in your program over the past five years. Have the enrollment trends in your program changed over the last five years? To what do you attribute any changes or lack of changes?

Fall 2025 has seen a >60% decrease in enrollment compared to the five year average. Since 2021, there have been three faculty retirements.

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3. How do you monitor and modify course offerings, including time and modality, to ensure that students' needs are being met?

Historically, enough courses were scheduled with a variety of times and modalities as signaled by a nearly zero course cancellation rate and consistently filled sections. This confirms the correct balance of times and modalities for the Department schedule.

However due to the availability of full-time and part-time instructors, more than seven sections have been cancelled this semester.

2.2 Student Achievement

1. Using data provided by the OIE, describe overall student achievement counts, rates, and trends in your program over the past five years, these include: course success rates, degrees/certificates completion counts, transfer counts, licensing, job placement, wage improvements (not all of these measures apply to every program).

19 students have earned degrees the past 5 years.

Course success rates are stable 77-81%.

Enrollments decreased 1700 to 1450 from 20/21 to 24/25 as a result of one retirement.

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2. Are there student groups whose success rates are below the institution-set standard or whose success rates are below other student groups? What factors can explain this?

Over the past 5 years, all ethnicities exceed the ISS for course success. There does not appear to be any statistically significant outliers.

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3. In terms of your degree and certificate completers, are there any groups who are underrepresented in your completion data compared to the overall enrollment in your program?

Of the 19 degrees awarded, 12 belonged to White students. This is not surprising given the lack of diversity and representation in teh Earth Sciences overall.

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4. Are your students completing your degree and certificate program requirements in the expected time frame? Are there certain groups whose rates are below other student groups? Discuss any efforts to improve time to completion.

The average time to degree is 7 years. This will not improve without more faculty offering courses.

2.3 Student Learning Outcomes

1. Describe your program's processes and practices for defining, assessing, and analyzing student learning outcomes at the course (CSLO) and program (PSLO) level. Include a discussion of how your program uses the results of CSLO/PSLO data to inform course and program improvement efforts.

The department discusses these regularly.

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2. (OPTIONAL/NOT REQUIRED) Using the data provided by OIE, describe the most salient results of CSLO or PSLO mastery rates. Did you find significant differences by race, ethnicity, gender, and other categories?

Section 3: Other Areas of Program Effectiveness

1. Document any substantial changes to your program curriculum since the last review and discuss what prompted these changes. Looking forward, what changes to the curriculum do you plan based on the emerging needs of your discipline, industry, student population, etc.

1. Added two new programs but lost two faculty members. It will be impossible to maintain any of the programs with a single faculty member. The Department is severely limited in its ability to hire and retain part-time faculty because, quite frankly, the pay is lower than other institutions and industry careers.
2. Until the staffing issue is resolved it is impossible to discuss any changes based on the current time and resources available to the Department. Give me more release time as Coordinator and then we can discuss changes.

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2. Please briefly describe opportunities your students have to apply and deepen knowledge and skills through projects, apprenticeship, internships, co-ops, clinical placements, group projects outside of class, service learning, study abroad, and other experiential learning activities that you intentionally embed in coursework or elsewhere in your program.

1. Transfer and graduate school are common conversations with students trying to locate programs aligned with their specific interests.
2. I regularly share the following opportunities and resources with students, regardless whether they are enrolled in my courses.
    - STEM field trips (Fall '23 and Spring '25) 40 students participated in the two trips

to the Desert Research Center in Zzyzyx.
- Environmental Justice Career Fellowship The Department helps recruit and has an advisory role in the program.
- STEMSEAS aims to provide ship-based, exploratory experiences for undergraduate students. Funded by NSF. At least three FC students have participated the past two years.
- Blue Economy and Climate Action Pathways (BECAP) aims to meet the emerging employment demands in ocean-related labor markets in Los Angeles that are aligned with California state climate action and environmental justice priorities.
- California Center for Climate Change Education is a forward-looking resource that will help prepare students for good-paying, fulfilling careers in the clean energy and climate technology industries.

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3. Describe any laws, regulations, trends, policies, procedures, or other influences that have an impact on your program. These can include things like Vision 2030, CALGETC, Common Course Numbering, etc.

> California AB285 is a tremendous opportunity for the Department to offer ESC 107 Earth Science for Educators. Yet this course cannot be offered due to…you guessed it, faculty staffing shortages! Too bad the College is missing out on this opportunity to help our pre-service teachers and increase enrollment.

Section 4: Faculty and Staff

4.1 Population and Demographics

1. Using the data provided by OIE, describe your program's staff (full-time/part-time faculty, nonfaculty, classified). How reflective of your program's student population is your staff?

1. The full-time faculty is 75% AAPI and 25% Latinx which loosely represents the student population.
2. Part-time faculty demographics are unknown because rude to ask and HR does not readily provide the information.
3. One part-time classified gave notification to leave in December so it doesn't matter.

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2. Describe your program's staffing changes since fall 2021. How have these changes impacted your program's ability to achieve its strategic action plans?

2021 FT faculty: 4 (no adjunct faculty)

2024 FT faculty: 3 (no adjunct faculty)

2025 FT faculty: 1 (+6 adjunct faculty)

SAPs were achieved when full-time faculty were >1.

Given the number of administrative tasks required by the department coordinator relative to a paltry 1-unit of reassign time, there is no chance that SAPs will be achieved unless the coordinator works >5hrs/week for free or is able to clone themself.

4.2 Staff Support and Professional Development

1. Describe the regular discussions your program faculty are having about equitable grading, attendance, late work, extra credit policies, and other strategies to support equitable student success.

I talk to myself a lot.

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2. How have these conversations shaped practices or polices in your program? What action has arisen from these discussions? If no action has been taken, why not?

No action is taken except I stop talking to myself because people stare at me. I am convinced that prior training/workshops and my lived experiences have made positive contributions to supporting student success.

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3. What additional areas of professional development could help your faculty and staff engage in this work?

Section 5: Program Planning

5.1 Progress on Previous Strategic Action Plans

1. Please discuss the goals (Strategic Action Plans, SAPs) from your last self-study. Assess and explain your progress on each of the SAP.

The department acheived all of its SAPs or are in the process of completing them.

One exception is the the creation of a digital storage for instructional materials. This is likely due to the availability of instructors overburdened with service and administrative duties.

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2. If additional funds were NOT allocated to you in the last review cycle, how did the LACK of funds have an impact on your program?

The Department relies on funding to schedule field trips for students. Per AP 4300.4

> the College must help students to taking a field trip or excursion, which is integral to the completion of a course because of lack of sufficient funds, with the exception of field trips or excursions offered as part of fee-based community services offerings. The colleges and North Orange Continuing Education will develop procedures to assure the participation of students in required field trips and excursions, lack of funding notwithstanding.

Thelack of funding means field courses cannot be reliably offered. This prevents students fromcompleting required and elective courses in both ESC and ENVS departments. Students willnot graduate without field classes.

SAPs

Developing Aquaculture Program

Short Description:
From the NSF Equipment and instrumentation grant, several items purchased can be used to start an aquaculture system if paired with existing equipment. One aspect of the blossoming blue economy, an aquaculture program would help students acquire the knowledge and skills to participate in blue economy jobs.

MeasurableOutcomes:
A fully developed program will serve students in existing ESC courses while generating new courses related to the certificate.

College Goals:
3.2 Reduce equity gaps in degree/certificate completion

SAP Phase:
New

Resource Requests

Aquaculture room rehab

Enhancement:
The Aquaculture facilities (office, lab, and greenhouse) are located in the Biological Garden. This building needs work to return it to a functioning state.

Personnel-Related:
No

Resource Category:
Facilities

Quantity:
1

Unit Cost:
$1.00

TotalCost:
$1.00

Aquaculture support

Enhancement:
To manintain the aquaculture system, full-time personnel is necessary.

Personnel-Related:
A full-time ESC lab technician would support this ongoing project.

Resource Category:
Non-Faculty Personnel

Quantity:
1

Unit Cost:
$1.00

TotalCost:
$1.00

Earth and Environmental Systems Collaboration

Short Description:
Increase the collaboration across ESC, ENVS, and GEOG. These three programs complement each other and students benefit from observing and experiencing the cross-cuttings themes related to climate change and sustainability. Furthermore, students experiencing climate anxiety will find community among the departments as experienced by student feedback from ENVS 142.

Measurable Outcomes:
Increase enrollment of student who complete more than one ESC, ENVS, and GEOG course. Create a campus community that supports sustainability and climate resilience. Empower students toward climate equity.

College Goals:
3.2 Reduce equity gaps in degree/certificate completion

SAP Phase:
New

Resource Requests

Earth and Environmental Systems Collaboration

Enhancement:
Earth Sciences, Environmental Sciences, and Geography request resources to develop a hub to A) Elevate the programs and courses relevant to the 21st century student. B) Highlight careers and transferrable skills that each discipline offers. C) Offer a one-stop shop for students to take courses across the departments that complement each other. D) Provide up-to-date resources for transfer programs, internships, and other off-campus opportunities.

Personnel-Related:
The request includes PE pay for faculty to join and contribute to field courses across the disciplines.

Resource Category:
Other

Quantity:
1

Unit Cost:
$4,000.00

TotalCost:
$4,000.00

Incorporating new equipment and instrumentation into ESC courses.

Short Description:
Using instrument-based activities and incorporating research mini-projects into the GE curriculum, the Earth Sciences Department will increase rates of course retention and success.

Measurable Outcomes:
In the past, the Deparment has been very successful at incorporating these materials into curriculum for students in lecture and laboratories. The high completion and success rates may, in part, be due to this work. The Department hopes to continue this work. This will also help recruitment and support for other programs that rely on the ESC Department for coursework such as ENVS, DRONE, and GEOG.

College Goals:
2.4 Increase access to academic support in course with DI

SAP Phase:
In Progress

Resource Requests

Faculty

Enhancement:
The lone department faculty member cannot complete this without additional faculty support.

Personnel-Related:
If you read the rest of the document, you would recognize that there is a severe shortage of faculty in the department.

Resource Category:
Full-time Faculty

Quantity:
1

Unit Cost:
$0.00

TotalCost:
$0.00

No Student Left Inside

Short Description:
The Earth Sciences department will maintain or expand the number of sections of field courses to meet growing demand of majors and non-majors for field-experience classes. Continue to find ways to engage students outdoor and will implement activities when conditions permit.

Measurable Outcomes:
Increase recruitment, retention, and success in field courses. Broaden participation in the Earth Sciences courses. This may also have spillover effects to ENVS and GEOG

College Goals:
3.2 Reduce equity gaps in degree/certificate completion

SAP Phase:
New

Resource Requests

No Student Left Inside

Enhancement:
ESC does not have a dedicated annual budget for conducting course related field trips. A number of important field trips require entrance fees, tour costs, or campsite fees. Field trips are routinely performed by the ESD are Aquarium of the Pacific, Whale Watching, USC Wrigley – Catalina Island, Santa Cruz Island, Cal State Desert Study Center, national and state park entrance fees, and various camping trips across the southwest.

Personnel-Related:
This includes PE pay for faculty drives who are not the instructor of record

Resource Category:
Other

Quantity:
1

Unit Cost:
$12,500.00

TotalCost:
$12,500.00

STEM to Planet: Broadening Participation in Earth and

Environmental Sciences

Short Description:

Expand recruitment to educate students and the public about natural disasters and human impacts on our planet The Earth Sciences are notoriously monolith with little changes in diversity. Community colleges offer opportunities for students from underrepresented backgrounds to broaden participation in Earth and environmental sciences.

Measurable Outcomes:

The Department expects to broaden participation in Earth Science career pathways, including those offered by the Environmental Justice Fellowship.

College Goals:

3.2 Reduce equity gaps in degree/certificate completion

SAP Phase:

New

Resource Requests

STEM Field Trips

Enhancement:

In the past, the STEM Field Trips have been extraordinarily successful. These trips have not been consistently offered due to relying on sporadic funding source. Currently no funding is available for conducting STEM field trips. As part of the recruitment of majors for the Earth Science and other departments within the Natural Science Division, students participate in a field trip focusing on multidisciplinary field-based sciences. The goal of the field trip is to introduce and broaden students understanding of field-based sciences such as geology, ecology, environmental science, biology, and others. The design of the STEM Field Trips are twofold. The first is to recruit students into field-based science majors such as Earth Science, Ecology, Environment Science, Biology. The second is to provide an opportunity to get a diverse community of students out into the field while creating a supportive and inclusive environment while expanding their knowledge.

Personnel-Related:

This includes PE compensation for faculty who provide discplinary expertise on the trips.

Resource Category:

Other

Quantity:

1

Unit Cost:

$10,000.00

TotalCost:
$10,000.00

No Student Left on Land

Short Description:
Increase boat and kayak based activities to engage students in ocean studies. Climate equity dictates inclusive participation in the blue economy. The Department expects that FC will play a role in climate equity and the blue economy. We hope to advertised and incorporate blue economy themes to broaden participation.

Measurable Outcomes:
Increased enrollment in field courses and ocean-based courses.

College Goals:
1.2. Increase equitable usage of apprecentiship/internship

SAP Phase:
New

Resource Requests

No Student Left On Land

Enhancement:
With the funded National Science Foundation grant, the Department has purchased equipment and instrumentation designed to study the ocean. Several of these instruments cannot be used from the shoreline and must be obtained on the water. Furthermore both ENVS and ESC field courses benefit from water-based excursions. This is easily demonstrated by student feedback from the co-taught ENVS 142 course. The use of kayaks will boost student engaement, enrollment, and appreciation for our coastal systems.

Personnel-Related:
No

Resource Category:
Equipment

Quantity:
1

Unit Cost:
$18,000.00

TotalCost:
$18,000.00

Resource Requests

Reassign Time

Enhancement:
Thank you for allowing me to spend 7 (update now 9) hours of my available 18 hours (1 unit) of release time on this program review. I honestly do not know how I would spend my remaining hours 11 hours of the semester given I only have completed a faculty allocation request, 5 adjunct reviews, monthly coordinator meetings, budget and scheduling discussions, and clerk supervision.

Personnel-Related:
Yes. I will use AI to complete my next program review unless I have more full-time hires or have more release time for coordinator duties.

Resource Category:
Full-time Faculty

Quantity:
3

Unit Cost:
$0.00

TotalCost:
$0.00

Faculty #1

Enhancement:
With additional faculty, students may actually be able to take classes and complete any ESC program.

Personnel-Related:
The Deparment has one full-time faculty down from four in 2021.

Resource Category:
Full-time Faculty

Quantity:
3

Unit Cost:
$0.00

TotalCost:
$0.00

Faculty #2

Enhancement:
With additional faculty, students may actually be able to take classes and complete any ESC program.

Personnel-Related:
The Deparment has one full-time faculty down from four in 2021.

Resource Category:
Full-time Faculty

Quantity:
3

Unit Cost:
$0.00

TotalCost:
$0.00

No Student Left on Land (Trailer)

Enhancement:
The kayaks need a trailer to transport from campus to the ocean. This will easily be towed by the Earth Science department 4x4 van.

Personnel-Related:
NO

Resource Category:
Adjunct Faculty

Quantity:
1

Unit Cost:
$5,000.00

TotalCost:
$5,000.00

Institutionalize STEM Center and Directo

Enhancement:
districts receiving MESA funding must locally ensure that programs are adequately staffed and supported. Although MESA funds will no longer be a competitive grant cycle application, we will not have sufficient MESA funding beginning July 1, 2027 for staff salaries. The $280,000 per year of MESA funds are insufficient to cover both the required student components (e.g., MESA field trips, conferences, honorariums for student STEM internships/experiential learning opportunities, guest speakers, MESA Counselor, MESA tutors, MESA peer mentors, PE(s), workshops, supplies, and equipment) of the program and staff salaries. The new regulations ensure that MESA's mission—to cultivate diverse talent in STEM, expand transfer opportunities, and close long-standing equity gaps—is now embedded in the structure of the community college system itself. They strengthen local capacity, affirm MESA as a vital instrument of Vision 2030.

Personnel-Related:
the following is needed to support the MESA and STEM Center staff salaries: Carlos Aguirre - Director, Academic Support Programs (MESA): ($165,460 salary) + ($3,500 doctoral stipend) + ($2,646.10 fringe benefits) + ($61,091.77 benefits) = $232,697.87

Resource Category:
Non-Faculty Personnel

Quantity:
1

Unit Cost:
$232,700.00

TotalCost:
$232,700.00

Institutionalize STEM Center and Admin

Enhancement:
districts receiving MESA funding must locally ensure that programs are adequately staffed and supported. Although MESA funds will no longer be a competitive grant cycle application, we will not have sufficient MESA funding beginning July 1, 2027 for staff salaries. The $280,000 per year of MESA funds are insufficient to cover both the required student components (e.g., MESA field trips, conferences, honorariums for student STEM internships/experiential learning opportunities, guest speakers, MESA Counselor, MESA tutors, MESA peer mentors, PE(s), workshops, supplies, and equipment) of the program and staff salaries. The new regulations ensure that MESA's mission—to cultivate diverse talent in STEM, expand transfer opportunities, and close long-standing equity gaps—is now embedded in the structure of the community college system itself. They strengthen local capacity, affirm MESA as a vital instrument of Vision 2030.

Personnel-Related:
the following is needed to support the MESA and STEM Center staff salaries: Stephanie Cheung - Administrative Assistant II: ($6,617 x 12 months) + ($2,646.10 fringe benefits) + ($29,209.84 benefits) = $111,259.94

Resource Category:
Non-Faculty Personnel

Quantity:
1

Unit Cost:
$111,300.00

TotalCost:
$111,300.00

F/T Lab Technician

Enhancement:
The Deparment requires dedicated personnel to maintain, organize, and coordinate equipment and instruments for labs and field courses. Their ability to relieve the ESC faculty of non-teaching tasks has allowed the faculty to focus their time on students. In order to continue having the support necessary so that the faculty can do what they do best, teaching, the Department needs continued funding of a Full-Time Lab Technician

Personnel-Related:
The ESC Lab clerk just gave notice they are leaving in December.

Resource Category:
Non-Faculty Personnel

Quantity:
1

Unit Cost:
$75,000.00

TotalCost:
$75,000.00