



**Fullerton College Program Review and Planning
Self-Study for Environmental Sciences
Fall 2021**

Statement of collaboration

The program faculty members listed below collaborated in an open and forthright dialogue to prepare this Self Study. Statements included herein accurately reflect the conclusions and opinions by consensus of the program faculty involved in the comprehensive self-study.

Participants in the self-study

Royden J. Hobbs, Professor of Environmental Sciences, ENVS Coordinator
Tom Morris, Professor of Environmental Sciences

Authorization

After the document is complete, it must be signed by the Principal Author, the Department Coordinator, and the Dean prior to submission to the Program Review and Planning Committee.

Royden J. Hobbs

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1.0 and 7.0 Executive Summary

Please provide the reader with a brief overview of the highlights, themes, and key elements of this self-study. Please don't include new information you did not discuss earlier. Although you will likely write this section last, please remember to put this summary at the front of your report.

The ENVS Program contributes significantly to the college's Mission, Vision, Values, and Goals by ensuring that large numbers of students meet their G.E. Life Sciences Lecture and Lab requirements to transfer to CSU and UC Schools. Many of its courses include interactive experiential learning in natural settings. It prepares its majors for transfer to four-year schools and employment in a field with faster growth than expected in many other sectors of the economy.

The ENVS faculty inspire students to improve the quality of people's lives by protecting and improving the health of the environment. Faculty participate actively in campus life in radio and newspaper interviews, campus seminars, and climate change panels. We often support other faculty in management and instruction of their field courses. In Spring 2020, we transitioned to online instruction while improving fill rates, course completions, and course success rates.

Course completion and course success in our courses overall is higher than for the average of all programs campus wide. Unfortunately, the number of faculty and courses/sections offered in ENVS have declined over the last 5 years as a result of faculty/instructor retirements and cuts in division FTES. The reductions have occurred despite consistently high fill rates.

Our department serves a wide diversity of demographic groups including, Low-Income, Female, Latinx, Fulltime, and Non-major students. 88% of our students are seeking a degree for transfer. We serve slightly more DSS students and approximately 30% more LGBT students than the average for all other programs combined. Although we have an average annual of 143 declared majors, only 56 students transferred from the ENVS program to 4-year schools in 5 years and only 6 of these received their A.A. or A.S. in Environmental Sciences.

Achievement gaps exist for several groups in course success (Black/African American, Latinx, Native Hawaiian/Pacific Islander, Low-Income) within our program. Parallel gaps exist in course completion. Achievement gaps that are the product of differences that exist among groups when they enter our program are best dealt with at the societal, community, and institutional levels. They are unlikely to be reduced significantly in a single course such as ENVS 105, but we hope we can reduce achievement gaps that exist among groups within our major during the

course of their degree program. Our equity plan began with the approval of our new A.S. in Environmental Sciences, revision of our PSLO's, and mapping of 2- and 3-year guided pathways. These developments make it easier for students to personalize and complete their degree and transfer requirements. We will continue to focus on equity by create a community where students find a sense of purpose and belonging. Community will be fostered though regular student-student and student-faculty interactions in shared experiences during our new field course offerings and gateway/capstone course.

Success of our program development and equity plans are dependent on hiring a new fulltime (FT) faculty member. Our current faculty are already required to teach overtime just to maintain our current G.E. offerings which are significantly reduced from 5 years ago. A new FT faculty member will enable us to increase the number of sections of our G.E. courses and diversify the days, times, and methods of instruction. They will be integral to the development and instruction of our gateway and field courses.

This is an exciting time for our program. We have a host of historic and recent successes, but our eyes are now firmly focused on the future. We look forward to implementing our new major and guided pathways, to bringing new ideas and perspectives into our program with a new faculty member, to developing new courses, and to contributing to an inclusive equitable and productive campus community.

2.0 Mission

Please explain briefly how your program contributes to the College's mission, vision, core values, and goals. Highlight any new contributions since your most recent self-study. If your department has a mission statement, please share it. If not then please consider discussing one with your colleagues.

ENVS Mission Statement:

ENVS does not currently have a mission statement, but will consider discussing one amongst our faculty members.

Mission Summary:

ENVS supports and enhances all of the college's mission, vision, core values, and goals. A few highlights are:

- 1) We support flexible pathways for students from diverse communities who seek educational and career growth, associate degrees, and transfer through our two- and three-year guided pathway maps.
- 2) We instill a sense of responsibility for the betterment of the world by highlighting the role humans have played in the decline of the Earth's natural systems and an understanding of the diverse impacts these alterations have on all species, including all segments of human society locally and globally.
- 3) We cultivate a culture of equity through an understanding of a single origin of life on earth and a common origin of all Homo sapiens on the African continent.
- 4) We strengthen connections with our regional community as we engage in field-oriented activities which bring our students together with staff and the public at local natural areas, zoos, aquaria, and parks.

Section 2.0 Narrative:

In keeping with Fullerton College's mission, vision, core values and goals, we revised our program's A.S. in Environmental Sciences degree to increase the possible pathways that students can follow to their degree. We did this by increasing the breadth of electives that can fulfill requirements for the major. This revision retains the strength of our degree in the departments core courses (ENVS 105F and ENVS 105LF), while allowing students a variety of possible areas of specialization within the degree based on their educational and career goals (such as biology, geology, geography, anthropology, or technology). Although we do not offer

certificates in our program at this time, this revision allows the possibility for the development of several certificates in the future as our department grows and new faculty develop additional course offerings.

To facilitate the achievement of an A.S. in Environmental Sciences in an expeditious manner while ensuring students complete all requirements necessary for transfer to UC or CSU universities, we mapped both 2-year and 3-year pathways. This will enhance the ability of students to achieve their educational and career goals, while exposing them to a greater breadth of professors, ideas, cultures, and experiences. At the same time, we revised our department PSLO's to better align with FC's ISLO's.

Department faculty have contributed to the college and community by doing interviews for campus radio and The Hornet, presenting a seminar on Biodiversity and Conservation, participating in climate change panel discussions, and liaising with numerous organizations throughout Southern California, including the Tucker Wildlife Sanctuary and the USC Wrigley Institute for Environmental Studies. We often support other faculty in management and instruction of their field courses.

In our commitment to achieving college and department goals with equity and compassion, and to continue to develop as professionals, ENVS faculty attended trainings in cultural awareness, equitable grading, and online instruction. We transferred all department courses online in response to the covid-19 pandemic to continue to serve our students. Our professors became fluent in delivering course content through Canvas and developed video editing and productions skills to accommodate lab students online. Professor Royden Hobbs earned his Online Teaching Certificate.

3.0 Students

Because there is a nearly infinite amount of student data that can be studied, please focus your analysis on the trends that stand out. The Office of Institutional Effectiveness (OIE) is providing data that will help you zero in on bottlenecks, gateways, and student equity issues. As per accreditation standards, OIE data will be broken down by race, ethnicity, gender, and other demographic categories. One of the purposes of this section is to identify inequities and make plans to remedy them.

3.1 Enrollment demographics.

3.1.1 Using the data provided by the OIE, briefly describe the enrollment trends in the program over the past five years.

ENVS program enrollments have declined by 13.2 % over the 5 years reported. This decline follows fairly closely with the campus wide decline of 11.9% over this same time period. The lowest enrollment was in AY 19/20, likely as a result of the Covid induced transfer from on-campus to on-line learning. The faculty responded rapidly and effectively to this transition working many uncompensated hours to provide the best learning environment for their students. However, the department had two field courses (ENVS 141F and ENVS 142F) that began within a week of the transition to online learning. Students enrolled in these courses for the in-the-field experience, therefore, the vast majority dropped these courses rather than take them online. Enrollments rebounded in the AY20/21 with a 4.8% increase as compared to a campus wide decline of 3.6%. This increase occurred despite the department not offering any sections of ENVS 141F or ENVS 142F.

The decline in enrollments in the ENVS department seems to be wholly accounted for by a reduction in sections. Over the last 5 years, enrollment at FC has been dropping. Our program assisted the division's need to reduce FTES by not replacing sections or courses taught by retiring adjuncts or faculty. The department has reduced course offerings from 32 sections a year in AY 16/17 to 25 sections in AY 20/21. As discussed in Section 2.0, we used this time to revise and modernize our program and develop a plan for regrowing the department in alignment with the college's developing priorities.

Throughout the 5-year study period, course fill rates have consistently been well above 90%, regardless of the number of sections offered, and rose to 103.7% in AY 20/21. These consistent fill rates indicate our department has room to grow in the number of sections of ENVS 105F and 105LF. Fill rates during the pandemic indicate student interest in online course offerings.

3.1.2 Using the data provided by the OIE, describe the student population the department serves. Do you have a way of determining which students are majors, for example through a gateway course? Please explain.

Data from the OIE indicates that the plurality of our students are Low-Income (79%), Female (56%), Latinx (62.8%), Fulltime (55%), Non-majors (98%) in the 20-24 age range (57%). 88% of our students are seeking a degree for transfer. In all the aforementioned categories, our program exceeds the averages for all other programs combined. We serve slightly more (7% versus 6%) DSS students and approximately 30% more (13% versus 9%) LGBT students than the average for all other programs combined.

Our department has fewer majors (2% versus 21%) than the average of other departments combined and offers no certificates. We do not have a gateway course or any way of determining which students are majors aside from information provided by the college. The need for a gateway course was identified through consultation with counseling, and the guided pathways and PSLO committees as we developed our guided pathways in Spring of 2021.

3.1.3 Which classes have the highest demand and why? Are they offered regularly – at different times of the day and week, in different formats (in-person, on-line, hybrid)? Please explain.

ENVS 105F, with 3,578 students enrolled in the last 5 years, and ENVS 105LF, with 1,606 students enrolled in the last 5 years, are the program courses in highest demand. These are the introductory courses within our program. They meet the Life Science transfer requirements for both CSU and UC schools, and are required for all majors in our program. They are of particular interest to students because of their relevance to some of today's most pressing issues in society, including climate change, ocean pollution, species extinction, and ecosystem destruction.

These courses are currently offered primarily Monday through Thursday during day time hours during non-covid on campus semesters. There is only one evening section of ENVS 105F (17% of offerings compared to 29% of offerings 5 years ago), no weekend sections, and only occasional summer offerings (an average of 1 section per summer over the last 5 years). There are no evening or weekend, and only occasional summer offerings, of ENV S 105LF. In recent pre-covid years, all sections of both these courses have been taught in person with no online or hybrid offerings.

We do not have the FT faculty to teach additional sections and have had unsatisfactory experiences recruiting adjuncts. These experiences include: (1) Our core courses require a specialty in the field of ecology, a deep knowledge of evolutionary theory, and extensive knowledge of local natural history, both terrestrial and marine. Our past experience is that candidates applying to teach as adjuncts in our department do not have expertise in these areas, i.e. degrees in Ecology or a closely related field with substantial coursework in evolutionary biology and field work in local environments. (2) We have had to spend substantial, uncompensated time to train new adjuncts in attempts to overcome the deficiencies in their training. We found that misunderstandings of the science were still perpetuated and that retention of adjuncts was low, negating these efforts. (3) Our field courses use a diverse array of local sites accompanied by site specific lectures and supervised exercises. We have to devote substantial time instructing adjuncts in the specifics of the local

field sites and training them on the course exercises they will be conducting. All this places an excessive burden of uncompensated time on faculty that are already teaching overtime. The low retention rate for adjuncts requires these processes to be repeated again and again. (4) Even with extensive training, adjuncts have been known to stray from course outlines, teaching more of a basic biology course (like Bio 101), rather than the more specialized Environmental Biology (ENVS 105 F) they were hired to teach. (5) We have had frightening experiences with adjuncts transporting students in district vehicles. Many students rely on this transportation to get to the field sites, but have not felt safe riding with adjunct drivers. Adjunct drivers can present a risk to student safety and a liability risk for the college. Students have complained to the Natural Science dean about the driving habits of adjuncts in the past. (6) Adjuncts have been known not to show up for their courses requiring fulltime faculty to scramble to try to cover those sections. One adjunct teaching a 3-hour night section would regularly dismiss the class after 20-30 minutes. We can let these adjuncts go, but there is no one to replace them and the damage to a student's education has already occurred. These concerns have also been noted in our FT Faculty Request (See Section 3.4.2)

There is opportunity to expand evening, weekend, summer, and online offerings if we can hire a new FT ENVS faculty member. In the past, when we offered an additional evening session of ENVS 105F, it tended to be popular with people working fulltime who could not attend daytime sections. In semesters when we offered a Saturday section of ENVS 105LF, it was in high demand, and typically was the first section to fill.

Covid has revealed a need for online offerings, as well. Our online offerings give flexible scheduling for students with work and family demands that preclude them from taking on-campus courses. The fill rate of online offerings in AY 20/21 was 103.7% (compared to 93.4% – 94.7% for pre-covid on campus sections), indicating a demand for online sections when on campus instruction resumes. All sections taught in our department consistently have fill rates higher than the average fill rate of FC sections for all programs (84.9% - 88.7%).

3.1.4 Please describe how course offerings match students' preparation and goals.

ENVS 105F and ENVS 105LF fulfill the Life Science Lecture and Lab requirement for transfer to CSU or UC Schools, and are core requirements for ENVS majors. 88% of our students list transfer as their primary goal with the largest percentage of students transferring to CSU (38%). An average of 143 students were declared ENVS majors in each of the last 5 years. Course offerings do not match student's goals. They cannot get the courses they need to complete their degree, especially field courses. ENVS 141F and ENVS 140F have only been taught once each in the last 5 years. Only 56 of our declared majors have transferred to 4-year institutions

in the last 5 years and only 6 of these completed their A.A. or A.S. degrees. We need to increase the breadth of our course offerings and instructional times and methodologies.

Preparation for many students entering the Environmental Sciences is poor. We often spend office hours teaching students how to study, something that should be established in their skill set as 74% of students enrolled in our courses are over 20 years of age. Writing skills are poor. Basic math, algebra, and geometry skill are often lacking. Students find research, critical thinking, and synthesis difficult without substantial oversight. Many students are unable to relate course material to real world phenomena, because they have very little exposure to natural systems.

3.1.5 Does enrollment vary by semester? Please describe how course offerings are adjusted to meet student demand and help students reach their academic goals.

Offerings of our introductory courses do not change much from semester-to-semester with 6 sections of ENVS 105F and 6 sections of ENVS 105LF taught each semester. These courses consistently fill (93.4% -103.7% fill rate) and often have full waiting lists by the beginning of each semester. Current course offerings do not need to be adjusted because they consistently fill, however, there is room to offer additional sections of all our courses to better accommodate student demand and help them reach their academic goals. This is part of the long-term plan for our program.

Field courses are taught sporadically (ENVS 141F and ENVS 140F only taught once each in the last 5 years) because of faculty shortages within our department. These courses have, at times, been bottlenecks for our students. These bottlenecks could be overcome with additional faculty. One odd phenomenon in enrollments is that our field courses fill quickly, but on the first day of class many students do not show and need to be dropped. Because these are short courses, we do not have time to add/recruit additional students to fill these spots before census date. Census date is the first day of the course. This results in field course enrollments being lower than they otherwise would be. It may be that some students are using these courses to harvest student aid. Allowing students to late add these courses, which has been consistently denied by the administration, would allow an increase in enrollments in these courses and help to reduce the bottleneck experienced by majors.

There is room for growth in evening, online, weekend, and field course offerings that increase FTES and make it easier for students to meet their academic goals. This will be particularly critical for ENVS majors trying to follow our 2-year guided pathway.

3.2 Student Achievement and Equity (and student demographic profile)?

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

Course completion and success rates are both high within the ENVS Program. Average course completion over the last five years for ENVS was 87.16% compared to a college wide average of 82.32% over the same time period. Average course success over the last five years was 75.8% compared to a college wide average of 68.94%. Average course completion and success in ENVS have both shown slight increases over the 5-year study period while these same measures stayed steady (Course Success) or slightly declined (Course Completion) campus wide over the same time period.

Fifty-six students from our department transferred to 4-year colleges in the last 7 years, but only 6 of those earned our degree. Two other students earned an A.A. or A.S. in Environmental Sciences without transferring to a 4-year college. These numbers show room for significant growth. Our revised major is a step in the direction of achieving this, but it needs to be accompanied by the development of new courses, additional regularly scheduled course offerings, and the establishment of a gateway course.

3.2.2 Equity Analysis: Please pay special attention to equity issues -- where a group of students has an achievement rate that is below average. What factors can explain this?

Course completion and course success trends mirror each other with course success rates running below course completion rates. Over the 5-year study period, 3 ethnic groups show course success rates below other groups (Black/African American 19.4% gap, Latinx 7.7% gap, and Native Hawaiian/Pacific Islander 20% gap). However, course success rates for these groups in ENVS are above those for the institution as a whole (56.8% verse 52% for Black/African American, 72.3% verses 66.38% for Latinx, and 60% verses 59.8% for Native Hawaiian/Pacific Islander). These achievement gaps are likely reflective of larger societal issues, rather than specific department failures. The United Negro College Fund indicates that only 57 % of black students have access to the full range of math and science courses necessary for college readiness and that 61% of black students that took the ACT in 2015 failed to meet any of the ACT's college readiness benchmarks (<https://uncf.org/the-latest/african-americans-and-college-education-by-the-numbers>).

Because we have only had 10 Native Hawaiian/Pacific Islander students in our program in 5 years, it is not statistically sound to draw any conclusion from the apparent course success and completion gap. This is, however, a result that we should keep an eye on as more data accumulates.

In addition to the above ethnic groups, course success of Low-Income students was 11.8% below Not-Low-Income students.

We do not have enough data for most demographic groups to comment on achievement gaps in degrees awarded because we only had 8 degrees awarded in the last 5 years. However, the data we do have indicates that 57% of declared Environmental Science majors were Latinx and only 27% were white, but 63% of our degrees awarded were to students who declared as white. We need to be cautious about drawing conclusions from these data because of the small sample size. However, it is important to keep an eye on these inequities as we seek to increase our number of A.S. degrees and possibly offer certificates.

Although many of the below factors are not unique to any particular demographic group, they may influence achievement gaps:

- (1) Environmental Sciences has an interdisciplinary foundation. Although our program's focus is to understand the role that humans play in the diversity and functioning of natural systems, it draws from a wide breadth of disciplines that are often taught at higher levels in 4-year institutions, such as biogeography, evolutionary theory, population dynamics, environmental chemistry, and conservation biology. Many of these topics have not penetrated deeply into the popular consciousness of our society, therefore, students often enter our discipline without an adequate foundation in these scientific fields.
- (2) Through a large variety of popular media channels, students are often assaulted with false or misleading information about environmental topics, such as "recent climate change is not a result of human activities", "addressing the world's environmental problems is not economically feasible", "human population growth is not an important societal concern", or "we can help people or the planet, but not both". When students enter with these preconceived notions, it takes time for them to unlearn the false information. They often do not have the disciplinary base, synthesis, and critical thinking skills to understand the fallacious arguments put forward by a variety of media sources.
- (3) Our program is built on understanding how and why natural systems function the way they do. Students who have grown up in urban environments and have not spent time in natural systems do not have a well-developed frame of reference for course materials.

(4) Learning the constituent parts and processes of natural systems requires repeated and prolonged exposure in the field. Many of our students may not have had these opportunities.

(5) Students in our program may not feel a sense of community or “belonging” within our department given its interdisciplinary nature, low number of course offerings, and small number of faculty with which to interact.

3.2.3 Does the department have regular discussions about equitable grading, attendance, late-work, and extra credit policies, or about other strategies for helping students succeed? Could reforming classroom policies help more students succeed? Please explain.

Our department consists of only two professors. In non-covid times, we had regular discussions about the way we conduct our courses and often witnessed each other’s interaction with students during office hours. During covid, we have maintained communication by phone and email. Discussions inside the department and within the division regularly include discussions of how to improve student success. ENVS Faculty are attentive to the policies discussed within our equity training seminars and discussions. We have reformed our classroom policies where appropriate, including: (1) Providing extra time to submit assignments (2) Allowing extra time on exams/quizzes (3) Allowing make up exams (4) Assigning numerous low point assignments/quizzes rather than a few high consequence assignments/exams (5) Dropping low test scores (6) Contacting individual students regarding missed work and providing a means and schedule for them to make up the missed work (7) Providing numerous instructional delivery methods, including images, videos, lectures (verbal and written), discussions, readings, and written assignments (8) Providing weekly prompts about upcoming assignments (9) Dropping students who are failing despite the above interventions, so their grade will not impact their GPA (10) Making attempts to engage individual students (11) Treating each student with respect and compassion (12) Guiding students to useful campus resources such as laptop loans, campus wifi, tutoring, and curriculum counselling (13) Offering free textbooks (14) Helping students troubleshoot online connection problems (15) Being accessible to students via Canvas Inbox and/or zoom seven days a week, including weekends and evenings. The effect of these policies is not yet clear.

3.2.4 Please write a brief Equity Action Plan. What strategies can you implement to close this gap in student achievement within the next five years? What professional learning, curriculum development, or other forms of support does your department need?

Many of the policies and actions that seem to improve equity need to be addressed by the institution and community (<https://edtrust.org/wp->

<content/uploads/2013/10/PracticeGuide1.pdf>). Nonetheless, there are actions that can be taken by our program. Our equity plan aligns with the long-term goals for our program that have already begun (revise major, update PSLO's, develop guided pathways) and include ideas that have arisen from recent campus wide training and discussion with the guided pathways and PSLO committees. Faculty trainings have included:

“Radical Care: Returning to Campus with Empathy.” 1/20/2022

“From Audit to Core: Infusion of Equity Practice within Course Curriculum.” 1/20/2022

“Returning to Campus with Empathy: Practical Strategies.” 1/20/2022

“Starfish: What Is It and How Will It Help Faculty Support Students?” 8/19/21

“Grading for Equity Follow-up Discussion.” 8/19/21.

From these and other learning opportunities, we are mindful of how inequities can be unwittingly reinforced, such as through unintentional microaggressions. We have discussed in section 3.2.3 numerous actions that we have already implemented as part of our Equity Action Plan, but we can have a greater impact on our majors than students who only take a single course within our department.

Our plan is to develop several new course offerings, including field-oriented courses and a gateway/capstone course for our program. We will offer these courses and additional sections of our GE course in non-traditional time slots and with different instructional formats (on campus, online, and in the field). These changes will address several of the points made above (see section 3.2.2) and may improve course completion and success rates of groups experiencing achievement gaps. Additional course offerings will increase the amount of time majors spend in courses taught by program faculty and attended by program students. This may increase the sense of community and belonging within our program by allowing greater faculty-student and student-student interaction. (Helps to address issues 1, 2, and 5 outlined in section 3.2.2)

The more time students spend with faculty; the better faculty will know the students. This allows faculty to notify them of scholarship and internship opportunities, to write compelling letters of recommendation, and to contribute to their intellectual development in less rigid settings than a campus classroom (such as, in the field, casual conversation around the department, or student clubs). (Helps to address issues 1, 2, and 5 outlined in section 3.2.2)

Additional field courses will allow students to spend more time in natural systems seeing their constituent components and processes in situ. More field classes also allow repeated exposure to these natural phenomena in a diversity of natural systems. These factors improve the contextual framework within which students from urban communities can place the conceptual foundations of our discipline (Helps to address issues 3 and 4 outlined in section 3.2.2).

The primary support our program needs is an additional FT Faculty member (see Section 3.4 of this document and the Rational for FT Faculty which has been submitted separately).

3.3 Student Achievement and Pathways

3.3.1 Using the data provided by the OIE, briefly describe how students have moved through the program over the past five years: unit accumulation, prerequisites, corequisites, substitutions, gateway courses, and bottleneck courses. (Not all of these measures apply to every program.)

Over the past 5 years, 3578 students have enrolled in ENVS 105F with 16% of students withdrawing and 9% of students repeating the course. These rates were the highest of our 2 regularly offered GE courses. 1606 students enrolled in ENVS 105LF with 4% of students withdrawing and 0.8% of students repeating the course. ENVS 105LF is an 8-week field course with one meeting per week and a lower seat count than ENVS 105F.

We have seen higher withdraw rates and lower success rates in ENVS 142F and 141F, but the data for these courses is heavily skewed by the Spring 2020 conversion to online instruction. These are field classes which students take for the active and experiential field-based activities. Most students enrolled for these courses in Spring 2020 withdrew when courses were moved online. ENVS 140F with 7% withdraw may be a better indicator of withdraw rates from these specialized field courses because its sole offering in the last 5 years was not in Spring 2020. These field short courses have been the primary bottlenecks for our majors with limited diversity of offerings and irregular scheduling because of the limited faculty resources in our program.

Enrollments in ENVS 142F may be one of the best indicators of students moving through our program because it is regularly offered. Enrollments for ENVS 142F over the 5-year period were 2.2% of enrollments in ENVS 105F. This is in line with the 2.1% of non-GE enrollments in our department, and the 2% of our enrollments that are declared as ENVS Majors.

Only 56 declared ENVS majors have gone on to transfer in the last 5 years even though we've had an average of 142 declared majors annually over this time period. 8 students have completed their A.A. or A.S. in Environmental Sciences in the last 5 years. These numbers indicate that students are not moving through our program. This is likely related to the interdisciplinary nature of our department which sends students to other departments to complete most of their course work, the low number of course offerings within our program,

and the lack of a gateway course, all of which contribute to a lack of community and belonging within our program. These issues have been discussed extensively throughout this document as have our plans to address them. We believe that our revised major and mapped pathways, along with expanding our field course offering, hiring additional faculty, and developing a gateway course, will help students to move through our program and attain their educational and career goals more successfully.

3.3.2 For transfer degree programs: Are your current requirements in line with the Transfer Model Curriculum, or have you added extra steps, such as prerequisites? If you added extra steps, please explain.

Students can complete our degree and their transfer requirements to CSU or UC within 2 or 3 years by following our guided pathways, but the A.S. in Environmental Sciences does not follow the TMC Template for Environmental Science. The TMC is interdisciplinary preparation for a four-year degree in Environmental Science which does not require any courses taught within our department.

3.3.3 Please provide an update on the curriculum mapping you have done, perhaps in collaboration with Counseling. Are all programs (degrees and certificates) mapped? Based on course offerings for the last two to three years, could a student complete the map(s) you have created? If so, please demonstrate this with some facts from your schedules. If not, how will you address these discrepancies?

Our A.S. in Environmental Sciences has been mapped. Students can complete the map based on course offerings from the last two to three years pre-covid, but some field courses could be bottlenecks if we do not have the faculty resources to offer them on a regular rotation. ENVS 105F, ENVS 105LF, ESC 130F, and ESC 130LF are offered every semester. Another 10-13 units are required out of 49 possible units worth of courses. These courses were selected during the recent revision of our program major (State Approved April, 09 2021). It was confirmed at that time that they were all offered at least once per year. Our degree, also, requires 4-5 units of field courses out of 9 possible units. ENVS 142F is offered at least annually, but ENVS 141F and 140F have only been offered once each in the last 5 years. With a new faculty member, we hope to be able to offer these courses once every other year, but with current faculty we cannot guarantee this. Some ESC field courses could be taken instead of these ENVS field courses. Previous to covid they were on a biannual rotation, but since then an FT ESC faculty has retired, so this may affect how frequently ESC field courses are offered.

We do not currently offer any certificates. One may be developed within the time frame covered by this CPRD. If developed, it will be mapped.

3.3.4 Do the data reveal differences among your AA, ADT, or certificate programs (in enrollment, completion, or success, for example)? Please explain.

ENVS offers an A.S. in Environmental Sciences. We do not offer an ADT for the reasons presented in 3.3.2. Neither do we offer a certificate at this time. Therefore, no differences among these exist.

3.4 Faculty

3.4.1 Using the data provided by the OIE, briefly describe the faculty workload over the past five years: FTF (full-time faculty), PTF (part-time, or “adjunct” faculty), FTEF (full-time equivalent faculty), WSCH per FTEF (weekly student contact hours). (Not all of these measures apply to every program.)

The number of Full-time Faculty within our program has declined as professors from other programs, who also taught courses within our program, retired and were not replaced within their respective departments by faculty with similar areas of expertise. FTEF declined from 5.9 in 2015 to 5.3 in AY 16/17 to 4.3 in AY 20/21. Our department now has only 2 FT Faculty which have to regularly teach overtime to ensure all program obligations are met.

Over the last five years, our program has tried to use numerous adjuncts. We have used as many as four in a single semester, but discovered that part-time faculty do not have the breadth and depth of knowledge to teach within the ENVS program because of the interdisciplinary nature of ENVS 105F and the extensive natural history experience required in ENVS 105LF. We have reduced course offerings as part-time faculty have moved on or been let go, rather than replace them, in part to accommodate Division requests to reduce FTES, and in part because of the difficulty of finding qualified part-time faculty.

3.4.2 If your department plans to request hiring a full-time faculty member, this is the place to make the argument. Please discuss hiring needs in reference to data analyzed in sections 3.1 to 3.4.

We have made a FT Faculty Request for a new faculty to begin in Fall of 2022. The justification for this hire was explained in depth in that document. We have included a copy of that rationale here:

Introduction: ENVS and Career Opportunities

The Environmental Sciences Program offers an A.S. in Environmental Sciences. The department's core courses are ENVS 105F Environmental Biology and ENVS 105LF Environmental Biology Lab, which meet the Life Science Lecture and Lab requirements for transfer to CSU and UC schools. A growing recognition of the severity of human alteration of natural systems has led to an increased interest in the environmental sciences. A significant majority of Americans say they are personally fairly or greatly worried about a range of environmental problems, including Global Climate Change (65%), Extinction of Plant and Animal Species (70%), and Tropical Deforestation (72%) (Gallup, March 2021). These are the kinds of issues addressed within the FC ENVS Program, and they offer educational and employment opportunities for our graduates.

Job growth for ENVS graduates who earn a 4-year degree is higher than average. The average growth rate of U.S. employment for all fields is estimated to be 4% between 2019 and 2029, but over this same time frame growth in Environmental Scientist jobs is expected to be 8% (U.S. Bureau of Labor Statistics 2020). In addition, the potential earnings of our graduates is strong when compared to U.S. real median earnings. While U.S. real median earnings in 2019 were \$57,456 for men and \$47,299 for women (U.S. Census Bureau 2020), Environmental Scientists had an annual median income of \$73,230 (U.S. Bureau of Labor Statistics 2020). 88% of FC ENVS students plan to pursue a 4-year degree (OIE 2021). However, at this time when interest and employment opportunities are growing, the Environmental Sciences Program at FC has a historically low number of faculty and course offerings.

ENVS Experiences Declines in Faculty and Course Offerings

Course offerings and FTES cuts occurred in ENVS as a result of retiring faculty and the unique nature of our discipline. Our course sections have been cut from 31 sections in AY 2016/2017 to 24 sections in AY 2020/2021. Historically, many of our courses were taught by faculty outside of our department, including faculty in the Earth Sciences and Biological Sciences. Courses were developed based on the unique interests and qualification of those faculty, but as they retired, they were not replaced within their respective departments by faculty with the same specialties or interests. Adjuncts did not have the qualifications to teach these specialized courses.

Some non-ENVS faculty (since retired) also taught sections of ENVS 105F. We attempted to find adjuncts to teach open sections of ENVS 105 and ENVS 105L, but discovered adjuncts did not

have the diverse knowledge and skill base needed in our discipline (See Adjuncts in ENVS below). Participating non-ENVS faculty retired at a time when our division was asked to reduce FTES. We assisted the division by eliminating these sections, keeping only the load that could be taught by the remaining two full-time faculty. These trends over the last five years have resulted in the elimination of 7 sections and the loss of a fulltime equivalent faculty. These losses are significant for our program which is now about 30% smaller than it was 5 years ago (All data OIE 2021).

ENVS Builds A Solid Foundation For Growth (FC Comprehensive Program Review Document (CPRD) 2021 Section 6.1)

ENVS has been working on a plan to modernize our program. We eliminated from the FC Catalog 7 obsolete course offerings and revised our program major. The new major focuses on the strengths of current faculty and allows students more opportunity to tailor their degree toward their educational and career objectives (State Approved April, 09 2021). We mapped both 2-year and 3-year Guided Pathways for this degree that will allow students to earn their A.S. in Environmental Sciences while simultaneously completing their transfer requirements for CSU and UC schools. We, also, revised our PSLO's to better represent program goals embodied in these pathways and align with FC ISLO's. The next step in our plan to grow and modernize our program requires hiring a new full-time faculty member.

ENVS Has Proven Growth Potential (CPRD Sections 3.1, 4.4, 5.1, 6.2)

The ENV program needs to restore lost sections of ENV 105F and ENV 105LF. These are the bedrock courses in our department. They allow students to complete their Life Science Transfer Requirements (Unduplicated Headcount 3915 over the last 5 years: OIE 2021) and are the primary feeder courses for our program. They are the initial contact point between ENV Faculty and program majors and establish the conceptual and applied foundations our majors build on while pursuing their degree. We have proven opportunity for growth here. Regardless of the number of sections we have offered over the last 6 years (range: 24-35 sections), our fill rates have always been greater than 93% (range: 93.4% to 103.7%). Each semester ENV is one of the top Natural Sciences programs for fill rate, section size (ENV range: 34.4-42.3), and course success (ENV range: 69.8% - 84.2%) and exceeds these metrics for all FC programs combined (fill rate: 84.9%-88.7%, section size (range: 26.2-29.8), and course success (range: 67.6% – 70.3%) (All Data FC KPI Program Overviews).

In the past 5 years, 56 declared ENV majors have transferred to 4-year universities, but only 6 of these students completed their ENV degree. This represents at least 50 missed

opportunities for students, our program, and the college. The failure of these students to secure their A.S. in Environmental Sciences is an equity issue, as well, as our program Majors include a higher percentage of female (60% vs. 55.0%), LGBT (33% vs. 12%), and low-income (87% v. 79%) students than non-majors. There is great room for growth in A.S. degrees awarded through our department as our program has enrolled an Unduplicated Headcount of 3915 students over this time period (All OIE 2021) and currently has 135 declared majors (FC KPI Program Overview).

ENVS Growth Will Promote Equity (CPRD Sections 3.2, 4.4, 5.1, 6.2)

In AY 20/21, which was taught entirely online, our fill rate was 103.7% and our section size was 42.3. These metrics were the highest of any Natural Sciences programs (except Health Education, which only has one course in its program: Section Size 55.7, Fill Rate: 76.7%: FC KPI Program Overviews). This indicates a growth opportunity for our program in online instruction. Previous to covid, ENVS did not teach any online sections. Continuing to offer online instruction after on campus instruction resumes is likely to improve equity and reduce achievement gaps by offering alternative instructional methodologies and flexible course scheduling (<https://edtrust.org/wp-content/uploads/2014/09/A-Look-at-Black-Student-Success.pdf>).

Within our program, achievement gaps exist in course success for several demographic groups (Black Student 19.4%; Latinx 7.7%; Pacific Islander 20%; Low Income 11.8%: OIE 2021). As we return to campus, an additional faculty member will allow us to continue offering online instruction and add night and weekend sections, accommodating students for whom traditional schedules cannot be balanced with school, work, and family obligations. In the past, we offered night sections of ENVS 105F that met only once a week, and a Saturday ENVS 105LF section. These sections were very popular with student's working fulltime. These changes in our instructional offerings are an important part of our program's equity plan as presented in the ENVS Comprehensive Program Review Documents (CPRD) 2021.

ENVS Growth Will Promote Active and Applied Learning (FCPR 3.2, 3.3, 4.4, 5.3, 6.2)

To allow students to move through their Guided Pathways and to prepare our students for field work once they transfer, we need to be able to increase the number of field courses that we offer and teach each field course at least every other year. This was the primary Long-Term Goal (four-six years) of the ENVS 2017-2018 Three Year Program Review (Section 7), but today we have fewer field course offerings because ENVS's 2 full-time faculty cannot develop and instruct these courses without further reducing offerings of our Life Science Transfer Approved

courses (ENVS 105F and ENVS 105FL). ENVS 140F and ENVS 141F have only been taught once each in the last 5 years (OIE 2021).

As discussed in the CPRD 2021, NOCCCD is interested in “faculty efforts to make learning active and applied” with “experiential learning activities ... intentionally embed(ed) in coursework, or elsewhere in (the) program”. They seek to address “institutional barriers hindering (the) department’s ability to offer or enhance these learning experiences for students (CPRD 2021).” Active and experiential learning is what ENVS field courses are designed for. These courses also align with our equity plan because urban students often have little exposure to natural systems. This prevents them from developing the context needed to understand environmental biology and the environmental sciences. Once the new faculty member comes on board and new field courses are developed, a combination of field courses may, also, allow us to develop a Field Certificate in Environmental Sciences.

ENVS Growth Will Build Community and Opportunity (FCPR 3.2, 3.3, 4.4, 5.3, 6.2)

While developing the ENVS Guided Pathways in consultation with Counseling and the Guide Pathways Committee, we identified the need for a gateway course in our program. Because Environmental Science is interdisciplinary by nature, our students will take the majority of their course work outside the ENVS Program. ENVS majors can take our G.E. courses (ENVS 105F and ENVS 105LF) then go on to complete their degree without taking another course from ENVS professors. This prevents us from evaluating whether our students meet our PSLO’s, prevents us from building a community which could improve equity within our program, and leads students to transfer without completing their degrees. Colleges with successful equity programs have recognized that full-time faculty foster consistency and stability in a program and serves as the core for building a more solid community (<https://edtrust.org/wp-content/uploads/2014/09/A-Look-at-Black-Student-Success.pdf>)

With increased field course offerings and a gateway course, students will have regular and repeated contact with faculty and peers as they move through their pathways from recruitment in ENVS 105F and ENVS 105LF, through field work in existing and newly developed field courses, and exiting through our Gateway Course. This community will improve equity, success, and retention, and increase degrees awarded (<https://edtrust.org/wp-content/uploads/2014/09/A-Look-at-Black-Student-Success.pdf>). The gateway course will also allow us to evaluate whether our program is meeting student, program, and institution objectives. “The new PSLO design principles encourage departments to use PSLOs as a way of gauging student learning *once they have completed a degree or certificate* (CPRD 2021, Italics added),” but without a Gateway Course ENVS has no way to accomplish this.

ENVS Needs a Full-time Faculty Member Instead of Part-time Instructors

There are numerous reasons why this position cannot be filled by adjuncts. (1) Professor Tom Morris, an FC ENVS faculty member for over 35 years, will retire within the next few years. To achieve department goals and maintain instructional consistency a new full-time faculty will need to be in place and up to speed before this happens. Students, the ENVS Program, and the college will reap significant benefits if the new full-time faculty member can benefit from Mr. Morris' mentorship and substantial discipline-related and institutional knowledge. The ENVS department will need to hire an additional faculty (possible to start Fall 2023 or Fall 2024) upon Mr. Morris' retirement to maintain the progress we have made with this hire that we are requesting for a Fall 2022 start date. (2) This faculty is not being hired solely to teach existing courses, but to be an integral part of program and course development. These are skill sets beyond what can be reasonably expected from part-time instructors. (3) The breadth and depth of knowledge required to teach the conceptual and applied aspects of our field is substantial. When our most recent faculty hire (Royden Hobbs) arrived in Fall 2005, he had a Ph.D. and 2.5 years of experience teaching related course work at 3 different Universities, but it was several years before he reached the standards expected within our department. (4) A critical part of our Equity and Strategic Action Plans (CPRD 2021) is to develop a community in which students feel a sense of belonging. This requires that they have regular contact with and consistent expectations from known faculty members from recruitment in our introductory courses through graduation after completion of our gateway course. (5) With only 2 faculty in our program, anytime a faculty member takes Sabbatical or Load Bank, substantial burden is placed on the remaining faculty to train and oversee adjuncts while teaching their regular load and assuming department coordinator responsibilities. (6) Our program has experienced substantial difficulties in recruiting and retaining qualified adjuncts. This was identified as a challenge and limit to program effectiveness in the ENVS 2017-2018 Three Year Program Review, but remains a challenge identified in the ENVS CPRD 2021. (7) Instruction of field courses come with unique safety obligations from driving students in college vans, identifying and mitigating potential hazards in the field, and establishing and enforcing the FC field safety protocols. It is difficult to ensure that adjuncts meet these obligations. In the past, students have expressed to the Division Dean (retired) concerns about their safety in field courses taught by adjuncts.

Conclusion: ENVS Builds a Better Future

In the last few years, ENVS has experienced a reduction in faculty and course offerings. This period of transition has created an opportunity for the ENVS Program to grow back in alignment with the transformations the college itself has undertaken.

(www.fullcoll.edu/about/mission). We've rewritten our PSLO's to better reflect the goals and values of our program. We've revised our major to create greater opportunity for students to personalize their degree. And, we've mapped Guided Pathways to enhance student success in achieving educational and career goals. But, there is still much work to be done. We need to expand student access to a diversity of course offerings and a diversity of experiences. We need to build a program where students experience a sense of personal belonging and purpose (mindfulgrowth.fullcoll.edu/purpose-and-belonging-mindsets/resources/). And, we need to close gaps where one demographic group lags behind another.

To begin this work, the ENVS Program needs to hire a new full-time faculty member with whom we can expand the number of sections of our G.E. courses, develop new field courses, and create a gateway course for our program. ENVS has a vision to build an inclusive community that embraces active and applied learning, fosters equity, and enriches opportunity. We hope FC will embrace our vision by funding a new full-time ENVS faculty member to begin this journey with us in Fall of 2022.

3.5 Covid-19

Using the data provided by the OIE, briefly describe how the Covid-19 pandemic affected your department and how your department has adjusted. Did you make temporary changes? Or have you adopted new, long-lasting practices that enhance teaching?

AY 19/20 had the smallest number of enrollments among the last 5 years. This is most likely the result of transitioning to online instruction in Spring 2020. Students and faculty were both unprepared for the rapid transition thrust upon them. Particularly hard hit were our field classes since they are based on applied and experiential learning. Our faculty went above and beyond to ensure a smooth successful transition for students. We worked long days 7 days a week for many months. We had to learn new skills in video production and editing as well as a host of new technologies. We attended many online trainings and one of our faculty completed his Online Training Certificate (OTC). All our courses were transitioned to asynchronous online learning.

Course completion and success were not significantly affected in AY 19/20 (Course Completion: 86.1%; Course Success: 77.4%) as compared to the 5-year average for these metrics (87.16% and 75.8%, respectively). These metrics improved for AY 20/21 (91.8% and 84.2%, respectively). This is a testament to the enormous amount of work performed under challenging conditions by the department's faculty.

We have adopted new long-lasting practices where appropriate, including maintaining an online section when faculty return to campus in Spring 2022. Undoubtedly, the development of our online courses will inform what we do when we return to campus, however, some courses that were transitioned in this emergency circumstance are not appropriate for online instruction (all field courses), except in such extraordinary situations as the Covid pandemic.

3.6 What has not been asked?

Please tell us about other ways your department has been successful, ways that the previous questions might have missed.

N/A

4.0 Outcomes

4.1 Program Student Learning Outcomes (PSLOs)

Since the last self-studies, the College adopted new Institutional Student Learning Outcomes ([ISLOs](#)) and new design principles for PSLOs. Please describe your department's PSLO revisions to date, and your PSLO plans.

Our program redesigned its PSLO's in coordination with the guided pathways and SLOA committees in Spring 2021. We are in the process of finalizing them through the process designated by the SLOA committee. We expect them to be finalized in Fall of 2021.

4.2 PSLO Assessment

The new PSLO [design principles](#) encourage departments to use PSLOs as a way of gauging student learning once they have completed a degree or certificate, not just when they have completed a single course. Please describe how PSLOs are assessed or will be assessed in your department.

PSLO's will be assessed by student success in an ENVS Gateway Course. We have requested a new FT Faculty member to be part of the development and instruction of this course (see FT Faculty Rational Fall 2021 or Section 3.4.2 of this document). It is unlikely this course will be developed without a new hire because ENVS' 2 FT Faculty are already fully/over-committed by current course offerings. For reasons discussed throughout this document, we do not have a means of assessing PSLO's without the development of this course.

If possible, we will also include transfer and employment data into these assessments, but this depends on the resolution of data collected by the institution.

4.3 CSLO Assessment

Briefly describe the timeline your department uses to assess CSLOs on a regular basis and how you use the results to make improvements. This discussion should be based on SLO data, which is available on eLumen. (Your division's SLO reps can help with this.) Please include relevant CSLO charts or graphs in an Appendix. Since the last self-study, you should have assessed the CSLOs of every course that you have taught, at least once. If that is not the case, please describe how you will accomplish this as soon as possible.

The ENVS department completes CSLO Assessments every 3 years. We assessed all CSLO's for all courses taught in Fall 2019. Our next assessment is scheduled for Fall 2022.

We use the assessment for personal reflection on our course materials and discuss the results as a program, as well. Assessments help to inform the regular and ongoing updating and revision of all division courses.

Data from the last assessments of our courses are included below. Assessments for ENVS 142F and ENVS 140F had small sample sizes (4, 3-13, respectively). They were completed as part of our cycle, but the sample sizes are too low to be meaningful. Written and oral course assessments by students have provided more useful information for revising and updating field courses. ENVS 141F was not taught during the assessment period between Fall 2016 and Fall 2019.

<u>ENVS 105F Course SLO</u>	<u>Met Expectations</u>
ENVS 105F SLO #1 Fall 2019	88.1%
ENVS 105F SLO #2 Fall 2019	82.2%
ENVS 105F SLO #3 Fall 2019	97.5%

<u>ENVS 105LF Course SLO</u>	<u>Met Expectations</u>
ENVS 105LF SLO #1 Fall 2019	49.0%
ENVS 105LF SLO #2 Fall 2019	77.6%
ENVS 105LF SLO #3 Fall 2019	40.8%

<u>ENVS 140F Course SLO</u>	<u>Met Expectations</u>
ENVS 140F SLO #1 Fall 2019	100%
ENVS 140F SLO #2 Fall 2019	100%

<u>ENVS 142F Course SLO</u>	<u>Met Expectations</u>
ENVS 142F SLO #1 Fall 2019	100.0%
ENVS 142F SLO #2 Fall 2019	50.0%
ENVS 142F SLO #3 Fall 2019	75.0%

Student success is lowest for field-based SLO's. The institution can support greater student success in these courses by reducing class size to allow the professor to give more individualized instruction to each student and allow each student to fully engage with the natural phenomenon under investigation which may be small in size, limited in distribution, or ephemeral in nature.

ENVS Faculty have implemented the following improvement measures: (1) State goals or objectives of assignment/activity more explicitly (2) Revise content of assignment/activities (3) Increase in-class discussions and activities.

ENVS Faculty will continue to collect data and reassess these SLO's as necessary. We will continue to experiment with different instructional approaches in attempts to improve student success.

4.4 SLO Equity Analysis

4.4.1 Looking at CSLO attainment data, do you find significant differences by race, ethnicity, gender, and other categories? Please include some illustrations of this data in the Appendix. Describe here what the data shows. What strategies will you use to close the attainment gaps among groups of students? What kinds of professional learning would help?

We analyzed CSLO data by "Ethnicity" and "Economically Disadvantaged Status" because these were the categories that showed differences in student success based on the OIE data. American Indian/Alaska Native (66.67%; n=2) and Hispanic (74.25%; n=222) ethnic groups fell below the course success average of all groups across all classes (80.1%; n=432). African Americans did not (80.0%; n=16). Course success across all groups and courses differed somewhat between OIE (75.8%) and elumen (80.1%) data, probably because OIE data included course success across all courses for all years, whereas CSLO success was based on a single semester's worth of data from the most recent CSLO assessment (mostly from Fall 2019).

Course success rates for these groups in the OIE data are fairly close for American Indian/Native Alaskan (60% versus 66.67%) and Latinx/Hispanic (72.3% versus 74.25%). African American course success was lower for the OIE data than for the CSLO data (56.8% versus 80.0%). The reason for the difference is African American course success between these two analyses is not readily apparent. It may be associated with the small sample sizes and disparities in semesters represented. Fall 2019 represents a more recent semester within the OIE data set and ENVS Course Success has generally been on the increase since 2016.

As a department, we have attended equity trainings and discussed instructional approaches presented in these, including equity grading practices. We have adopted these where appropriate in our courses, but closing achievement gaps in a single semester's course is problematic because these gaps reflect wider societal disparities (See discussion in Sections 3.2.2 and 3.2.4). Some of the problems unique to our department were discussed in Section 3.2.4.

4.1.2 Compare the equity analysis in this section to the equity analysis in Section 3.2. Are there some groups who have lower completion and success rates AND lower SLO attainment rates than other groups? Can new departmental strategies close both gaps? Please explain. [For example, many departments found that their SLO attainment gaps are quite a bit smaller than their success gaps (or the gaps don't exist). This might mean that many students who get a D or lower in a course are actually learning the material (i.e. attaining the SLOs) but they are winding up with a failing grade for other reasons: absences, tardies, missed assignments, missed exams, poor performance on high-stakes assignments.]

See discussion above.

5.0 Other Areas of Program Effectiveness

5.1 Your Department and General Education

- 1. Using the data provided by the OIE, please look at students who take your courses for GE credit.**
- 2. What role does your department play in helping students complete the GE pathway?**
- 3. Do you offer GE courses at a variety of time slots and at a frequency that allows students to fulfill GE requirements?**
- 4. Please take into account daytime, evening, weekend, and online classes to provide a brief sketch of your GE course availability.**

Our department plays a large role in helping students complete their G.E. pathway. The vast majority of enrollments in our program (97.9%) over the past 5 years were in G.E. courses (ENVS 105F: 3578 enrollments and ENVS 105LF: 1606 enrollments). Staffing issues have limited our ability to teach more sections of our G.E. courses and to offer sections in a variety of time slots and formats. We teach one evening course in non-covid times (17% of ENVS 105 enrollments), but the rest of our course sections are scheduled during daytime hours Monday through Thursday. These limits may create bottlenecks for students trying to complete their G.E. pathways and may contribute to achievement gaps. We have requested a new FT Faculty

to help address these issues. Answers to Section 5.1 questions were discussed thoroughly in Section 3 (Please see discussion there).

5.2 Outside Influences on Your Department

- 1. Describe any laws, regulations, trends, policies, procedures, or other influences that have an impact on your program. Please include any other data that may be relevant to student achievement, learning, and trends within your Basic Skills, CTE, or Transfer Education programs.**
- 2. Make sure you are including all degree and certificate programs, including the College's GE program.**
- 3. Please also consider not only your courses, but also prerequisite and corequisite courses that might be offered by a different department.**
- 4. If AB 705 applies to the program then how are you meeting its mandates?**

We are not aware of any outside mandates that impact our department.

5.3 Your Program's Active and Applied Learning and High-Impact Practices

5.3.1 The College wants to create an inventory of faculty efforts to make learning active and applied. Please briefly describe opportunities your students have to apply and deepen knowledge and skills through projects, 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.

Many of our courses are designed around active applied learning. Our ENVS 105LF lab courses take students to natural areas around Orange County to study species, adaptations, and ecosystems. Some of the labs we conduct are:

- 1) Ecological community mapping at Oak Canyon and the Upper Newport Bay where students learn about the physical factors that influence the distribution of biological communities. In these classes they walk the trails, touch and smell the leaves of a variety of local plant species, and record the differences in environmental variables they observe that seem to influence community distribution.
- 2) Marine community distribution and species adaptations at Little Corona Beach and Aquarium of the Pacific. Students witness and record the differences in physical and biological variables that influence which species live at different elevations in the intertidal zone of Little Corona Beach. They record the adaptations that allow each species to persist in their community despite the physical and biological stresses they interact with. The

following week, students have an opportunity to touch intertidal species in touch tanks at the Aquarium of the Pacific and feel the differences in their physical characteristics.

The ENVS Program also teaches several 1- or 2-unit field courses that focus on specific types of natural systems or species groups.

- 1) In ENVS 141F, students spend two days in the California desert, including camping overnight. Among other activities, they practice species identification of desert plants, mammals, birds, and reptiles and investigate the physical and biological factors that influence species distributions. Students are given time to develop and record inquiries and reflections inspired by the desert environment.

- 2) In ENVS 142F, students spend three days camping, hiking, and investigating the Channel Islands of California. They identify and map geological formations. They hold, inspect, and identify specific rock types they and other students have collected. They learn kelp forest community ecology using kayaks to investigate these systems from above and snorkel gear to investigate them from below the water surface. Students practice species identification, record morphological characteristics that may aid species survival, and record observations and insights in field journals.

Field courses form one of the 3 pillars of the A.S. in Environmental Sciences, allowing students to establish a foundation in the observational and natural history skills necessary for careers in Environmental Sciences, Natural Resource Management, and Field Ecology. At the moment, our field course offerings are limited by faculty resources, but development of additional field courses are an important part of our program's long-term plans. We have requested to hire an additional FT Faculty position member to assist in the development and instruction of these courses among other responsibilities.

5.3.2 Are there institutional barriers hindering your department's ability to offer or enhance these learning experiences for students? Please explain.

Lack of enough faculty to develop and instruct field courses is the most significant limit to increasing the offering of and enhancing the experiences in field courses. We have requested to hire an additional FT Faculty member to assist in the development and instruction of these courses among other responsibilities. Over time, we may need additional faculty hires and field equipment for field investigations that might include night vision equipment, aerial and underwater drones, additional binoculars and field scopes, and a variety of measuring devices. As our field course offering increase, we will likely need an additional van.

6.0 Planning

6.1 Progress on Previous Strategic Action Plans

6.1.1 Please briefly describe the goals (Strategic Action Plans, SAPs) from your last self-study. How much progress have you made on them? If you have reached a goal, explain how it allows ongoing improvement, especially if you received additional funding.

In our 2017 CPRD, we discussed revisions of course requirements for our major. This turned out to be an ongoing project as faculty resources limited course offerings. Our new A.S. in Environmental Sciences was state approved in Spring 2021 and will be active starting in Fall 2022. This improves our program by allowing students more diverse pathways that can be followed to complete their A.S. in Environmental Sciences, while simultaneously completing transfer requirements for CSU and UC schools. With the new degree, students can tailor their degree to their specific educational and career goals while developing field-course experience crucial to our discipline.

In 2017, we set the goal of expanding the program's field course offerings. This has not been successful because we lost faculty to retirement, and we were unable to hire and maintain adjuncts capable of meeting the requirements for teaching even our general education courses. We also assisted the division by cutting course sections as the division was asked to reduce FTES. Development of additional field courses continues to be a major priority of our program, but remains inhibited by lack of faculty resources.

Another problem identified in our 2017 program review was ongoing staffing problems, including finding qualified instructors at times when faculty are on load bank or sabbatical. This continues to be the major problem inhibiting our program's short- and long-term plans. In fact, the impact on our program has been more severe, rather than less, since 2017 as faculty and long-term adjuncts retired or took positions outside of FC. We have requested a new full-time faculty member to allow us to move forward with the improvements of the ENVIS program.

6.1.2 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?

Additional funds were not allocated. We have no way of assessing how the lack of funding impacted our program.

6.2 New Strategic Action Plans

Please write brief, concrete plans that you will accomplish over the next four years. Your plans might include requests for additional funds. The Program Review Committee will read these and either endorse the request or ask for more information. Please keep in mind that the Committee’s endorsement does not guarantee additional funding. The President’s Advisory Council and Faculty Allocation Committee play major roles in allocating funds and prioritizing new faculty hires.

Please number each of your plans. This will help keep track of them. Also, make sure that each funding request includes the following elements:

1. It is supported by the data and analysis in previous sections of this self-study.
2. It fulfills a part of the [College mission, vision, goals, or objectives](#).
3. It explains how the request helps the College attain student equity.
4. There is a measurable way to tell if the extra funding will be effective.
5. It considers whether you can reach this goal (or parts of it) without additional funding.
6. Please give a dollar amount, or best estimate. If you can identify a funding source, then please name it. If you can put the request into one of the following categories, please do so: Personnel, Facilities, Equipment, Supplies, Computer Hardware, Computer Software, Training, Other.

Strategic Action Plan (SAP) # 1: Hire a New Fulltime Faculty Member
Department (or program) Name: ENVS

Describe Strategic Action Plan.	Hire a New Fulltime Faculty Member
List College goal/objective the plan meets.	These have been outlined extensively elsewhere in this document and in the Fulltime Faculty Request submitted separately. College goals this supports include guided pathways, PSLO assessment, active and applied learning, equity, community, and inspiring positive change in the world.
Explain how the request helps the College attain student equity.	These have been outlined extensively elsewhere in this document and in the Fulltime Faculty Request submitted separately. Supports equity by building a sense of purpose, community, and belonging within the ENVS department. Increases

	course offerings in a diversity of time slots and formats.
What measurable outcome do you anticipate for this SAP?	The expected measurable outcomes are increases in FTES, development of additional courses, expansion of course offerings to non-traditional times and formats, increased retention rates, increased graduation rates, and reductions in achievement gaps.
What specific aspects of this SAP can you accomplish without additional financial resources?	None of these goals can be accomplished without hiring a new fulltime faculty member. Current faculty already teach overload every semester.

Type of resource	Requested dollar amount	Potential funding source
Personnel	Cost depends on the experience and qualification of the new hire relative to faculty pay scales.	General Funding
Facilities	Standard for New Hire Fulltime Faculty	
Equipment	Standard for New Hire Fulltime Faculty	
Supplies	Standard for New Hire Fulltime Faculty	
Computer hardware	Standard for New Hire Fulltime Faculty	
Computer software	Standard for New Hire Fulltime Faculty	
Training	Standard for New Hire Fulltime Faculty	
Other	Standard for New Hire Fulltime Faculty	

TOTAL requested amount	Standard for New Hire Fulltime Faculty	
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Strategic Action Plan (SAP) # 2: Develop New Field Courses

Department (or program) Name: ENVS

Describe Strategic Action Plan.	Develop new field courses.
List College goal/objective the plan meets.	These have been outlined extensively elsewhere in this document. College goals this supports include guided pathways, active and applied learning, equity, community, and inspiring positive change in the world.
Explain how the request helps the College attain student equity.	These have been outlined extensively elsewhere in this document. Supports equity by building a sense of purpose, community, and belonging within the ENVS department. Increases course offerings in a diversity of time slots and formats.
What measurable outcome do you anticipate for this SAP?	The expected measurable outcomes are new field-course offerings, increases in FTES, increased retention rates, increased graduation rates, and reductions in graduation gaps.
What specific aspects of this SAP can you accomplish without additional financial resources?	<p>This SAP cannot be accomplished without hiring a new fulltime faculty member. Current faculty already teach overload every semester.</p> <p>Some field courses may require specific equipment to meet course goals, but these are undetermined at this point as the courses themselves have not been developed.</p>

Type of resource	Requested dollar amount	Potential funding source
Personnel	Cost depends on the experience and qualification of the new hire relative to faculty pay scales.	
Facilities	Classroom space to accommodate on campus organizational meetings.	
Equipment	Variable dependent on specific courses developed. Equipment may include night vision equipment, aerial and underwater drones, additional binoculars and field scopes, and a variety of measuring devices. As our field course offerings increase, we will likely need an additional van.	Instructional Equipment Funding
Supplies	Variable depending on specific courses developed.	
Computer hardware	Not expected at this time.	
Computer software	Not expected at this time.	
Training	Not expected at this time.	
Other	Not expected at this time.	
TOTAL requested amount	None specifically requested at this time. Eventual amount requested will be variable depending on specific courses developed.	

Strategic Action Plan (SAP) # 3: Develop a Gateway Course

Department (or program) Name: ENVS

Describe Strategic Action Plan.	Develop a Gateway Course
List College goal/objective the plan meets.	These have been outlined extensively elsewhere in this document. College goals this supports include guided pathways, PSLO assessment, equity, community, and inspiring positive change in the world.
Explain how the request helps the College attain student equity.	These have been outlined extensively elsewhere in this document. Supports equity by building a sense of purpose, community, and belonging within the ENVS department. May help to reduce gaps in graduation rates.
What measurable outcome do you anticipate for this SAP?	The expected measurable outcomes are increases in FTES, increased retention rates, increased graduation rates, and reductions in graduation gaps.
What specific aspects of this SAP can you accomplish without additional financial resources?	This SAP cannot be accomplished without hiring a new fulltime faculty member. Current faculty already teach overload every semester.

Type of resource	Requested dollar amount	Potential funding source
Personnel	Cost depends on the experience and qualification of the new hire relative to faculty pay scales.	
Facilities	Classroom space.	
Equipment	None expected at this time.	
Supplies	None expected at this time.	
Computer hardware	Not expected at this time.	

Computer software	Not expected at this time.	
Training	Not expected at this time.	
Other	Not expected at this time.	
TOTAL requested amount	None specifically requested at this time. Some needs may be identified during course development.	

6.3 Optional: Long-Term Plans

Your department might have more plans than just immediate requests for funding. If so, please describe them here.

In addition to the Faculty Hire requested in 2021, we will need to hire a new faculty member to fill the position vacated when one of our long-time faculty members retires in the near future. Without replacing this position, the department at that time will be right back where it is today with too few faculty to adequately fulfill its program objectives. We will, also, likely require an additional van to transport students on field courses.

8.0 Publication Review

The College wants to maintain integrity in all representations of its mission, programs, and services. Please help this effort by reviewing your publications: professional social media profiles, websites, brochures, pamphlets, etc. Please tell us the date they were last reviewed and if you found them to be accurate in all representations of the College and program missions and services. Information on the college’s graphic standards is available here.

- 1. For each of your program’s publications, please provide the URL where the publication can be viewed. If the publication cannot be accessed via the Internet, please contact Lisa McPheron, Director of Campus Communications at lmcpheon@fullcoll.edu.**
- 2. If you find an inaccurate publication, please explain how you will make corrections.**
- 3. If your department maintains a social media presence then please describe it here. What do you use it for? How do you monitor it? Who is in charge of it? In what ways is it benefiting the College and your program? Does it follow the District’s social media guidelines?**
- 4. If your program regularly communicates with the wider community, please describe how. What feedback do you get from the community?**

ENVS department staff oversee department information published on the Division of Natural Sciences home page (<https://natsci.fullcoll.edu/>). Content for this resource was last reviewed by ENVS faculty on October 16, 2021, and found to be accurate in all representations of the College and program missions and services.

Appendix A: Key Performance Indicator (KPI) data

The Office of Institutional Effectiveness will provide data for departments to analyze. To answer some of the questions on this form, departments will need disaggregated data that focuses on specific groups. The data will be presented to identify equity gaps among groups, so that departments can plan ways to close those gaps. Departments should also be informed how their student populations compare to the overall college population, and the population of the college's service area.

Appendix B: SLO data

This data is still off-limits to the OIE because it is housed in eLumen. The Faculty Senate only allows faculty members to have access to SLO data on eLumen. The Senate's SLO Assessment Committee will work with its division reps to help departments disaggregate SLO data, just as KPI data is disaggregated in Appendix A.



Environmental Science Dept.

Date: 09-11-2021

Terms: Spring 2021, Fall 2020, Summer 2020, Spring 2020, Fall 2019, Summer 2019, Spring 2019, Fall 2018, Summer 2018, Spring 2018, Fall 2017, Summer 2017, Spring 2017, Fall 2016, Summer 2016

Summary

Statistic	Number of Courses	Courses
Courses in the Department	5	ENVS105 F, ENVS105LF, ENVS140 F, ENVS141 F, ENVS142 F
Courses with CSLOs	5	ENVS105 F, ENVS105LF, ENVS140 F, ENVS141 F, ENVS142 F
Courses without CSLOs	0	
Courses with CSLOs mapped to PSLOs	2	ENVS105 F, ENVS105LF
Courses without CSLOs mapped to PSLOs	3	ENVS140 F, ENVS141 F, ENVS142 F
Courses with direct assessment of PSLOs	0	
Courses with CSLOs mapped to ISLOs	2	ENVS105 F, ENVS105LF
Courses without CSLOs mapped to ISLOs	3	ENVS140 F, ENVS141 F, ENVS142 F
Courses with direct assessment of ISLOs	0	
Courses with at least one planned Assessment	4	ENVS105 F, ENVS105LF, ENVS140 F, ENVS142 F
Courses with planned Assessments scored	4	ENVS105 F, ENVS105LF, ENVS142 F, ENVS140 F
Courses with some Assessments scored	0	
Courses without any Assessment scored	0	
Courses with no planned Assessments	1	ENVS141 F

Assessments**Fall 2019****ENVS 105 SLO #1 Fall 2019**

SLO	Scored	Meets expectations	Does not meet expectations	N/A
Judge claims by using the language, practice and philosophy of science.	121 of 280	104	14	3.0

ENVS 105 SLO #2 Fall 2019

SLO	Scored	Meets expectations	Does not meet expectations	N/A
Identify and explain complex biological system dynamics, on multiple scales, based on resource flow modeling.	121 of 280	97	21	3.0

ENVS 105 SLO #3 Fall 2019

SLO	Scored	Meets expectations	Does not meet expectations	N/A
Identify and explain the consequences, on multiple scales, of human-caused disruptions of natural biological and environmental systems.	121 of 280	115	3	3.0

Assessments**Fall 2019****ENVS 105L SLO #1 Fall 2019**

SLO	Scored	Meets expectations	Does not meet expectations	N/A
Identify and list common, conspicuous and distinctive species associated with local ecological communities.	51 of 137	24	25	2.0

ENVS 105L SLO #2 Fall 2019

SLO	Scored	Meets expectations	Does not meet expectations	N/A
Identify meaningful traits in species from different environmental settings, and propose sensible arguments that explain how such traits could yield improved fitness.	51 of 137	38	11	2.0

ENVS 105L SLO #3 Fall 2019

SLO	Scored	Meets expectations	Does not meet expectations	N/A
Identify and characterize distinct ecological communities in various environmental settings, and explain their geographic distribution in terms of physical factors, and biological traits.	51 of 137	20	29	2.0

Assessments**Spring 2019****Bird Natural History SLO**

SLO	Scored	Meets expectations	Does not meet expectations	N/A
Characterize identified birds in terms of their ecological niches.	13 of 13	13	0	0.0

Bird identification SLO

SLO	Scored	Meets expectations	Does not meet expectations	N/A
Locate and identify many species of birds common to Southern California.	13 of 13	3	0	10.0

Assessments

Fall 2019

ENVS 142F SLO #1 Fall 2019

SLO	Scored	Meets expectations	Does not meet expectations	N/A
Explain how the scientific process could be used to answer questions about the geology and marine biology of the Channel Islands.	6 of 6	4	0	2.0

ENVS 142F SLO #2 Fall 2019

SLO	Scored	Meets expectations	Does not meet expectations	N/A
List and identify geologic features and common, conspicuous, and unique species associated with Channel Island ecological communities.	6 of 6	2	2	2.0

ENVS 142F SLO #3 Fall 2019

SLO	Scored	Meets expectations	Does not meet expectations	N/A
Recognize and justify Channel Island ecological communities in terms of physical settings, environmental stresses, and special adaptations possessed by natural residents.	6 of 6	3	1	2.0

ENVS CSLO all courses 2016-2021 (Summarized From Table Below)

Course / Semester	Met Expectations		Did Not Meet Expectations	
	#	%	#	%
All / All	432	80.1	107	19.9

Overall by Term for Demographic Category: Economically Disadvantaged Status

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
Spring 2016	0	0.00%	0	0.00%	9	90.00%	0	0.00%	1	10.00%
Fall 2016	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Spring 2017	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Fall 2017	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Spring 2018	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Fall 2018	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Spring 2019	0	0.00%	0	0.00%	16	100.00%	0	0.00%	0	0.00%
Fall 2019	0	0.00%	0	0.00%	407	79.34%	0	0.00%	106	20.66%
Spring 2020	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Fall 2020	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Spring 2021	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%

Overall by Demographic Element for Demographic Category: Economically Disadvantaged Status

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
UNKNOWN	0	0.00%	0	0.00%	414	80.39%	0	0.00%	101	19.61%
Y	0	0.00%	0	0.00%	17	73.91%	0	0.00%	6	26.09%

Overall by Demographic Element for Demographic Category: Ethnicity

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
African American	0	0.00%	0	0.00%	16	80.00%	0	0.00%	4	20.00%
American Indian/Alaskan Native	0	0.00%	0	0.00%	2	66.67%	0	0.00%	1	33.33%
Asian	0	0.00%	0	0.00%	33	91.67%	0	0.00%	3	8.33%
Filipino	0	0.00%	0	0.00%	16	88.89%	0	0.00%	2	11.11%
Hispanic	0	0.00%	0	0.00%	222	74.25%	0	0.00%	77	25.75%
Pacific Islander	0	0.00%	0	0.00%	6	100.00%	0	0.00%	0	0.00%
Unknown	0	0.00%	0	0.00%	13	86.67%	0	0.00%	2	13.33%
Unspecified	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
White Non-Hispanic	0	0.00%	0	0.00%	122	87.14%	0	0.00%	18	12.86%

Appendix C: Other data

In addition to the KPI and SLO data, departments may wish to include other data that it finds in Tableau or other sources.



Key Performance Indicators: Program Overview

*NOTE: An Academic Year combines the Summer, Fall, and Spring terms (e.g., Academic Year 2013 includes Summer 2012, Fall 2012, and Spring 2013).

Select Program:

Division: Change What is Displayed in "Completions" Box

Program:

View By:

Program Award Detail:

Total Awards or Unique Students:

Enrollments						
	2016	2017	2018	2019	2020	2021
Total Enrollments	1,332	1,160	1,090	1,076	961	1,007
Student Headcount	1,000	879	829	768	711	728
Course Success	70.8%	69.8%	75.1%	72.5%	77.4%	84.2%
Course Completion	87.5%	83.2%	87.1%	87.6%	86.1%	91.8%

Completions: Student Headcount					
	2016	2017	2018	2019	2021
Degrees	3	2	2	1	3

Sections						
	2016	2017	2018	2019	2020	2021
Active Sections	35	31	30	31	28	24
Section Size	38.1	37.5	36.4	34.8	34.4	42.3
Fill Rate	97.7%	93.6%	94.5%	93.4%	94.7%	103.7%
Resident FTES	119.5	104.9	98.2	95.8	87.5	66.8
Non-Res. FTES	3.1	2.3	3.4	2.6	1.1	1.6
Total FTES	122.5	107.2	101.6	98.3	88.7	75.1

Faculty						
	2016	2017	2018	2019	2020	2021
Total FTEF	5.7	5.3	5.0	5.2	4.6	4.3
WSCH per FTEF	643.0	608.8	603.7	564.7	573.0	523.8



Key Performance Indicators: Program Overview

*NOTE: An Academic Year combines the Summer, Fall, and Spring terms (e.g., Academic Year 2013 includes Summer 2012, Fall 2012, and Spring 2013).

Division: Change What is Displayed in "Completions" Box

Program:

View By:

Program Award Detail:

Total Awards or Unique Students:

Enrollments						
	2016	2017	2018	2019	2020	2021
Total Enrollments	151,415	147,562	141,607	132,165	134,797	129,983
Student Headcount	35,195	34,556	33,658	32,096	31,556	30,501
Course Success	67.6%	68.2%	68.8%	70.3%	68.7%	69.1%
Course Completion	82.8%	83.3%	82.9%	84.3%	80.3%	81.1%

Completions: Student Headcount						
	2016	2017	2018	2019	2020	2021
Degrees	1,557	1,637	1,909	2,006	2,122	2,167
Certificates	276	263	237	276	1,820	2,086
Skills Certificates			24	37	7	

Sections						
	2016	2017	2018	2019	2020	2021
Active Sections	5,084	5,154	4,913	4,751	5,160	4,767
Section Size	29.8	28.7	28.9	27.9	26.2	27.4
Fill Rate	88.7%	84.9%	88.1%	87.4%	88.1%	86.8%
Resident FTES	18,745.2	18,375.5	17,898.4	16,752.9	16,593.9	14,349.3
Non-Res. FTES	513.4	525.8	548.3	492.1	417.2	362.0
Total FTES	19,260	18,902	18,447	17,245	17,392	16,238

Faculty						
	2016	2017	2018	2019	2020	2021
Total FTEF	1,236.8	1,245.7	1,200.9	1,122.3	1,168.3	1,129.2
WSCH per FTEF	467.9	456.1	462.2	461.6	447.2	431.7