



Instructional Annual Program Review and Planning Update Form Fall 2023

BACKGROUND:

Program review is an integral part of the campus planning process. As programs and areas monitor their progress on the current comprehensive four-year program review, changes in need and scope can be expected. This Annual PR Update form is designed to outline and request modifications to the current program review that occur between comprehensive four-year review cycles, as needed.

Examples of a requested change include new information such as action plans, outcomes modifications, personnel changes, technology needs, and capital expenditures requirements. As programs and areas monitor their progress on the previous comprehensive four-year program review, the form provides the basis to suggest a change in plans and processes to improve student success and institutional effectiveness.

DIRECTIONS:

This form shall be completed annually by **all** instructional programs.

- Instructional programs must submit their Annual Program Review Update form to their dean by 5pm on Monday, November 27, 2023.
- Deans will forward the completed form to the Program Review and Planning Committee Chairs by 5pm on Monday, December 4, 2023.
- Questions or concerns?
 - Committee contacts:
 - Co-chairs Mary Bogan (mbogan@fullcoll.edu) and Bridget Kominek (bkominek@fullcoll.edu)
 - Division representatives on the [Program Review and Planning Committee](#)
 - [Office of Institutional Effectiveness](#)

SUBMISSION:

Program: **Biology**


Division: **Natural Sciences**

Date: **2023-11-27**

We have reviewed our most recent self-study and **have not identified** any significant changes that necessitate resource requests for the upcoming academic year. *(Complete part 1 only)*



We have reviewed our most recent self-study and **have identified** significant changes that necessitate additional resource requests, which are attached in our submission. *(Complete parts 1 and 2)*

Principal Author Signature: 

Printed Name: Spiros Dimitratos, Ph.D.

Date: 2023-11-27

Dean Signature: Bridget Salzameda

Printed Name: Bridget Salzameda, Ph.D.

Date: 2023-11-27

Part 1: Review of Data

Institution Set Standards (ISS)

1. Use the data provided by the Office of Institutional Effectiveness (OIE) to review your course completion and success rates and provide a comparison to the Institution Set Standards for course completion and success rates.

The success rate set standard is currently 62% while the completion rate set standard is currently 74.1%. The data indicate that during AY 2022/2023 the Department of Biology had 1,946 students enroll, resulting in a 60.7% success rate and a 77.6% completion rate. The success rate is slightly below the set standard but remains comparable to the success rates of allied disciplines and other departments within the Natural Sciences division; the completion rate meets the standard.

We have implemented several approaches to increase student success and will continue to work toward improving rates of success and completion. Department success and completion rates have remained relatively consistent throughout the past ~7 years despite significant socioeconomic and epidemiological challenges faced by our community during the COVID-19 pandemic. Our goal remains to support increased student success and completion.

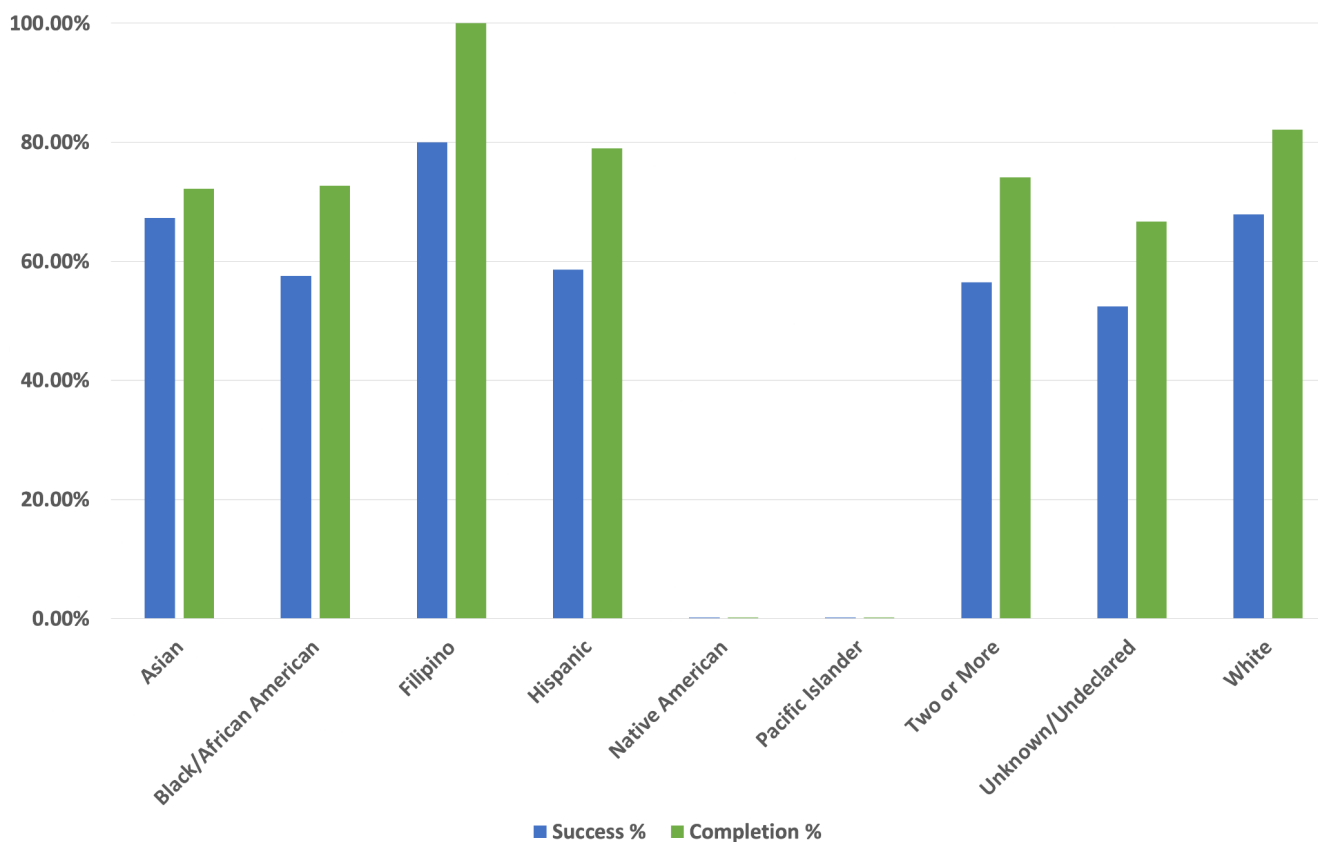
Subject	Enrollments	Avg. Success	Success Standard	Avg. Completion	Completion Standard
BIOL	1,946	60.7%	Below Standard	77.6%	+

Below are success and completion rate data for the Department, disaggregated by students' stated Race/Ethnicity:

Race/Ethn	Enrollments	Avg. Success	Success Standard	Avg. Completion	Completion Standard
Asian	281	67.3%	+	72.2%	Below Standard
Black/African ..	33	57.6%	Below Standard	72.7%	Below Standard
Filipino	10	80.0%	++	100.0%	++
Hispanic	1,156	58.6%	Below Standard	79.0%	+
Native American	1	0.0%	Below Standard	0.0%	Below Standard
Pacific Islander	1	0.0%	Below Standard	0.0%	Below Standard
Two or More	170	56.5%	Below Standard	74.1%	Below Standard
Unknown/Decli..	42	52.4%	Below Standard	66.7%	Below Standard
White	252	67.9%	+	82.1%	+

Success rates for students of Black/African American, Hispanic, Native American, Pacific Islander, Two or More, and Unknown/Declined to State Races/Ethnicities were below standard. Completion rates for Asian, Black/African American, Native American, Pacific Islander, Two or More, and Unknown/Declined to State Races/Ethnicities were below standard.

DEPARTMENT OF BIOLOGY SUCCESS AND COMPLETION DATA



Individual biology courses with success rates below the standard were BIOL 102 (Human Biology), BIOL 102L (Human Biology Laboratory), BIOL 109 (Genetics and Biotechnology in Society), and BIOL 170 (Organismal Biology). Individual courses with completion rates below the standard were BIOL 102L (Human Biology Laboratory), BIOL 109 (Genetics and Biotechnology in Society), BIOL 170 (Organismal Biology), and BIOL 276 (Genetics and Evolutionary Biology). We are committed to increasing retention and success rates while promoting equity for all students, and we are providing enhanced resources to better serve our students; program-wide and course-specific details are provided below.

2. If your program meets or exceeds the standard for completion and success, to what do you attribute your success? If your program does not meet this standard, please examine the possible reasons, and note any actions that should be taken, if appropriate.

Our department is committed to providing high quality instruction in a curriculum that is challenging because it involves the study of biological systems; these are, by nature, complex and their study requires parallel instruction in several other STEM disciplines. Biology majors also enroll in challenging mathematics, physics, and chemistry courses in addition to Biology courses in the sequence starting with BIOL 170 (Organismal Biology), and the demands on their time and effort are significant.

Although our success and completion rates are comparable to those of other Natural Sciences departments despite the challenging curriculum, we remain committed to providing enhanced resources to our students. To better serve our students, we are maintaining our focus on equity, consistency, inclusion, and accessibility while safeguarding an anti-racist campus climate and promoting the preservation of biological diversity and ecological resources.

We actively coordinate between department members in order to ensure consistency in multi-section courses. In such multi-section courses, we have implemented consistent, equitable grading practices that include

eliminating the lowest quiz or lab report scores. We also utilize Hornets tutors, embedded tutors, boot camps, and mentoring opportunities. We have integrated OER materials in many of our sections. Where OER materials are not yet available, and where feasible given what materials are available, we have attempted to improve student access and reduce overall costs by using less expensive textbooks (several BIOL 101, General Biology sections) or using the same textbook for more than one class (BIOL 170, Organismal Biology and BIOL 272, Cell and Molecular Biology).

We have also emphasized equitable experiential learning opportunities in our laboratories and field trips. Our students, who out of necessity may have spent a noteworthy amount of their high school and/or college career receiving remote instruction, report anecdotally that they appreciate the opportunity to complete hands-on, in-person training in our laboratories on campus as well as the campus experience itself. We promote collaborative efforts between our campus and adjacent four-year institutions that provide undergraduate research experiences, such as CSUF Project RAISE and UCI Bridges to Baccalaureate. Additionally, all our majors courses are taught exclusively by experienced full-time faculty.

Recently, due to the approval of the STEM Center, we have been given the opportunity to help generate a student-focused, dedicated area where Biology majors can learn more about the discipline and its practitioners. We anticipate that scientific seminars and career-oriented events will cultivate student motivation and provide students a place where they can interact with like-minded individuals at various stages of their scientific development – from college freshmen to endemic and visiting professors. The STEM Center will result in a centralized hub for students to interact with us, with one another, and with the enriched resources that we will continue to provide.

Where appropriate and feasible while maintaining academic rigor and providing equitable access to material resources, equipment, and instructors, we are expanding our course offerings off campus in an effort to introduce students to our curriculum earlier and at a convenient location – while they are still enrolled in local high schools. We are piloting these Dual Enrollment (DE) efforts by offering DE BIOL 190 (Introduction to Biotechnology) and DE BIOL 190L (Introduction to Biotechnology Laboratory) sections. We anticipate that our DE Biol 190 and DE BIOL 190L offerings will serve as gateways for students who will be introduced to college-level curriculum while completing their high school education and will then continue their college careers on campus in our classrooms and laboratories at Fullerton College.

We continue to employ careful coordination between department members to maintain a consistently high quality curriculum and to avoid differences in success rates between instructors. Our course schedules continue to reflect these considerations, with sections offered early as well as late in the day to accommodate as many students as possible.

Regarding individual courses noted above, we have taken the following steps to promote learning, success, and retention:

BIOL 102: This non-majors course is being offered only by full-time faculty, with a section scheduled in the evenings and sections offered online to increase access. We will continue to regularly assess CSLOs for BIOL 102 and we anticipate that increased faculty-student contact, tutoring, and other resources at the STEM Center will enhance the learning experience for students.

BIOL 102L: This non-majors laboratory course is frequently the first college-level laboratory experience for many students who enroll to meet the requirements of their particular program. We believe increased faculty-student contact will assist students to do better in all our courses and anticipate that the STEM Center will allow students to better reflect on the material.

BIOL 109: This non-majors lecture course is a prerequisite for several healthcare programs. Although BIOL 109 itself has no prerequisites, it is a challenging course that surveys rapidly advancing areas of our discipline and the success and completion rates noted reflect the challenges faced by our students who may lack a science background. We continue evaluating BIOL 109 CSLOs and have offered the course as a hybrid with an on-campus, in-person component or as an online course in order to serve as many students as possible. Since many students who take this course have complicated schedules, we offer

various options so they can better meet their time restrictions. The STEM center will increase instructor and resource availability to all our students.

BIOL 170: Organismal biology is the prerequisite core course for biology majors and for students preparing for medical, dental, veterinary, and other professional or graduate schools. We recommend taking BIOL 101 before BIOL 170 to help prepare for the workload and depth of a majors biology course. We have offered boot camps in cell processes, genetics, science essay writing, and study skills. We are utilizing embedded tutors to help students with the challenging material and are ensuring all sections follow uniform course policies.

Institutional Student Learning Outcomes (ISLOs)--Global Awareness ISLO.

1. Describe your program’s participation in assessment of Institutional Student Learning Outcomes (ISLO’s). Specifically, how does your CSLO attainment, for the courses that are mapped to the Global Awareness ISLO, compare to Fullerton College’s ISLO attainment?

The ISLO is *Analyze the interconnectedness of racial, cultural, political, social, economic, and environmental issues from multiple perspectives and recognize the individual agency and collective responsibility necessary for positively influencing those systems* and the collegewide data for this ISLO are summarized here:

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
Fall 2022	0	0.00%	41	0.25%	13841	85.68%	0	0.00%	2272	14.06%
Spring 2023	0	0.00%	10	0.07%	11949	85.48%	0	0.00%	2019	14.44%

As shown above, the collegewide data indicate that 85.93% and 85.55% of all students met or exceeded expectations in Fall 2022 and Spring 2023, respectively.

For biology students the available data for this ISLO are:

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
Fall 2022	0	0.00%	16	18.60%	53	61.63%	0	0.00%	17	19.77%
Spring 2023	0	0.00%	0	0.00%	7	36.84%	0	0.00%	12	63.16%

Of the two semesters shown, the data for Fall 2022 (n=86) are better aligned with the collegewide results but both Fall 2022 and Spring 2023 (n=19) indicate a disparity in attainment rates between our students and the campus rates.

It should be noted that the data indicate that we may be able to increase the number of students assessed by considering the mapping of our existing CSLOs to the ISLOs and making adjustments that would better reflect the alignment of our course and institutional learning outcomes. This would provide us with more data and would better inform our decisions.

2. Does the SLO data show significant achievement gaps among demographic groups in your program? If so, where are the gaps and what steps can your program take to shrink them? If not, to what do you attribute your success in minimizing the achievement gap?

Here, we compare the available ISLO data for those demographic groups assessed vs. the available collegewide data. Groups are presented in alphabetical order, with collegewide data first.

Asian, Collegewide:

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
Fall 2022	0	0.00%	24	2.91%	738	89.56%	0	0.00%	62	7.52%
Spring 2023	0	0.00%	9	0.81%	1021	91.82%	0	0.00%	82	7.37%
Overall	0	0.00%	33	1.70%	1759	90.86%	0	0.00%	144	7.44%

Asian, Biology:

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
Fall 2022	0	0.00%	0	0.00%	5	100.00%	0	0.00%	0	0.00%
Spring 2023	0	0.00%	0	0.00%	2	66.67%	0	0.00%	1	33.33%
Overall	0	0.00%	0	0.00%	7	87.50%	0	0.00%	1	12.50%

The majority of Asian students collegewide met ISLO expectations, as did the majority of biology students. Although more data will facilitate better analyses, it is important to note that our department recognizes the importance of retention, success, education, and equity for all students, and we will continue taking the actions described below.

Hispanic, Collegewide:

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
Fall 2022	0	0.00%	26	0.62%	3442	81.60%	0	0.00%	750	17.78%
Spring 2023	0	0.00%	23	0.44%	4506	86.69%	0	0.00%	669	12.87%
Overall	0	0.00%	49	0.52%	7948	84.41%	0	0.00%	1419	15.07%

Hispanic, Biology:

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
Fall 2022	0	0.00%	0	0.00%	7	58.33%	0	0.00%	5	41.67%
Spring 2023	0	0.00%	0	0.00%	2	18.18%	0	0.00%	9	81.82%
Overall	0	0.00%	0	0.00%	9	39.13%	0	0.00%	14	60.87%

Hispanic students currently comprise the largest demographic group served by our department and this trend is well established. The collegewide results indicate that the majority of Hispanic students meet the evaluated ISLO, and our data from Fall 2022 follow suit. However, the Spring 2023 semester saw an increase in Hispanic students who did not meet expectations. The currently available data thus bring to light specific instances of achievement gaps and our department recognizes the need for effective steps to close them as described below. In parallel we will monitor future results to leverage more data so that we may continue to identify any potential achievement gaps in a timely manner.

White, Non-Hispanic, Collegewide:

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
Fall 2022	0	0.00%	14	0.70%	1800	89.64%	0	0.00%	194	9.66%
Spring 2023	0	0.00%	3	0.13%	1838	80.76%	0	0.00%	435	19.11%
Overall	0	0.00%	17	0.40%	3638	84.92%	0	0.00%	629	14.68%

White, Non-Hispanic, Biology:

	Greatly exceeds expectations.		Exceeds expectations		Meets expectations		Does not meet expectations but developing		Does not meet expectations	
Fall 2022	0	0.00%	0	0.00%	3	75.00%	0	0.00%	1	25.00%
Spring 2023	0	0.00%	0	0.00%	2	100.00%	0	0.00%	0	0.00%
Overall	0	0.00%	0	0.00%	5	83.33%	0	0.00%	1	16.67%

The majority of White, Non-Hispanic students campuswide met ISLO expectations, as did the majority of biology students. We will continue to monitor available data moving forward, but the measures we describe below should help increase retention, success, education, and equity for all students.

*N/A: African-American, American Indian/Alaskan Native, Filipino, Pacific Islander, Unknown and Unspecified. No department-specific data were available. By considering the mapping of our existing CSLOs to the ISLOs, we may be able to make adjustments that would better reflect the alignment of our course and institutional learning outcomes to collect more data from our students.

The available data disaggregated by ethnicity indicate we should continue to exercise care in order to address gaps with respect to the Global Awareness ISLO between Hispanic and Asian or White, Non-Hispanic biology students. The department continues to take specific steps as described below while recognizing the need for more robust data to better facilitate more definitive analyses. These discussions and our data collection are ongoing while we continue taking steps to address the indicated gaps.

Steps that our department is taking to address potential achievement gaps include boot camps to better prepare students for challenging coursework, experiential curriculum utilizing hands-on laboratory training coupled with highly targeted field trips that focus on exposing participants to the real-world environment as part of specific courses, and mentoring opportunities that expose students to a variety of perspectives and experiences. In our classrooms we have sought to implement active learning through various measures that include generating collaborative groups, offering multiple “lower stakes” opportunities to demonstrate understanding, utilizing short written exercises, providing pre-class questions that promote the higher order cognitive skills necessary to master the in-class material, utilizing multimedia, and promoting class discussions.

In parallel, scientific and career-oriented seminars featuring speakers from diverse academic, socioeconomic, and cultural backgrounds, internship classes that expose students to real-world academic or industrial research projects in topical fields, and the increased student-faculty contact opportunities that will be provided by the STEM Center will complement our other efforts to reduce achievement gaps among the students we serve.

Part 2: Additional Resource Request Reasoning and Support

For each separate resource request, complete steps A, B, and C.

1. Spectroscopy and Imaging Equipment

Step A: Briefly describe the request.

Vital equipment used in several lab exercises in BIOL 272 (Cell and Molecular Biology) has recently become outdated and inoperable, such that repairs and updates are no longer supported by their suppliers, necessitating replacement. These instruments allow us to provide valuable training on industry standard equipment used in scientific research, medical diagnostics, and biotechnology industries. Completing the lab exercises is impossible without the equipment, and students cannot get the hands-on training and skills they need for entry into STEM careers. The requested resources will be used to illustrate concepts and teach laboratory skills in BIOL 272 and laboratories for BIOL 190L, BIOL 191, BIOL 192, and BIOL 193. These replacements are critical for our majors and certificates programs.

BIOL 272 resources requested include the following replacement instruments: SpectraMax ABS Plus Spectrophotometer - Absorbance plate reader with cuvette port, \$30,935, and an Azure Biosystems imaging system, \$58,599.74; the total is \$89,534.74.

Step B: Answer the following questions:

1. Is it imperative that this resource request be processed now rather than during the next comprehensive program review? Why?

The requested equipment is necessary for class exercises that are an important part of the curriculum in BIOL 272. Without these instruments, students would be underprepared for the next chapter of their educational goals transferring into a 4-year program or professional program. Further, these instruments support our application of High Impact Practices used in the Biology major and also in our Biotechnology certificate courses, which include: collaborative research projects, ePortfolios, and competitive training to prepare for internships. Loss of this equipment generates an equity gap between our students and their peers elsewhere who would receive the necessary training; this equipment is necessary for student learning, student success, and retention. This equipment is currently inoperable and normally used in about 50% of the lab curriculum of Bio 272; thus, the need for this equipment is imperative.

2. How will this additional resource allocation specifically enhance your program's services, activities, processes, etc. to continue or improve student learning and achievement?
 - Is the resource request personnel-related? If so, please provide evidence to justify the requested positions such as retirements, program growth or curricular demands, full-time/adjunct ratios, etc.

The requested resource allocation will enable our department to continue to use High Impact Practices in our program and allow us to continue training students in skills that enable them to enter STEM career pathways and to transfer to 4-year institutions for their major. In addition to allowing us to continue our current curriculum for majors students, the updated equipment can also allow for the development of new lab exercises for majors and biotechnology certificate courses.

3. How will this additional resource allocation help you serve the college mission or strategic initiatives, and/or your program's goals for improvement, as stated in your last program review?

This resource allocation helps advance student learning and achievement by providing valuable skills needed for career growth in STEM, and by improving and maintaining the quality of curriculum used in our biotechnology certificates, associate degrees, and degrees for transfer. Without this equipment, our students will not receive the necessary training and hands-on experience in cell and molecular biology; this equipment is necessary to prevent an equity gap between our students and their peers.

Step C: Complete this chart with details of the request:

Type of Resource	Requested Dollar Amount	Potential Funding Source It is only necessary to list potential funding forces if you are aware of specific grants/program funds appropriate to the request, such as Strong Workforce.
Personnel		
Facilities		
Equipment	\$89,535	
Supplies		
Computer Hardware		
Computer Software		
Training		
Other		
Total Requested Amount:	\$89,535	

2. Safety Training

Step A: Briefly describe the request.

We request funding to allow adjunct faculty to attend regular safety training. Student and personnel safety are of paramount importance. Our laboratories contain materials that are potentially toxic, flammable, or otherwise hazardous and we perform experiments and demonstrations using equipment that may be hot, very cold, sharp, or present other potential dangers. Our full time faculty review safety hazards and our policies regarding safety during the course of Flex Day activities, but we need to train all adjunct faculty in the same safety procedures to ensure all laboratories remain safe working environments.

Step B: Answer the following questions:

1. Is it imperative that this resource request be processed now rather than during the next comprehensive program review? Why?

Our department is expanding laboratory sections, including laboratory sections hosted as Dual Enrollment classes on local high school campuses. Whether on our own campus or elsewhere, safety is critically important and the need for funding to train all adjunct instructors is pressing; the need for this funding is therefore

imperative.

2. How will this additional resource allocation specifically enhance your program's services, activities, processes, etc. to continue or improve student learning and achievement?
 - Is the resource request personnel-related? If so, please provide evidence to justify the requested positions such as retirements, program growth or curricular demands, full-time/adjunct ratios, etc.

The requested resource allocation will enable our department to fund the safety training of adjunct faculty who will be teaching laboratory sections to our students on campus and off campus at Dual Enrollment locations.

3. How will this additional resource allocation help you serve the college mission or strategic initiatives, and/or your program's goals for improvement, as stated in your last program review?

Our College is required to maintain a safe learning environment in all laboratory sections. As we expand our offerings, we are hiring new adjunct colleagues who require equivalent, appropriate safety training options.

Step C: Complete this chart with details of the request:

Type of Resource	Requested Dollar Amount	Potential Funding Source It is only necessary to list potential funding forces if you are aware of specific grants/program funds appropriate to the request, such as Strong Workforce.
Personnel		
Facilities		
Equipment		
Supplies		
Computer Hardware		
Computer Software		
Training	\$1,500	
Other		
Total Requested Amount:	\$1,500	

3. Expansion of Dual Enrollment Courses

Step A: Briefly describe the request.

The Biology Department is interested in expanding the number of dual enrollment biotech courses offered. We have seen increased requests for our Introduction to Biotechnology lecture and Laboratory (BIOL 190 and BIOL 190 L). Each high school requires specific equipment, supplies, and embedded tutors for these course offerings. We are interested in purchasing equipment and supplies to expand our ability to serve our local community. These offerings will help to expose high school students to hands-on science and get them on a pathway to earn a biotechnology certificate. Our goal is to increase career, transfer, and educational opportunities in the community, and to attract additional students to our academic pathways at Fullerton College. In addition, these courses are UC/CSU transferable.

The request includes funding for the equipment necessary to run BIOL 190 and BIOL 190L at a remote (off-campus) location and reflects the current costs for a single high school campus based on our previous experience. Equipment includes electrophoresis gel boxes, power supplies, micropipettes, and other standard laboratory gear. Supplies include standard laboratory expendables necessary to complete the experiments, including serological pipettes, micropipette tips, raw reagents, and solutions. We also request funding for embedded tutors at the remote site in order to provide equitable access to educational resources and assistance personnel for all FC students, regardless of the location in which they attend our courses.

Equipment	Price	Quantity Needed	Total
Minione Gel Boxes	350	8	2800
Micro Pipete Sets, p20,p200,p1000 (30 of each)	300	30	9000
Pipet Aides	400	12	4800
Biorad PCR machine	5000	1	5000
100ml Beakers 6 pack	100	1	100
50ml beakers 6 pack	300	1	300
500ml graduated cylinder case of 8	300	1	300
25ml graduated Cylinder case of 18	100	1	100
microwave	100	1	100
minifridge	100	1	100
heat block 1.5ml tubes x 2	400	2	800
Vernier Spectrovis	1000	8	8000
10ml plastic graduated cylinder (Case of 20)	200	1	200
Microscope slides (Paramecium, Letter E, Ameoba, Blood, and Sickle	25	14	350
TOTAL			31950
Supplies	Price	Quantity Needed	Total
Lab Coats (50 coats)	30	50	1500
micropipette tips (TipOne)	200	10	2000
composition books	2	50	100
TOTAL			3600
Personel			
Embedded Tutor (TEA Contract)	\$20/per hour	10 hours a week/16 weeks	3200
Benefits (estimated at 10%)			320
TOTAL			3520

Step B: Answer the following questions:

1. Is it imperative that this resource request be processed now rather than during the next comprehensive program review? Why?

Timing is critical to the success of our DE projects. The sooner we can acquire all equipment needed, the sooner we can provide service to additional high schools. We already have requests from 3 high schools for Spring 2025. If we are unable to purchase equipment now, it is likely that we will have to deny a high school that is interested in a partnership; beyond the immediate repercussions for the affected students, a denial may adversely affect our long-term relationship with that particular partner.

2. How will this additional resource allocation specifically enhance your program's services, activities, processes, etc. to continue or improve student learning and achievement?
 - Is the resource request personnel-related? If so, please provide evidence to justify the requested positions such as retirements, program growth or curricular demands, full-time/adjunct ratios, etc.

These resources will allow courses in our biotechnology program to reach more students in our local community. Expanding dual enrollment offerings to more feeder high schools will allow students to start a career pathway in high school and expose students to the possibilities for growth and employment associated with higher education. They will then be able to transfer into Fullerton College and complete their education. In addition, students will be exposed to hands-on science on their own high school campus. This provides access to all students by removing additional barriers to enrolling in courses on our campus, such as transportation. Student learning will be enhanced by providing equipment and curriculum not offered at high school campuses. To ensure enhanced student support, we will deploy embedded tutors to assist students during class time as well as provide tutoring sessions.

3. How will this additional resource allocation help you serve the college mission or strategic initiatives, and/or your program's goals for improvement, as stated in your last program review?

Expansion of dual enrollment will serve the college's mission by providing flexible pathways for diverse students from our local community. Dual enrollment courses provided equitable access for all students to engage in educational and career growth opportunities by enrolling in college courses while in high school. The funding requested for personnel below involves embedded tutors; our experience with these courses shows that embedded tutors contribute very significantly to student success.

Step C: Complete this chart with details of the request:

Type of Resource	Requested Dollar Amount	Potential Funding Source It is only necessary to list potential funding forces if you are aware of specific grants/program funds appropriate to the request, such as Strong Workforce.
Personnel	\$3,520	
Facilities		
Equipment	\$31,950	
Supplies	\$3,600	
Computer Hardware		
Computer Software		
Training		
Other		
Total Requested Amount:	\$39,070	

4. FTF Requests

Step A: Briefly describe the request.

In addition to our direct requests for materials, supplies, equipment, and personnel expenses that are detailed elsewhere in this document, the Department of Biology requests that every consideration be afforded to the applications for new full-time faculty (FTF) hires from the Department of Chemistry and the Department of Environmental Sciences. The details of those requests are included in the Program Review forms of the respective departments, and we support both departments.

The Department of Chemistry has lost five (5) full-time faculty. Biology students must complete several chemistry courses in order to achieve a Biology AS or AS-T, and chemistry courses are prerequisites for biology majors courses. Moreover, the biotechnology certificates also require chemistry courses. Biology students routinely enroll in chemistry courses including CHEM 107, CHEM 111A/B, and CHEM 211A/B. Therefore, in order for our students to complete any of our programs in a timely

manner, it is essential that an adequate number of chemistry sections are offered. We thus appreciate the opportunity given to our colleagues in Chemistry to hire additional full-time faculty so that they can continue to offer necessary courses.

The Department of Environmental Sciences will have lost two (2) full-time faculty by the end of this academic year and has already been forced to reduce course offerings despite historically high enrollment rates, success rates, and completion rates. ENVS offers experiential, applied, and active courses that are well aligned with the ISLOs and goals of Fullerton College while serving a large number of students from a variety of educational, vocational, and socioeconomic backgrounds, including members of communities that are underrepresented in STEM fields. Furthermore, ENVS courses are significant components of Fullerton College's reports to the Sustainability Tracking, Assessment, and Rating System (STARS). The main courses offered by ENVS, ENVS 105 and ENVS 105L are components of their guided pathways and serve as feeder courses to the ENVS major while, crucially, also meeting the life sciences lecture and lab requirement for transfer students. If ENVS cannot continue to offer their courses, the GE course offerings from the Department of Biology (*e.g.*, BIOL 101, BIOL 190) will be further impacted and our department will be unable to meet the increased demand. In addition, a strong Division of Natural Sciences that offers diverse coursework is critical to our College's mission to serve the community with educational opportunities and to train lifelong learners in critical thinking and responsible citizenship. We thus support our colleagues in Environmental Sciences as they search for new faculty to strengthen their department and maintain/expand their course offerings.

Step B: Answer the following questions:

1. Is it imperative that this resource request be processed now rather than during the next comprehensive program review? Why?

The requests by the Department of Chemistry and the Department of Environmental Sciences are dictated by their need for full time faculty necessary to continue offering coursework important for their departments; in the case of Chemistry, our students are affected by the number and selection of chemistry sections and in the case of ENVS, our division is affected by the number of GE courses we are able to offer.

These needs are pressing and ongoing, and we therefore support our colleagues' FTF applications.

2. How will this additional resource allocation specifically enhance your program's services, activities, processes, etc. to continue or improve student learning and achievement?
 - Is the resource request personnel-related? If so, please provide evidence to justify the requested positions such as retirements, program growth or curricular demands, full-time/adjunct ratios, etc.

Biology students are required to take chemistry courses in the CHEM 10x, 11x, 21x series for degree and/or certificate completion and for successful transfer to UC, CSU, or other university biology programs.

ENVS offers GE sections that have been historically well attended and resulted in high success rates, serving many of our students across campus. If they are unable to continue doing so, our own resources and ability to offer GE course sections in sufficient number and frequency would also be affected.

3. How will this additional resource allocation help you serve the college mission or strategic initiatives, and/or your program's goals for improvement, as stated in your last program review?

Student degrees, certificates, and transfer are core components of the College mission statement, and serving the community with GE courses is part of our duty as a department and division. These activities are explicitly stated in our Program Review documents.

Step C: Complete this chart with details of the request:

Please refer to the Annual Program Review Update documents submitted by our colleagues in CHEM and ENVS.