

DEPARTMENT OF BIOLOGY

Fall 2024 Instructional Annual Program Review Update Preview

All Fall 2024 APRUs will be completed using an online form. However, to help programs work together collaboratively and allow for drafting before submitting, this document gives an overview of all of the questions on the form. Programs are encouraged to draft answers and copy and paste into the form when APRUs are ready to be submitted. Please do not edit this document or submit your annual update using it or any other document outside of the form linked above.

Fall 2024 APRU questions

Part 1: Review of Data

Use the data provided by the Office of Institutional Effectiveness (OIE)--available in August 2024--to review your program completion and success rates and compare them to the Institution Set Standards for course completion and success rates. Then, answer these questions:

1. Where your program meets or exceeds the college-wide standard for completion and success, to what do you attribute your success?

Our program meets or exceeds the college-wide standard for completion among the following races/ethnicities: Asian, Black/African American, Filipino, Latinx, Native American, Two or More, Unknown/Declined to State, and White.

Available data indicate courses that meet or exceed the standard for completion among Asian students are BIOL 100, 101, 101H, 102, 102L, 109, 190, 190L, 191, 192, 193, 196, 272, 274, 276, 297; among Black/African American students, BIOL 100, 101, 102, 102L, 109, 190, 190L, 272; among Filipino students, BIOL 170, 190, 190L; among Latinx students, BIOL 100, 101, 102, 102L, 109, 190, 190L, 191, 192, 193, 194, 196, 272, 274, 297; among Native American students, BIOL 100; among Pacific Islander students, BIOL 100, 101; among Two or More students, BIOL 100, 101, 101H, 102, 109, 190, 190L, 191, 192, 194, 196, 272, 274, 276, 297; among Unknown/Declined to State students, BIOL 100, 101, 102, 109, 190, 190L, 272, 276; among White students, 100, 101, 101H, 102, 102L, 109, 170, 190, 191, 193, 194, 196, 272, 274, 276, 297.

Our program meets or exceeds the college-wide standard for success among the following races/ethnicities: Asian, Latinx, Native American, Two or More, Unknown/Decline to State, and White.

Available data indicate courses that meet or exceed the standard for success among Asian students are BIOL 100, 101, 101H, 102, 102L, 109, 190, 190L, 191, 192, 193, 196, 272, 274, 276, 297; among Black/African American students, BIOL 100, 101, 102L, 109, 272; among Filipino students, BIOL 190, 190L, 191; among Latinx students, BIOL 100, 101, 102L, 190, 190L, 191, 192, 193, 194, 196, 272, 274, 297; among Native American students, BIOL 100; among Pacific Islander students, BIOL 100, 101; among Two or More students, BIOL 100, 101, 101H, 109, 190, 190L, 191, 192, 194, 196, 272, 274, 297; among Unknown/Declined to State students, BIOL 100, 101, 109, 190, 190L, 272; among White students, BIOL 100, 101, 101H, 102, 102L, 109, 170, 190, 190L, 191, 193, 194, 196, 272, 274, 276, 297.

We attribute this to the active coordination between department members that ensures consistency in multi-section courses, equitable grading practices including eliminating lowest quiz or lab report scores, utilizing Hornets and embedded tutors, offering boot camps, and providing mentoring opportunities. Where feasible we have utilized OER materials and in the absence of suitable OER materials we have preferred less expensive texts to improve access, while selecting texts that may serve more than one course if possible, to further reduce costs. Experiential learning is ensured using on-campus, in-person labs and collaborating with nearby institutions to offer internships and undergraduate research experiences. We regularly discuss student outcomes, our degree and certificate pathways, how we can improve our results, and student needs.

2. Where your program does not meet this standard, please examine the possible reasons and note any actions that should be taken, if appropriate.

Our program does not meet the college-wide standard for completion among Pacific Islanders.

Available data indicate courses that do not meet the standard for completion among Asian students are BIOL 170, BIOL 194; among Black/African American students, BIOL 170, BIOL 191; among Filipino students, BIOL 102; among Latinx students, BIOL 101H, BIOL 170, BIOL 276; among Native American students, none; among Pacific Islander students, BIOL 102, 102L, 170; among Two or More students, BIOL 102L, 170; among Unknown/Declined to State students, BIOL 102L, 170, 191, 274; among White students, none.

Our program does not meet the college-wide standard for success among the following races/ethnicities: Black/African American, Filipino, and Pacific Islander.

Available data indicate courses that do not meet the standard for success among Asian students are BIOL 170, 194; among Black/African American students, BIOL 102, 170, 191; among Filipino students, BIOL 102, 170; among Latinx students, BIOL 101H, 102, 109, 170, 276; among Native American students, none; among Pacific Islander students, BIOL 102, 102L, 170; among Two or More students, BIOL 102, 102L, 170, 276; among Unknown/Declined to State students, BIOL 102, 102L, 170; among White students, none.

This may be attributed to educational and socioeconomic factors. It is also possible that in some cases our students are not yet prepared for the workload and rigor of STEM courses. The local economic climate in our area means many of our students have at least one job, with some needing several jobs to support themselves and perhaps dependents or family members. Their external obligations and their unfamiliarity with college demands and campus culture may prevent some students from accessing or taking full advantage of the resources that FC has to offer and limit the time they have available to complete assignments and/or prepare for examinations.

Our department has taken several steps to address potential achievement gaps. These include continuing to offer boot camps that better prepare students for challenging coursework and continuing to provide an experiential curriculum that integrates hands-on laboratory work with targeted field trips to expose students to real-world contexts relevant to their studies. We also offer mentoring opportunities that introduce students to diverse perspectives and experiences. In the classroom, we promote active learning and equity via collaborative group work, low-stakes assessments, and pre-class questions that encourage critical thinking. We also offer multimedia resources and encourage class discussions as a means to foster a sense of community.

We will strive to continue offering scientific and career-focused seminars with speakers from diverse socioeconomic and cultural backgrounds as well as internship opportunities that engage students in real-world academic or industrial research projects. These activities dovetail with increased student-faculty interactions through the STEM Center and with ongoing MESA initiatives on campus and are intended to complement our efforts to reduce achievement gaps among the students we serve.

We are also pursuing constructive discussions with other STEM fields in order to exchange information, ideas, and productive approaches to increase student success and retention. Flex Day activities provide a practical venue for such discussions, and we will therefore engage in a common Flex Day activity with colleagues who teach Microbiology, Anatomy and Physiology so that all participating departments can benefit from the experiences of others.

Another strategy to improve completion and retention we are implementing is to leverage our established dual enrollment relationships while trying to expand our dual enrollment program to other local HS partner campuses. There are two goals to this approach: one goal is to introduce HS students as early as possible to the rigors of college-level STEM courses while allowing them to begin getting hands-on experience with the devices commonly used in our discipline, including micropipettes, scales, and other laboratory instruments; the other goal is to attract as many HS students as possible to our campus and facilities at FC, where the modern labs with up-to-date instruments, embedded tutors, STEM Center, college campus atmosphere, specialized faculty and emphasis on hands-on learning will provide enhanced educational, transfer, and career opportunities.

3. Compare your data analysis in questions 1 and 2 to the review of data in your 2023 Annual Program Review update (available on the Program Review and Planning Committee website). Are there significant changes? Do you notice any patterns from year to year?

We consider all student outcomes important and recognize that behind every data point we discuss there are students about whose educations we care.

Our 2023 APRU data reflected that Asian, Filipino, and White students met the success standard, while success rates for Black/African American, Hispanic, Native American, Pacific Islander, Two or More, and Unknown/Declined to State Races/Ethnicities students were below standard.

Our 2023 APRU data also reflected that Filipino, Hispanic, and White students met the completion standard, while completion rates for Asian, Black/African American, Native American, Pacific Islander, Two or More, and Unknown/Declined to State Races/Ethnicities students were below standard.

When evaluating the 2024 data we are encouraged by noteworthy improvements compared to the 2023 data. These improvements include several Race/Ethnicity groups who were below the standard for success previously but are now meeting the success standard: Latinx, Native American, Two or More, and Unknown/Declined to State. The 2024 data also indicate improvements in completion standard attainment among Asian, Black/African American, Native American, Two or More, and Unknown/Declined to State students.

These improvements are largely due to the combination of factors that we discussed here and in our previous Program Review documents. They include active collaboration among department members to ensure consistency across multi-section courses, equitable grading practices, enhanced support through the use of tutors, boot camps, and various mentoring opportunities, and emphasis on accessibility via low-cost or OER. In parallel our curriculum offers experiential learning, in-person laboratories on campus or during field trips, and internships. We anticipate that the events, resources, and sense of community offered by the STEM Center and MESA Program will further improve student opportunities and outcomes.

The results indicate that our approaches and actions indeed have the potential to improve student outcomes, and we will therefore continue implementing the measures described. The trend from last year is positive and it is our hope that increasing awareness of departmental and campus activities and resources will engage all students more, including those from groups that are below the institutional standard threshold for 2024: Black/African American, Filipino, and Pacific Islander students. We have recently hosted a Biology Open House Event, established a new forensic technician certificate in collaboration with Administration of Justice, and guided the formation of new pre-health

and biology clubs so that we can support more students. We continue to publicize relevant events and activities of organizations such as APIA and the science club so that more students can feel welcome and can pursue their academic interests. We have also expanded the instructional modalities of courses with curriculum that is appropriate for hybrid instruction to increase accessibility while retaining in-person laboratory sections and we continue to exclusively utilize experienced full-time faculty for all our majors courses.

Part 2: Additional Resource Request Reasoning and Support

Selected:

We have reviewed our most recent self-study and have identified significant changes that necessitate additional resource requests.

For programs that have identified significant changes that necessitate additional resource requests, answer the following questions for each separate resource request:

For each separate resource request, programs will complete this chart with details of the request:

Type of Resource	Itemized Requested Dollar Amount
Personnel	1) One full time faculty member, Dept. of Biology 2) Additional STEM Counselor for all STEM students 3) Part-time technician for late-night courses, Dept. of Biology
Facilities	8) Expanded hours by DSS, Student Health and cafeteria in order to match the hours during which classes are offered on campus
Equipment	6) BIOL 102 ¾ Life Size Human Muscle Model 3B Scientific, \$12,500. 7) BIOL 274 Trailer with shelving, \$10,000 12) BIOL 101 and BIOL 170 Plant Reproduction Specimens \$2,500 13) BIOL 272 Microscope Replacements and Parts \$15,000 16) BIOL 170 Skulls and calipers \$5,650 17) BIOL 101 Vertebrate Forelimbs \$3,834
Supplies	4) Biotechnology and Dual Enrollment materials \$25,322.06 4) Biotechnology services and supplies \$7,850.00 14) BIOL 272 supplies \$4,800 11) Plant Reproduction Supplies \$1,800 15) Outreach Materials (printing) \$2,000
Computer Hardware	N/A
Computer Software	5) Degree and certificate completion tracking software
Training	9) Safety Training for Adjunct Lab Instructors \$1,500
Other	10) Veterinary Care for Animals \$2,500
Total Requested Amount:	\$95,256.06

For programs that have identified significant changes that necessitate additional resource requests, answer the following questions for each separate resource request:

1. FULL-TIME FACULTY REQUEST

1. Briefly describe your resource request.

We request the hiring of an additional full time faculty member for the Department of Biology. We have been unable to offer specific courses since AY 18/19 and have lost 4 full time faculty members since then and are reduced to only 7 full time faculty.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

The Natural Sciences Division at Fullerton College serves both STEM majors and non-majors. Departments that teach majors are crucial for preparing students for STEM careers, while those focused on non-majors play a vital role in general education, fostering scientific literacy and critical thinking across disciplines. Both areas are critical to the college's mission.

To maintain high educational standards, it is essential that we hire faculty who specialize in both teaching majors and supporting non-majors. The Biology Department serves a large number of life science majors and non-majors but is currently facing significant staffing challenges. Several of our courses are regularly waitlisted, while several local high schools have expressed interest in expanding dual enrollment offerings. We are increasingly reliant on part-time faculty to meet demand, while the number of full-time faculty continues to decrease.

Since AY 18/19, we have lost four full-time faculty members. We now have just seven full-time faculty, including one in phased retirement, while two more faculty members are expected to retire in 2025 and 2026. This personnel reduction has already led to the cancellation of key courses such as Marine Mammal Biology and Conservation (BIOL 141) and Marine Biology (BIOL 222), which we have not been able to offer since 2018-19 due to a single faculty retirement.

Staffing challenges have resulted in many sections now taught by part-time faculty, who may not have the availability or long-term commitment needed to maintain instructional consistency. This is particularly problematic as some courses, such as General Biology (BIOL 101) and Human Biology (BIOL 102), serve both non-majors and majors preparing for rigorous courses like Organismal Biology (BIOL 170) and the pre-nursing curriculum. These courses are important for student success, yet they routinely have waitlists and struggle to secure qualified part-time instructors.

The loss of faculty in our department threatens the quality and availability of these essential courses. It is pressing that we address staffing shortages by hiring full-time faculty to maintain the high pedagogical standards and continuity that are essential for both majors and non-majors. We urge the college to prioritize faculty hiring in both majors and non-majors areas to support our students and uphold the college's mission.

b) How will this additional resource allocation specifically enhance your program's services, activities, processes, etc. to continue or improve student learning and achievement?

We need additional full-time faculty to offer our full curriculum and have been unable to offer certain courses for lack of trained personnel capable of doing so. We are also facing waitlists for existing courses that we need to address and are obligated to respond to increasing dual enrollment demands on faculty.

c) Is the resource request personnel-related?

Yes.

If so, please provide evidence to justify the requested positions such as retirements, program growth or curricular demands, full-time/adjunct ratios, etc.

Figure 1 gives a synopsis of our degree completion and certificate completion rates for the past academic year, as well as the extent to which we have been forced to hire part-time faculty to meet course needs.

	FTEF Load	FTEF Overload	FTEF Adjunct	Total FTEF	Adjunct %	# Adjuncts
Fall 2023	8.5	1.5	2.5	12.4	35.3	3
	Total Sections		Total Sections Taught by Adjuncts		% Sections Taught by Adjuncts	
Fall 2023	37		11		29.7	
	Average Census Class – Size		Certificates Issued 2023 – 2024		Degrees Awarded 2023 – 2024	
Fall 2023	26.1		33		50	

Figure 1. Synopsis of FTEFs including Overload and Adjunct Data, Department of Biology.

Table 1 below provides recent waitlist data for BIOL 101 and BIOL 102.

Course	Sections Offered	Waitlisted Students	Date Assessed
BIOL 101	11	69	2023-08-21
	9*	63	2024-01-29
	10	69	2024-08-26
BIOL 102	4	17	2023-08-21
	4	23	2024-01-29
	4	27	2024-08-26

Table 1. Synopsis of waitlist data for two large BIOL courses for nonmajors. Each course is offered in multiple sections. Continued offerings of either course would be threatened by the inability to staff sections.

*: In addition to the listed BIOL 101 sections, a separate section of BIOL 101H (Honors) is offered during Spring semesters, thus reducing further the number of BIOL 101 instructors.

The State Chancellor’s dual enrollment initiative and established legislative and funding frameworks have prompted us to prioritize dual enrollment courses as a mechanism to expand equitable access to high-demand disciplines and career opportunities. These courses help underrepresented groups, increase lifelong earning potential, prepare students for the high-tech economy, and raise awareness of Fullerton College’s high quality instructional programs.

Our dual enrollment efforts currently focus on BIOL 190 and BIOL 190L (Introduction to Biotechnology lecture and lab). These courses serve as prerequisites for three stackable, state-approved CTE certificates in biotechnology, a rapidly expanding field with local and national career opportunities. Additionally, in collaboration with the Administration of

Justice, we have established a new certificate for forensic technicians, a high-interest field that attracts both traditional and dual enrollment students. These courses also satisfy transferable GE requirements.

Economic data support the value of this curriculum. According to the 2023 Biocom California Life Science Economic Impact Report, our sector generates \$413.7 billion in business, \$130 billion in labor income, and 1.19 million jobs. The sector's employment multiplier is 2.5X, meaning each job in life sciences supports an additional 1.5 jobs. Biotechnology has seen the largest growth, with 9,074 new positions. Our students are increasingly drawn to life sciences fields such as academic research (+4,658 jobs), healthcare, and conservation.

Despite the growing demand for dual enrollment, we face challenges staffing BIOL 190 and BIOL 190L. Multiple high school partners have requested these courses concurrently at different remote campuses. Our current dual enrollment partnerships, as summarized in Table 2, reflect this demand. Looking ahead, we must also prepare for expanded dual enrollment offerings, including courses like BIOL 102.

K12 Partner	BIOL 190	BIOL 190L
Anaheim HS	Requested	Requested
Buena Park HS	Requested	Not Requested
Esperanza HS	Requested	Requested
Valencia HS	Requested	Requested

Table 2. High School partners within our service area that have requested Fullerton College biotechnology courses. Each BIOL 190L laboratory offering involves the transfer of materiel (supplies, solutions, equipment) in addition to the services of a qualified Fullerton College instructor.

Future retirements will directly affect our ability to offer not only GE courses but also BIOL 170 (Organismal Biology), the first course in our majors' pathway. Students must complete BIOL 170 to enroll in the BIOL 27x series (BIOL 272, Cell Biology; BIOL 274, Ecology; BIOL 276, Genetics). Fullerton College is currently the leading institution for biology majors transferring to Cal State Fullerton and our majors also transfer to UC Irvine and other CSU/UC campuses; these students rely on us to offer the appropriate courses, and our mission obligates us to do so.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

An inability to offer crucial GE, certificate, or even majors' courses would have a cascading effect:

- The department would be affected directly, and we are among the largest departments in the Division of Natural Sciences. Fewer biology students would

affect enrollment in chemistry and physics, and our students also routinely enroll in mathematics.

- The Division would be affected if we are unable to meet demand for GE courses, since those students would still need to fulfill GE needs, and any overflow would burden our colleagues in other departments within the Division.
- Moreover, inability by a Fullerton College department to serve the needs of a K12 partner requesting dual enrollment course offerings may allow that partner to engage with community colleges from another service area; staffing challenges we face thus have the potential to affect the campus as a whole by costing the campus dual enrollment relationships.

Adding a full-time faculty member will be essential if we are to maintain our effectiveness in serving students and meeting our institutional goals. Moreover, there is potential for growth that could be met if we hire a new full-time faculty member to teach one or more of the courses discussed above. This request involves enrollment and reengagement activities because we need the requested personnel to offer our curriculum.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Ongoing.

2. Is the funding requested for enrollment and reengagement activities?

Yes.

2. ADDITIONAL STEM COUNSELOR REQUEST

1. Briefly describe your resource request.

We appreciate and strongly support the efforts of the STEM counselor to advise our students and guide them toward efficient and effective goal attainment. The demand for academic advising among biology students is very strong, and while the current counselor is excellent and highly dedicated, anecdotal reports from students suggest that the volume of students seeking guidance may have exceeded the capacity of a single counselor.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

STEM pathways are complex and can be highly institution-specific; they often involve specific course unit transfer agreements, prerequisite sequencing, and different requirements across nearby UCs and CSUs.

b) How will this additional resource allocation specifically enhance your program’s services, activities, processes, etc. to continue or improve student learning and achievement?

To avoid our students experiencing delays in securing timely STEM counseling appointments that may impact their ability to make informed academic decisions or hinder their progress toward program completion, transfer, and career readiness, we support the hiring of an additional full-time STEM counselor. This additional position would significantly reduce wait times, allowing students to receive the timely, focused and detailed guidance they need for the increasingly complex landscape of biology education and career pathways.

c) Is the resource request personnel-related?

Yes

If so, please provide evidence to justify the requested positions such as retirements, program growth or curricular demands, full-time/adjunct ratios, etc.

Our students face delays in scheduling appointments with and obtaining counseling from a STEM specialist counselor.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

Our students transfer to a variety of local and distant institutions and need to receive the appropriate and timely support necessary to plan their academic pathways. There are significant differences between CSU, UC and other institutions and our students are faced with complex decisions about their coursework as a result. Students failing to transfer or failing to complete degrees in a timely manner are unacceptable outcomes that are incompatible with our mission.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Ongoing.

2. Is the funding requested for enrollment and reengagement activities?

Yes.

3. PART-TIME TECHNICIAN REQUEST:

1. Briefly describe your resource request.

We request a part-time technician to provide support for our classes that operate in the evenings or on weekends. Our existing technicians work very hard and are very effective at supporting our courses when they are present, but they cannot realistically be present during all courses we offer. We need additional assistance to address an equity gap and course support problem as a result.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

As stated in our previous Program Review Updates and Self Study documents, our goal is to provide accessible educational opportunities for all community members, including those enrolled in local high schools, displaced homemakers, workers, those who have family or other obligations during the day, and non-traditional students. Coupled with high demand for specific courses, this has resulted in us offering sections for nonmajors, majors and certificate programs during the evening and at times that do not coincide with the traditional schedule. Our courses are well enrolled, and we emphasize consistency of instruction and resources to preserve equity.

However, this generates a logistical and support challenge for laboratory sections scheduled during non-traditional times. Instructors need support and assistance from the laboratory clerk. Since the laboratory clerk works a full-time schedule supporting the classes that are on the conventional schedule, evening instructors and students do not have the necessary clerk support for their classes.

b) How will this additional resource allocation specifically enhance your program's services, activities, processes, etc. to continue or improve student learning and achievement?

Our program is limited in the number of labs we can run concurrently by instructor and room availability. All labs should receive the same technical support to allow our program to continue offering high-quality, equitable educational opportunities.

c) Is the resource request personnel-related?

Yes.

If so, please provide evidence to justify the requested positions such as retirements, program growth or curricular demands, full-time/adjunct ratios, etc.

Courses that are offered early in the morning, late at night, and/or on Fridays and require logistical and technical support from our technicians include BIOL 101, BIOL 170, BIOL 190L, BIOL 191, and BIOL 192.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

We request the addition of a laboratory clerk on a part-time basis to cover those hours not attended by our existing personnel. If feasible and necessary, our department could share a clerk with another STEM department so that the employee's time is used efficiently.

The existing situation leaves several sections of courses without appropriate support and generates an equity gap as a result. We want all our students to be provided the best opportunities to succeed in our curriculum.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Ongoing.

2. Is the funding requested for enrollment and reengagement activities?

No.

4. BIOTECHNOLOGY AND DUAL ENROLLMENT MATERIALS AND SUPPLIES REQUEST

1. Briefly describe your resource request.

We request necessary materials, supplies, and services without which we will be unable to offer our biotechnology curriculum. This curriculum is currently offered on campus and at several local high schools and demand has been rising. The items listed here are essential and without them our classes cannot proceed. Our costs total \$33,172.06 and are detailed in Table 3. These costs concern BIOL 190, 190L, 191, 192, 193, and 196.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

We are unable to run our courses without the requested materials. Moreover, some of the items are personal protective equipment (PPE) and are therefore directly related to a safety requirement. The courses affected generate certificates, prepare students for transfer and/or the workforce, and are also offered as part of dual enrollment curriculum at local high schools. The courses are BIOL 190, 190L, 191, 192, 193, and 196.

b) How will this additional resource allocation specifically enhance your program’s services, activities, processes, etc. to continue or improve student learning and achievement?

These are essential items for which we have had to rely on grants up to this point. We request that these items, without which the classes would not be possible, be provided using lottery funds as provisioned by California law in Cal. Educ. Code § 8880.5, Cal. Educ. Code § 8880.7 and Cal. Code Regs. tit. 5, §§ 59200-59208. The courses in question are CTE and dual enrollment courses.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

Since the establishment of the Biotechnology Program in 2015, faculty have had to rely on ephemeral grants to support the needs of the Biotechnology program in laboratory materials and consumables. This is a program that has grown, fostered unprecedented cooperation among 4 Orange County colleges, created 4 certificates including a novel collaboration between Biotech and Administration of Justice, and supported dual enrollment relationships with several high school partner campuses. Hundreds of students have gained certificates representing marketable skills and gone on to transfer, enter industry, join academic labs, enter graduate school, or enter professional schools including medicine and nursing. Characteristically, the program retained in-person instruction on campus during the pandemic and trained biotechnicians who were in high demand. Current enrollment data indicate program strength has returned to pre-pandemic levels and interest is high. However, without stable funding the program is not sustainable on campus or at any of our dual enrollment sites.

We request lottery funds to provide materials and supplies for our on-campus and Dual Enrollment courses in accord with Cal. Educ. Code § 8880.5, Cal. Educ. Code § 8880.7 and Cal. Code Regs. tit. 5, §§ 59200-59208 that specify lottery funds shall be used for instructional materials and supplies and extend financial support to CTE courses respectively. The total amount of our request is \$33,172.06. The expenses are listed in Table 3.

This request concerns on-going funding for consumables and instructional materials via lottery funds as provided by the legislative framework cited above and involves enrollment and reengagement activities to sustain the percentage of local high school graduates enrolling at FC, increase enrollment among underrepresented populations, non-traditional and re-entry students, and maintain and increase support for Dual Enrollment courses.

As seen in Table 3, in addition to the reagent costs of \$25,322.06 there is a services cost of \$7,850. In Table 3 the costs are listed in detail. The reagents are laboratory materials and necessary expendable items for the laboratory exercises in our curriculum. The services are CO₂ and liquid N₂ that are necessary for maintaining cell lines in tissue culture, DNA sequencing costs that are necessary because we do not have our own DNA sequencer and it is less expensive to send our samples to a provided for sequence data, and biosafety

cabinet certification that is standard industry practice and a regulatory requirement.

Reagent/Supply	Quantity needed	Cost per unit	Total amount
Crime Scene Investigator Kit	3	136	408
Forensic DNA Fingerprinting Kit	3	125	375
CRISPR Kit	1	125	125
GMO Kit	1	125	125
Taq polymerase	2	200	400
Gel green	2	100	200
Agarose	1	750	750
Luria broth, 500g	1	125	125
LB agar, 500g	1	145	145
Competent cells	3	150	450
Fluorescent antibodies	2	500	1000
p20 tips	20	30	600
P200 tips	20	30	600
P1000 tips	20	30	600
p10 tips	10	30	300
Serological 5ml	10	170	1700
Serological 10ml	10	170	1700
Serological 25ml	5	350	1750
Tissue culture plates	3	450	1350
Tissue culture media	2	260	520
Gloves (10 pack X \$200 X xs, s,m, l, xl)	6	200	1200
50ml conical	2	600	1200
15ml conical	2	600	1200
Mini Prep DNA Kit	1	150	150
Midi Prep DNA kit	2	350	700
Ammonium sulfate, 2.5kg	1	200	200
Size exclusion chromatography kit	2	185	185
Restriction enzymes	3	70	210
PAGE gels	1	150	150
Ligase	1	150	150
DNA ladder	2	150	300
Protein Gels	2	120	240
Western Kit	2	235	470
Kaleidoscope	2	143	286
RPMI, 6x500mL		301	
RIPA (5X), 100mL		207	
Serum	3	300	900
Trypsin (box)	1	150	150
Lipofectamine	1	200	200
Flow cytometry reagents	1	300	300
			\$21,414.00
		Tax and Shipping (18.2	\$3,908.06
		TOTAL	\$25,322.06
Services			
CO2 and liquid Nitrogen	\$6,000		
DNA sequencing	\$1,200		
Biosafety Cabinet Certification	\$650		
	\$7,850		

Table 3. Biotechnology supplies and laboratory expendables. We request lottery funds for these expenses as provided by CA law.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Ongoing.

2. Is the funding requested for enrollment and reengagement activities?

Yes.

5. DEGREE TRACKING/COMPLETION SOFTWARE REQUEST:

1. Briefly describe your resource request.

We request that District provide degree tracking software to benefit all divisions. There is currently no automated system to track student progress toward a degree and the new funding system is based on completion metrics that our campus cannot assess in an automated manner.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

The enrollment figures for our courses leading to CTE certificates are indicative of an important challenge we face in documenting our successful response to state funding requirements that are tied to certification, degree completion, and transfer rates. In short, a significant number of students earn certificates and/or AA/AS/AS-T degrees, yet due to the absence of an automated system that tracks student progress and issues certificates/degrees to students who achieve these milestones it is very difficult to track and record them. This makes assessing program metrics laborious and error-prone, while depriving FC of student achievement data and depriving students who may not be aware of their qualifications of degrees and/or certificates.

b) How will this additional resource allocation specifically enhance your program's services, activities, processes, etc. to continue or improve student learning and achievement?

Under the state chancellor's and governor's funding model, colleges are incentivized based on the number of students who complete degrees, earn certifications, or successfully transfer to four-year institutions. However, without an automated mechanism in place to identify and document these achievements in real time, the college risks underreporting its positive outcomes. Underreporting is particularly problematic as it may lead to reduced funding and a misrepresentation of FC's success.

In contrast, neighboring institutions have implemented software systems that streamline the process of tracking student progress and initiate a response by the college upon completion of designated milestones so that the student completes the paperwork needed

and each success is recorded promptly. Software would ensure accurate recording that can be used for both internal assessment and external funding or reporting and would benefit every department in all divisions. Without accurate real-time achievement data FC may be at a funding disadvantage once the “hold harmless” period lapses and we may also be missing opportunities to enhance our student support efforts and improve our programs.

To remain competitive and ensure fair representation of our achievements, we believe that FC must implement an automated degree/certificate/transfer recording and issuing system. Our representative in the Academic Senate is voicing these concerns and we are eager to resolve this issue.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program’s goals for improvement, as stated in your last self-study?

This request involves ongoing funding for campus-wide software licensing and support and involves enrollment and reengagement activities because it makes it possible for our campus to track whether it is meeting our goals and serving our students.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Ongoing.

2. Is the funding requested for enrollment and reengagement activities?

Yes.

6. BIOLOGY 102 HUMAN MODEL REQUEST:

1. Briefly describe your resource request.

BIOL 102L (Human Biology Laboratory) is a human biology laboratory course offered each semester with at least two sections that generate strong interest as reflected by enrollment and waiting list numbers. The curriculum includes anatomy, physiology, and the study of the muscular and skeletal systems. BIOL 102L relies on a human anatomy model that requires replacement because it is broken due to age, wear and tear.

The model we use is a $\frac{3}{4}$ life-size human replica that depicts deep and superficial musculature, nerves, circulatory vessels, tissues, and organs to reveal fundamental interrelationships of human anatomy. Our established supplier is 3B Scientific and the cost of the replacement model is \$10,212 plus tax and shipping, or \$12,500.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

A necessary learning device for BIOL 102L has been damaged due to wear, tear, and age. This course is offered in two sections each semester and is popular among students in the clinician and health pathways, including pre-med and pre-nursing students who rely on our curriculum for their preparation.

b) How will this additional resource allocation specifically enhance your program’s services, activities, processes, etc. to continue or improve student learning and achievement?

The integration of a human anatomy model is necessary due to a multitude of pedagogical advantages, particularly for students from backgrounds with limited prior exposure to such resources. The model enables a hands-on, interactive approach to learning, allows students to visualize the spatial arrangements and interactions between complex anatomical structures in 3D space, provides a more intuitive grasp of bodily functions, and supports deeper understanding through tactile engagement. The model thus provides all students an accessible means of understanding human biology via a multimodal learning experience based on experiential engagement.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

A human biology laboratory relies on a model of human anatomy to allow students to relate theoretical concepts from their texts and lectures to real-world applications. It is crucial for students to gain experiential learning with human anatomy and morphology in BIOL 102L. Our goal remains to train our students with up-to-date materials in a hands-on environment.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Yes.

2. Is the funding requested for enrollment and reengagement activities?

No.

7. BIOL 274 (GENERAL ECOLOGY) TRAILER REPLACEMENT REQUEST:

1. Briefly describe your resource request.

BIOL 274 trips require materials to be transported off campus to remote locations for use during field trips. The trailer utilized for this purpose has damaged sides and flooring due to a combination of age and water entry from the side door that has resulted in floor and side panel rot. Safety and practicality dictate its replacement. We therefore request a replacement trailer to serve the needs of this majors course.

The replacement unit needs to be fitted with shelving for the necessary class materials. A locally available maker can provide a Fractal brand MY2024 base model trailer, 6' wide x 12' long x 6' 6" tall, with a 36" cam lock door, 3,500lb axle with electric brakes, upgraded radial tires, exterior led lights that are DOT approved, a bottle jack, Darco underbelly protective mesh, safety chains with brake-away kit, rear ramp door, wired to standard SAE diagram with a round 7-way connector, 1/4" cabinet grade finished side walls, and 3/4" sanded finish floor. Therefore, costs are \$8,000 for trailer and \$2,000 for shelving to be fitted within for a total of \$10,000.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

BIOL 274 is a majors course offered every semester that relies on a trailer for the successful completion of field trip activities integral to the curriculum. The necessary trailer is available locally but may take some time to fit with shelving and deliver, so our request is pressing.

b) How will this additional resource allocation specifically enhance your program's services, activities, processes, etc. to continue or improve student learning and achievement?

Replacing the trailer is necessary to continue offering the curriculum. Students need real-world experience in the field to master the material presented in BIOL 274, which includes ecology and evolutionary biology.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

Biology majors rely on BIOL 274 to complete their degrees and/or transfer to a 4-year institution. We need this equipment to safely and efficiently transport materials necessary for our curriculum to the field during field trips.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

One-time.

2. Is the funding requested for enrollment and reengagement activities?

No.

8. EQUITY GAPS GENERATED BY ABBREVIATED HOURS OF OPERATION FOR KEY SERVICES:

1. Briefly describe your resource request.

The limited hours of operation for key campus services such as Disability Support Services (DSS), Student Health, and the cafeteria create significant inequities for students, particularly those who rely on these services to fully participate in academic and campus life. Currently, these services close or operate on abbreviated schedules on Fridays, after hours, and on Saturdays, even though classes are in session during these times.

This mismatch between service availability and academic schedules disproportionately affects students who need consistent support but face barriers to accessing it outside of regular weekday hours. The request is safety-related due to involving Student Health services.

These service gaps unfairly affect students who rely on institutional support for their academic progress and personal health. The service gaps may limit students' ability to succeed and to fully engage with campus life because important campus resources are inaccessible to them. The gap in Student Health coverage arguably generates a safety challenge for students on campus when that service is not available. We therefore support the expansion of hours of operation by DSS, Student Health, and food services to address the equity gap and allow all students to equitably access all campus resources.

2. Is this request related to an essential safety need?

Yes.

• If programs answer this question “yes,” they will be asked to explain how this resource will help your program meet an essential safety need.

Disability Support Services (DSS): DSS hours do not match instructional schedules for numerous classes on campus. Therefore, students with disabilities who require accommodations such as extended test-taking time or other assistance face delays or inadequate access. Since DSS services are not available during critical periods of the week, students are unable to fully participate in classes and may fall behind as a result.

Student Health: Likewise, the hours of operation for Student Health currently leave students in evening and weekend classes without essential medical support. These students are unable to access a campus resource that is available to address the health concerns or health issues of their peers, creating a systemic inequity.

Cafeteria Services: With the cafeteria closing or offering limited hours in the evenings and on weekends, students who depend on affordable and nutritious meal options may

struggle to find suitable alternatives within a reasonable distance from campus and at a reasonable cost. Many of these students have enrolled in courses during the evenings or on weekends due to their own work schedules and may face financial hardships. Unlike their peers, they are unable to quickly access food on campus (e.g., during class breaks). This creates inequity with their peers who can afford to enroll in earlier, daytime weekday courses.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Ongoing.

2. Is the funding requested for enrollment and reengagement activities?

No.

9. SAFETY TRAINING FOR ADJUNCT INSTRUCTORS REQUEST:

1. Briefly describe your resource request.

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. We therefore request safety training funding on an ongoing basis in order to ensure we can reimburse all adjunct faculty for attending safety training sessions. We request \$1,500.

2. Is this request related to an essential safety need?

Yes.

• If programs answer this question “yes,” they will be asked to explain how this resource will help your program meet an essential safety need.

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 reiterative Flex Day activities, but we need to train all adjunct faculty in the same safety procedures to ensure all laboratories remain safe.

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.

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.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Ongoing.

2. Is the funding requested for enrollment and reengagement activities?

No.

10. VETERINARY CARE FOR ANIMALS REQUEST:

1. Briefly describe your resource request.

In biology departments the keeping of animals is a common and necessary practice for a variety of pedagogical purposes. To ensure their well-being and compliance with ethical standards, it is important and necessary to provide both routine and emergency veterinary care. This may include regular health assessments, preventive treatments, and immediate attention to any injuries or illnesses. Securing adequate funds for veterinary services is needed in order to maintain the health of the animals.

We therefore request \$2,500 annually on an ongoing basis for veterinary expenses.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

This is a recurring need involving animal welfare. Necessary veterinary expenses cannot be postponed without endangering the animals.

b) How will this additional resource allocation specifically enhance your program’s services, activities, processes, etc. to continue or improve student learning and achievement?

This resource allocation will allow our program to continue maintaining animals as is common and necessary for our discipline.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program’s goals for improvement, as stated in your last self-study?

Our biology courses teach students about the diversity and complexity of life, and the animals we maintain are an integral part of our curriculum.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Ongoing.

2. Is the funding requested for enrollment and reengagement activities?

No.

11. PLANT REPRODUCTION FLOWER SPECIMENS REQUEST:

1. Briefly describe your resource request.

We request support for fresh flower specimens for all of our BIOL 101 and BIOL 170 laboratories; these courses are offered in multiple sections every semester. This is a recurring material expense eligible for lottery funding in accord with Cal. Educ. Code § 8880.5 and Cal. Educ. Code § 8880.7 that specify lottery funds shall be used for instructional materials and supplies. These materials are necessary for the curriculum of BIOL 101 and BIOL 170. The total cost is \$1,800.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

Flowers contain the reproductive structures of angiosperm plants. BIOL 101 and BIOL 170 both rely on flowers from particular plant species so that students can perform dissections and learn about plant reproductive morphology. Each course is offered in multiple sections each semester, and until recently our technician and clerk have had to forage around the campus for flowers.

Frequently the number and quality of available flowers were inadequate for all our sections. Recently, landscaping changes to the campus have eliminated our previous sources of flowers, meaning we must now purchase flowers for our students to dissect. Faculty in the Biology department have been spending personal funds and time to purchase flowers for individual classes because we do not have a sufficient regular supply source.

b) How will this additional resource allocation specifically enhance your program’s services, activities, processes, etc. to continue or improve student learning and achievement?

Landscaping and practical limitations have left us unable to source these necessary resources on our campus, despite the best efforts of faculty and staff. We are therefore required to obtain these items from the open market in order to continue offering our curriculum.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

There are on average 10 BIOL 101 sections and 6 BIOL 170 sections each regular semester that rely on these materials for student laboratory dissections. These are necessary items that are no longer available on campus.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Ongoing.

2. Is the funding requested for enrollment and reengagement activities?

No.

12. PLANT REPRODUCTION SPECIMENS REQUEST

1. Briefly describe your resource request.

We request plant reproduction specimens for both our majors organismal biology (BIOL 170) and non-majors general biology (BIOL 101) laboratories; these courses are offered in multiple sections every semester. These specimens are necessary for the curriculum of BIOL 101 and BIOL 170.

Our request involves 3 seed fruit set bioramas (\$209 each plus tax/shipping) and 3 seed dispersal sets (\$13 each plus tax/shipping) from Carolina Biological, 3 fruit types 12”X16” Riker mounts (\$280.25 each plus tax/shipping), 3 fruit types 14”X21” Riker mounts (\$188 each plus tax/shipping), and 3 seed dispersal Riker mounts (\$77.05 each plus tax/shipping) from Ward’s Science. The total is \$2,070.75 plus tax and shipping, or \$2,500.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

The current specimens used in these courses are decades old and have deteriorated to the point of being unusable. It is difficult for students to observe fine features critical to understanding plant reproduction and we need to replace our specimen collection to ensure that students are able to engage with updated examples of plant biology. New, high-quality demonstration specimens would not only improve the learning experience but also ensure that students are exposed to the most accurate and comprehensive examples of plant reproduction available and prevent equity gaps between our students and their peers at other institutions.

b) How will this additional resource allocation specifically enhance your program’s services, activities, processes, etc. to continue or improve student learning and achievement?

BIOL 101 and BIOL 170 laboratories rely on hands-on learning to understand the complex biological processes underlying plant reproduction. Demonstration specimens and preserved plant samples provide students with tangible examples of key concepts, helping them visualize and engage with the curriculum. These specimens allow students to

observe plant reproductive structures and to connect lecture material to real-world organisms.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

These items are necessary for us to continue effectively delivering the requisite curriculum in the two highest-enrolled courses offered by our department. Our goal is to continue growing in enrollment, success, and completion and our existing specimens are worn out.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

One-time.

2. Is the funding requested for enrollment and reengagement activities?

No.

**13. BIOL 272 (CELL AND MOLECULAR BIOLOGY) MICROSCOPE REPLACEMENTS
AND PARTS REQUEST:**

1. Briefly describe your resource request.

BIOL 272 is a majors course offered in two sections during every regular semester and is required for students that are completing a degree at FC and/or are transferring to a nearby CSU or UC. We request microscope replacements and replacement lens/reticle parts in order to increase student access to specialized equipment. Our microscopes are older models and require replacement parts to provide all of the features needed for current laboratory exercises. Replacement parts to repair damages accrued with time and additional microscopes will increase student time with specialized equipment.

Our request includes 6 Olympus CX31 Binocular Microscopes at \$1,899 each (\$12,533) and 10 eyepiece reticles totaling \$208.78 for a grand total of \$12,742.18, plus shipping, or \$15,000.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

This request helps provide equitable access to microscopes. Currently, not enough equipment exists for each student and some students are forced to use older microscopes. BIOL 272 is a course for biology majors who need to master the curriculum in order to succeed. The request is therefore pressing.

b) How will this additional resource allocation specifically enhance your program’s services, activities, processes, etc. to continue or improve student learning and achievement?

Microscopy is among the most widespread techniques in biology and the instruments involved are present in laboratories globally. It is important for our students to gain the necessary skills while at FC so that they are competitive when they graduate, transfer, and/or enter the workforce.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

Since this is a majors course and an equity issue, the request is pressing. Modern equipment will allow FC to remain competitive among local colleges and will assist us in our efforts to increase enrollment, retention, and success rates.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

One-time.

2. Is the funding requested for enrollment and reengagement activities?

No.

**14. BIOL 272 (CELL AND MOLECULAR BIOLOGY) EXPENDABLE ITEMS AND
ROUTINE SUPPLIES REQUEST:**

1. Briefly describe your resource request.

BIOL 272 trains students in modern cell and molecular biology techniques, including DNA sequencing and PCR. These techniques require materials and expendable supplies on a recurring basis and the items listed therefore qualify for lottery funds in accord with Cal. Educ. Code § 8880.5 and Cal. Educ. Code § 8880.7 that specify lottery funds shall be used for instructional materials and supplies.

The items include Sanger sequencing reagents (\$228.80), PCR bead kits (\$1498.20), Instagene Matrix (\$330), NEB Taq Mastermix (\$360.8), micropipette tips (10 µl, 20 µl, 100 µl, 1000 µl, \$1800) and laboratory gloves (sized S – XL, \$300), amounting to \$4,517.8. The total including tax and shipping is therefore \$4,800.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

BIOL 272 is offered in two sections each semester and trains biology majors in cellular and molecular biology techniques. The listed materials are necessary in order to complete the required curriculum and appropriate PPE (personal protective equipment) is also included in our request. Students need these items to complete their lab work.

b) How will this additional resource allocation specifically enhance your program’s services, activities, processes, etc. to continue or improve student learning and achievement?

Experiential learning and hands-on laboratory exercises are required in order for students to gain familiarity with lab equipment and lab techniques that are common and necessary in our discipline. The curriculum prepares students for transfer and/or entry into the workforce.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

This request involves necessary laboratory supplies and expendables that are needed so that students can succeed in the required curriculum. Our approach to training students remains focused on equitably providing hands-on experiences that prepare our students for the rigors of the modern laboratory workplace or for transfer.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

Ongoing.

2. Is the funding requested for enrollment and reengagement activities?

No.

15. OUTREACH MATERIALS REQUEST:

1. Briefly describe your resource request.

The Biology Department routinely hosts “open house” events and has established ongoing collaborations with on-campus and off-campus entities including Administration of Justice, the STEM Center, the MESA Program, local academic and industrial laboratories in which our students are placed as interns, technicians, or undergraduate researchers, and other stakeholders. Our goal is to increase enrollment, retention, and success rates and we have therefore maintained a strong public presence on and off campus in order to raise community awareness of our curriculum, equipment, facilities, personnel, degrees, and certificates.

Informational materials are an integral part of these efforts. We have successfully used NOCCCD district printing services to generate our department-specific materials, and we request recurring funding in order to continue generating pamphlets, brochures, and other documents that we can use to increase awareness and attract more students to FC.

We request \$2,000 for these outreach materials. This request involves enrollment and reengagement activities because it is necessary for our outreach efforts.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

Our extensive activities routinely exhaust our reserves of outreach materials. We need to print more materials.

b) How will this additional resource allocation specifically enhance your program’s services, activities, processes, etc. to continue or improve student learning and achievement?

We need these resources to continue our efforts to strengthen enrollment, retention, and success rates.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

Our department provides high quality, equitable educational opportunities to all community members and we are committed to increasing student enrollment, retention, and success rates.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

One-time.

2. Is the funding requested for enrollment and reengagement activities?

Yes.

16. BIOL 101 AND BIOL 170 CRANIA SPECIMENS REQUEST:

1. Briefly describe your resource request.

Cranial specimens in introductory biology and organismal biology laboratories are crucial for students to understand evolutionary biology, anatomy, and morphology. The crania provide students examples of how morphological adaptations suit organisms to particular ecological niches.

Existing specimens are extensively damaged due to wear and age, and some crania are missing pieces that are necessary for the students to perform valid and informative observations. We therefore request the replacement of our cranial specimens.

We request one human skull replica (\$146), one walrus skull (\$1,224), two North American mammal sets (\$540), two domestic pig skulls (\$424), two sheep skulls (\$364), two Przewalski's Horse skulls (\$726), and two cow skulls (\$726), all from Skulls Unlimited; prices listed do not include tax and shipping. We also request a set of 15 calipers for measuring cranial dimensions for student data acquisition and recording purposes during lab exercises, item KE-101 from Bone Clones at \$13/each plus tax/shipping (\$195 total plus tax/shipping).

The items requested cost \$4,345 and the total including tax and shipping is therefore \$5,650.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

The existing crania are no longer suitable for use in a modern classroom and do not allow our students to take advantage of the wealth of educational resources to which they are entitled. Existing specimens are worn out and old.

b) How will this additional resource allocation specifically enhance your program's services, activities, processes, etc. to continue or improve student learning and achievement?

We offer a curriculum rooted in experiential, hand-on learning and it is therefore vital that our students directly engage with specimens so that they observe adaptations and

differences across species boundaries in the shape and function of dentition, the attachment of musculature, and the overall cranial morphology. The requested specimens allow direct comparisons between species and reveal how form follows function from an evolutionary and anatomical perspective.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

Our goal is to continue providing our students high quality educational opportunities and resources to prepare them for transfer or the workplace while addressing equity gaps so that our graduates are truly competitive. Up-to-date equipment is crucial for this endeavor.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

One-time.

2. Is the funding requested for enrollment and reengagement activities?

No.

17. VERTEBRATE FORELIMBS REQUEST

1. Briefly describe your resource request.

Vertebrate forelimbs can have notably varying functions, yet they share a common skeletal structure that reflects homology acquired from a common ancestor. Studying these homologous structures helps elucidate the evolutionary relationships between species, indicates how species may have diverged from shared ancestral forms, and provides tangible evidence of evolutionary adaptations for diverse functions. Evaluating homologous structures is therefore an established way to introduce basic evolutionary principles to students.

To enhance and update our laboratories for BIOL 101 we request 3 sets of homologous forelimbs, item COMP-146 (human arm, raven wing, flying fox wing), at \$640 each and 3 seal forelimbs, item KO-285, at \$343 each from Bone Clones. The total for this request is therefore \$2,949 plus tax/shipping, or \$3,834.

2. Is this request related to an essential safety need?

No.

• If programs answer this question “no,” they will be directed to answer the following questions:

a) Why must this resource request be processed now rather than during the Fall 2025 comprehensive self-study?

BIOL 101 is our General Biology course that serves both majors and non-majors, and it is offered in roughly 20 sections annually during the regular semesters. There is also usually summer BIOL 101. Our goal is to strengthen enrollment and retention while serving as many students as possible, and these materials will allow us to enhance the offered educational experience.

b) How will this additional resource allocation specifically enhance your program’s services, activities, processes, etc. to continue or improve student learning and achievement?

The study of homologous structures is a basic and established approach to determining the evolutionary relationships between organisms and to studying evolutionary adaptations. These are crucial principles that students must understand in order to succeed.

c) Is the resource request personnel-related?

No.

d) How will this additional resource allocation help you serve the college mission or strategic initiatives, and your program's goals for improvement, as stated in your last self-study?

The vertebrate forelimb is a valuable model system to study evolutionary biology and provides insights into speciation, adaptations, and how species are related to one another. Our students will have the opportunity to gain hands-on experience with forelimb replicas that will enrich their education. Up-to-date materials will allow our campus to retain its competitiveness among local institutions and to attract more students as a result.

Finally, for each request, programs will be asked to respond to two check box yes/no questions:

1. Is the funding requested ongoing or one-time funding?

One-time.

2. Is the funding requested for enrollment and reengagement activities?

No.