2021-2022 Program Review

CAN Program Review (Instructional) - Biological & Health Sciences (Fall 2021)

STEP 1: Program Review Narratives

2021-2022

Instructional Program Review (IPR)

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Program Context

1. Mission: The Biology & Health Sciences program offers general education (GE) and transfer courses, and offers an AS in Allied Health, AS in Biology, AS-T in Biology and AS-T in Nutrition & Dietetics.

MISSION STATEMENT: The Biological & Health Sciences Program provides well-supported, personalized, interactive, and hands-on instruction in the life sciences that is accessible to a very diverse student population. We share our own enthusiasm for biology and use multi-faceted and rigorous approaches to education to help enhance or instill in students a driving curiosity that leads them to fully explore the wonders of the living world. With guidance, personalized instruction, and their own self-motivation and empowerment to learn, students will be prepared for professional programs and more advanced academic degrees in the biological, natural, and health sciences.

VISION: The Biological & Health Science Program incorporates current computer and laboratory technology and methods into our curriculum. We challenge our students to meet the expectations of a rigorous curriculum and challenge ourselves, as faculty, to maintain high educational standards and to stay current in the biological and health sciences. To meet the challenges of a continually diversifying and ever-growing student population, we continue to look forward and plan consistent evaluation and modifications to our curricula. We provide continually updated methodologies and equipment to meet the burgeoning employment demands of the community and to prepare students seeking degrees and employment in the biological, natural, and health sciences.

2. Articulation: There have been no changes in articulation with 4 year institutions since our last program review. We do not currently have any courses articulated with high schools. Human Biology (BIOL 130) has been offered through concurrent/dual enrollment agreements in years past when grants have funded some "early college" allied health pathways from high school to college. As we and our K-12 partners recover from the pandemic, we'll re-examine possible opportunities for alignment.

For reference: We offer AS degrees in Biology and Allied Health, and Associate in Science Degrees for Transfer (AS-T) in Biology and Nutrition & Dietetics. According to the Data Dashboard, since 2018-19 there have been 101 students graduating with an AS in Allied Health, 38 students graduating with an AS in Biological Sciences and 10 with an AS-T in Biology: Transfer IGETC CSU GE and fewer than 5 students graduating with an AS-T in Nutrition and Dietetics.

3. Community & Labor Needs: Since our last program review, our faculty have been working with Cañada's Workforce Development Director to develop a new Funeral Services Education (FSE) associates degree program. This CTE program, formerly known as Mortuary Sciences, is interdisciplinary in nature. The science components of the program include our existing courses (anatomy, chemistry and microbiology) that serve as prerequisites, as well as new discipline-specific courses in embalming. These connections, the potential for collaboration between FSE, BIOL and other non-science faculty, and the opportunity to meet a significant regional labor need motivated us to support the development of this new degree program. The FSE program will offer yet another degree pathway to our current students who are taking prerequisite biology courses as well as the possibility of attracting new students to the college. Biology faculty were involved, as related discipline experts, in the hiring of an adjunct faculty to develop curriculum and in guiding them through the curriculum and college approval processes. We are also soon to be involved in the search for a Program Director.

While virtually all courses in the District were moved into an online modality during the pandemic lockdown, a few courses were allowed to meet in-person. This exception was made for science courses that were needed by students pursuing certain fields of study in specific labor market sectors. In our department, the lab components of two courses (BIOL 230 and 250) have been offered on campus in-person beginning Jan. 2021. These sections are offered either in a hyflex manner or with specific sections devoted to in-person learning while other sections are purely online. In this manner, we have attempted to be responsive to both our community/student needs and labor market needs.

There are no known changes in technology that are likely to affect the biology program.
There are no licensing or accreditation requirements associated with the biology program.

Looking Back

4. Curricular Changes: BIOLOGY
The disciplines of Biology (BIOL) and Health Science (HSCI) are undergoing their 5-year review cycle this academic year. All biology courses were reviewed and updated with Distance Education Addenda last year in order to enable them to be taught in a fully online modality. This was a herculean effort especially for so many of our "hard-to-convert" lab courses. We've been challenged to consider whether and how a completely online or at-home lab experience is equivalent to what students would normally have on-campus. And when faced with the "choice" of either converting the labs to be online or not offering the courses that students need to pursue their ed plans, we chose to make the conversion. (You can read more about the lab-specific impacts of the pandemic on items 6A and 6B below.) Now, as we return to campus, we will be having conversations as a department about how effective the online lab curriculum has been at simulating the in-person experience and facilitating student achievement of learning outcomes. As opportunities for improvement are identified, we can act to obtain resources and enhance our online curriculum to ensure its quality continues to meet or exceed the academic standards of our traditional face-to-face labs. We must also be cognizant that while transfer institutions are temporarily, due to the pandemic, granting credit for purely online lab experiences, this has not been the historic norm. Faculty at transfer institutions will also be assessing the viability of online labs and their decisions may impact our options going into the future.

HEALTH SCIENCE
The full-time faculty member assigned to shepherd the health science discipline resigned in spring 2019. Neither of the two health science courses (100 General Health Sciences, 116 Women's Health) have approved DE Addenda, which was a requirement for offering the courses online during the pandemic. Since neither courses are any longer part of a degree or program, it is possible, though yet undetermined, that they will be deactivated/banked during this year's curriculum review cycle. If that determination is made, we may want to evaluate whether some of the curriculum from these courses could be integrated into other courses such as Human Biology (BIOL 130). This upcoming spring semester Skyline College will be offering its first section of Introduction to Public Health (HSCI 135) as part of the Public Health AS-T. We are interested in watching their enrollment to gauge student demand for this degree.

5A. Progress Report - IPC Feedback: The program received the following feedback from IPC:
1. Include a summary of action plans in the Executive Summary
2. Continue discussing community and employment needs

Response to feedback 1. The executive summary section of the IPR appears to have been eliminated for this year; otherwise we would have included a summary of action plans in that entry field.

Response to feedback 2. We have continued to work with the Workforce Development DIrector on opportunities to meet our community's educational needs. This has led us to support the development of a new CTE program in Funeral Services Education. This was described in section 3 above.

5B. Progress Report - Prior Program Goals: 2018 Action Plan: Anatomy Success Initiative
Progress: The purpose of the Initiative was to investigate and identify the barriers to student success and retention in anatomy courses and to develop relevant support systems. We submitted a proposal for reassigned time to allow a faculty member to work with PRIE to research effective practices and conduct focus groups with current and former anatomy students. This proposal was submitted to IPC in fall 2018 but was denied. Since that time, one of the two faculty who authored the Initiative resigned, we conducted a successful search for a new full-time anatomy faculty, the college locked down due to the pandemic, and we converted our "hard-to-convert" courses into a completely online modality. Unsurprisingly, we've made no specific progress on the Initiate. However, as we return to some version of in-person teaching and learning, we will be examining how the multitude of changes we've made in the transition to online teaching are affecting our student outcomes.

2018 Action Plan: Revise laboratories for non-majors classes
Progress: During the pandemic we had to convert all our labs to the fully-online modality. Now that we are returning to some version of in-person teaching and learning, we will be examining what changes to the labs have been effective and which parts of the lab curriculum need further revision.

2018 Action Plan: Future of Health Science discipline
Progress: The full-time faculty member assigned to shepherd the health science discipline resigned in spring 2019. Neither of the two health science courses (100 General Health Sciences, 116 Women's Health) have approved DE Addenda, which was required during the pandemic since all courses were offered online, and so are not being offered at this time. We will have to re-evaluate the value of these courses as we return to campus.

2018 Action Plan: Institutionalization of EPIC tutoring program
Progress: The department supported our division's proposal to PBC for funding a permanent EPIC Tutor Coordinator position. The proposal was submitted in the 2018-19, 2019-2020 and 2020-21 cycles. In the 20-21 cycle, the Coordinator position was ranked into Group 2 with a June 2021 decision timeline pending the budget revise. We have yet to hear any news on this position. As the college looks to expand tutoring and Student Success Teams through Guided Pathways, we are hopeful that a Tutor Coordinator position will eventually be funded.

2018 Action Plan: Increase departmental budget
Progress: We were requesting that the funding for human cadavers be permanently allocated to our departmental budget. Our dean has since informed us that cadavers are not part of the annual resource request process through program review, but neither will the funding be allocated to our department budget. The funds for the cadavers come from the college's CA-lottery dollars.

2019 Action Plan: Provide undergraduate research opportunity
Progress: Using funding from a 2019 federal DoE CCEM/MSEIP Student Research Grant, Dr. Staples provided 4 students with original research opportunity in partnership with Stanford University. In spring and summer 2019, Dr. Nathan Staples assembled a team of 4 well-qualified student candidates, all Hispanic young women, to engage in professional-level research in partnership with Dr Matthew Bogyo's Lab at the Stanford University Medical School (Department of Pathology). Students planned and conducted many experiments on microbial growth of bacteria commonly found in human intestines (natural microbiota) in the presence of artificial sweeteners. Most of the 4 species tested showed strongly reduced growth in the presence of Acesulfame K, Sucralose, and Aspartame, but little effect with Erythritol. On the other hand, none of these sweeteners could support or promote growth of any of the tested species (Bacillus subtilis, E. coli, Klebsiella aerogenes, or Enterobacter faecalis). Students were thrilled and very excited to be invited to present our research at the national CCEM Research Conference in Washington DC and the SACNAS Conference in Honolulu HI in October 2019. Two of the students gave oral research presentations and 3 of them gave poster presentations at the conferences. The three posters still decorate the display cases on the third floor of Building 23. We are VERY proud of our students: 3 are now UC (San Diego, Merced) or CSU (San Francisco) graduates, and one graduates this spring from UC Davis. We hope that such research grants and opportunities are soon again available for our underrepresented Science Students, and for our broader student population as well.

6A. Impact of Resource Applications: IMPACT OF PANDEMIC ON BUDGET & SUPPLY RESOURCES
During the pandemic we were forced to move all of our laboratory curricula to online experiences and/or experiments that students could do at home. We learned that commercial kits cost $250-400 per student, were in extremely limited supply and might not be available in a timely manner. Going this route was problematic for many reasons, not the least of which was the $100,000+ budget-busting price tag! So our faculty and laboratory technicians researched what other colleges were doing, selected equivalent lab experiences that could be redesigned for performing at home, learned what was legally and safely permissible to send to students, and then created DIY kits filled with the necessary supplies for students to safely conduct experiments at-home. If that was not challenging enough, our lab techs quickly ran into global supply chain challenges and skyrocketing pandemic-pricing. Over $5000 was spent in packaging costs (boxes, bags, labels, containers) alone! We went over budget for last fiscal year but were able to use limited one-time COVID-related funding to fill the gap. In the end we were able to build 350 kits to supply ten sections of BIOL 110, 225, 230, 240, and 250.

We have learned a lot about building and distributing kits. We've refined what's needed and streamlined the process. Nevertheless, we cannot continue to build the same number of kits and simultaneously supply and support face-to-face teaching as well. Resuming in-person instruction will require us to reduce the number of online labs being offered and a modest increase in budget (approximately $3000) to account for ongoing supply chain challenges, delivery costs and price increases.

INSTRUCTIONAL EQUIPMENT ALLOCATIONS
Instructional equipment requests by our program during 2018-19 for the FY19-20: an Incubating Mini-shaker and an Incubating Orbital Shaker were approved through the process. These were necessary to more adequately support the large number of sections of cell and microbiology. Other funds were found to replace obsolete glucometers and broken pulse transducers that are required in human physiology labs.

Instructional equipment requests by our program during 2019-20 for FY20-21: no requests were funded

Instructional equipment requests by our program during 2020-21 for FY21-22: we received substantial funding for our requests. As of this writing date, we are in the process of procuring the equipment.

6B. Impact of Staffing Changes: IMPACT OF PANDEMIC ON CLASSIFIED STAFF
As described earlier, our laboratory technicians performed above-and-beyond their normal work to develop hundreds of at-home lab kits. They spent an inordinate amount of time developing labels, safety sheets and instructional videos, handling and packaging materials. At the end one remarked, "now I know why they charge so much for the commercial kits!" We have worked with our Dean to plan the spring 2022 schedule with a limited blend of online lab sections with predominantly face-to-face instruction. If the program/college/district envision a higher percentage of online labs in the future, we will need a new additional laboratory technician to be shared between biology and chemistry to support the online labs. As students return to campus over the next year, we may also be able to use Student Assistants to help the laboratory technicians with this work.

FACULTY CHANGES
In 2019-20 we lost two of our excellent full-time faculty members (Dani Behonick and Carol Rhodes) due to resignation (career-change) and retirement. We have since filled these positions with two new outstanding faculty: Dr. Julie Luu (spring 2019) and Dr. Michael Limm (fall 2021). We are thrilled to have them on our team! As we return to campus from remote teaching and learning this will be an "unprecedented" opportunity for us to draw upon their experiences and vision for how best to shape the biology program to serve our students.

Current State of the Program

7A. Enrollment Trends: Enrollment and section offerings have declined over the past two years. Census enrollment in our program in 2019-20 was 3.6% lower than the 5-year average of 1980 students. In comparison, the college's enrollment declined a comparable 3.2% from its 5-year average for that same year. In 2020-21 biology enrollment was only 2.3% lower than our 5-year average while the college's enrollment declined 8% during that same year. While our enrollment has declined, we have actually increased our efficiency by decreasing the number of section offerings from a high of 69 to a low of 58. Sections declined 6% in 2019-20 and 9% in 2020-21 from the 5-year average. The net impact of these changes has been a year over year increase in LOAD from 535 in 2018-19, to 556 and 576 in the next two years respectively.

Although the data packets don't provide any additional granularity for analysis, we can attempt to draw some correlations. Census enrollment data for 2019-20 was determined prior to the pandemic lockdown. Our program's enrollment decline for that year was virtually identical to the overall college's decline (3.6% compared to 3.2% respectively). Enrollment during AY 2020-21 would be most affected by the pandemic since all course offerings and services were remote. In that year, our program's enrollment actually declined significantly less than that of the overall college (2.3% compared to 8% respectively). These observations suggest that our program continues to strongly attract students and that many of our students have been undeterred by the pandemic and online learning challenges and continue pursuing their educational goals.

As we begin planning for the 2022-23 academic year schedule, we will need to carefully consider enrollment at the course and modality level to best project student demand.

7B. Significant Changes in Your Program: The changes in enrollment and course offerings for our program are comparable to, or less significant than, those of the college overall.

7C. Planning for Your Program: With our Dean, we will be carefully considering how to offer the optimal blend of online, hybrid and in-person sections of our courses in order to best serve student needs. This determination will need to be informed by curricular concerns (how effective the online lab experience has been at simulating the in-person experience and facilitating student achievement of learning outcomes) as well as access, success and equity concerns. Since our disaggregated data on enrollment, completion, and success metrics is limited to two semesters of pandemic teaching, we will likely need to experiment over the span of several semesters/years with different blends of scheduled offerings.

8A. Access & Completion: Every semester Cañada offers, all the courses necessary for students to complete a degree in our program. We offer AS degrees in Biology and Allied Health, and Associate in Science Degrees for Transfer (AS-T) in Biology and

Nutrition & Dietetics. According to the Data Dashboard, since 2018-19 there have been 101 students graduating with an AS in Allied Health, 38 students graduating with an AS in Biological Sciences and 10 with an AS-T in Biology: Transfer IGETC CSU GE and fewer than 5 students graduating with an AS-T in Nutrition and Dietetics. These outcomes are fairly comparable to the prior 5 years (2013-2018) during which there were 90 students graduating with an AS in Allied Health, 44 students graduating with a AS in Biology, 13 with a AS-T in Biology, and 2 with a AS-T in Nutrition.

Please see our response in 8B and 8C for more detailed analysis of success rates.

8B. Student Equity: In the 2020-2021 Academic year, several equity gaps still exist in enrollment headcounts and success rates. Male Biology students were 8 percentage points (38 male students, or 27% difference) below the College-wide average for enrollment access, which historically is consistent with higher female enrollment in the Biological and Health Sciences (Koerting, 2018; Data USA). As a division, we need to invest more effort into attracting and retaining male students, while maintaining our high enrollments of female students, and broadening access of female students to other STEM majors as well.

Success rates for First Generation Students in Biology were 7% (57 students) lower than the total Department average for academic success (completion and pass rate). Sciences are very challenging, and more focus is needed to attract, support, and retain first-generation students in the Biological Sciences. We can work to use CARES and Tutoring support systems to bolster student success. We also can help make science majors less intimidating and more appealing -- as we have several first-generation students among our own faculty and staff. Perhaps more transparency and telling of our own stories will open more doors and bring in more first generation students. We already see many successful first-generation students on display in multiple STEM Speaker presentations each year. We should advertise these more broadly to the campus community and to our high school programs, such as Middle College and Dual Enrollment.

Similarly, young students (ages 18-22 range) lag behind the Department average Success Rate by 5.6% (46 students). Again, more aggressive and early student support interventions, and broader promotion and communication with first-generation and young students about our programs, support services, and awareness of student success stories should help close these gaps. We can help them navigate the common problems of family pressure, guilt, and imposter syndrome. Student peer panels and counseling can also help overcome these hurdles. We have worked hard for years to eliminate the old narrative on our campus: “Introductory courses in STEM fields tend to be structured to weed out students rather than compensate for this lack of preparation. Nationally, 46 percent of white and Asian students ma-joring in STEM complete a degree in six years, compared to less than one-third of Latino students and about 20 percent of African-American students. Despite decades of focus and effort invested into fixing this problem, attrition from STEM majors remains high, especially during and after the first year.” (Kredell, 2017) Perhaps we too could develop a “summer bridge” (e.g. “Bio Jam!” or "Anatomy Academy") type program. To do so, we would first need to work with PRIE to determine which course would best benefit from a Jam-type intervention. Additionally, we might consider developing “First-Year Undergraduate STEM Experience (FUSE) program” events throughout the semester, and broader use of Cañada College’s own First Year Experience program to better attract, support, and prepare young and first-generation students in the Biology Program.

We still have much work to do towards closing racial and gender equity gaps in success as well. Black non-Hispanics were 27% (8 students) less likely to succeed than the department average, while Hispanics were 10% less likely to succeed than the average Biology student. In addition, black students were 2.5 times! (7 students) more likely to withdraw from Biology courses than the average student. Earlier community-building, support and intervention mechanisms (eg: FYE, CARES) must be incorporated and actively used within our STEM programs to provide extra and multifaceted aid to our black and hispanic students. Partnering with Puente and the emerging Umoja program may help address our gaps. It should also help that we’ve also been increasing our hispanic, black, and Asian-american faculty and staff numbers for the last few years -- providing a better identification and representation model for some of our minority students. They have so much to give and contribute to our department, that we are fully invested in their improved success!

Among female underrepresented minorities in Biology, Hispanic females were 11.8% less successful (52 students) , and black females were 15.8% less successful (7 students) than average Biology students. There are also notable ethnic gaps in higher withdrawal rates among black and asian/pacific islander females, who are 2.6 times (7 students) and 2.9 times (5 students) more likely to withdraw from Biology courses than the average student. Again, we must explore more aggressive support, intervention, and community-building programs among these less successful ethnic minorities and women of color. These students must be the foci of our efforts to improve success and retention.

Christopher Robin’s words to Pooh apply so well to our students (and often to ourselves as well! :-)):
“You are stronger than you seem, braver than you believe, and smarter than you think you are.” ? A.A. Milne

REFERENCES:

Koerting, Katrina. (2018, March) “More women than men in life sciences but less in STEM.” Newstimes.com. https://www.newstimes.com/local/article/More-women-than-men-in-life-sciences-but-less-in-12777665.php

Data USA: https://datausa.io/profile/soc/biological-scientists

Kredell, Matthew. (2017) “Keeping first-generation students in STEM.” USC Rossier School of Education, rossier.usc.edu. https://rossier.usc.edu/magazine/fall-winter-2017/equity-runs-through-it/

8C. Completion - Success Online: The “Success Rate Modality” graph in the “Program Review Data Packet Academic Year 2020-21: Biological and Health Sciences” indicates that the success rates of our online courses have improved since the 2016-2017 year. During the consecutive 2016-2017 and 2017-2018 years, the success rates of our online courses were similar at 68% and 69% respectively. Since then, the success rates of our online courses have consistently been higher by approximately 10% (success rate: 80%, 79%, and 78% in 2018-2019, 2019-2020, and 2020-2021 respectively).

We need to ensure that the rigor of the course is maintained...

The success rates of our face-to-face courses have also improved since the 2016-2017 year. During the consecutive 2016-2017 and 2017-2018 years, the success rates of our face-to-face courses were the same at 66%. The success rate of our face-to-face courses then increased by approximately 2-3% during the next two years and increased again by an additional 6% the following year (success rate: 69%, 68%, and 74% in 2018-2019, 2019-2020, and 2020-2021 respectively).

It is interesting to note that the success rates of our online courses have been higher than the success rates of our face-to-face courses. During the consecutive 2016-2017 and 2017-2018 years, the success rates of our online courses were slightly higher than the success rates of our face-to-face courses (by 2% and 3% respectively). During the following two 2018-2019 and 2019-2020 years, the success rates of our online courses were higher than the success rates of our face-to-face courses by approximately 10%; this difference is due to the success rates of our online courses increasing faster than the success rates of our face-to-face courses during the 2018-2019 and 2019-2020 years (e.g., In the 2018-2019 year, the success rate of our online courses increased 11% from the prior year whereas the success rate of our face-to-face courses increased 3% from the prior year). However, the success rate of our face-to-face courses have continued to increase and, in the following 2020-2021 year, the success rate of our face-to-face courses (74%) was once again closer to the success rate of our online courses (78%).

Thus overall, the success rate of our online courses and the success rate of our face-to-face courses have both improved since the 2016-2017 year. From the 2016-2017 year to the 2020-2021 year, the success rate of our online courses has improved by about 10% and the success rate of our face-to-face courses has improved by about 8%. While the success rate of our online courses was slightly higher than the success rate of our face-to-face courses in the most recent 2020-2021 year, they both increased to similar values (78% for online vs 74% for face-to-face). Interpreting these data is quite challenging due to many confounding variables. Over the period of analysis (1) the mix of courses which were taught online and contribute to the statistics, (2) the identity, training and experience of the instructors of the online courses, (3) the assessment options available to instructors, (4) the online support services available to instructors and students, and (5) the motivation and opportunity that drove students to choose online learning and to persist in the class in that modality were all vastly different early in the analysis period than these factors were during the last year of analysis. In the transition from face-to-face to online instruction the overall course content, objectives and outcomes remain the same. However the pedagogy and the philosophy of assessment and its implementation have, depending upon the instructor, been completely reimagined. Given all these variables and the limited data set, how do interpret the differential success rates we observe? As assessment methods have changed, are we maintaining the same degree of academic rigor independent of modality? If we apply similar changes in pedagogy and assessment to our face-to-face courses, how might that affect student success in that modality? These are important questions that we will strive to answer in the upcoming years and will be useful as we consider the range of modalities of classes (e.g., fully online, hybrid, and/or face-to-face) to offer our students to better serve the learning community.

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At the course-level, success rates from 2016 to 2021, including the pandemic-induced transition to entirely online or hybrid modalities, success rates decreased most in Majors Biology courses: BIOL 230 (-13 %) and BIOL 225 (-5 %). These courses require heavy use of hands-on specimens and special equipment, and virtual labs and interactions did not seem to work well for these STEM majors.

In contrast, success rates jumped in allied health prerequisite courses (BIOL240/ BIOL250/ BIOL260) by 9%, 43%, and 17% respectively. Unfortunately, these statistics only compare the first and last years of the analysis period; we are not provided with course-specific success data during the intervening years. Such data would indicate whether there has been a gradually increasing trend to improvement or whether the improvement only occurred in the final (pandemic) year. A continual trend of improvement might be attributed to varied interventions that have been implemented by faculty and support staff over recent years. Alternatively, if the improvement is isolated to the final/pandemic year, we must search for other explanations. These might include changes in pedagogy due to course modality, changes in assessment and/or academic rigor, or increased resolve and resiliency by students motivated through the pandemic to pursue careers in health professions.

Non-majors courses also made significant jumps in success rates (8%-23% improvements), as new students enrolled in pursuit of new careers or upward mobility amidst the rising unemployment and uncertainty of the pandemic. These results could provide impetus to investigate more online and hybrid offerings for health prerequisite courses. However, withdraw rates were particularly high in BIOL 100 (entry-level nonmajors science) and BIOL 250 (usually the first 200-level health-major prerequisite course). Do these outcomes suggest a "weeding out" effect - those who aren't succeeding choose to withdraw from the course whereas those who are succeeding choose to persist? Or do they suggest a failure of faculty or students to appropriately transition to online teaching and learning? Without comparative data from prior years and without any substantive information about the reason students are withdrawing from a course, we must be cautious about drawing conclusions. Nevertheless, these data highlight (1) the need to ensure appropriate student preparedness and support interventions for students who are just beginning their studies in subjects which present a new type and level of challenge, (2) the need for substantive research through PRIE to determine the proximate causes for student withdrawal in target courses.

9A. SLO Assessment - Compliance: The following BIOL courses are currently in the Cañada College catalog:
BIOL 100 - This course was last assessed in spring 2018.
BIOL 110 - This course was last assessed in fall 2017.
BIOL 130 - This course was last assessed in spring 2021.
BIOL 132 - This course was last assessed in spring 2017.
BIOL 225 - This course was last assessed in spring 2017.
BIOL 230 - This course was last assessed in fall 2019.
BIOL 240 - This course was last assessed in fall 2019.
BIOL 250 - This course was last assessed in spring 2021.
BIOL 260 - This course was last assessed in spring 2021.
BIOL 310 - This course was last assessed in spring 2019.

During this program review we have discovered that we have not updated our SLO assessment records for 40% of our courses within the last 3 years. While faculty teaching these courses have engaged in ongoing cycles of assessment/ reflection/revision, the formal documentation of this process has fallen through the cracks. We can point to changes in department faculty, extended leaves, and the pandemic as contributing factors to explain our shortcoming but ultimately we simply dropped the ball on training instructors and monitoring our compliance in the Nuventive database. This program review has highlighted an opportunity for us to meet as a department and revisit our plans for course and program assessment. Our new colleagues have experience teaching at other institutions and may be able to bring new perspective on how we can make SLOAC more consistent, robust and meaningful.

9B. SLO Assessment - Impact: BIOL 130 Human Biology
SLO: Find, evaluate the validity of, and analyze information about contemporary topics in human biology.
Before the pandemic, some face-to-face BIOL 130 courses had a semester-long "Current Issues Project" in which students explored a current controversial topic in biology, analyzed information from several sources, and presented their conclusions to the class as a poster. When the pandemic lockdown occurred in March 2020, we had to quickly modify the way we organize, teach, and assess our students to be compatible with the new online modality. As a result, we required students to write up their project as a paper instead of presenting it as a poster. After informally assessing the outcome and using perspective gained through professional development about equity-focused practices, we decided that it was important to (1) provide students with more opportunities to receive feedback from the instructor and/or colleagues, (2) to allow students more opportunities to revise their projects, and (3) to provide more flexibility and create a range of strategies for assessment. In the following semester (Fall 2020) Dr. Julie Luu adapted the "Current Issues Project" to have students first present their project to the class as a 7-10 minute video and, after receiving feedback from their colleagues and instructor, then write up their findings as a paper. The result was that 70% of students exhibited high proficiency (scoring 80% or better) in achieving the SLO by presenting their project as a video, while 67.5% of students exhibited high proficiency (scoring 80% or better) in achieving the SLO by writing it as a paper. Students reported to Dr. Luu through a feedback survey that they appreciated having different ways to present their project; some students connected with one method more than the other. Through reflecting on these outcomes, Dr. Luu currently allowing students to consider their own strengths and choose the way that they can best present their project in an online class:

whether through a video to the whole class or through a written paper. Both manners of assessment are appropriate. Giving students more flexibility and choices in how their performance is measured is a recommended method for reducing equity gaps in student performance and will ideally help more students achieve competency (70% or higher) and proficiency (80% or higher) in this course outcome.

BIOL 230
Cell & Molecular Biology was last assessed in fall 2019 before the current pandemic hit, but after moving into the new state-of-the-art Science & Technology Building, Building 23. Since this building presented a significant upgrade to student lab spaces and lab resources, we decided to assess SLO #5 (previously, SLO #7): Laboratory Competency and use of the Scientific Method. We were interested to see if this correlated with a positive impact on student lab performance.

Students enjoyed the brand new labs during fall 2019, and did a great job on lab reports on Enzyme activities (assessed separately). On the lab practical exam, while most students did very well, we got the sense that many were overwhelmed with end-of-semester stress and many other assignments and exams coming due the week before finals, which is when we have the Lab Practical. That being said, 78.3% of students exhibited good Competency (Scoring over 70% of the practical exam points) on the lab practical -- successfully displaying knowledge of lab experimental concepts, data analysis, and hands-on technique. 57% of students scored 80% or better, showing high proficiency with lab concepts and techniques.

While criteria are met, we expect that students should show closer to 90% or better success rate at achieving good competency. We will look towards providing more formative quiz questions and review sessions earlier in the semester to make sure they are maintaining the mental skills and manual techniques through the end of the semester.
It is notable to mention that Practical Exams were not used for assessments during the 2020-2021 shift to fully (or nearly-all) online lab experiments.

BIOL 240
Much like BIOL 230, BIOL 240 was last assessed in fall 2019 before the current pandemic hit, but after moving into the new state-of-the-art Science & Technology Building, Building 23. Since this building presented a significant upgrade to student lab spaces and lab resources, we decided to assess SLO #5 (previously, SLO #6): Laboratory Competency -- microbial culturing & testing techniques, and data analysis. We were interested to see if this correlated with a positive impact on student lab performance and learning.
Students enjoyed the brand new labs and fantastic new Science Building, Building 23, during Fall 2019, and did a great job on lab reports on isolation and identification of unknown microorganisms (assessed separately). During the lab practical exam, we got the sense that many were feeling a bit overwhelmed with end-of-semester stress and many other assignments and exams coming due the week before finals, which is when we have the Lab Practical. That being said, my Microbiology students showed incredible resiliency that semester, with 92% of students exhibited good Competency (Scoring over 70% of the practical exam points) on the lab practical -- successfully displaying knowledge of lab experimental concepts, data analysis of biochemical tests and selective and differential media, and hands-on technique. Impressively, 79.4% of students scored 80% or better, showing high proficiency with lab concepts and techniques.
Efforts in improving student engagement during labs, in regularly assessing lab competency (formative assessments) on regular quizzes and notebook assignments, as well as organized review sessions on study guides for the lab practicals have shown a consistently positive effect on student performance on the Lab Final Practical Exam. :-)
It is notable to mention that Practical Exams were not used for assessments during the 2020-2021 shift to fully (or nearly-all) online lab experiments.

The current Pandemic forced MANY changes to how we organize, teach, deliver content, and assess our courses and students -- especially for courses with Laboratory experiments that require specialized equipment. We assess and evaluate student performance in meeting SLOs EVERY semester, though most often this is done informally for our own knowledge. We are dedicated to constant improvement as educators, and to constantly adapting to better meet students' needs. We are currently assessing SLOs for online & hybrid laboratory courses like BIOL 230 and BIOL 240 this semester and will have more information soon. Still, we have been forced (though beneficially!) to shift our focus on how to evaluate student laboratory performance.
Prior to the pandemic and online labs, students worked in small groups of 2-3 to analyze data and compose formal written "Laboratory reports". During the pandemic, such lab reports have been kept to a few per semester (so as not to overburden students nor instructors), and have been shifted to a "Laboratory Discussion" format, where students can comment, encourage, and gently critique each other's data analysis, explanations, and presentation of tables and graphs. Pre-pandemic, students performed well on the written Lab Reports: average score of 87.7% on the Enzyme Kinetics report in BIOL 230; average score of

88.5% on the Bacterial Culture lab report in BIOL 240. During the pandemic (fully online virtual labs) students continued to perform strongly: average score of 88.3% on the Enzyme Kinetics discussion and report in BIOL 230; average score of 88.9% on the Bacterial Culture discussion and report in BIOL 240.

These new individual Discussions involved a broader consideration of each others' work, and stimulated more evaluation of each students' own work. Noting that most of the discussion happens after the submission of the online discussion/report (though changes/corrections can be made for several days), students continued to meet our expectations of strong scores on laboratory reports.

In BIOL 230 (SLO #5), in the fall 2019 report on Enzyme kinetics and properties, students averaged 87.7% on the Lab Reports. In fall 2020 (fully online & synchronous -- all VIRTUAL labs), students averaged 88.3% on the similar report on Enzyme kinetics/properties and Respiratory Metabolism. Noting that most of the discussion happens after the submission of the online discussion/report (though changes/corrections can be made for several days), students continued to meet our expectations of strong scores on laboratory reports.

In BIOL 240 (SLO #5), in the fall 2019 report on Bacterial Culture and Isolation/Identification, students averaged 88.5% on the Lab Reports. In fall 2020 (fully online/at-home synchronous), students averaged 88.9% on the similar report. Again, noting that most of the discussion happens AFTER the submission of the online discussion (though changes/corrections can be made for several days), students continued to meet our expectations of strong scores on laboratory reports.

Therefore, as we go along, especially under dramatic circumstances such as we've faced for the last two years, we constantly reevaluate our students and our teaching and assessment methods. Despite the unfavorable circumstances, we have been able to adapt and still provide quality education that meets our pre-existing instructional standards and SLOs. We have also found ways to keep our students engaged in the material and with each other.

BIOL 250 & 260
Note: Although not associated with any specific SLO, the following narrative illustrates another way in which our faculty are approaching assessment of student learning.

We all have heard the saying, "when life gives you lemons, make lemonade!" When faced with the "opportunity" provided by the pandemic to convert his courses to an online modality, Prof. Hirzel decided it was time to re-imagine his approach to teaching and assessment using inspiration from the Faculty Learning Program and various workshops on course design with an equity focus. Typically assessments in biology 250-260 involve lecture and lab quizzes that lead up to three non-comprehensive exams. When moving these exams to an online modality, there are very few options for proctoring to ensure the integrity of the testing process. Prof. Hirzel felt that the downsides to remote proctoring outweighed the benefits. So he converted all of the exams to several lower-stakes open-note but timed quizzes, with additional practice quizzes for preparation. To augment those scores he implemented multiple project-based assessments. Some projects are completed by students individually to reflect individual achievement while other projects were completed by small teams to facilitate peer teaching.

Preliminary results from the first semester still need to be analyzed at a more granular level and comparisons to the pre-pandemic assessment methods need to be performed. In their first incarnation, many of the project-based assessments showed significant promise. Students expressed that they appreciated the alternative form of assessment. Project scores were generally were quite high. Lower scores often indicated confusion in directions/expectations rather than indicating a failure to achieve learning outcomes. Prof. Hirzel will continue refining and improving these projects and assessing whether they are a more effective method of evaluating student learning than traditional in-person exams.

10. PLO Assessment: We use our SLOs in Laboratory Competency as a proxy to assess our PLO for the Scientific Method (PLO3). As mentioned in section 9B above, our laboratory competency SLOs has been assessed regularly for both BIOL 230 (Majors Cell & Molecular Biology) and BIOL 240 (General Microbiology, for allied health prerequisites). Students have done very well in both the in-person (fall 2019) and fully online/distance education (fall 2020) course modalities. It also will be interesting in the near future to evaluate how well these SLOs/PLOs are being met in our non-majors Biology courses (BIOL 100/110/130).

Based on strong conceptual explanations, formed questions, constructed hypotheses, and clear presentation and analysis of data, 91% of students in BIOL 230 in fall 2020 (fully online, synchronous labs) demonstrated competency and great proficiency (scored 80% or better) in Scientific Methodology on their lab reports on Enzyme Kinetics and Cellular Respiration. This represents moderately higher proficiency than the 87% of students in on-campus labs during fall 2019, but lower successful showing of competency (100% scored over 70% on the lab reports).

In the same fashion, students in BIOL 240 demonstrated 98% basic competency (scored 70% or better) and 91% strong proficiency (scored 80% or better) in the online synchronous lab environment during fall 2020, in lab discussions on Microbial Isolation & Biochemical Analysis Experiments. This is a moderate drop from the 100% basic competency and 95% proficiency demonstrated in the new Science Building/Labs in fall 2019 on-campus (in-person).

Taken all together for both courses, we conclude that while online preparation is still very successful, perhaps the lack of in-person community, group teamwork, and interaction with instructors is a slight disadvantage to the learning experience and biology major and pre-health students' ability to achieve high success rates. Yet, of course, there have been many other distractions as well in students' lives during the current pandemic.

Program Review Narrative Status: Complete

Goal Description: Future of Health Science discipline

Reassess role of Health Science discipline at Cañada College

Goal Status: 2 - Continuing (PR)
Relevant Program Review Cycle: 2019-2020, 2021-2022
Estimated Start Date:
Estimated Completion Date:
Who's Responsible for this Goal?: Department faculty
Please select the college goals with which your program goal aligns.: Student Completion/Success - Provide educational and student services programs that highlight inclusivity, diversity, and equity in their mission to help students meet their unique educational goals and minimize logistical and financial barriers to success., Organizational Development - Focus institutional resources on the structures, processes, and practices that invest in a diverse student population and prioritize and promote equitable, inclusive, and transformative learning.
Please select the college strategic initiatives with which your program goal aligns.: Develop Clear Pathways

Goal Description: Institutionalization of EPIC tutoring program

Obtain college funding for a permanent EPIC tutor coordinator to institutionalize the program and make it available to a wider variety of courses, within biology and beyond.

Goal Status: 2 - Continuing (PR)
Relevant Program Review Cycle: 2019-2020, 2021-2022
Estimated Start Date:
Estimated Completion Date:
Who's Responsible for this Goal?: Division faculty and staff, Dean Thompson, VPI
Please select the college goals with which your program goal aligns.: Student Completion/Success - Provide educational and student services programs that highlight inclusivity, diversity, and equity in their mission to help students meet their unique educational goals and minimize logistical and financial barriers to success., Organizational Development - Focus institutional resources on the structures, processes, and practices that invest in a diverse student population and prioritize and promote equitable, inclusive, and transformative learning.
Please select the college strategic initiatives with which your program goal aligns.: Improve Student Completion, Implement Guided Pathways, Institutionalize Effective Structures to Reduce Obligation Gaps

Action Plans

2018-2019 - The biology program will help author and support a New Position Proposal requesting that the college fund a permanent position for an EPIC tutor coordinator. (Active)

Who's Responsible for Completing this Action Plan?: Carol Rhodes and interim Dean Windham
Estimated Completion Date:

Goal Description: Improve instructional outcomes by investing in

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equipment for funding in FY 2022-23

Purchase instructional equipment to replace broken or aging equipment that is required to implement current curricula. Purchase equipment to enhance and develop curricula.

Goal Status: 1 - New (PR)
Relevant Program Review Cycle: 2021-2022
Estimated Start Date: 10/15/2021
Estimated Completion Date:
Who's Responsible for this Goal?: Biology faculty, Dean Thompson, VPI Robinson
Please select the college goals with which your program goal aligns.: Organizational Development - Focus institutional resources on the structures, processes, and practices that invest in a diverse student population and prioritize and promote equitable, inclusive, and transformative learning.
Please select the college strategic initiatives with which your program goal aligns.: Improve Student Completion

Resource Requests

Digital block heater (augment existing equipment) - VWR: 800 932 5000
cat# 75838-270, digital block heater ($833.22)
1 item x $833/item

Status: New Request - Active
Type of Resource: Supplies (Items less than $5000)
Cost: 833
One-Time or Recurring Cost?: One-Time Cost
Critical Question: How does this resource request support closing the equity gap?: All students in our lab benefit from having sufficient numbers of functioning equipment so that they can learn the lesson objectives and experience what it is like to actually do science.
Critical Question: How does this resource request support Latinx and AANAPISI students?: All students in our lab benefit from having sufficient numbers of functioning equipment so that they can learn the lesson objectives and experience what it is like to actually do science.
Resource Priority Ranking: High Priority

Dissecting Trays (replacement of aging equipment) - Our existing dissecting trays are beginning to take on damage and need to be replaced.

NEBRASKA SCIENTIFIC: (800) 228 7117
cat# D4125, large dissecting tray
purchase 15 each at $54.95

Status: New Request - Active
Type of Resource: Supplies (Items less than $5000)
Cost: 825
One-Time or Recurring Cost?: One-Time Cost
Critical Question: How does this resource request support closing the equity gap?: These trays are used to support non-majors, allied health majors and biology majors students. All will benefit from having equipment that isn't broken.
Critical Question: How does this resource request support Latinx and AANAPISI students?: These trays are used to support non-majors, allied health majors and biology majors students. All will benefit from having equipment that isn't broken.
Resource Priority Ranking: High Priority

Gel electrophoresis gel boxes and power supplies (replace failing/obsolete equipment) - The manufacturer of our current gel boxes is no longer in business making replacement/repair of our 15-year old equipment impossible. These equipment are beginning to fail and need to be replaced. They are shared equipment among multiple courses.

FISHER SCIENTIFIC: 800 766 7000

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cat# 09-528-110, Owl B1A horizontal mini gel electrophoresis system, 16x10.5cm ($658.50)
16 items x $660/item = $10,560

CAPITOL SCIENTIFIC: 800 850 1167
8x cat# TSOWL-105ECA-LVD, Owl EC-105 Compact Electrophoresis power supply system, 120V ($684.78)
8 items x $690/item = $5,520

Status: New Request - Active
Type of Resource: Supplies (Items less than $5000)
Cost: 16080
One-Time or Recurring Cost?: One-Time Cost
Critical Question: How does this resource request support closing the equity gap?: Without this equipment we are unable to offer our current laboratory curricula. This would negatively affect ALL of our students and diminish their learning experience.
Critical Question: How does this resource request support Latinx and AANAPISI students?: Without this equipment we are unable to offer our current laboratory curricula. This would negatively affect ALL of our students and diminish their learning experience.
Resource Priority Ranking: High Priority

Mini-centrifuges (augment existing equipment) - FISHER SCIENTIFIC: 800 766 7000
cat# 07-203-954, Corning mini microcentrifuge
4 items x $590/item = $2360

Status: New Request - Active
Type of Resource: Supplies (Items less than $5000)
Cost: 2360
One-Time or Recurring Cost?: One-Time Cost
Critical Question: How does this resource request support closing the equity gap?: All students in our lab benefit from having sufficient numbers of functioning equipment so that they can learn the lesson objectives and experience what it is like to actually do science.
Critical Question: How does this resource request support Latinx and AANAPISI students?: All students in our lab benefit from having sufficient numbers of functioning equipment so that they can learn the lesson objectives and experience what it is like to actually do science.
Resource Priority Ranking: High Priority

UV-Vis Spectrophotometer (replacement of end-of-lifed equipment) - Our Cell/Molecular Biology majors labs use spectrophotometers for multiple cellular and biochemical assays. About 16 years ago we began purchasing low-cost spectrophotometers from a small company (UNICO) which are now unavailable (discontinued?) as are their replacement parts (bulbs, etc.). Four of the specs have started to fail or have frequent errors. These devices are crucial to keep our labs functioning and running efficiently. We have researched the lowest-cost, high-quality spectrophotometers that we can find (with UV range for nucleic acid analysis needed), and found these from Fisher Scientific/Thermofisher. We hope that the discount promotion holds out until next year, but we need to purchase these new spectrophotometers and cuvette cell changers ASAP.
We need 8 spectrophotometers with 8 Cuvette Multicell Changers

Spectrophotometer Manufacturer: Thermo Scientific™ 840301000PR21H2; Catalog No.03010PR21H2
$5,880.00 / Each X 8 = $47,040.00

CUVETTE Multicell Changer/carousel Manufacturer: Thermo Scientific™ 840303400; Catalog No.14-385-374
$267.00 / Each X 8 = $2136.00

https://www.fishersci.com/shop/products/biomate-160-uv-vis-spectrophotometer-promo-3/03010PR21H2

https://www.fishersci.com/shop/products/multi-cell-accessories-genesys-140-150-180-biomate-160-spectrophotometers-3/14385374

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Status: New Request - Active
Type of Resource: Equipment (Items Over $5000)
Cost: 49176
One-Time or Recurring Cost?: One-Time Cost
Critical Question: How does this resource request support closing the equity gap?: Without this equipment we are unable to offer our current laboratory curricula. This would negatively affect ALL of our students and diminish their learning experience.
Critical Question: How does this resource request support Latinx and AANAPISI students?: Without this equipment we are unable to offer our current laboratory curricula. This would negatively affect ALL of our students and diminish their learning experience.
Resource Priority Ranking: High Priority

Goal Description: Increase department budget for FY 2022-23

Increase the annual department budget to include ongoing annual instructional equipment needs

Goal Status: 1 - New (PR)
Relevant Program Review Cycle: 2021-2022
Estimated Start Date:
Estimated Completion Date:
Who's Responsible for this Goal?: Dean Thompson and VPI Robinson
Please select the college goals with which your program goal aligns.: Student Completion/Success - Provide educational and student services programs that highlight inclusivity, diversity, and equity in their mission to help students meet their unique educational goals and minimize logistical and financial barriers to success.
Please select the college strategic initiatives with which your program goal aligns.: Improve Student Completion

Resource Requests

Increase department budget by $3000 - Providing at-home biology kits for students taking online lab courses is very expensive. While the pandemic forced us to develop these kits, we believe there is persistent student demand for the online learning modality. We have reduced the number of online sections and have learned how to streamline kit construction. However we continue to encounter escalating costs due to the global supply chain disruptions, delivery costs and price increases. Augmentation is needed in order to keep us within budget next year.

Status: New Request - Active
Type of Resource: Budget Augmentation
Cost: 3000
One-Time or Recurring Cost?: Recurring Cost
Critical Question: How does this resource request support closing the equity gap?: Providing online laboratory courses meets the needs of a variety of students, but especially those who are economically disadvantaged and need to work during the day when our F2F courses are offered.
Critical Question: How does this resource request support Latinx and AANAPISI students?: Unfortunately we have no statistics on how many of our online-learners are either Latinx or AANAPISI.
Resource Priority Ranking: High Priority

Goal Description: Update equipment and expand use of Molecular Techniques in the laboratory.

Microbiology and Cell/Molecular biology techniques are expanding and improving constantly. For example, classic microbial identification techniques (growth and biochemical methods), though very educational about microbial physiology, are becoming outdated in modern laboratories. Similarly, molecular cloning and genomic analysis techniques have become commonplace in biomedical research. We will investigate more ways that we can better incorporate modern molecular technologies (especially the now-standard PCR-based techniques, and possibly simple CRISPR gene modification technology) so commonly used now in biological

and clinical laboratories, especially for our BIOL 230 and BIOL 240 labs.

Goal Status: 1 - New (PR)
Relevant Program Review Cycle: 2021-2022
Estimated Start Date: 10/15/2021
Estimated Completion Date:
Who's Responsible for this Goal?: Biology faculty
Please select the college goals with which your program goal aligns.: Organizational Development - Focus institutional resources on the structures, processes, and practices that invest in a diverse student population and prioritize and promote equitable, inclusive, and transformative learning.
Please select the college strategic initiatives with which your program goal aligns.: Improve Student Completion

Goal Description: Create opportunities for students to gain experience with anatomy dissection

During the pandemic students were prohibited from coming to campus and access to dissection opportunities was eliminated. In response, we developed at-home kits containing sheep hearts for students to dissect. Students overwhelmingly reported this was one of their favorite and most memorable aspects of the course! We intend to expand on this effort by involving more students in dissections of human cadavers and, hopefully, to provide the opportunity for them to earn credit (through BIOL 695) for their experience. Dissection provides a unique experience for learning and mentoring between faculty and students.

Goal Status: 1 - New (PR)
Relevant Program Review Cycle: 2021-2022
Estimated Start Date: 10/15/2021
Estimated Completion Date:
Who's Responsible for this Goal?: Anatomy faculty
Please select the college goals with which your program goal aligns.: Student Completion/Success - Provide educational and student services programs that highlight inclusivity, diversity, and equity in their mission to help students meet their unique educational goals and minimize logistical and financial barriers to success.
Please select the college strategic initiatives with which your program goal aligns.: Connect Students with Internships and Mentorships

Goal Description: Develop exercise physiology-related laboratory curricula

In the last 2 years we have incrementally been building capacity to accomplish exercise physiology laboratories. Six exercise cycles were obtained when building 23 was completed. In fall 2021 we received funding for 3 gas analysis systems that will enable us to measure the metabolism of students during variable test conditions. Now we need to develop laboratory curriculum that takes advantage of these equipment. In doing so, one challenge we will have to face is the limitations of measuring respiratory output from students in the age of coronavirus transmission. This may delay actual implementation of any new lab exercises.

Goal Status: 1 - New (PR)
Relevant Program Review Cycle: 2021-2022
Estimated Start Date: 10/15/2021
Estimated Completion Date:
Who's Responsible for this Goal?: Physiology faculty
Please select the college goals with which your program goal aligns.: Organizational Development - Focus institutional resources on the structures, processes, and practices that invest in a diverse student population and prioritize and promote equitable, inclusive, and transformative learning.
Please select the college strategic initiatives with which your program goal aligns.: Improve Student Completion

Goal Description: Evaluate optimal modality for biology courses

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All of our biology courses can now be offered in three modalities: fully online, hybrid, and face-to-face in-person. We will need to evaluate the effectiveness of each modality and its effect on student learning and success. We will evaluate and revise our pedagogy and assessment methodologies to match these modalities.

Goal Status: 1 - New (PR)
Relevant Program Review Cycle: 2021-2022
Estimated Start Date: 10/15/2021
Estimated Completion Date:
Who's Responsible for this Goal?: Biology faculty
Please select the college goals with which your program goal aligns.: Student Completion/Success - Provide educational and student services programs that highlight inclusivity, diversity, and equity in their mission to help students meet their unique educational goals and minimize logistical and financial barriers to success., Organizational Development - Focus institutional resources on the structures, processes, and practices that invest in a diverse student population and prioritize and promote equitable, inclusive, and transformative learning.
Please select the college strategic initiatives with which your program goal aligns.: Improve Student Completion