

2018-2019 Program Review Cycle



Instructional Programs

CAN Program Review (Instructional) - Biological & Health Sciences (Odd Year)

Program Review Narratives

2018-2019

Instructional Program Review (IPR)

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Executive Summary

0. Executive Summary: The Biology and Health Science Program has a strong tradition of innovation. In the past, we have experimented with honors courses, learning communities, distance education, and field study abroad. In more recent years, we have been at the forefront of participating in statewide initiatives such as C-ID course alignment and Associate Degree for Transfer (ADT) creation, and local initiatives including General Education Pathways. Our program serves a broad range of students, including science majors and general education students. Biology and Health Science coursework is integral not only to the degrees housed in our own departments, but also to degrees and certificates offered in other departments, including Human Services and Kinesiology.

Our faculty provide relevant educational programs that prepare our students exceptionally well for success in a four-year institution or career training program. Through skillful management and monitoring of enrollment trends, we are able to consistently schedule the courses students need, when they need and without conflicts, all while maintaining high fill, load, success and retention metrics. Not only are we responsive to these internal data sources, but we also keep a keen eye toward external labor market and community trends. When an opportunity arises, such as the invitation to develop a Neurodiagnostic Technology program, our response is enthusiastic, rapid and nimble. Unfortunately, in this particular case, we are very disappointed at the opportunity lost for our students due to what may be insurmountable challenges in establishing this new program. But we firmly believe that no program can be successful unless it is built collaboratively with the commitment of partner institutions.

We continue to look forward and to provide ourselves with the professional development necessary to improve our curriculum, our pedagogy, and our students' success. To that end we have successfully recruited a new full-time faculty member devoted to invigorating our non-majors courses and bringing fresh perspectives and experience to our department's community of scholars. We are expanding our students' worldview by offering a study abroad course to Belize and students' transfer potential by obtaining a federal grant to fund undergraduate research opportunities. We are pursuing college funding for institutionalizing and expanding the EPIC tutoring program and for creating an Anatomy Student Success Initiative. We eagerly await our new building to take advantage of the updated laboratories, native garden "laboratory", student research space, and flexible classroom learning spaces in which we can experiment with the continual transformation of teaching and learning.

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 have any courses articulated with high schools.

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. Since the summer of 2013, there have been 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. Some of our biology courses are major components of the Associate in Arts Degree and the AA-T in Kinesiology. Since the summer of 2013, there have been 17 students graduating with an AA in Kinesiology and 25 in the AA-T. According to the CSU Data Dashboard, from 2012-14 there were 14 student transfers from Cañada into CSUs in biology-related disciplines, 11 in health science, 16 in kinesiology, and 2 in nutritional sciences. These transfer data pre-date the establishment of most Associate Degrees for Transfer so we will have to wait for more current data to see the effects of our ADTs.

3. Community & Labor Needs: For the last 14 years Cañada has enjoyed a successful partnership with SFSU and the Sequoia Healthcare District to offer on a bachelor's degree in nursing program on our campus through the University Center. Without these dedicated partners, and especially the commitment of Sequoia Hospital to provide clinical training sites, the program would not have been possible. Similarly, the existence of committed clinical training sites is the lifeblood to Cañada's decades-old Radiologic Technology program. In contrast, Cañada's phlebotomy certification program ran only a few years before it had to be discontinued due to the lack of clinical training sites. A similar fate befell Cañada's Chemical Laboratory Technician program. These experiences lead us to believe in the essentiality of having specific industry partners who are vested in the success of allied health CTE programs.

in light of these experiences, our program faculty were very excited when we were approached in summer 2016 by the University of California San Francisco to develop an associate's degree in Neurodiagnostic Technology (NDT) to meet their labor needs. Our faculty and dean worked with UCSF over the course of 2016-17 and the college provided \$32.7K from the Strong Workforce Program to support curriculum development. Initial work on curriculum began but was left unfinished with the resignation of the contracted adjunct faculty member. Unfortunately, to-date, neither the college's Workforce Development Director nor UCSF has been able to find a discipline expert willing to complete the curricular work. As a result, all progress in NDT program development has been suspended. Our faculty have suggested that the interim Workforce Development Director consider either (a) reaching out to the NDT faculty at Orange Coast College to offer an independent contract for the curriculum development, or (b) reaching out to Stanford Hospital to initiate a similar partnership with their NDTs. With Stanford's aggressive expansion throughout the Bay Area it is possible they may see the benefit of partnering with us to provide for their long-term staffing needs. If, however, neither option is met with success, then regrettably, this avenue of new program development should be considered closed.

Recently the college's Workforce Development Director expressed some interest in pursuing an associate's degree in Medical Laboratory Technology (MLT). Our faculty approach this prospect with an open-mind but also with significant concerns. We have provided our dean with information from 2007-2009 when we last considered creating a MLT program. At that time, in response to the research findings from the Regional Health Occupations Resource Consortium (RHORC) and from the challenges reported by the DeAnza MLT program, we determined that without a specific hospital partnership in place, there was insufficient clinical and job placement opportunities to justify a second MLT program in the Bay Area. While it has been nearly 10 years since that assessment, we have also learned that the MLT program at Diablo Valley College was discontinued in 2014-15 due to budget constraints and labor market uncertainty. According to this 2015 report <http://www.eastbayworks.com/wp-content/uploads/2016/06/Occupational-Profile-Medical-Laboratory-Technician-Bay-Area-2015.pdf> from the Centers of Excellence, it is likely that a single MLT program (DeAnza College) can continue to meet of the needs of most Bay Area hospitals without the creation of a second MLT program in the region.

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

Looking Back

4. Curricular Changes: The disciplines of Biology (BIOL) and Health Science (HSCI) successfully underwent their five-year Curriculum Update Cycle during the 2016-2017 academic year. No courses that remained active in this update required major revisions. One course was banked in Biology (BIOL 103 Native Plants and Wildflowers), and one course was banked in Health

Science (HSCI 115 Introduction to Health Care and the Health Professions).

BIOLOGY

In Fall 2018, we are offering BIOL 100 Introduction to the Life Sciences as a hybrid course: part online, part in -person (2 Saturdays) and completing with an 8-day study abroad trip to Belize. One unique aspect of this program is that it is done jointly with Anthropology Prof Jessica Marshall, who is teaching ANTH 110, Cultural Anthropology, as part of the program. Students can earn 6.0 units of transferable General Education credits in two different IGETC groups by taking both courses. The trip will occur in January and end before the start of Spring term 2019, meaning that course sequences in student SEPs will not be interrupted. The strategy of offering standard courses, as versus special Travel Study courses such as BIOL 381, seems to be more useful for students. It may be time to bank BIOL 380 and 381.

Two lab courses, BIOL 132 and BIOL 110, were scheduled to split the 3 hour lab sessions into two 1.3 hour sessions per week. This schedule made it difficult to conduct certain lab activities that did not fit the shorter time slots and reduced the total lab time available. We are working with the current Dean to avoid this schedule, as much as possible.

HEALTH SCIENCES

HSCI 115 Introduction to Health Care and the Health Professions was banked during the Biology and Health Science disciplines' five-year Curriculum Update Cycle (2016-2017 academic year). This course had not been offered since 2014, and when it was offered regularly, was primarily being offered as part of the Early College programs at local high schools. As of 2014, these schools were no longer offering the health science pathway of which this course was a part, and it was not a requirement for any degree or certificate on campus.

A major effort of Dani Behonick, full-time faculty in Health Science, since our 2016-2017 Program Review, has been to infuse more social justice elements into her Health Science curriculum. Toward this end, she has participated in a variety of social justice-oriented trainings, including regular attendance at the annual Teachers 4 Social Justice conference, and participation in a Transforming STEM Teaching Faculty Learning cohort through CSU East Bay. Her sections of HSCI 100 General Health Science continue to be offered as part of the Social Justice General Education Pathway.

As it currently stands, the HSCI discipline serves a purely general education purpose on the Cañada College campus. Two Health Science courses - HSCI 100 General Health Science and HSCI 116 Women's Health Issues - remain active in the college catalog. However, only HSCI 100 is regularly offered, as past attempts to offer HSCI 116 have been cancelled due to low enrollment, or have run with especially small enrollments.

We continue to think deeply about the place of the Health Science discipline within the greater Biology discipline, and on the Cañada campus. At the time of the 2016-2017 Program Review, Dani Behonick was exploring collaborations with the Early Childhood Education (ECE.) and Human Services (HMSV) disciplines to create program offerings geared toward students interested in public health careers. Since these meetings, the HMSV discipline has been placed on hiatus. It continues to be unclear whether the creation of a public health degree would be beneficial to the campus (based on student demand), or to students (based on transfer and employment prospects). Dr. Behonick is currently considering the possibility of creating an AS-T in Public Health Science (which would require the revision of HSCI 100 for C-ID approval, and the creation of an entirely new Introduction to Public Health course), and is interested to see the results of Skyline College's recent implementation of this degree program.

5A. Progress Report - IPC Feedback: Below is the feedback we received on our 2016-2017 Program Review:

Recommendation/Feedback: Executive Summary - Information needed: Summary of action plans; "Only one sentence describing summary of action plans"

Response: Immediately following the sentence we assume that the reviewers reference in this comment (paragraph 1, final sentence of the Executive Summary of our 2016-2017 Program Review) is a paragraph that details the challenges the Biology department has had in designing and executing action plans. We hope that this very thorough description makes clear the reason that more elaborate action plans were not summarized in this part of our narrative. As stated in the second paragraph of the Executive Summary of our 2016-2017 Program Review:

"Among the four full-time faculty in this program are the current Academic Senate President, the current chairperson of both the local and district-wide Curriculum Committees, current co-chairperson of the college's Technology Planning Committee, the former Accreditation co-chairperson, the former chairperson of the Institutional Planning Committee, the former Student Learning Outcomes Assessment Coordinator and the former co-chairperson of the Center for Innovation and Excellence in Teaching and Learning. A significant challenge in our program lies in our lack of additional full-time faculty. In particular, we would benefit from a faculty member dedicated to our general education offerings in Biology, which serve more than half of the students in our department each semester."

Recommendation/Feedback: Articulation - Information needed: Analysis, Impact on program

Response: We regret the omission of the impact of the new degree programs described in this section of our narrative, and will endeavor to include this analysis in our current narrative.

Recommendation/Feedback: Community and Labor Needs - Information needed: Technology needs, Licensing, Accreditation

Response: We did not include information on changes in technology needs because no changes had occurred; we regret our failure to note that there were "no known changes" in this area. With respect to the feedback that information is needed regarding "Licensing," and "Accreditation," it is not clear what information is needed for these items, as there is no licensing and accreditation specific to the disciplines of Biology and Health Science (and so it is appropriate for us not to have addressed these items). Our best guess here is that the individuals reviewing our 2016-2017 Program Review were not sufficiently familiar with our discipline to be aware of this.

5B. Progress Report - Prior Action Plans: Action Plan: Plan new biology labs for Building 23N

Progress: Our faculty and staff have met every deadline for providing information and feedback to the building architects, consultants, planners, and other ancillary personnel. We continue to provide feedback this semester, often with little advance notice or consideration for teaching schedules. Nevertheless we are excited to see the daily progress on construction and are eager for the date to begin occupancy.

Action Plan: Re-invest in documentation of assessment of student learning in all biology courses

Progress: See sections 9A and 9B of this report

Action Plan: New Full time Biology Faculty

Progress: We are thrilled that we were approved in Spring 2018 to hire a new full-time biology faculty member to specialize in non-majors/general education courses. We successfully hired a new faculty member, Ellen Young, for this position. Ellen began teaching at Cañada as of Fall 2018.

Action Plan: Equipment Requests for 2016-17

Progress: Our program typically requests new equipment each academic year. We received the equipment for 2016-17 and, at the time of writing, are waiting for the arrival of equipment that was approved in 2017-18.

Action Plan: Develop customized physiology labs

Progress: The plan was to develop customized Biopac lessons that would allow us to eliminate a printed/downloadable lab manual. Unfortunately Doug Hirzel has not had sufficient free time outside of his normal/full load teaching schedule in order to begin this work. Instead his free time has been occupied by participating in a Faculty Learning Program (FLP) with San Jose State University (2 semesters in length) to improve teaching and learning in STEM courses. Once this program is complete, he intends to prioritize the lab development once again.

Action Plan: Create a Neurodiagnostic Technology associate's degree program

Progress: Attempts to create an associate's degree program in Neurodiagnostic Technology in collaboration with UCSF, as described in our 2016-2017 Program Review, have stalled indefinitely. Despite approval of this program's creation by the Curriculum Committee and completion of preliminary curriculum work by a contracted adjunct faculty member, this progress was halted with the resignation of this contract faculty. According to former Director of Workforce Development Alex Kramer, our original collaborators at UCSF have failed to identify any additional faculty who can continue this work. Because no faculty currently employed at Cañada College meet minimum qualifications for the Neurodiagnostic Technology discipline, no currently employed faculty are able to write curriculum for this discipline. (Please also refer to the response to question 3 Community and Labor Market Needs)

Action Plan: Collaborate with ACES and STEM/MESA to improve access and completion for underrepresented students in BIOL

Progress: Several full-time Biology faculty have attended the Flex Day sessions (August 14, October 10) on Equity in the Classroom, led by Georgeanne Morin of the STEM Center and Michael Hoffman. Furthermore in September 2018, lead BIOL faculty member, Nathan Staples, was awarded the CCEM/MSEIP grant (\$81K) from the Department of Education to fund a Biological Sciences research project for underrepresented minority STEM students at a local professional research facility. Currently, student applications are being prepared, and local facility partners are being explored (See section 11., Program Planning, part #7 below).

During the Fall 2018 semester, Dani Behonick and Doug Hirzel submitted a proposal for faculty reassigned time to establish an Anatomy Student Success Initiative. The mission of the Anatomy Student Success Initiative is to provide necessary additional

support to BIOL 250 Human Anatomy students on the Cañada College campus, with the specific goal of increasing the retention and success of these students. Increased success and retention in this course will allow more students to continue in the Allied Health and kinesiology pathways, and to continue in their training to become health care providers. Before we can address this retention/success issue and improve departmental/institutional support for these students, we must first conduct focussed inquiry research, at both the local and statewide levels, to determine what form this support should take. If funded, this reassigned time will provide a Faculty Researcher whose, the primary responsibilities will be to complete a thorough needs assessment of the current anatomy program, investigate current local parallel efforts for supporting student success and providing supplemental instruction to bring underprepared students up-to-speed, and investigate current statewide efforts/initiatives for supporting anatomy student success. Following this research and analysis, the Anatomy Student Success Initiative Faculty Researcher will then draft a proposal for an ongoing student support initiative for anatomy student success,, which will be presented to the College administration.

6A. Impact of Resource Applications: Impact of Resource Allocations:

The soil moisture sensors have been used in BIOL 225 as part of longer-term field research projects. Students create hypotheses about environmental factors that affect plant growth and development, and then select field sites on campus to test their hypotheses. Soil moisture is a critical component to assess, and adds important data to their analysis of temperature, rainfall, light, and soil effects on plant development.

The instructional equipment requested by our program during 2017-18 has been approved and is just now beginning to be delivered. We will update the impacts of these resources in our next program review.

Impact of Resource Reductions:

The biology program is required to maintain human cadavers for its anatomy courses to articulate with four year institutions and with workforce training programs such nursing, radiologic technology, surgical technology, and occupational therapy. These cadavers provide students with hands on materials for learning anatomical structures. However, the cadavers must be dissected in advance by trained anatomists. For decades, we have done this by the volunteer efforts of faculty, full and part time, who perform dissections during off hours, vacations, etc., without pay. Last year, the Willed Body Program (WBP) at UCSF, which supplies cadavers within Northern California, accelerated the rate at which it requires institutions to use and return cadavers to UCSF and required us to return virtually all of our existing inventory of dissected specimens. Complying with this directive has significantly increased the workload of faculty and reduces the flexibility we have to spread out the investment of time to perform dissection. As a result, our program faculty authored a proposal to the college requesting an allocation of funds to support up to 50 hours per year to pay a faculty dissector (at special rate). The VP of Administration agreed to allocate these funds into the program's annual budget.

6B. Impact of Staffing Changes: The biology faculty submitted proposals for a new full-time biology faculty member over 5 different request cycles. We were thrilled when the college finally approved funding a fifth faculty member in spring 2018. We immediately began the recruitment process and are very pleased to report the successful hiring of Prof. Ellen Young! Although she has only been working with us for two months, the early impacts of her hiring include:

- a. Time saved by no longer having to write, present and defend a new position proposal;
- b. Excitement around having a new colleague and the fresh perspective she brings to our program, including this program review;
- c. Inspiration from seeing the fruits of her experience/training with SFSU's Science Education Partnership and Assessment Laboratory (SEPAL) and from being the faculty coordinator of Professional Development at CSM
- d. Reinvigoration of General Biology (Biol 110) laboratory by Ellen's implementation of new labs

Carol Rhodes is Principal Investigator for two types of federal grants that fund a substantial portion of STEM Center programs. The Dept of Education GANAS grant (approx \$4.8 million over 5 years) allocates 0.2 FTE reassigned time for her contributions to these programs. The NSF Scholarship grants (one ending next September, another that began this fall) do not budget any time for management, as most of the money goes directly to students as scholarships. Given that the STEM Center positions are entirely grant-funded at this point, some amount of time should be allocated towards writing new grant proposals.

Current State of the Program

7. Enrollment Trends: BIOLOGY

The downward trend following 2012, from 2104 headcount in 2013 to 1904 in 2017, took a notable upward turn in 2017-2018, and rose to 1961. Notably, the end of term headcount in 2017/18 was 1632, 83% retention, vs. numbers of 1648 or 78% retention in 2013/14. In this same 5-year span, FTEF were maintained between 19.7 5 years ago, and 18.3 in the last 3 years. FTES dropped from 351 to 331 in 13/14 to 14/15, but then stabilized near 334 in the last two years. WSCH stayed between 10.5K to start, and stabilizing at 9.9K-10K in the last 4 years. Most importantly, load has remained stable, with about a 2% increase in the last couple of years. Productivity is being maintained at a stable and consistent rate. With the recent loss of our SFSU Nursing School partnership, we can expect some enrollment fill rate declines in the coming year.

Fall semesters 2013-2017 had only minor fluctuations in Fill rates from 86% to 91%, most often in the high 80%. Spring semesters had similar fluctuations between 86% and 92% filled seats. 2017/18 regained a moderate upward trend. Adjusting number of sections seemed to help maintain consistent fill rates and load between 499 and 567, thanks to careful monitoring, data analysis, and planning by the Dean of Science and Technology (Janet Stringer, M.D., Ph.D.) and the office of the Vice President of Instruction. Fall and spring semesters change and alternate which has the most opportunities to increase enrollment and load, so the trends are not always predictable between the semesters of the same academic year. However, for the last two years, fall FTES/Load/Fill rate have been approximately 150/546/90, while spring has been 137/539/87. The moderate dropoff in FTES between fall and spring is likely related to the drops in headcounts at the end of fall, leading into spring. Increased retention and success of students in fall semesters could help improve fill rates, FTES, and headcounts in spring. Our program needs to remain diligent and increase efforts in helping and supporting students early in the academic year, in order to increase retention and improve productivity in the spring semesters.

Evening class fill rates are consistently 5-10% less filled than day classes, but Load is 30-60 points lower in evenings as well. Evening classes and students are a very significant portion, nearly 1/3, of our enrollments. Now, with a new Full-Time faculty in charge of Nonmajors courses, including some of the night sections, we should be able to bump-up fill rates and load with more consistent, quality instruction.

Course by course enrollments have been consistently high in nonmajors biology classes in the fall semesters, filling 85-100+%, while these numbers sometimes dip in to the 60s-70s% in the spring. We will need to find ways to increase student interest and attract new students to these courses during enrollment periods late in the fall semesters. New program/dept. brochures and updated websites could be good ways to increase student awareness and interest in these courses for spring semesters, and to minimize fluctuations in Majors and allied health prerequisite courses (discussed below). This strategy could be employed to help increase night class enrollments too (mentioned above).

Fill rates of Biology Majors courses seem to be more random: BIOL 225 and BIOL 230 fill rates seem to fluctuate independently of each other, and sometimes have drops in the spring and sometimes in the fall. However, except for a couple of low enrolled semesters, fill rates have been 80-100%. We have had improved and more frequent communication between Biology Majors instructors to facilitate and encourage filling of BIOL 225 and BIOL 230 from semester to semester, and early discussions with students as to prerequisites and sequence of course plans that should best suit their needs.

Productivity in allied-health related prerequisites courses (BIOL 240/250/260) have stayed consistently high over 90% most semesters. Health majors and allied-health related career paths remain very strong draws to our Biology Program. Section offerings have been skillfully monitored and adjusted, as evident in the consistent mid-400s to 600 load levels in BIOL courses. We expect that all these course-types will show increases and more consistency as we prepare to move into the brand new and state-of-the-art Science Building (B23) next fall.

HEALTH SCIENCE

A thorough analysis of enrollment trends and their implications was provided in the 2016-2017 Biology/Health Science Program Review. In summary, Cañada's Health Science discipline has experienced a steady decline in the number of sections of Health Science courses offered since the 2011-2012 academic year. Factors that have contributed to this include loss of the faculty member who taught our Spanish-language Health Science courses, the decision to stop offering first aid courses with small class size requirements in Health Science, the loss of concurrent enrollment courses in this discipline at collaborating high schools, the proliferation of courses in general education area E which compete for students with Health Science course offerings, and a college-wide decline in student enrollment.

A comparison of Health Sciences productivity data between the 2016-2017 and 2017-2018 shows a continuation of the trend of declining enrollment in the discipline. The Census headcount (103 in 2016-2017, 54 in 2017-2018), End of term headcount (94 in 2016-2017, 45 in 2017-2018), FTES (10.11 in 2016-2017, 5.40 in 2017-2018), and WSCH (303 in 2016-2017, 162 in 2017-2018), for 2017-2018 are each roughly half what they were in 2016-2017. Comparing FTEF and section number data for these academic years shows that there was 1 fewer 3-unit Health Science course with a maximum enrollment of 50 offered in 2017-2018 as compared to 2016-2017. While this decrease in sections offered would account for some reduction in the parameters discussed earlier, it does not account for the significant decrease observed between academic years. It is also noteworthy that the fill rate for Health Science decreased from 2016-2017 (82.4%) to 2017-2018 (72.0%). This fill rate is below those for the Science and Technology Division (85.0%) and the college as a whole (81.5%) during the same time period. As illustrated throughout the Health Science Productivity Data Packet, the maximum enrollment for Health Science courses is generally 35 or higher; the same data also illustrates that the courses offered in this discipline generally do not enroll enough students to justify such high enrollment maximums. We suggest that a reasonable strategy going forward is to offer just one health science course each

semester, with a maximum enrollment of 30.

The Health Science discipline has experienced unique challenges in recent years. Among these is an increase in the courses offered at Cañada that fulfill CSU General Education Area E (Lifelong Learning & Self-Development), which compete for students with Health Science courses. Whereas the Health Science courses were once the only non-activity courses offered that fulfilled this GE area, the 2018-2019 college catalog lists 8 courses that fulfill CSU area E, only 2 of which are Health Science courses. In addition, Health Science currently functions largely as a discipline that allows students to complete their GE requirements. While Health Science courses are selectives for many programs on campus, these courses are generally not core requirements for degrees/certificates, and there are no degrees or certificates in the Health Science discipline. The sole program on campus that requires Health Science courses for completion is the Community Health Worker Certificate through Human Services (which requires HSCI 100 General Health Science); the future of this program is currently unclear with the Human Services discipline on hiatus. HSCI 100 General Health Science has been offered as part of the Social Justice GE Pathway since the start of the GE Pathways program in Fall 2016; this has yet to translate to an increase in enrollment in the course, or in the Health Science discipline that we can discern.

An associates degree for transfer (ADT) in Public Health Science exists (http://extranet.cccco.edu/Portals/1/AA/TransferDegreesTemplates/TMC_Public_Health_Sci_Template_ORG.docx). Health Science faculty are considering the creation of this ADT; it is not clear that there is sufficient demand on campus. Of note, this degree would require significant modification of course objectives and content of HSCI 100 General Health Science to submit this course for C-ID approval (<https://www.c-id.net/descriptors/final/show/495>) so that it may be used in the degree. Creation of this degree would also require creation of an entirely new Introduction to Public Health course (<https://www.c-id.net/descriptors/final/show/496>).

8-A. Access & Completion: BIOLOGY

Comparing data from our previous Program Review (2016) to the most recent data (2018) indicates that the gender equity gap has decreased from 7.7% to only 5.6% deficiency for males vs. females. This may reflect the loss of SFSU's nursing program from our college, as some biology students were attracted to Canada for its proximity to SFSU's program. The continued majority of females compared to male students may still be a consequence of interest in Allied Health professions, which historically have attracted more females than males. There were no other equity gaps in access, when analyzing by ethnicity.

The largest equity gap in course completion rates (15.6%) is for Black non-Hispanic students. While this seems to be a substantial gap, the number of students reveals that only 6 students achieving success would be enough to close the gap. The gap for Hispanic students is less (9.4%), yet these students comprise a much larger proportion of our enrolled students, such that an additional 62 students would need to succeed in their biology courses to close this gap. Likewise, the gap for Pacific Islander students is 5.9%, yet the low number of students in this category means that only 2 additional successful students would close the gap.

To address these gaps, faculty have been participating in training designed to reduce unconscious bias in classrooms. Two sessions on this topic have been held on Professional Developments Flex Days. Many faculty require students to attend at least some of the STEM Speaker Series talks, which can be inspirational for students when they see someone they identify with as a professional in a STEM career.

Faculty also support STEM Center programs that provide academic services, such as tutoring and study skills training. By holding office hours in the STEM Center, that encourages students to get connected to other services and students that can help them succeed.

HEALTH SCIENCE

In past years, Health Science reported higher retention rates than those of the Science & Technology Division and the College as a whole; the exception is the 2017-2018 academic year, when the retention rate for Health Science (83.3%) fell just below those of the Division (84.0%) and the College (84.4%). One contributing factor is likely the dramatic contraction in sample size for Health Science: these data for the Health Science discipline were based on 54 enrollments, 45 of which were retained and 33 of which were successful. This is half the sample size of the 2016-2017 academic year and one tenth the sample size from the 2013-2014 academic year. In such a small group, all fluctuations will have a more dramatic impact on the results.

Similarly, 2017-2018 was the first year that Health Science's success rate (61.1%) was below those of the Division (71.1%) and the College (72.5%). While the success rates of the Division and College have trended toward increasing, the success rates in Health Science have been in decline. As stated with retention rates, the dramatic decrease in enrollments in this discipline are unlikely to be the only reason for this, and are likely a major factor at play.

According to the 2017-2018 Equity Packet, male students experience a 5.0% equity gap in accessing Health Science courses. This result tracks with data that consistently show women access/utilize health care services more often than men do (Vaidya et al., 2012; Hunt et al., 2011; Bertakis et al., 2000; Cleary et al., 1982) and as such, are more engaged in their health care and health literacy. This suggests that a more targeted outreach effort to male students may be needed, not only to close the equity gap described, but also to address the need to increase men's engagement in their own health.

We are thrilled that no ethnicity or gender gaps have been identified in Health Science course completion.

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8-B. Completion - Success Online: ENROLLMENT TRENDS IN FULLY ONLINE COURSES:

Enrollment in fully online biology courses has generally grown over the last five years: 91, 146, 208, 177, 361. Overall, online enrollments comprised 20% of our total 2017/18 enrolment. Some sections of the following courses were offered fully online: Biol 100 (Intro to Life Sciences), Biol 130 (Human Biology), and Biol 310 (Nutrition).

SUCCESS AND RETENTION TRENDS IN FULLY ONLINE COURSES:

Our success and retention rates in online classes is improving. Our retention rate in fully online courses during the 2017/18 year (83%) was slightly higher than the retention rate for our face to face courses (81%). Our success rates in fully online courses have improved from 63% in 2014/15 to 69% in 2017/18, which slightly higher than our success rates in fully face to face courses (68%) in 2017/2018. There do not appear to be any ethnicities that have consistently lower retention rates or success rates in fully online courses compared to face to face courses.

Looking at the success rates for individual online courses, all but two of our courses had success rates that were higher than 69% in 2017/18. The Biol 100 (Intro to Life Sciences) and Biol 310 (Nutrition) courses however had particularly low success rates (56% and 58% respectively) during Fall 2017/18. The following semester, however, the success rates in both courses increased to above 69%. It is unclear why these two courses showed such low success rates during Fall 2017, but it will be important to watch to see if the success rates for these courses continue to improve or if there is a pattern of poor success rates during Fall semesters.

ENROLLMENT TRENDS IN FULLY ONLINE COURSES:

Hybrid enrollment has grown from 27 students in 2013/14 to 286 students in the 2017/2018 school year. Some sections of Biol 260 (Human Physiology) and Biol 110 (Principles of Biology) are currently offered as hybrid courses. Students enrolled in hybrid courses comprise 16% of our total enrollment.

SUCCESS AND RETENTION TRENDS IN HYBRID COURSES:

Success in hybrid enrollments (92%) was higher than both face-to-face (81%) and fully online courses (83%). This may suggest that hybrid courses are a more successful course model than online or face-to-face courses. However, both of our hybrid courses serve particularly high performing populations of students. Physiology students tend to be diligent students as they have had to succeed in other previous challenging courses. The hybrid Biology 110 course serves many College for Working Adult students, a particularly focused and mature population. To understand the impact of hybrid courses, we would need to compare face-to-face and hybrid courses that are the same course and serve similar population of students. There do not appear to be any ethnicities that have consistently lower retention rates or success rates in fully online courses compared to face to face courses.

HEALTH SCIENCE

n/a - no HSCI courses are currently offered online.

9A. SLO Assessment - Compliance: BIOLOGY

The following BIOL courses are currently in the Cañada College catalog:

BIOL 100 - This course was last assessed in spring 2018. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in spring 2019.

BIOL 110 - This course was last assessed in fall 2017. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in fall 2018.

BIOL 130 - This course was last assessed in spring 2017. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in spring 2021.

BIOL 132 - This course was last assessed in spring 2017. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in fall 2018.

BIOL 225 - This course was last assessed in spring 2017. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in fall 2019.

BIOL 230 - This course was last assessed in fall 2017. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in spring 2019 or fall 2020.

BIOL 240 - This course was last assessed in spring 2018. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in spring 2019 or fall 2020.

BIOL 250 - This course was last assessed in Fall 2016. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in fall 2020.

BIOL 260 - This course was last assessed in Fall 2018. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in spring 2021.

BIOL 310 - This course was last assessed in fall 2018. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in spring 2019.

All of the biology courses have been assessed within the past 3 years. We are in compliance! However, we did not assess BIOL 130, 250, 260 during 2017-18 as originally planned in our 3-year Assessment Plan. Consequently if we wait to re-assess some of the classes until the plan's schedule, they will fall out of compliance with the 3-year requirement. We will either have to do additional unscheduled assessments (as has been done with BIOL 260) or revise our 3-year assessment plan.

HEALTH SCIENCE

The following HSCI courses are currently in the Cañada College catalog:

HSCI 100 - This course was last assessed in Spring 2016. According to the Biology Department's 3-year Assessment Plan, it will next be assessed in Spring 2019.

HSCI 116 - This course was last assessed in Spring 2014, and does not currently appear on the Biology Department's 3-year Assessment Plan. As stated in our 2016-2017 Program Review, a major limitation for SLO assessment is that this course has been offered successfully only twice (Fall 2012, Spring 2014) since its creation in 2011. As it is unclear when it might next be offered, we are currently unsure where to place within our 3-year assessment plan.

9B. SLO Assessment - Impact: BIOL 132 Human Biology Laboratory:

"Correctly operate common lab instruments, such as pH meter, microscopes, pipettes, and use the metric system of measurement"

Many students who enter the BIOL 132 laboratory are taking their first college-level biology lab course, and are quite anxious about that. They are unfamiliar with the equipment that we use (although we refer to it as "common" laboratory equipment), have low confidence in their abilities, and generally do not think that they belong in a science lab. In an attempt to address these observations (and the SLO listed above), Dani Behonick altered her approach to teaching lab activities that involved lab equipment. This included the addition of supplemental laboratory lessons and exercises that provided students with more guided hands-on time with each piece of equipment, no-stakes practice activities to facilitate students' familiarity, and regular and repeated exposure to the same pieces of equipment throughout the course to build fluency. At the end of the semester, students' ability to utilize these pieces of lab equipment was determined via an online skills assessment. According to this assessment, students are not meeting this SLO; however, only 3 questions on this 10-question assessment focused specifically on use of scientific equipment. In the future, a more robust assessment will be used to assess this SLO.

"Apply all steps of the scientific method to answer questions and solve problems."

Similarly, students in BIOL 132 often do not feel ownership in the science laboratory. They are most familiar with the model of science lab courses in which they come in each class and follow a prescribed series of steps out of a lab manual because that is what they were told to do by the instructor. They are often unaware why they are following these steps or how the steps they're performing link to the overall lesson. In addition, students in these courses are often taught relentlessly about the scientific method but are unfamiliar with it because it looks nothing like what they're doing each day in lab. In an attempt to both address this SLO and also change students' experiences of an introductory biology lab, Dani Behonick altered segments of the BIOL 132 laboratory curriculum to allow students to practice both guided and open inquiry. Early in the semester, students

to use a simple experimental system (e.g., Meter Stick Reaction Time Test <https://www.youtube.com/watch?v=81IPJtAp5Sc>) and then directed in groups to brainstorm a research question that could be answered using students in the class and that experimental system. The class then developed one research question from those proposed, determined the variables and hypothesis for that question, and tested the hypothesis by collecting data. Later in the semester, students learned about an organ system (e.g., Muscular System) and performed a short, prescribed experiment exploring the function of this organ system. Each lab group was then directed to develop its own research question, hypothesis and experimental design with instructor support. Following this design process, each group recruited subjects from the class and collected and processed data. No formal assessment was performed for this SLO at the time, as it was scheduled for assessment in a different academic year.

BIOL 225 Organismal Biology:

Some of the short-term lab activities have been replaced with longer term experiments that require students to maintain data records for weeks, do more analysis of results, and write full research reports. One project involves selection of field sites on campus, tracking plant development, and analyzing for correlations with site-specific temperature and light data. These research projects include literature searches and analytical reading of standard research papers. Assessment of impact on student learning is underway.

BIOL 230 Cell & Molecular Biology:

SLO #1: "Describe and compare the cellular macromolecules and subcellular organelles in bacteria and eukaryotes, and explain how these structures determine associated biological functions."

In fall 2016 (and again in fall 2017), students answered the exam question: "Explain how two different biochemical polymers, composed of the exact same monomer (eg: glucose), might have very different chemical properties and biological functions (eg: easily broken down for energy, vs. strong and stable for cell structural support). Give a specific example of each macromolecular polymer that you mention above."

63% of students scored competently at C-level (70%) or better on this question, below acceptable standards, and even further below expected/hopeful standards of proficiency (scores of 80% or better). However, in fall 2017, 71.4% of students scored at B-level (80% or better!!) on the question. This result is a GREAT improvement. The less encouraging news is that the other 28.6% of students only scored 50% or worse on the question. This again was the first essay question on the very first midterm of the semester, and students often struggle more on the first exam than any other -- probably due to adapting to the much higher rigor of this class as compared to any previous BIOL or CHEM classes they might have taken. As discussed in spring 2017 BIOL Program Review, in early 2017 Dr. Nathan Staples started requiring regular written and drawn homework from BIOL 230 and BIOL 240 students from the first week of class, to make sure that they keep up and develop conceptual and practical competence in the course topics as soon as possible. This seems to be working, but there is still a significant gap between the top 71% here, and the bottom 29%. More rigorous scrutiny of student homeworks and quizzes should help identify gaps in effort and depth of competency early on. Dr. Staples is also extra-actively encouraging students to seek out instructors and tutors to regularly help them with concepts and exam preparation. Hopefully this will greatly close the gaps and bring everyone to acceptable competency and hopefully proficiency with all course concepts, even this early in the semesters.

SLO #3: "Compare bacterial and eukaryotic gene structure, replication, gene expression and regulation, and explain technological applications of molecular processes."

Previous assessments of student understanding and intellectual ability to apply concepts about Molecular Laboratory Applications/Biotechnology-related techniques part of this SLO have shown poor results (only 63% success). As a result, lessons on Molecular Applications/Biotechnology topics were reorganized with more lab time dedicated to discussion of the concepts and applications used in modern laboratories, and used in some of our current experiments. As of spring 2018, this increased focus and discussion time seemed to help improve student understanding of the lab-related concepts and applications, and these are being formally reassessed this semester, fall 2018.

BIOL 240 General Microbiology:

SLO #2: "Describe and compare the processes and regulation of cellular metabolism (respiration and photosynthesis) and gene expression, and how these processes drive microbial growth."

Students answered the question: "Describe AND diagram when and how six carbons in glucose are all transferred and released, and in what form (molecule), from glycolysis through the Krebs (TCA) cycle. What else happens each time carbons are released?"

This question assesses their knowledge of when and where carbons and electrons are processed during cellular metabolism. 86% of students were able to answer the question at a B-level or above (earning 80% of available points or better) for the question. 93% passed at a C-level or better, scoring equal to or more than the 70% of points available. Students have been doing VERY well on questions about enzymes and metabolism in BIOL 240. We employ many methods: multiple review

sessions, diagrams, drawings, homework/study questions, quizzes, videos, question-answer sessions, small group work with think-pair-share questions, and constructing tables of detailed information to help them. Also, this is the time of the semester when students more clearly realize how demanding and difficult the rest of the semester's information will be, so they start taking studies more seriously and start investing more focused time as instructors have told them from the beginning. :-)

We will not assess this Learning Outcome again for a few years, as students are proving very successful with current teaching and evaluation methods. More attention will be given to Microbial Diversity, Disease, and Immunology/Body defenses in 2018 and beyond.

BIOL 250 Human Anatomy:

"Explain how the shape and composition of cells, tissues and organs determine their function."

A foundational topic in Human Anatomy that is both important for students to grasp early in the semester, and also serves as a common stumbling block, is epithelial tissues. To address this (and also to address the SLO listed above), and with the support of the STEM Faculty Learning Program at CSU East Bay, Dani Behonick backwards designed a new lesson/activity for her anatomy class that gave students the opportunity to explore their understanding of structure/function relationships in epithelial tissues (<https://www.youtube.com/watch?v=6vbWn2g1MSI>). Assessment of this approach and its impact on student success with this SLO is ongoing; this course is scheduled to be assessed next in 2020-2021.

BIOL 260 Human Physiology:

"Describe the coordinated responses of physiologic systems to maintain homeostasis in response to change."

Students are often overwhelmed with the complexity of human metabolic pathways. In the past, Doug Hirzel has taught this subject through lecture format interrupted by Think-Pair-Share multiple choice questions. This semester, he experimented with an alternative approach designed to significantly increase student engagement through peer instruction and jigsaw activity. This activity was designed with the support of the STEM Faculty Learning Program at SJSU. Students were divided into groups and assigned a specific organ (muscle, fat, liver, brain). They were provided 2-11 cards with metabolic processes and instructed to sort them into fed/fasted states. After a period of small group work, and consultation with other groups of the same organ, students reported their conclusions on white boards. This led to whole class discussion, identification of misconceptions, and opportunities for elaboration. The results of this formative assessment (ranged from 77-95% on different metrics) suggested a reasonable level of successful interpretation by groups of students. The use of the jigsaw method of instruction was effective at producing successful learning outcomes. In future iterations, it would be beneficial to follow up with questions that are answered individually by students to get a more detailed assessment.

10. PLO Assessment: BIOLOGY

A new assessment method was used for the last 5 terms. The portfolio assignment was not useful for students beyond receiving classroom credit, since it was not implemented college-wide. The new assessment was a figure and a writing prompt that required students to think broadly and specifically about biological concepts involving genetics, evolution, development, and environmental effects (file: PLO2 Fish Assessment). It was designed to address PLO 2: Recognize and explain the evolutionary connections between biological structures and their function and between organisms and their environment.

Over 5 terms in BIOL 225 from Spring 2016 through Spring 2018, about 100 students were assessed with this prompt. The exact wording of the prompt was crucial, as any mention of genetics or genetic terms narrowed the range of responses. For example, the average number of explanations was 1.7 when the prompt said "inherited" (Fall 2016) and increased to 4.7 when that term was replaced with "gotten" (Spring 2017). When the prompt included suggestions of genetic terms, that also seemed to decrease the number of reasons (2.0 and 2.4 averages). The most recent results from Spring 2018 had an average of 2.6 reasons for the skin pattern and included all major categories (genetics, developmental, environmental effect, behavioral choice, evolutionary adaptation).

It might be more revealing to assess the number of students that described at least 3 different reasons, rather than the average number of reasons. It seems to be a relatively straightforward way of assessing overall student thinking about different biological processes.

Looking Ahead

11. Program Planning: PROMPT: Create objectives that describe your plans for program improvement. As you write your objectives, be sure to explain how they address any opportunities for improvement that you identified throughout this Program Review. Also include how you will be able to measure your progress and completion for these objectives. After you've entered your objectives and completed your Program Review Narratives, be sure to click Save at the top right. Then click on Objectives, Action Plans, and Resource Requests on the left and enter your objectives along with your action plans, and any resource requests if you have them. PLEASE NOTE: You will be asked to re-enter your objectives in the next section - please feel free to

copy and paste.

1. Continue professional development activities to improve our teaching practices and student success. Professors Behonick and Hirzel are currently completing their PD through the Faculty Learning Program for STEM faculty with CSUEB and SJSU. They will continue to integrate what they are learning into their teaching.

2. Revise curriculum as appropriate to fit student needs and articulation requirements.

3. Plan for transfer to the new science building next year, including lab activities, to make best use of the new spaces.

4. Revise laboratory curriculum specifically for BIOL 110 Principles of Biology lab and BIOL 132 Human Biology Laboratory

The standard publisher-produced lab manual that has historically been used for BIOL 132 Human Biology laboratory has presented numerous challenges including a high cost to students and being consistently understocked at the bookstore (resulting in students being unable to access course materials for several months into the semester). For Spring 2019 (and potentially ongoing), Dani Behonick (in consultation with Carol Rhodes, full-time lead for Human Biology courses) has opted to forgo use of this manual. She will continue to use the Cañada-generated content from the old lab manual, and will replace the costly and often pedagogically underwhelming publisher's materials with curriculum from the Health and Science Pipeline Initiative (HASPI, <http://www.haspi.org/haspi-curriculum.html>) at Butte College. HASPI curriculum is open source and free for faculty to use with their students; these materials are pedagogically sound, engage students, and encourage the use of critical thinking and problem solving skills.

5. Reassess role of Health Science discipline at Cañada College:

As documented in sections 7 and 8 of this report, and in our 2016-2017 Program Review, the Health Science discipline is at something of a crossroads. Enrollment, retention and success in this discipline were at lows in 2017-2018. Strategies that have been undertaken thus far, including the inclusion of HSCI courses in GE Pathways, has not translated into a boost in enrollment. We are also aware of the decline in enrollments/demand in Human Services, a closely related discipline, on the Cañada campus. Overall, it is unclear whether student demand would support the creation of new courses or a new program in Health Science at this time. We are interested to see the outcome of the first year of Skyline's Associate in Science degree for transfer (AS-T) in Public Health Science. Meetings with the faculty responsible for this program, as well as those responsible for Human Services on the Cañada campus will help us to better plan for the future of Health Science.

6. Native garden:

Plans for the new science building include several areas of landscaping that are designed to mimic particular ecosystems of California, namely chaparral, mixed evergreen, oak woodland, and riparian/meadow. The intent is to use these areas as part of our courses, especially lab courses. Curriculum will need to be redesigned to incorporate these sites, with the goal of teaching field research techniques. These areas also include plants for Anthropology courses, with the goal of allowing students to harvest and use native plants in ways similar to that of Native Americans in this area. It may take a while after installation for these plants to be established enough to use for these curricular purposes.

7. Grant for Microbiology/Cellular laboratory research:

After years of greatly encouraging Biology Majors (BIOL 230) students to seek internships to enhance their experience and knowledge of Biological Research, Biology Faculty were informed that a federal research grant from the Department of Education became available to fund undergraduate research by underrepresented minority students in STEM disciplines at local laboratory research institutions. This grant is a supplement to Cañada College's MSEIP (Minority Science and Engineering Improvement Program) grant, INSPIRES (Implementing New Strategies and Programs for Improving Retention and Enhancing Success). The supplement is called the Capacity Competitiveness Enhancement Model (CEM). Professor Nathan Staples, Ph.D., wrote a grant proposal for students to study the potential stimulatory or inhibitory effects of commercial natural and artificial sweeteners on metabolism and growth of normal bacteria known to inhabit the human gut. Much recent research has shown that concentrated sweeteners and non-nutritive sweeteners greatly change the populations of bacteria among the human gut microbiota, and these changes are associated with many human metabolic problems. The grant application was fully funded (\$81K!), and we are excitedly searching for a local research institution with whom to form a partnership, and plan to conduct research during the spring semester and summer months. We plan to present research results at scientific research conferences in late summer. This project should also provide great professional development for lead faculty, and create avenues for future student research and partnerships, as well as inform faculty on current laboratory methods and technology that can be incorporated into the laboratory classrooms.

8. Anatomy Student Success Initiative (work contingent upon receipt of funding/reassigned time):

During the Fall 2018 semester, Dani Behonick and Doug Hirzel submitted a proposal for faculty reassigned time to establish

an Anatomy Student Success Initiative. The mission of the Anatomy Student Success Initiative is to provide necessary additional support to BIOL 250 Human Anatomy students on the Cañada College campus, with the specific goal of increasing the retention and success of these students. Increased success and retention in this course will allow more students to continue in the Allied Health and kinesiology pathways, and to continue in their training to become health care providers. Before we can address this retention/success issue and improve departmental/institutional support for these students, we must first conduct focused inquiry research, at both the local and statewide levels, to determine what form this support should take. If funded, this reassigned time will provide a Faculty Researcher whose, the primary responsibilities will be to complete a thorough needs assessment of the current anatomy program, investigate current local parallel efforts for supporting student success and providing supplemental instruction to bring underprepared students up-to-speed, and investigate current statewide efforts/initiatives for supporting anatomy student success. Following this research and analysis, the Anatomy Student Success Initiative Faculty Researcher will then draft a proposal for an ongoing student support initiative for anatomy student success,, which will be presented to the College administration.

9. Institutionalization of EPIC tutors:

The biology program will help author and support a proposal requesting that the college fund a permanent position for an EPIC tutor coordinator. EPIC tutoring was piloted using grant funds. The funding agencies expect that the college will institutionalize the practices that the data show are effective. EPIC tutoring is clearly effective at increasing student retention and success. By institutionalizing the program, a wider variety of courses, within biology and beyond, can be provided EPIC tutors.

Program Review Narrative Status: Complete

Objective: Improve instructional outcomes by investing in instructional equipment

Purchase instructional equipment for the biology program

Objective Status: 1 - New (PR)

Objective Year: 2019-2020

Estimated Start Date:

Estimated Completion Date:

Please select the college goals with which this objective 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 district goals with which this objective aligns.: District Goal #1 - Develop and Strengthen Educational Offerings, Interventions, and Support Programs that Increase Student Access & Success

Resource Requests

Glucose monitors - The glucose meters we use for BIO260 have been phased out by the manufacturer, and it is no longer possible to get test strips that work with our meters. We will need to replace our meters with current versions. For estimating purposes, we can consider the following model:

https://www.amazon.com/Accu-Chek-Guide-Glucose-Monitoring-System/dp/B0716J6KMD/ref=sr_1_1_a_it?ie=UTF8&qid=1540842208&sr=8-1&keywords=Accu-Chek+Guide&dpID=51Kk%252B0TqupL&preST=_SY300_QL70_&dpSrc=srch

Type of Resource: Supplies (Items less than \$5000)

Cost: 360

Holder for 125 ml flasks, fits shaker - Adapter flask holders for different sized flasks, for cultures of different volumes. For VWR Shaker 3500I.

<https://us.vwr.com/store/product/4835149/vwr-incubating-orbital-shaker-model-3500i>

Need 4 at \$29 each

Price quoted is before tax and excluding SH

Type of Resource: Supplies (Items less than \$5000)

Cost: 116

Holder for 250 ml flasks; fits shaker - Adapter flask holders for different sized flasks, for cultures of different volumes. For VWR

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Shaker 3500I.

<https://us.vwr.com/store/product/4835149/vwr-incubating-orbital-shaker-model-3500i>

Need 4 at \$29 each

Price quoted is before tax and excluding SH

Type of Resource: Supplies (Items less than \$5000)

Cost: 116

Incubating Mini-Shaker - We only have 2 small shaking incubators, and need more to support the 4-5 sections of Microbiology and Cell/Molecular biology, as well as increasing number of student research projects.

<https://us.vwr.com/store/product/4902590/vwr-incubating-mini-shaker>

Price quoted is before tax and excluding SH

Need 2, each at \$3600

Type of Resource: Equipment (Items Over \$5000)

Cost: 7200

Incubating Orbital Shaker (VWR 3500I) - We only have 2 small shaking incubators, and need more to support the 4-5 sections of Microbiology and Cell/Molecular biology, as well as increasing number of student research projects. We need to be able to aerate and incubate larger cultures too.

<https://us.vwr.com/store/product/4835149/vwr-incubating-orbital-shaker-model-3500i>

Need 1, at \$5921

Price quoted is before tax and excluding SH

Type of Resource: Equipment (Items Over \$5000)

Cost: 5921

Micropipettors P-1000 size (4 pack) - We need a few complete sets (4 each of P-1000) of micropipettors to support independent student projects outside of regular class time, especially with the new student Independent Projects lab space in Building 23.

1-4 pack

<https://www.pipette.com/P3940-4P-Labnet-Biopette-Plus-4-Pack-Mix-and-Match-Please-specify-sizes-at-checkout-1-Carousel-Stand-and-2-Racks-of-Tips>

Price quoted is before tax and excluding SH

Type of Resource: Supplies (Items less than \$5000)

Cost: 619

Micropipettors P-20 size, (4 pack) - We need a few complete sets (4 each of P-20) of micropipettors to support independent student projects outside of regular class time, especially with the new student Independent Projects lab space in Building 23.

<https://www.pipette.com/P3940-4P-Labnet-Biopette-Plus-4-Pack-Mix-and-Match-Please-specify-sizes-at-checkout-1-Carousel-Stand-and-2-Racks-of-Tips>

1-4 pack

Price quoted is before tax and excluding SH

Type of Resource: Supplies (Items less than \$5000)

Cost: 619

Micropipettors P-200 size (4 pack) - We need a few complete sets (4 each of P-200) of micropipettors to support independent student projects outside of regular class time, especially with the new student Independent Projects lab space in Building 23.

<https://www.pipette.com/P3940-4P-Labnet-Biopette-Plus-4-Pack-Mix-and-Match-Please-specify-sizes-at-checkout-1-Carousel-Stand-and-2-Racks-of-Tips>

1-4 pack

Price quoted with before tax and excluding SH

Type of Resource: Supplies (Items less than \$5000)

Cost: 619

Pulse transducer - Students use these devices with our computerized data acquisition systems to measure blood flow through the

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finger. Two of these transducers are broken and in need of replacement.
<https://www.biopac.com/product/photoplethysmogram-for-pulse-waveform-bsl/>
Need 4, each at \$245.

Type of Resource: Supplies (Items less than \$5000)

Cost: 980

Reaction Timers - Students use these hand-held timers to test their reaction time to visual and auditory stimuli. Several of our timers are broken and need replacement.

<https://www.amazon.com/American-Educational-Products-6027-Reaction/dp/B00658AXCQ>
Need 6, each at \$173

Type of Resource: Supplies (Items less than \$5000)

Cost: 1038

Shaker Platform - Adapter platform for different sized flasks, for cultures of different volumes. For VWR Shaker 3500I.

<https://us.vwr.com/store/product/4835149/vwr-incubating-orbital-shaker-model-3500i>
Price quoted is before tax and excluding SH

Type of Resource: Supplies (Items less than \$5000)

Cost: 225

Objective: Anatomy Student Success Initiative

The mission of the Anatomy Student Success Initiative is to provide necessary additional support to BIOL 250 Human Anatomy students on the Cañada College campus, with the specific goal of increasing the retention and success of these students.

Objective Status: 1 - New (PR)

Objective Year: 2019-2020, 2020-2021

Estimated Start Date:

Estimated Completion Date:

Please select the college goals with which this objective 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 district goals with which this objective aligns.: District Goal #1 - Develop and Strengthen Educational Offerings, Interventions, and Support Programs that Increase Student Access & Success

Action Plans

2018-2019 - Submit proposal for reassigned time for a faculty researcher to conduct focus groups and and to investigate possible models and strategies for improving student success. (Active)

Who's Responsible for Completing this Action Plan?: Dani Behonick

Estimated Completion Date: October 2018

Objective: Revise laboratory curriculum for BIOL 110 and 132

Replace existing manuals with content that is pedagogically sound, engaging students, encourages the use of critical thinking and problem solving skills, and cost-effective.

Objective Status: 1 - New (PR)

Objective Year: 2019-2020

Estimated Start Date:

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Estimated Completion Date:

Please select the college goals with which this objective 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 district goals with which this objective aligns.: District Goal #1 - Develop and Strengthen Educational Offerings, Interventions, and Support Programs that Increase Student Access & Success

Objective: Future of Health Science discipline

Reassess role of Health Science discipline at Cañada College

Objective Status: 1 - New (PR)

Objective Year: 2019-2020, 2021-2022

Estimated Start Date:

Estimated Completion Date:

Please select the college goals with which this objective 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 district goals with which this objective aligns.: District Goal #1 - Develop and Strengthen Educational Offerings, Interventions, and Support Programs that Increase Student Access & Success

Objective: 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.

Objective Status: 1 - New (PR)

Objective Year: 2019-2020

Estimated Start Date:

Estimated Completion Date:

Please select the college goals with which this objective 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 district goals with which this objective aligns.: District Goal #1 - Develop and Strengthen Educational Offerings, Interventions, and Support Programs that Increase Student Access & Success, District Goal #3 - Increase Program Delivery Options, Including the Expanded Use of Instructional Technology, to Support Student Learning and Success

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: