

**Cerritos College
Instructional Program Review**

Instructional Program Review Submittal Form (Appendix F)

This form is completed and submitted as a cover sheet for the self-study report

Name of the Program Biology Department

Date Submitted 11/8/2017

Scheduled Presentation Date 12/5/17

All courses in the program have been reviewed by the Curriculum Committee within the last six year cycle (circle one) Yes No

Explain any exceptions for non-compliance with curriculum requirements:

The self-study report adequately addresses the following components:

| Description of the Program | Yes | No |
|--|-----|----|
| Course and program content | | |
| Student demographics | | |
| Human resources | | |
| Instructional Improvement | Yes | No |
| Teaching effectiveness | | |
| Activities to improve student learning | | |
| Course grading | | |
| Course and program completion | | |
| Program outcomes | | |
| Core indicators (if vocational) | | |
| Student feedback | | |
| Institutional data | | |
| Other | Yes | No |
| Strengths and weaknesses of the program | | |
| Opportunities and threats of the program | | |
| Goals of the program | | |

Self-Study prepared by: Matt Covill

Reviewed by (Division Dean): Connie Boardman

**Cerritos College
Instructional Program Review**

Instructional Program Review Checklist (Appendix G)

This form is completed by the IPR committee during the review of each program's self-study report presentation (Phase 4)

Name of the Program Biology

Visitation Date 11/21/17

IPR Committee Liaison Ernest Lew

| Evaluation of Compliance with Institutional Requirements | Yes | No |
|---|------------|-----------|
| All courses in the program have been reviewed by the Curriculum Committee within the last six year cycle? | ✓ | |
| Program is in compliance with guidelines established by the Student Learning Outcomes task force? | ✓ | |
| Institutional Data used is current as of the draft due date? | ✓ | |
| Program and Primary Data included information which is less than 2 years old? | ✓ | |

The self-study report adequately addresses the following components:

Description of Component

| Description of the Program | Yes | No |
|--|------------|-----------|
| Course and program content | ✓ | |
| Student demographics | ✓ | |
| Human resources | ✓ | |
| Instructional Improvement | Yes | No |
| Teaching effectiveness | ✓ | |
| Activities to improve student learning | ✓ | |
| Course grading | ✓ | |
| Course and program completion | ✓ | |
| Program outcomes | ✓ | |
| Core indicators (if vocational) | ✓ | |
| Student feedback | ✓ | |
| Institutional data | ✓ | |
| Other | Yes | No |
| Strengths and weaknesses of the program | ✓ | |
| Opportunities and threats of the program | ✓ | |
| Goals of the program | ✓ | |

Cerritos College
Instructional Program Review

Instructional Program Review Approval Form (Appendix H)

Committee Action taken:

Approved



Not Approved



Excellent work collecting data to demonstrate
impact of priority registration on access / completion.

Recommendations:

Program Review Chair

S. Roseblatt / A. Conley

Explanation for non-approval:

Biology Department

Program Review

NOVEMBER 8, 2017
CERRITOS COLLEGE
Biology Department

FULL TIME FACULTY:

Ryan Babiar
Matt Covill
Scottie Henderson
Susan Lepere
Santos Rojas
Michelle Steiber
Chace Tydell
Anna Valcarcel

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PROGRAM DESCRIPTION

The biology department has eight full-time and 18 part-time faculty that teach approximately 75 sections and 1500 students each semester. The biology department serves three primary groups of students: 1) students fulfilling general education life science requirements for degree or transfer, 2) pre-nursing, other health care related programs and kinesiology students, and 3) biology majors.

The biology department is committed to student engagement and a culture of completion. We are partners with CSULB's and UCI's Bridges to Baccalaureate programs which provides paid summer internships to biology and chemistry students. This partnership includes workshops open to all students on topics such as graduate school, writing personal narratives, and obtaining letters of recommendation. The biology department also hosts two seminars each year presented by CSULB faculty who speak on their career pathway, their research, and undergraduate research opportunities. We are also partners with the CSULB BUILD program, which is open to Cerritos students transferring to CSULB. BUILD participants enter a cohort of students that receive financial support, academic support, placement into research labs, and enter a pipeline to promote their entrance into doctoral programs for the purpose of increasing the diversity of biomedical research scientists. The biology department has also been able to facilitate students acquiring research internships at City of Hope and Friday Harbor Laboratories. We also help host a Student Research Poster Session on campus where students who participated in summer research share their work directly with fellow Cerritos students. Biology students may also apply to take our Advance Biology Seminars a non-credit discussion-style course that combines biology concepts, research findings, and analytical MCAT questions for the purpose of developing student critical thinking skills, preparing students for university study, and combating the risks of stereotype threat. Beginning in Spring 2018, the biology department will begin participating in PACT pathways for biology majors and pre-nursing students to expedite academic progression through the required courses in a timely fashion. These ongoing activities provide students with the opportunity to engage in biology outside the classroom, promote completion, and serve as constant reminders of transferring to a university.

The biology department strives to use new technologies and incorporate new teaching practices to support student success. The department has capitalized on the recently created imbedded tutor program, and as of Fall 2017 we are now offering embedded tutors in almost all of our AP120, AP150, AP151, BIOL201, and MICRO200 sections. We also have non-embedded tutors for microbiology and A&P courses. We created our own fully custom AP120 lab manual to reduce course costs and to support success and engagement through the use of a course-specific lab manual. Several of our A&P courses make required use of adaptive student learning programs such as LearnSmart. The use of the adaptive learning programs includes ebook versions of course texts at half the cost of the publisher's printed text. Likewise, BOT120 recently adopted an open source text to reduce barriers to success associated with the high cost of textbooks. Collectively, these practices reduce costs to students and increase access to the materials that support student success. Half of our full-time faculty make use of clickers or NearPod to increase engagement and feedback in their classrooms. Likewise, some of our faculty are applying, or exploring use of, flipped classroom models. The biology department also possesses two sets of iPads that enable the use of mobile technology in the class room and create the opportunity for students to demonstrate learning in a greater variety of ways such as in creating video

presentations, stop-animations and interactive mind maps, or engaging in lecture through the use of appropriate apps including NearPod. Department members organized several department-level workshops to discuss and share ideas of how to incorporate the iPad into our courses. The practice of incorporating new technology keeps our courses and methods relevant to an increasingly digital native student population and experimenting with different teaching approaches serves to find the best possible way to reach an ever-changing student audience.

In addition to working with outside institutions such as CSULB and UCI, the biology department works with a number of programs at Cerritos College to align goals and benefit students. The department promotes and works with Project HOPE to promote success of pre-health care students through workshops, academic support, speakers, and volunteer opportunities. We have historically worked with Teacher TRAC to offer sections of BIOL120 for Teacher TRAC participants. The department altered lab scheduling to enable students in the President's Scholars/Middle College program to enroll in a BIO120 course within the time constraints of that program. We also work closely with the chemistry department on class scheduling to ensure that biology and chemistry courses are offered at times that allow biology majors to take biology and chemistry courses concurrently. The biology and chemistry departments also meet periodically to discuss course content so that curriculum of pre-requisite courses meets the needs of subsequent courses. We likewise collaborate with the chemistry department to offer a biology-chemistry student meeting each fall that discusses course sequences, college support services, and student development/enrichment opportunities. The biology department has also had discussions with earth science department about offering an interdisciplinary environmental science program.

Department faculty take an active role in governance and campus leadership. For more than twelve consecutive years, the department has had a faculty member on Faculty Senate. Biology faculty serve or have served on the academic excellence committee, extensive lab committee, SLO committee, extensive lab task force, and the 16-week calendar task force. Department members have been involved in leading faculty development programs such as the iPad FIG, CTX workshops on iPads, and CTX workshops on GoogleDrive. Department faculty currently serve as advisors for several student clubs (Environmental Club, SACNAS, and Women in STEM). One of our faculty serves as Project HOPE coordinator and another completed the Presidents Leadership Academy. The department also has an established practice of having each member serve as a course coordinator. Although the primary purpose of a course coordinator is to ensure the necessary consistency across lab sections, this practice facilitates leadership skills among faculty that can be applied at higher levels of institutional organization as coordinators develop personnel management skills, communication skills, and become increasingly aware of college policy in the process of assisting part-time faculty and managing courses. Course coordinators also communicate regularly with our part-time faculty to support adjuncts and foster an atmosphere of inclusion and familiarity.

Twelve years ago the biology department moved into a new building; our rooms are equipped with complete media options, WIFI, and now AppleTV all of which support our instruction and incorporation of technology in the classroom. However, since the building's opening, it has been plagued with issues that impede learning such as an HVAC system the routinely cooled the rooms into the low 60's which directly interferes with a constructive learning environment. Likewise, exterior doors allowing access

into and out of the building routinely did not work properly. These problems were due to the original construction; we appreciate that Facilities has worked so persistently to resolve these problems. However, the length of time it took (and can take) to address many of these issues speaks to the need for more resources for Facilities. The central administration of Cerritos College should allocate more resources to Facilities so that they have the ability to attend to infrastructure issues in a timely and effective manner. Likewise, at this point in the building's lifespan, equipment such as chairs, projectors, screen, tables and other items are beginning to need replacement which will require adequate funding. Maintenance of infrastructure is critical to the learning environment; when there are building and technology failures (such as a recent failure of the projector screen in S121) it can cause severe disruptions to instruction especially given the extent to which current instructional practices rely on functioning technology and media. To ensure quality of instruction it is essential that the college provide Facilities and IT with the resources necessary to quickly respond to problems and to develop a system of materials requisition and communications that minimizes instructional disruptions.

DATA COLLECTION AND ANALYSIS

The biology department reviewed institutional data generated by Institutional Effectiveness, Research, and Planning (IERP) as well survey results. Several surveys were prepared as part of our program review process; the principal survey was developed by the biology department and distributed to all students enrolled in courses during the Spring 2017 semester. This survey had a response rate of 68% and the survey results were analyzed and summarized by IERP. The department implemented two smaller surveys at the beginning of Fall 2017. One survey asked about career awareness and internship interest among biology majors. This survey was sent to all biology majors enrolled in department classes for Fall 2017 (approximately 150 students, 53% response rate). The second survey was sent to our 18 part-time faculty to solicit feedback on their experiences working within the department (50% response rate). Additionally, the department has ongoing discussions about student performance, curriculum, policy, instruction, infrastructure, as well as equipment and supply needs.

The department class fill rates are consistently high and regularly approach or exceed 100% in fall and spring terms (figure 1). With the exception of BIO202 there is no evidence of decreased fill rates. In fact, our fill rates have stayed stable even though we have increased the number of sections offered by the department over the last six years to historically high levels. This has resulted in mild increases in FTES. The department is also very efficient with a department wide average WSCH that is well above the state target of 525 with levels ranging from 683-757 over the last six years.

The notable exception to our steady fill rates is BIO202 which has showed a marked, steady decline in class fill rate from 100-27% over the last six years. The decline is likely linked to its limited transferability as it is targeted toward students transferring to UCI and UCLA. We have moved BIO202 to the fall semester where there may be more eligible students who have completed the organic chemistry pre-requisite. There is the distinct possibility that this class will become obsolete if an associate degree for transfer for the UC system is developed.

6-year average fill-(Class), completion-, success-rates

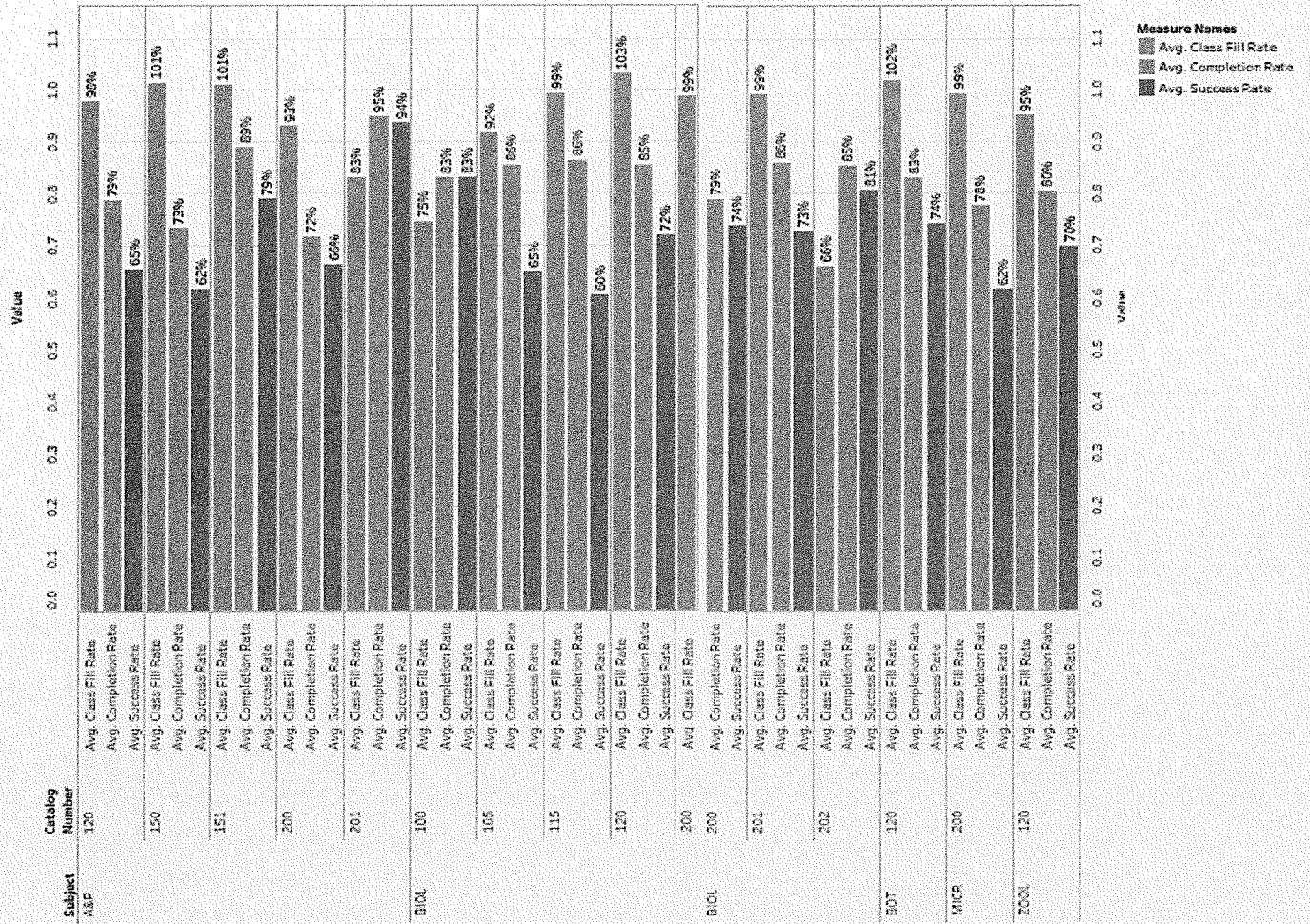


Figure 1. Average class fill rate, completion rate, and success rate over the last six years by specific course. Data excludes fall 2010, spring 2011, and summer 2011, but includes all other summer sessions. Summer session fill rates are notably lower than fall and spring the effect being that inclusion of summer session data on fill rate reduces the average fill rate statistic

Overall, the department has met the ACCJC target retention (i.e., completion) rate of 83% over the last six years with completion rates being high and stable over that time period. However, AP200 has experienced a small, but noticeable decline that may be related to the decline in university students and graduates enrolling in the course since the post-recession economic recovery. Anecdotally, university students taking this course show a high level of academic preparedness that better supported their success in the course, and IERP data confirms that students with degrees perform better in our A&P courses. AP200 would routinely have a small number of students with university degrees who were taking AP200 to fulfil professional school requirements.

In the last four fall terms the department did not meet the 71% target success rate set by ACCJC, but there is no evidence of a downward trend. Biology is a very rigorous and challenging topic for many students, and often students find themselves academically unprepared or lacking adequate time for

their course which contributes to our success rates. AP150 and MICRO200 are the courses with the lowest success rate, but do not show signs of decreasing success over the past six years. These are particularly fast-paced courses and anecdotal evidence indicates these courses are taken by students who often have significant outside responsibilities such as families and full-time jobs--circumstances which contribute to low success rates. The department has explored creating a pre-requisite for AP150 course, but is unable to create one due to limitations on the number of units that nursing students can be compelled to take; these restrictions are imposed by the accrediting agency for nursing programs. Low success rates in introductory human A&P courses is not a Cerritos specific problem; according to the Human Anatomy and Physiology Society success rate in similar courses nationwide is about 50%. AP200 has experienced a mild decline in success rates and this too may be influenced by the decline of university students enrolling in the course over the last several years. Analysis performed by IERP in 2016 indicates that there is a correlation between the grades earned in AP150, AP151, AP200, AP201, and MICRO200 and the amount of chemistry a student has completed. Students who took more advanced level chemistry courses tended to receive more A's across all select courses, while students who attempted more lower level chemistry courses tended to receive more C's (figure 2)

Although the last two years has shown a decrease in the number of students officially declaring biology as a majors, we believe that this does not accurately reflect the number of biology majors based on the fluidity of that data, the fact that enrollment in the biology majors course sequence (BIO200 & BIO201) have held steady, that biology degrees awarded have increased dramatically over 2011 levels (from 87 to over 120), and the fact that biology as a major has ranked as the 7th-9th most popular major at Cerritos College between 2009 and 2016. Likewise, students self-identified as biology majors often elect to obtain the AA in Natural Science because of that degree's increased flexibility. Furthermore, biology students are routinely counselled to take the fewest possible courses at Cerritos College prior to transferring; this enables them to create more reasonable course loads post-transfer because they will be better able to spread out rigorous upper division biology courses with general education courses over their remaining terms.

Among the important survey findings is that 34.5% of students enrolled in biology classes receive priority registration. Participation in EOPS and DSPS are the most common reason for students receiving priority registration (figure 2). The number of our students that receive priority registration is of great concern to the department as it prevents fair access to our courses. The impact of priority registration can be demonstrated by the fact that for the Spring 2017 semester, all AP151 sections were completely full (including waitlists) by the end of the priority registration (tier 1 & 2), and only 15 seats in a single section remained in AP150. In this case unless a student had priority registration they could not enroll in AP151 that semester.

| | % |
|--|---------|
| Cal Works | 5.99% |
| DSPS | 17.37% |
| EOPS | 33.83% |
| Foster Youth | 1.80% |
| Scholar's Honors | 6.29% |
| Specialized program requiring full time enrollment | 16.77% |
| Student athlete | 8.68% |
| Veteran | 9.28% |
| Grand Total | 100.00% |

Figure 2. Breakdown (in percent) of biology student participation in programs that grant priority registration. Participation in EOPS, DSPS, and a variety of one-off "other" programs are the most common reasons biology students receive priority registration.

Likewise, by the end of the first week of priority registration for Fall 2017 69% of all AP150 seats were taken, and 78.5% of AP151 were already taken; both of these courses were full within two days more days. For the Spring 2018 semester, by the end of the 7th day of priority registration all available AP151 seats were taken; if not for a late opening section due to staffing problems, students without priority registration would have had no chance to register for AP151 that semester. Likewise, by the end of priority registration for Spring 2018 there was only 1 seat available in our standard AP150 course and only 19 seats available in our 6-hour Friday section of the course. Due to staffing challenges in the Fall 2016 semester one of our microbiology labs did not open for enrollment until well after priority registration; the late enrolling course had 35% more students earning a C or better in the lab and had lab percentages that were more than 5% higher compared to the average of the other four labs. This suggests that an appreciable number of students who receive priority registration are unprepared for the courses they enroll in, contributing to the repeat rate, and further impeding fair access to biology courses.

A related data item is that 16% of students taking courses within the biology department have had to drop and retake their biology course. The most common reason noted for dropping, according to student respondents, was academic unpreparedness and insufficient time to study. The classes with the highest repeat rates were: MICRO200, AP150, and BIOL120 which had 6-year average repeat rates of 18.9%, 15.8%, and 13.2% respectively (figure 3). Although these rates may seem modest, they translate into enough BIOL120 students to fill two full labs each semester, enough Micro200 students to fill 1/5th of all MICRO200 lab space, and enough AP150 students to fill a full lab every semester. The biology department views reducing repeat rates as part of the approach of creating better access to our courses (i.e., the fewer repeaters; the more new students we can serve).

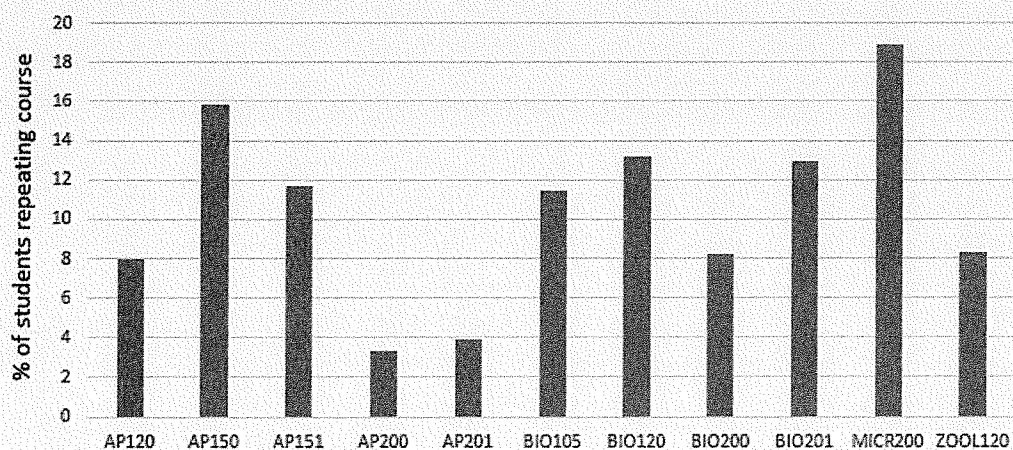


Figure 3. 6-year (2010-2016) average repeat rate, as percent of course enrollment, for select courses in the biology department

Student responses to open ended questions on surveys revealed several departmental strengths. Students stated that department faculty are the most helpful and beneficial resource to them. According to IERP analysis, “the vast majority” of student responses to open ended questions centered

on how supportive the biology faculty are. Students likewise had strong positive responses to field trips noting that they were not only better able to connect course content, but that field trips inspired them to continue in their education in science. In regard to biology labs, 81.6% of students agree or strongly agree that the labs help in understanding the course material; among the specific reasons noted were that labs allowed application of course content and labs worked well for the visual learning styles many students stated they have. Students felt that labs were most helpful when they were taught by the same professor who taught the lecture. The biology department acknowledges this benefit, but having the same instructor for lab and lecture is often not possible because room use constraints results in faculty needing to teach other courses that conflict with labs, or large class sizes prevent a lecture instructor from teaching all sections associated with the lecture; furthermore, having the same instructor for lab and lecture is also prevented by part-time instructor availability and load caps.

Although students stated that labs assist in understanding of the material, there was a response trend indicating that many of the labs were too busy or rushed, that there was a disconnect when lab and lecture were taught by different instructors, and that some labs simply need to be improved. These student responses are consistent with the faculty assessment of the strengths and weaknesses of our current labs, and at the time of program review the department had already began a discussion about revising some of the labs.

Survey analysis revealed the largest barriers to student success were lack of study time and not knowing how to study. The lack of study time corresponds well to the fact that 45% of our students work more than 20 hours a week (figure 4) and that 40% our students are first generation. First generation students are likely without a model for the college experience or college success. The student survey also indicates that many students were not aware of resources available to them such as the study room and tutoring. Use of the study room seems to be high among A&P and microbiology students, but some students report that the study room environment is not conducive to studying and is often too loud. This is due in part to the fact that peer tutors use the study room to provide tutoring which requires a degree of talking and thus noise. Many students also indicated that they would like more supplemental resources and study tools that are available outside of class to support their efforts and this represents an area where the department could develop additional tools to assist students. Although the lack of time to study for the course is outside department control, we have plans to produce support materials including those that can be accessed by students at times that are convenient for them allowing efficient use of the time they do have, whenever they may have it.

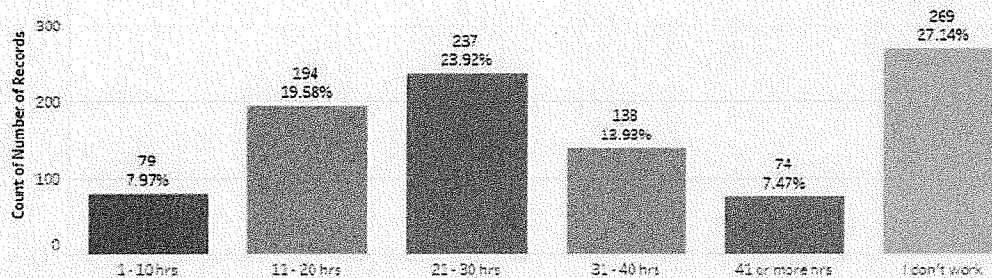


Figure 4. Average Hours Students Work Per Week

Fall 2017 surveys show that the majority of biology majors (74%) plan on pursuing careers in the medical field including veterinary medicine. For 61.5% of survey respondents the first biology associated profession that came to mind was that of a medical professional, and only 48% of our students could list a reasonable example of a profession outside medicine or teaching that someone with a biology degree could pursue. This indicates a general lack of knowledge about career options available to biology students. The same survey shows a high level of interest among biology majors in internships with 81% respondents stated they are interested in internship opportunities and 79% interested in job shadowing opportunities.

All respondents to the part-time instructor survey indicated that they felt their contributions to the department were valued, that they had adequate academic freedom, and that full-time faculty were helpful in answering questions. With the exception of one respondent who was neutral, our part-time faculty felt they were supported and that the department had a positive work environment. Part-time faculty expressed that they would like to be better informed on college policies and procedures and increased availability of course materials electronically and with more lead time in advance of the start of the semester. The biology department is fortunate to have a pool of high quality and stable part-time faculty, but training, retaining, and informing part-time faculty of policy, changes, and matters such as SLO procedures requires significant amounts of time from course coordinators and the Department Chair.

STUDENT LEARNING OUTCOMES

The biology department is not currently assessing SLOs in accordance with the SLO committee guidelines. Multiple factors contribute to this situation including the historical confusion about SLOs, turn-over of full-time department faculty due to retirement, changes in SLO guidelines, and changes in SLOs associated with extensive labs and CI-D course approvals. Faculty are interested in identifying SLOs that can drive course improvement and student success, but some of our faculty have re-written course SLOs as many as three times over the last five years as they revise SLOs written by former full-time faculty, then changed them in response to extensive lab requirements or CI-D requirements, and again in response to new guidelines from the SLO committee. Likewise, in the past eLumen has not allowed input SLO assessment data from many of our classes because of problems stemming from most of our classes having multiple labs linked single lecture section. Inconsistent or out of date information about SLOs among multiple campus constituencies has also created barriers to meaningful

SLO assessment. Together these experiences have created barriers to SLO compliance and buy-in. Rather than rushing into compliance, we are currently attempting to take a thoughtful approach that will result in SLOs that will provide meaningful data, that have data easily collected from normal course work and assignments, and that be integrated sensibly at the program level so that we avoid the need to repeated revise SLOs over and over. One challenge is determining how to collect data from the many labs, often staffed by different part-time faculty, that are linked to a single lecture in a way that is consistent, reliable, and sustainable. The Department Chair has meet with the SLO Coordinator multiple times over the last academic year to consult about the SLO process and resolve problems; the department will continue to work with and consult the SLO Coordinator as we sensibly move toward compliance.

SWOT ANALYSIS

Strengths

1. Students describe department faculty as the most helpful and beneficial resource facilitating their success.
2. Lab components of course support student understanding and motivation through use of hands-on activities and approaches valued by visual and kinesthetic learners.
3. Biology courses make effective use of field trips to reinforce course concepts and inspire students.
4. Department successfully promotes research opportunities at local universities and fills programs to capacity each year.
5. Ongoing student access to research opportunities at UCI and City of Hope.
6. Quality part-time instructors with high levels job satisfaction and relatively low part-time faculty turnover.
7. Biology department serves a large number of students in courses that fill to capacity each semester.
8. Department actively incorporates new technologies such as iPads, clickers, and NearPod into instruction.
9. Department faculty are active in campus leadership and as advisors to student clubs
10. High course retention rates especially given the large size of many of our courses.

Weaknesses

1. Department is not currently compliant with SLO assessment guidelines.
2. Some labs need revision and more consistency between lab and lecture instructors to better meet student needs.

3. Current MICRO200 is a poor fit to the needs of the pre-nursing students that it serves; it is currently 5 units and has two labs a week which results in three hours more of lab than need for nursing programs and reduced outside time for students to learn needed material.
4. Course repeat rates that contribute to lack of access to department courses, especially AP150.
5. Students have indicated the department could provide more supplemental materials and outside resources for its courses.
6. The current department website lacks useful information and is out of date.
7. Large class sizes (60-120 students) negatively impacts student engagement and places constraints on the instructional methods that can be used in a course.
8. Amount of time needed by Chair and course coordinators to communicate necessary information to part-time faculty.
9. Department has not recently offered Teacher TRAC sections of Bio120 since one of our full-time faculty took a position as Division Dean.
10. Part-time faculty feel they are unaware of college resources, policies, and procedures.
11. A department composed mostly of new faculty full-time faculty members that are unfamiliar with institutional procedures, practices, and organization; prior cohort of full-time faculty retired resulting in loss of institutional knowledge within department.
12. Biology majors are generally unaware of careers in biology outside the area of teaching and medicine.

Opportunities

1. The funding of discipline specific tutors through the Success Center and the development of the embedded tutor program has dramatically increased the department's ability to provide academic support to our students.
2. The increased development of the CSULB BUILD program is deepening our relationship with one of the major transfer universities for Cerritos students and creating increased opportunities for our students such as participation in instrumentation and methodology workshops.
3. The continued NIH funding of the CSULB LB3 and UCI Bridges program provides ongoing opportunities for students to participate in research internships
4. Number of students electing biology and nursing as majors has increased over last six years (nursing majors represent a significant portion the students taking classes in the biology department).

Threats

1. The current soft-hiring freeze on staff positions poses an existential threat to the biology department as it would prevent the replacement of our full-time lab technician who may be retiring at the end of this academic year.

2. Recurring shortage of cats for AP200 dissections.
3. Lack of instructional space (rooms) prevents increased course offerings to meet student demand and results in teaching schedules that hinder collaboration among department members and the ability of instructors to teach more of the labs linked to their lectures.
4. Board hiring procedure creates undue delays in hiring tutors--this negatively impacts student learning due to lack of timely support services.
5. Current priority registration practices negatively impact student access to high demand courses within the biology department.
6. Increased demand for AP150 and AP151 due to recent Kinesiology ADT.
7. A student population that does not have adequate time to study or does not know how to study.
8. The recently approved AA for Transfer in environmental science undermines the original concept of an environmental science program between earth science and biology departments
9. Lack of clarity and communication time lags between success center and department about who is hired as tutors and the hours that they work.
10. Funding for preventative maintenance and repair, replacement and updating of equipment, and field trips.
11. Students are unaware of resources that are available to them or in the case of the study room unwilling to utilize a resource due to a counterproductive environment.
12. Faculty time and energy is used to manage tutors and study room at the expense of other department objectives.

DEPARTMENT GOALS

For chart below faculty listed in "Persons to Assigned" column are abbreviated as follows: Ryan Babiar (RB), Matt Covill (MC), Scottie Henderson (SH), Susan Lepere (SL), Santos Rojas (SR), Michelle Stieber (MS), Chace Tydell (CT), and Anna Valcarcel (AV).

| Ref | Goal | Actions | Completion Date | Person(s) to Assigned |
|----------------------------|---|---|-----------------|-----------------------|
| S2 W2 W4 | 1.Improve success rates and course consistency through creation of new lab manuals | For AP150, acquire images & write content | Spring 2019 | RB |
| | | For AP150, work with publisher to format and produce manual | Fall 2019 | RB |
| | | For BOT120, create images using class slides | Spring 2019 | MC |
| | | For BOT120, acquire new slides as necessary | Spring 2019 | MC |
| | | For BOT120, write lab content | Fall 2019 | MC |
| | | For BOT120, establish Creative Commons license & format for web and printing through Lulu.com | Fall 2019 | MC |
| S2 W2 W4 | 2. Increase course success and relevance to students by completely revising the BIO120 lab. | Create new set of lab topics and new lab sequence for topic sequence | Fall 2019 | MC |
| | | Revise existing labs & develop new lab activities | Fall 2020 | MC |
| | | Revise existing lab manual to reflect course changes & submit to publisher | Fall 2020 | AV |
| | | Revised weekly memos for part-time instructors and create an instructor's version of lab manual for lab faculty | Spring 2021 | AV |
| S2 W3 W4 W7 T7 | 3. Create new microbiology course for healthcare professionals | Verify that a 4-unit microbiology course will fulfil the pre-nursing requirement | Fall 2017 | SR |
| | | Obtain training on curriculum component of eLumen | Fall 2017 | SR |

| | | | | |
|------------------------|--|---|-------------|----|
| | | Create new course and take it through curriculum committee approval | Spring 2018 | SR |
| W1 W4 W8 | 4. SLO Assessment compliance | Course leads and course teaching groups collaborate to write meaningful and sustainably assessable SLOs that are integrated with regular class assessments. | Fall 2018 | MC |
| | | Revise program level SLOs to be consistent with new course SLOs | Spring 2019 | MC |
| | | Establish a schedule for and the practice of assessing and reporting all CSLOs within recommended time frames | Fall 2019 | MC |
| | | Develop an easy to use and accessible department level summary of SLO assessment results. | Fall 2020 | CT |
| | | Develop a method for all instructors (FT & PT) and/or course coordinators to collect needed assessment data and submit it to eLumen, including training as necessary. | Fall 2020 | MS |
| | | Continue to meet with SLO Coordinator to develop assessment practices and solve eLumen problems | Ongoing | CT |
| O1 W4 T11 T12 | 5. Create more productive study space for students and reduce the time faculty spend managing tutors and study room use. | Discuss moving tutors to success center, contingent upon success center having space for models | Fall 2018 | MC |
| | | Consider having the department computer lab converted to a "quiet" study room. Discuss removal of computers from S130 | Spring 2018 | SL |
| | | Explore feasibility of having department tutoring in another location with the S | Fall 2018 | MC |

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| | | building other than the study room to free up study room for use as actual study space | | |
| | | Explore and secure funding to purchase a set of models to keep at success center for tutor use. | Fall 2019 | RB & SL |
| W9 | 6. Resume participation in Teacher TRAC | Develop faculty knowledge of Next Generation Science Standards and develop Teacher TRAC assignment based on/related to those standards | Fall 2020 | AV |
| W2 W4 W5 T7 T11 | 7. Develop and curate a robust set of student support materials and services | Develop Quizlet study sets for AP120 Lab | Spring 2019 | CT |
| | | Develop Quizlet study sets for AP150 Lab | Spring 2019 | RB |
| | | Discuss current workshop offerings with success center to assess: --The extent that their current workshops fit our students needs --If existing workshops can be modified to be "biology specific" to better fit the needs of our students | Spring 2019 | CT & MS |
| | | Discuss the possibility of developing our own "how to ___ for a biology class" workshops and/or the feasibility of developing online tutorials on "how to study for ___" | Fall 2019 | Entire dept. |
| | | Discuss the developing online tutorials or DLA for key topics that span multiple classes (e.g., osmosis and diffusion). | Fall 2019 | CT |
| | | Discuss re-offering BIO95 to provide a study hall staffed by faculty members | Spring 2019 | MC |

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| | | Increase recruitment of BIO120 tutors | Fall 2018 | AV |
| | | Discuss student support and preparation programs/models with health science division | Fall 2018 | MC & CT |
| | | Investigate the A&P workshops that LBCC Learning & Academic Resources Department provides as a potential model | Spring 2019 | MC |
| W12 | 8. Improve awareness of career options of biology majors | Collect career pathways and profiles from working biologist (not medical or education) | Fall 2020 | MS & MC |
| | | Create slides and/or videos of the career pathways and profiles of working biologists (not medical or education) share in class and potentially post online. | Fall 2021 | MS & MC |
| | | Conduct surveys to measure levels of student awareness of career options | Spring 2022 | MS & MC |
| S5 O2 O3 | 9. Increase number of students are of and applying to BUILD | Increase promotion of CSULB BUILD program with visits from BUILD personnel and Cerritos alumni who are BUILD participants to classrooms. | Fall 2018 | SH |
| | | Increase internal promotion of BUILD through class announcements (in-class, web-posting, & email) | Fall 2018 | SH |
| | | Increase participation in BUILD instrumentation and methodology workshops via promotion and by instructors personally encouraging select students to participate | Fall 2018 | SH |

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| S5 W12 O2 O3 | 10. Increase student competitiveness for internships. | Identify specific skills that would improve student competitiveness for internships. | Fall 2019 | MS & SH |
| | | Design stand-alone workshops for selected skills with award students certificate of completion | Fall 2020 | SH |
| S6 W2 W8 W10 | 11. Improve part-time instructor awareness of policy and resources, & increase lab-lecture instructor communication | Create Canvas site for part-time instructors with resources and information on college & department policies | Fall 2018 | MS |
| | | Survey PT faculty on information they feel is most valuable | Spring 2018 | SR |
| | | Survey course coordinators about information PT instructors ask for the most | Spring 2018 | MC |
| | | Populate Canvas site with content | Fall 2018 | SR |
| | | Discuss method to enhance lecture instructor-lab instructor communication (possible through Canvas) and establish it as department norm | Fall 2018 | SH |
| S7 T3 T5 T6 | 12. Improve student access to A&P courses | Explore feasibility of appropriately altering AP151 lab so rooms other than S129 can be used for AP151 lab so that S129 can be used for other courses and to increase AP151 offerings. | Fall 2018 | SL, CT, RB |
| | | Room availability allowing, re-arrange room use to allow increased A&P lab offerings. | Fall 2018 | MC or current Chair |
| | | Advocate for revised priority registration policies when possible. | Fall 2019 | MS |
| W6 T11 | 13. Improve communication of resources and | Develop clear and informative website for | Fall 2018 | MS |

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|----------------------|--|---|-----------|------------|
| | department information with students | Biology Department Determine if this should be done in OUCampus or Canvas | | |
| | | Resources Awareness Campaign: compile resources, create slides to show in class, Add content to Canvas or traditional website | Fall 2019 | SH |
| S2 W2 W4 T2 | 14. Improve success in of AP150 and AP200 by increasing relevance and relatability of course material. | Explore funding or grant writing to obtain an Anatomage table or SynDaver. | Fall 2022 | SL, RB, CT |
| | | Revise AP200 lab activities & handouts to utilize Anatomage (or SynDaver) table instead of cat dissections | Fall 2023 | RB |
| | | Establish practices for use of Anatomage table (or SynDaver) in AP150 and train part-time instructors on use | Fall 2003 | RB |
| | | Determine storage site for Anatomage table (SynDaver) and policy about what other courses and instructors are able to use it | Fall 2003 | RB |
| W12 | 15. Develop internship opportunities in applied biology and/or field biology | Identify and meet with agencies/programs that could host biology internships in applied of biology (non-medical or education) | Fall 2021 | MC & MS |
| | | Develop & pilot internship program model with agencies | Fall 2023 | MC & MS |
| | | Identify and contact agencies/companies that could host job shadowing opportunities. | Fall 2021 | MC & MS |

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|----|--|--|-------------|---------|
| | | Develop and pilot a job shadow program | Fall 2023 | MC & MS |
| T8 | 16. Determine which Environmental Science degree options to offer and whether or not to develop a BIO105 lab | Meet with Earth Science to discuss Environmental Science program | Spring 2018 | AV |
| | | Determine demand for Bio105 lab and if desired pursue IGETC approval | Fall 2020 | AV |
| | | Determine room availability for Bio105 lab | Fall 2020 | AV |
| | | Determine if we will offer Environmental Science EDT | Fall 2020 | AV |

Cerritos College
Instructional Program Review
Curriculum Committee Program Review Checklist (Appendix E)

Indicate which course outlines you have reviewed in the last three years? (Review ALL of your courses, including those not currently being offered.) You can update content, texts, objectives, assignments, methods of instruction (except distance education), and student learning outcomes without a trip to the Curriculum Committee, but updated outlines –even if just a text update-- still should be sent to the Academic Affairs Office.

The following course outlines have been reviewed within the last 3 year: AP120, AP150, AP151, AP200, AP201, BIOL95, BIOL100, BIOL115, BIOL120, BIOL180L, BIOL200, BIO201, BIO202, BOT120, MICRO200, & ZOOL120

- List courses that have NOT been offered in the last three years. (Should they be inactivated? This is a department decision.)

The courses currently listed in the course catalog that have not been offered in the last three years are: AP298, AP299, BIOL95, BIOL100, BIOL110, BIOL180L, BIOL250L, BIOL298, BIOL299, BOT298, BOT299, MICR298, & MICR299

The department does not wish to inactive them at the moment. None of these courses are requirements so not offering them while retaining them in the college catalog should not pose problems for students trying to complete programs of study. The department plans on offering BIOL100 at some point in the future and will begin discussions of re-offering BIOL95 in the near future.

- List courses with pre-requisites/co-requisites? Have you reviewed the requisites to assure that they are still necessary and the courses are being offered. Hint: Look at the current student learning outcomes of those courses: at least two should be needed to justify the requisite. Requisites outside your discipline require periodic statistical validation to assure there is no disproportional impact on demographic groups.

The following courses have pre-requisites. The department has reviewed the prerequisites and concluded that all prerequisites are necessary and will be retained.

- AP120, AP150, AP151, AP200, & AP201
- BIOL105, BIOL110, BIOL120, BIOL180L, BIOL200, BIO201, BIOL202, & BOT120
- MICRO200
- ZOOL120

The following courses also have co-requisites. The department has reviewed the corequisites and concluded that they will be retained.

- BIOL180L, BIO200

- Do all of your course outlines list CURRENT texts and student learning outcomes? Note that whenever you update content, textbooks, student learning outcomes a new outline should be sent to the Academic Affairs Office; the office should NEVER have an out-of-date outline. These types of changes do not require Curriculum Committee approval.

The course outlines list current text, except BIOL115. The BIOL115 text will be updated as soon as department members have received training on the curriculum component of eLumen. All courses except for Marine Biology have SLO that have been written within the last three years (which will be addressed by the end of Spring 2018); however, SLOs for a number of our courses are in flux and will be revised on course outlines and submitted to Academic Affairs once finalized by instructors.

- Do you offer any courses as distance ed (hybrid or online)? Have they been approved for distance ed delivery by the Curriculum Committee? Do the courses you have been offering as distance ed for some time still match the delivery methods you outlined in your original proposals? Substantial changes require re-approval.

The department does not currently offer distance education courses (either hybrid or online)

- List the current degrees and certificates for your program. Have all the required courses (whether in your discipline or elsewhere) been offered in the last two years? Have enough electives been offered in the last two years? Are any electives (whether in your discipline or elsewhere) NOT being offered any more? Does the degree/certificate need updating? Note that every course SHOULD be attached to a new or existing degree/certificate, even if just as an elective. There ARE valid exceptions: check with the Curriculum Chair.

All department degrees have been updated within the last three years. Current degrees offered by the department include (the department does not offer any certificates):

All degrees share the following: (1) major requirements, (2) the A.A. Degree General Education requirements, and (3) electives to achieve a minimum of 60 units.

- Biology AA for Transfer (AST)
- Biology AA
- Botany AA
- Microbiology AA
- Zoology AA

Although not specifically a degree offered by the biology department many of our courses fulfill requirement or options for the Natural Science AA

- Natural Science—General AA
- Elsewhere in the program review there should be a look at whether there are students completing degrees/certificates. If no one is earning them, should the degree/certificate be updated or inactivated? This is a department decision.



Annual Student Learning Outcome (SLO) Assessment Goals (Appendix F)

Departments will want to complete the following assessment goals:

1. Departments that offer degrees and/or certificates complete each year an assessment cycle:
 - a) Assessment of SLO(s);
 - b) Analysis of results;
 - c) Development and implementation of improvement plans;
 - d) Reassessment - for each degree and certificate.
2. All departments complete each year an assessment cycle, as defined above, for each course offered.
3. All departments complete every other year an assessment cycle, as defined above, for each individual course SLO.

Please complete the tables below to demonstrate that your department is completing the assessment goals. You will find the data you need to complete these tables by printing two reports in elumen:

- o For degrees and certificates: Print the "SLO Performance - ISLO/PSLO Overall" Report
- o For courses: Print the "SLO Performance - By Dept, Course, CSLO" Report

For instructions on how to print these reports, click here <http://cms.cerritos.edu/slo/course-degree-and-certificate-slos/elumen.htm>

To complete the table, answer the questions for each academic year since your last six-year Program Review.

| Degree and/or Certificate SLO(s) | | | | |
|----------------------------------|---|--|---|---|
| Academic Year | Number of Degrees and/or Certificates Offered by the Department | Number of Degrees and/or Certificates Assessed by the Department | Number of Degree and/or Certificate SLOs identified by the Department | Total Number of Degree and/or Certificate SLOs Assessed by the Department |
| 2016-17 | 4 | See below | 24 | See below |
| 2015-16 | 4 | | 24 | |
| 2014-15 | 4 | | 24 | |
| 2013-14 | 4 | | 24 | |
| 2012-13 | 4 | | 24 | |
| 2011-12 | 4 | | 0 | |

Currently the total number of Degree SLOs (PSLOs) cannot be determined due to problems with eLumen output. The Department Chair will work with SLO coordinator to resolve eLumen output issues and with the inability to enter SLO data into eLumen and in some cases entered data not being present in eLumen. As described earlier in the report, the biology department has been out of compliance because it has not been completing an assessment cycle for all courses offered.

| Course SLO(s) | | | | |
|---------------|---|--|---|--|
| Academic Year | Total Number of Courses Offered by the Department | Total Number of Courses Assessed by the Department | Total Number of Course SLOs offered by the Department | Total Number of Course SLOs Assessed by the Department |
| 2016-17 | 15 | 14 | 118 for 2017-18 year | See #3 below |
| 2015-16 | 15 | See #1 below | See #2 below | |
| 2014-15 | 15 | | | |
| 2013-14 | 15 | | | |
| 2012-13 | 15 | | | |
| 2011-12 | 15 | | | |

NOTE to Program Review Committee: The handling of Appendix F is the most honest and useful way to present the current state of SLO assessment. Please keep in mind that most courses have re-written SLOs within the past six years (at least once), and that due to our SLOs changing on an ongoing basis any data that is on file with eLumen is not valuable as a tool to improve instruction

#1. There are no reliable records for this data. Personal communication with biology department faculty revealed that all courses except BIO115 assessed at least one SLO, but this is not reflected in eLumen. There are records of at least some SLO assessments for 2011, 2012, 2014, and 2015, but these are very incomplete (to the point that they are useless from an assessment and improvement stand point). Many assessed SLOs over the last five years could not be entered into eLumen due to problems with eLumen, and some entered data did not appear to get stored.

#2 The total number of course SLOs offered by the department has steadily increased over the last 6 years as: 1) SLOs were written for all courses, 2) overly-broad SLOs were split into more actionable SLOs, and 3) as classes expanded SLOs in response to extensive lab status. There are no reliable records how many SLOs existing within the department prior to the current academic year.

#3 There are no reliable records for this data. There are records of at least some SLO assessments for 2011, 2012, 2014, and 2015, but these are very incomplete (to the point that they are useless from an assessment and improvement stand point). Many assessed SLOs over the last five years could not be entered into eLumen due to problems with eLumen, and some entered data did not appear to get stored