

Instructional Units Program Review Year Five Update - Biological Sciences Latest Version

This cycle is for Instructional Units to complete the Year Five Update of the Program Review Cycle.

Instructional Units Program Review Year Five Update

1. Program Update : Version by Bouchard, Jill on 10/26/2021 15:04

1a. Provide any important changes or updates within your program since your Program Review Year Three Update (2019-20). (New degrees, new curriculum, staffing changes, etc.)

No new degrees to report.

With the opening of the Brentwood campus, we have added a Bio45 (Human Physiology) and Bio40 (Human Anatomy) section.

Major curricula changes include emergency pandemic conversion to create fully online and hybrid biology courses.

James Clark and James Madden were hired as full-time faculty members for the Brentwood and Pittsburg campus, respectively.

1b. Please address the following enrollment data provided for your program.

1.b.1. What are the enrollment trends over the past 3 years, beginning with Fall 2018? (Please address census enrollment, census fill rate, and productivity (FTES/FTEF))

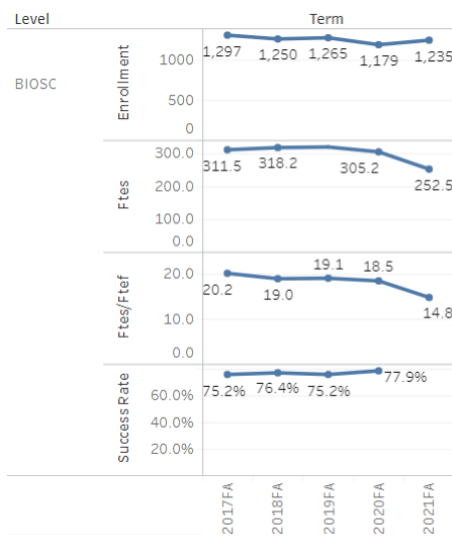


Program Enrollment and Productivity at Census

* Success rates for the active term are incomplete until the end of term occurs.

Location: LMC
 Level: Subject
 Term(s): FA

Source: 4CD's internal data system, Colleague. Last updated 9/30/2021 11:09:06 PM.
 Click on a topic in the Level column to filter the data.



Level	Term	Census Enrmt	Fill Rate	Ftes	Ftes/Ftef	Ftef	Sections	Success Rate*
ATH	2017FA	243	67%	66.2	22.7	2.91	10	95.4%
	2018FA	254	64%	65.5	18.3	3.59	10	94.4%
AUTO	2017FA	297	99%	77.8	22.6	3.44	9	69.8%
	2018FA	333	82%	81.8	19.3	4.24	12	67.4%
	2019FA	349	86%	86.2	19.5	4.41	12	67.3%
	2020FA	199	92%	49.7	13.8	3.60	9	62.1%
	2021FA	263	75%	62.0	14.4	4.32	11	
BIOSC	2017FA	1,297	102%	311.5	20.2	15.42	38	75.2%
	2018FA	1,250	103%	318.2	19.0	16.75	37	76.4%
	2019FA	1,265	104%	320.0	19.1	16.75	37	75.2%
	2020FA	1,179	99%	305.2	18.5	16.49	36	77.9%
	2021FA	1,235	101%	252.5	14.8	17.05	37	
BUS	2017FA	1,106	79%	112.9	17.6	6.41	35	69.7%
	2018FA	944	80%	97.7	18.8	5.21	29	69.1%
	2019FA	974	76%	102.8	17.3	5.93	32	66.9%
	2020FA	845	82%	91.2	18.0	5.07	26	71.8%
	2021FA	872	88%	89.9	16.3	5.51	25	
CHDEV	2017FA	1,108	83%	120.9	18.8	6.44	32	67.7%
	2018FA	1,141	83%	124.5	18.8	6.64	33	67.7%
	2019FA	1,216	86%	135.1	19.8	6.84	34	71.6%
	2020FA	1,001	82%	102.5	18.5	5.54	29	66.5%

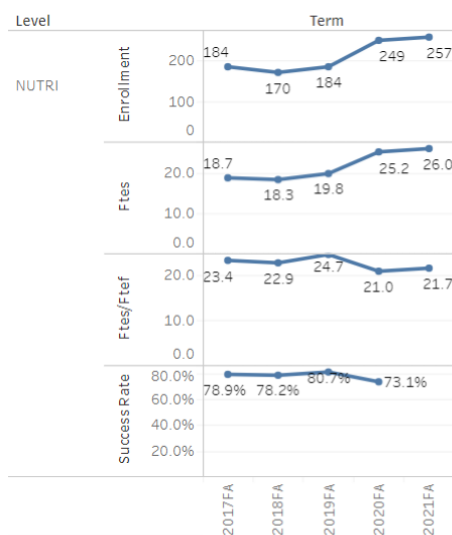


Program Enrollment and Productivity at Census

* Success rates for the active term are incomplete until the end of term occurs.

Location: LMC
 Level: Subject
 Term(s): FA

Source: 4CD's internal data system, Colleague. Last updated 9/30/2021 11:09:06 PM.
 Click on a topic in the Level column to filter the data.



Level	Term	Census Enrmt	Fill Rate	Ftes	Ftes/Ftef	Ftef	Sections	Success Rate*
	2020FA	2,852	84%	579.2	16.6	34.98	104	60.5%
	2021FA	2,672	79%	487.3	14.0	34.80	103	
MUSIC	2017FA	807	62%	88.8	15.3	5.80	35	71.8%
	2018FA	885	63%	97.5	14.6	6.70	37	65.1%
	2019FA	851	64%	94.3	15.2	6.22	35	66.9%
	2020FA	578	48%	61.3	11.1	5.52	33	77.4%
	2021FA	388	35%	40.9	7.8	5.22	31	
NUTRI	2017FA	184	102%	18.7	23.4	0.80	4	78.9%
	2018FA	170	94%	18.3	22.9	0.80	4	78.2%
	2019FA	184	102%	19.8	24.7	0.80	4	80.7%
	2020FA	249	92%	25.2	21.0	1.20	6	73.1%
	2021FA	257	95%	26.0	21.7	1.20	6	
PE	2017FA	690	43%	73.1	18.6	3.92	41	82.0%
	2018FA	653	36%	68.6	17.5	3.92	43	77.7%
PHIL	2017FA	311	73%	32.1	15.3	2.10	11	59.7%
	2018FA	483	82%	51.5	17.7	2.90	15	68.5%
	2019FA	477	85%	50.7	17.5	2.90	15	63.3%
	2020FA	473	84%	50.6	17.4	2.90	15	71.6%
	2021FA	322	60%	32.6	12.1	2.70	14	
PHYS	2017FA	261	79%	56.5	14.4	3.92	12	77.0%
	2018FA	272	89%	62.9	15.1	4.16	11	74.7%

Over the past three years, our overall yearly enrollments have remained relatively constant, with a slight, potentially insignificant dip during the pandemic. In comparing our Fall enrollments from 2018-2020, Fall20 enrollments (1179) are down compared to enrollment in FA18 (1250); a 5.7% decrease in enrollment. However, enrollment increased in FA21 (1235; 4.8%) to nearly pre-pandemic levels.

Further analysis shows that student census numbers have remained relatively constant when comparing pre-pandemic semesters (FA18) to pandemic semesters (FA20). Specifically, student census numbers decreased by 13 students (4.1%).

Our fill rate has been consistently high over the past three Fall semesters, averaging over 100% in 37 biology sections. For FA18 our FTES/FTEF (19.0) was well above our goal of 16. Compared to FA18 (19.0) and FA19 (19.1), the FTES/FTEF did drop slightly in FA20 (18.5), though it is still above our goal of 16.

1b. Please address the following enrollment data provided for your program.

1.b.2. What does the data suggest in terms of future needs/directions?

Overall, the data suggests that although enrollment, FTES, and FTES/FTEF have dipped slightly, these dips are potentially insignificant and likely reflect the effects of the pandemic during those time periods. We plan to stay the course, and add more sections to meet the needs and demands of our students.

Our fill rate data suggests that we are doing well in filling all of our classes to maximum enrollment. This also suggests that we continue to offer and schedule classes appropriately to meet students' goals and needs. Though the pandemic delayed our ability to offer additional sections to expand our offerings at the new Brentwood campus, we plan to continue to add sections to accommodate for the demands of our classes, especially for our biology majors and pre-allied health science students.

The small decline in productivity by 2.6% comparing FA18(19) to FA20 (18.5) is likely an effect of the pandemic on our students' ability to take classes. We know our students have struggled during the pandemic. For instance, students may have had to juggle childcare issues, deal with food and housing insecurities, as well as problems related to continuing education in an online format.

1c. Provide a brief update on the timeline for your program's goals as listed in your Program Review Year Three Update (2019-2020). If your program's goals are in progress or modified, please include action steps and responsible parties in your explanation.

Goals	Completed/ Abandoned/ In Progress/ Modified	Impact/ Explain/ Action Steps	Timeline/ Responsible Parties
Goal 1: Continue to support and explore skills developed by students in the Biology program with those emphasized at transfer institutions and in the STEM workforce.	In Progress	This item requires continued conversations within the department, across STEM departments, and neighboring transfer institutions/future work places. We are working to build and strengthen relationships with transfer institutions (i.e., UC Berkeley and UC Davis), Lawrence Berkeley National Labs, and to create partnerships with nearby regional parks and cities. We will continue to meet as a STEM task force to discuss how to further these outreach opportunities and other ways that we can support the STEM initiative.	FA21 and SP22 - Jill Bouchard, Briana McCarthy, Tess Shideler, Jancy Rickman, and Nicole Trager
Goal 2: Expand Biology Department offerings at the Brentwood Center after the new facility is built.	In Progress	Now that the new Brentwood facility is built we have increased our biology department offerings by adding a Bio40 and Bio45 section. We plan to continue adding biology department sections, as well as increase our diversity of offerings on this campus to include Bio7, Bio8, and Bio50.	Continued work through Spring 2022 with whole department, based on management directions.
Goal 3: Meet the equipment, maintenance, and supply needs of current and future lab curricula department-wide, including conversion of SCI-103 to a fully functional wet lab.	In Progress	We continue to fund purchases and maintenance of supplies at Pittsburg and Brentwood and work to expand materials and supplies to support our growth on the Brentwood campus, utilizing our existing department budget as well as the RAP process. Lab conversion of SCI-103 is in progress. It is usable lab space, but not a fully-functioning wet lab as the floor is still carpeted. We look forward to getting college funding and approval to continue to meet our equipment, maintenance, and supply needs.	Based on management approval/funding
Goal 4: Make a successful transition to the new compressed calendar format in a manner consistent with excellent pedagogy, with minimal impact on FTES.	Completed		

FOR CTE PROGRAMS ONLY

1c. Community and Labor Market Needs (Link Ed Code 78016 (http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=EDC§ionNum=78016), Title 5, 51022 ([https://govt.westlaw.com/calregs/Document/I69DDBCC0B6CB11DFB199EEE3FF08959C?viewType=FullText&listSource=Search&originationContext=Search+Result&transitionType=SearchItem&contextData=\(sc.Search\)&navigationPath=Search%2fv1%2fresults%2fnavigation%2f0ad7140b000016c911a16d7fb7f969b%3fNav%3dREGULATION_PUBLICVIEW%26fragmentIdentifier%3dl69DDBCC0B6CB11DFB199EEE3FF08959C%26startInde](https://govt.westlaw.com/calregs/Document/I69DDBCC0B6CB11DFB199EEE3FF08959C?viewType=FullText&listSource=Search&originationContext=Search+Result&transitionType=SearchItem&contextData=(sc.Search)&navigationPath=Search%2fv1%2fresults%2fnavigation%2f0ad7140b000016c911a16d7fb7f969b%3fNav%3dREGULATION_PUBLICVIEW%26fragmentIdentifier%3dl69DDBCC0B6CB11DFB199EEE3FF08959C%26startInde)))

No Value

FOR CTE PROGRAMS ONLY

1d. Advisory Board Update and Analysis (CTE related only) Include dates of Advisory Board meetings in 2020-2021, and those completed or planned in 2021-2022.

No Value

Goals and Objectives			Modified	In Progress	Abandoned	Completed
Goal 1. Strengthen a culture of equity, diversity, inclusion, and racial justice. (District #2 and #4)						
Recommended Actions	Goal #1: Continue to support and explore skills developed by students in the Biology program with those emphasized at transfer institutions and in the STEM workforce.	0 linked SLOs 0 resource requests				
	Goal #2: Expand Biology Department offerings at the Brentwood Center after the new facility is built.	0 linked SLOs 0 resource requests				
	Goal #3: Meet the equipment, maintenance, and supply needs of current and future lab curricula department-wide, including conversion of SCI-103 to a fully functional wet lab.	0 linked SLOs 0 resource requests				
Goal 2. Increase and maximize equitable opportunities for students to successfully complete courses and programs. (District #1 and #2)						
Recommended Actions	Goal #1: Continue to support and explore skills developed by students in the Biology program with those emphasized at transfer institutions and in the STEM workforce.	0 linked SLOs 0 resource requests				
	Goal #2: Expand Biology Department offerings at the Brentwood Center after the new facility is built.	0 linked SLOs 0 resource requests				
	Goal #3: Meet the equipment, maintenance, and supply needs of current and future lab curricula department-wide, including conversion of SCI-103 to a fully functional wet lab.	0 linked SLOs 0 resource requests				
Goal 3. Increase opportunities that will prepare students to enter high-demand and living-wage occupational fields. (District #3)						
Recommended Actions	Goal #1: Continue to support and explore skills developed by students in the Biology program with those emphasized at transfer institutions and in the STEM workforce.	0 linked SLOs 0 resource requests				
	Goal #2: Expand Biology Department offerings at the Brentwood Center after the new facility is built.	0 linked SLOs 0 resource requests				
	Goal #3: Meet the equipment, maintenance, and supply needs of current and future lab curricula department-wide, including conversion of SCI-103 to a fully functional wet lab.	0 linked SLOs 0 resource requests				
Goal 4. To better support students in accomplishing their academic and career goals – from entry to completion/transition – and to enhance course-level and program-level achievement, expand and deepen educational, workforce, and community partnerships. (District #3)						
Recommended Actions	Goal #2: Expand Biology Department offerings at the Brentwood Center after the new facility is built.	0 linked SLOs 0 resource requests				
	Goal #3: Meet the equipment, maintenance, and supply needs of current and future lab curricula department-wide, including conversion of SCI-103 to a fully functional wet lab.	0 linked SLOs 0 resource requests				
	Goal #4: Make a successful transition to the new compressed calendar format in a manner consistent with excellent pedagogy, with minimal impact on FTES.	0 linked SLOs 0 resource requests				
Goal 5. Effectively utilize institutional resources to meet the needs critical to the College mission. (District #4 and #5)						
Recommended Actions	Goal #3: Meet the equipment, maintenance, and supply needs of current and future lab curricula department-wide, including conversion of SCI-103 to a fully functional wet lab.	0 linked SLOs 0 resource requests				

2. Vision for Success Goals Update : Version by Bouchard, Jill on 11/29/2021 22:08

Strategic Initiative Report

2a. The following table lists the *Vision for Success* indicators that we must align to as a College and as a District. Please look at your program data (Tableau) for each of the following *Vision for Success* indicators. Please address all indicators that are relevant to your program and provide a status update on your program goals from your Program Review Year Three Update. Please include action steps if your goal(s) has been modified and an explanation if your goal(s) has been abandoned. *

**NOTE - Please copy and paste the table below in your response and complete accordingly.*

Vision for Success Indicators and ACCJC Indicator	Program Set Goals (from PR Year 3 Update)	Status (Indicate Modified, Completed, or Abandoned)	Timeline	Responsible Parties	Action Steps/ Explanation
Course Success					
Degrees (AA, AS, ADT)					
Certificates of Achievement					
Unit Reduction					
CTE Jobs					

Vision for Success Indicators and ACCJC Indicator	Program Set Goals (from PR Year 3 Update)	Status (Indicate Modified, Completed, or Abandoned)	Timeline	Responsible Parties	Action Steps/ Explanation
Course Success	76.1%	77.8% (Completed)		All Bio Dept	<p>We met and exceeded our goal. We will continue doing what we are doing but also work to continue to increase student success the following ways:</p> <ul style="list-style-type: none"> Budget additional hours for Student Workers ("TAs") to host study sessions in preparation for quizzes and tests. Strengthen relationship between Center for Academic Support and Biology Department. Create massive online banks of practice quiz and test questions for students to utilize. Develop community network for internship opportunities and speakers to increase engagement with materials Improved technology resources Develop within department advising for students to connect with faculty to experience in field of interest We will examine our retention and success rates in our online vs hybrid vs in - person courses to determine which modalities are likely to maximize student success in bio classes going forward.
Degrees (AA, AS, ADT)	AS 49 AST 4 Total degrees awarded = 54	AS 6 AST 38 Total degrees awarded = 44	Starting Fall 2020	All Bio Dept Faculty	<ul style="list-style-type: none"> There is an overall decrease in biology degrees, which likely mirrors the overall decrease in college enrollment over the last two years due to the pandemic. We plan to collect additional information from the District office and analyze it to determine our next steps. Increase sections of Bio 20 & Bio 21 with the opening of the new Brentwood Center (In progress; goal FA2022) Increase degree options by adding possible AS (Biology:Health Sciences) for students completing the "pre-nursing" courses
Certificates of Achievement					
Unit Reduction	AS 79 AST 79	AS 138 AST 102		All Bio Dept Faculty	<p>Before setting a progressive goal to reduce biology AST units, we would like to better understand where the extra units are coming from. Some of the questions we would like answers to are the following: Are they taking preparatory courses (extra math, English, non-majors science courses) to be ready for majors classes? Are they undecided/changing major? Are they preparing for a double major? To answer these questions, we can submit a research request with the District Office Research and Planning Department. Depending on the results of the research, we can then set goals and develop strategies to target unit reduction in biology.</p>
CTE Jobs					

2b. The *Vision for Success Goal 5 - Equity* is designed to reduce the equity achievement gap on course success for disproportionately impacted (DI) student populations. The College has identified the following three disproportionately impacted (DI) populations: African-American, economically disadvantaged students (low income), and foster youth students.

Please review your program data (Tableau) for each of the aforementioned DI populations, and provide a status update on your program goal(s) for your previously selected DI population(s) in your Program Review Year Three Update. If your goal(s) has been modified please include action steps and if your goal(s) has been abandoned please provide

an explanation.*

**NOTE - Please copy and paste the table below in your response and complete accordingly.*

Course Success by DI Population	Program Set Goals (PR Year 3 Update)	Status (Indicate Modified, Completed or Abandoned)	Timeline	Responsible Parties	Action Steps/ Explanation
African American					
Low Income					
Foster Youth					

Course Success by DI Population	Program Set Goals (PR Year 3 Update)	Status (Indicate Modified, Completed or Abandoned)	Timeline	Responsible Parties	Action Steps/ Explanation
African American	63.8%	69.1%(Completed)		All Bio Faculty & Staff	<p>We met and exceeded the goal. We will continue doing what we are doing but also work to continue to increase student success.</p> <ul style="list-style-type: none"> Encourage all faculty participation in equity-mindedness training FLEX workshops <ul style="list-style-type: none"> Pedagogy Innovation Project (PIP) focuses on decolonized assessment and trauma-informed, healing-centered pedagogy Encourage PT faculty participation in FAM (Faculty Advising Mentoring) Equity Hour Program Increase student's awareness and participation in UMOJA, MESA, CalWORKs/EOPS/CARE, BOEP Invite speakers from above programs to speak to faculty & staff during Department's Flex workshops Implement mentoring programs (peer-to-peer, teacher/student) Create summer bridge programs Invite guest speakers to increase visibility of African Americans in STEM & healthcare professions; Invite LMC Alumni to speak to classes "Alumni Spotlight" Include/increase "Science Spotlights" which showcase African Americans who have made contributions in STEM and healthcare Select course TAs that reflect diverse populations (esp. African Americans) Feature student alums in display/recognition areas in Science spaces Host class reunions where a diverse cast of former students are invited back as guest speakers to the new students; this doubles as a networking opportunity. Develop community networks to allow for mentoring/job opportunities Develop within department advising program for students to have access with faculty that have experience in field of interest
Low Income	75.1%	78.4%(Completed)		All Bio Faculty & Staff	<p>We met and exceeded the goal. We will continue doing what we are doing but also work to continue to increase student success.</p> <ul style="list-style-type: none"> Increase the number of Zero Textbook Costs sections for our courses Encourage all faculty participation in equity-mindedness training FLEX workshops (i.e., PIP) Encourage PT faculty participation in FAM (Faculty Advising Mentoring) Equity Hour Program Increase student's awareness and participation in EOPS/CARE training FLEX workshops Encourage PT faculty participation in FAM (Faculty Advising Mentoring) Equity Hour Program Increase student's awareness and participation in EOPS/CARE Dedicate display spaces to important student resources, like food pantry, EOPS, etc Create and offer at least one scholarship each semester funded by Biology Department faculty and staff Develop community networks to allow for mentoring/job opportunities Develop within department advising program for students to have access with faculty that have experience in field of interest

Strategic Initiative Report

Foster Youth	64.5%	67.3% (Completed)	All Bio Faculty & Staff	<p>We met and exceeded the goal. We will continue doing what we are doing but also work to continue to increase student success. .</p> <ul style="list-style-type: none"> • Increase the number of Zero Textbook Costs sections for our courses • Encourage all faculty participation in equity-mindedness training FLEX workshops <ul style="list-style-type: none"> ◦ PIP - we discuss ACEs and how multiple childhood traumas impact learning engagement • Encourage PT faculty participation in FAM (Faculty Advising Mentoring) Equity Hour Program • Increase student's awareness and participation in EOPS/CARE; <ul style="list-style-type: none"> ◦ Could we dedicate display spaces to important student resources, like food pantry, EOPS, etc • Develop community networks to allow for mentoring/job opportunities • Develop within department advising program for students to have access with faculty that have experience in field of interest
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3. Assessment Status Update and CSLO Assessment Effectiveness : Version by Bouchard, Jill on 09/29/2021 22:03

a. Please review the data provided on the assessment status of courses in your discipline for Cycle Two (2017/18-2020/21). For any courses that were not assessed in Cycle Two please list them in the table below in your response including why they were not assessed, when you are going to assess them, and who is going to assess them.*

*NOTE - Please copy and paste the table below in your response and complete accordingly (add extra rows if needed).

Course Name/ Number	Reason course was not assessed	When course will be assessed	Faculty Responsible for Course Assessment
Human Biology/Biosc08		Assessed and submitted 9/20	Jill Bouchard
Organismal Biology/Biosc021		Assessed and submitted 9/20	Jill Bouchard
Intro to Anatomy & Physiology/Biosc030		Assessed and submitted 9/16	Jim Clark

b. Discuss the results of any CSLO assessments performed this year. What changes, if any, are planned to improve student success (ex. pedagogy, assessment instruments are not appropriate to measure, CSLO rewritten etc.)?

Bio8

For more reliable assessment data in Bio 8, all four CSLO's were re-written. The updated CSLOs eliminate disparate concepts within a singular CSLO. By focusing each CSLO on one critical concept, the assessment tools for each CSLO can be more targeted. When the directions for and expectations from the assignments are more clear, we anticipate an improvement on overall proficiency across all four CSLOs, leading to more useful data.

Bio20

In Bio 20, based on the assessment of three CSLOs, it was determined that our approach for teaching how to write a lab report was successful. We recognized that students would benefit from more deliberate role modeling on how to think critically in order for them to better discuss concepts with greater depth and breadth. Our data for the third CSLO was incomplete because the assessment tool needed to be broader in scope. Only one CSLO was slightly reworded to better reflect the higher order thinking expected in this Biology course.

Bio21

The results from the Bio21 assessment indicate that the assessment tools, instructional activities, and CSLO's are generally well-aligned, and no changes were made to the CSLO's. We learned that students struggle to make deeper connections with course content in an online setting, evident by comparing multiple choice vs. written exam questions for a topic. As a result of the assessment, we have made curriculum changes focused on giving students more opportunities to practice the material by increasing student-student and student-instructor interactions.

Bio30

The results of the Bio30 assessment indicated that the majority of students were able to process information at lower levels of Bloom's taxonomy and a Dreyfus level of novice, but showed limited ability to synthesize ideas or differences between concepts that were similar but would be applied differently based on a given scenario. For more reliable assessment data and to better align the assessment tools with the CSLO, all CSLO's were modified and an additional CSLO was added. Specifically, each CSLO now includes a unique goal of learning for the course and emphasizes learning terminology, and a fourth CSLO was added to emphasize the need to develop critical thinking skills of the students. The CSLO modifications should also now allow for alignment with the GE focus of courses at LMC that were not present in the previous version of the CSLO's for the course.

Bio45

As a result of the assessment, there were no changes made to the CSLOs. To improve student success, we purchased newer, more advanced software to allow students to collect more data and perform more robust analysis to further enhance our students' ability to meet proficiency in this outcome. We plan to offer students more opportunities to engage in in-class discussion of concepts through flipped classroom sessions; add smaller, more frequent assessments; utilize Canvas to create modules for curated content on specific topics; and discuss strategies for test taking, including sample responses. We will also continue to engage in intrusive advising identify students early in the semester who find the volume challenging and offer/recommend student resources and support.

Bio50

As a result of the assessment there were no changes to CSLOs. More written assignments were added to promote critical thinking and application of concepts.

4. Course Outline of Record Updates : Version by Bouchard, Jill on 09/29/2021 22:03

