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Page 1: I. Program Overview and Update

Q1

I.1. Department(s) Reviewed:

Biology

Q2

I.2. Lead Author:

Michelle Garcia

Q3

I.3. Collaborator(s) - List any person that participated in the preparation of this report:

Fabienne Bouton, Richard Jimenez, Charlene Alsbaugh, Christina Burnette, Bri Hays, Megan Smith, David Burnette, Miriam Simpson, Kathryn Nette,

Q4

1.4. Dean/Manager:

Kim Dudzik

Q5

Initial Collaboration Date with Dean:

Enter the initial date you met **10/04/2021**
with your dean to discuss
your program review using
this format: MM/DD/YYYY

Page 2: II. Program Reflection and Description

Q6

II.1. Provide your program's mission statement:

The mission of the Biology department is to provide our diverse population of Biology and Allied Health majors with an exceptional, curiosity-driven learning experience, one that exposes them to the critical thinking skills necessary to comprehend, interpret and critically evaluate fundamental scientific concepts as well as new evolving racial and social justice issues. This is accomplished by striving to develop the student's lifelong learning, organization, and management skills, thereby facilitating successful transitions into their transfer program or chosen field of employment for social and economic mobility.

Q7

II.2. How is this program advancing the college mission, vision and values?

Our program is committed to the development of culturally relevant material and embracing a student-centered pedagogy. Our goals center around removing unnecessary barriers to both course completion and the field of Biology. Our faculty strive to be equity minded and are deeply driven and strive to eliminate inequities perpetuated by a lack of attention to policies and behaviors that would allow all students to thrive. We demonstrate our commitment to inclusion and social justice in our commitment to the Kumeyaay Studies program. All of the Kumeyaay Science courses that are required for the associates degree are housed and developed in the Biology Department. We are committed to innovative strategies such as promoting diversity within our curriculum, utilizing new pedagogical techniques and "learning by doing" activities to both inspire our students and build relationships within the community.

Q8

II.3. How does your program support the college's strategic goal of implementing guided pathways?

Research shows that the interventions and support systems that are part of a guided pathways approach will have an impact on equity and overall student success. Previous work done with the Title III HSI-STEM grant was designed to address these issues by developing a guided pathways approach and providing multiple support systems and student intervention points. Biology has strived to be equity focused in our plans and actions. As funding for this grant is ending, one of the most successful strategies in intervention and guidance of students will be a STEM center specialist that was previously funded through the grant. This person would be responsible for coordinating with tutoring and faculty and staff for workshops, career panels and student engagement activities.

We are also working with counseling to ensure that our degree maps are clear and efficient. We want to make sure that our students' academic journeys are streamlined and proper support is available to students to guide their academic choices. We are working as a department to ensure that our curriculum, emphasizing the SLOs, is clear so that students are able to achieve their completion goals.

Q9

Yes

II.4. Is the program description in the current college catalog up to date and accurate?

Page 3: III. Course Curriculum, Assessment and Student Success

Q10

Yes

III.1. Access the Five Year Curriculum Review Cycle (requires GCCCD login). Have all of your active courses outlines been reviewed within the last five years?

Q11

III.2. Please list any planned changes from the current semester forward for curriculum (courses, degrees, and/or certificates) and the rationale for those changes (e.g., labor market data, advisory committee recommendations, transfer institution changes, industry trends, statewide transfer model curriculum).

We are working in conjunction with Grossmont College to decrease the unit value of Bio 140: Anatomy from 5 units to 4 units because of requirements of their nursing program. Both departments are planning to change our curriculum to 4 units in Spring 2022 for the course to run as 4 units in Fall 2022. This also aligns with SDSU. The course outline has been rewritten and will be run through Curriculum in Spring 2022. Once this gets through Curriculum, we will start a new assessment cycle In Fall 2022.

To better meet the needs of our Allied Health students and our non-major students, we are looking at two strategies in curriculum:

1. Split the Bio 130 (lecture prerequisite) into a course designated to increase the success of Allied Health students in their future courses (Anatomy, Physiology and Microbiology). Bio 130 is currently a course that is serving too broad of a student base and it, in turn, is too difficult for non-majors. At the same time, the curriculum is not focussed enough for Allied Health students. Bio 130 will be split into two courses, where one course is designated for the Allied Health pathway and the second course will encourage and be designated for non-majors, with the overarching goal to excite students about STEM and encourage underrepresented populations into a STEM career.

2. A supplemental "side-by side" course that can be taken with Anatomy to help provide resources during the course to increase student success. A similar course has been designed and approved at Grossmont College. We will be working with Grossmont faculty to assess the success of this strategy and to pool our resources to increase student success Districtwide.

Q12

III.3. How is your program meeting the needs of students, and/or articulation with four-year institutions?

Our program is meeting the needs for students to transfer as Biology majors. It is also meeting the needs of students to move forward in their Allied Health career.

All of our non-major level courses are meeting the general education needs for non-major students to transfer to four-year institutions.

Q13

III.4. Please upload the most recent version of your program's course SLO assessment plan. [Click here for an Assessment Plan Template](#)

Biology SLO Plan update 2021 - Sheet1.pdf (39.5KB)

Q14

III.5. Please provide a high-level analysis of your SLO findings over the past year and discuss what changes, if any, were made as a result. Include any student learning-related successes and challenges that SLO results have revealed for your department.

Because of COVID, and the fact that we have not been able to run labs and some classes, we have had to adjust the assessment schedule. An updated plan is being submitted to the coordinator that reflects the changes that we need to make and are discussed in this report. In most cases, the assessments are being pushed forward to a time when we will be back on campus.

SLO assessment planning and evaluation occurs every semester during staff development week with both part and full time faculty, as stated in previous reports. These meetings have been utilized to address possible issues in both the instructional aspect of courses and the relevance of the course outlines and SLOs. Through these conversations this semester and after teaching online for the past year or so, some questions came up that we as a department are working on addressing. There are two main questions that we asked ourselves (written below) and the action plan we are utilizing to address these questions.

1. Are the SLO assessments providing us with valuable data that can help us better meet all of our students' needs?

***For the courses with low success rates and high equity gaps, such as Bio 130 and Bio 140, are the SLO assessments allowing us to see where the issues are occurring for students? After examining this data, they are not. The SLO are generally being met successfully, but the overall success rates are not improving. How can this be? We as a department will be looking at this in Spring 2022 utilizing a community of practice model where we are going to delve into solving this problem by scrutinizing our curriculum and how this curriculum is assessed. An example of an SLO assessment of Bio 140 is discussed at the end of this question.

***Are these assignments equitable? It appears that we are accurately assessing the white students, who are passing, and not capturing where our students of color are struggling to meet the SLO. We will be looking at the nature and style of the assessments and how these can provide more accurate representation in our data.

***We work on running a pilot assessment project where faculty will provide information whether or not a student met the SLO metric along with the student IDs, and send the data to IESE to run demographics and disaggregate the data across sections (not specific to any one section).

2. Are the SLO observable and/or measurable results that are a reflection of student learning experience in the course? The SLOs need to be examined to make sure that they are not just about content of the course but are outcomes reflecting knowledge and or skills that students are achieving as a result of the learning framework of the course.

***Evaluating and rewriting the SLO to reflect a process of learning will help us to better assess the effectiveness of the pedagogy that is driving the coursework.

***Thinking about the course as a whole learning journey and not just a series of content steps can help our instruction be more impactful.

As a department, this semester, we chose to reflect on our assessment strategies and our SLOs. The curricular activity of assessing SLO must be a practice that is both beneficial and productive. In Spring 2022, we will be working to evaluate our outcomes and our strategies in achieving these outcomes. One aspect of assessment that we are examining is assessing all of the SLO over one semester.

This was done in two courses this semester, a section of Bio 240 (in-person lecture and lab) and Bio 133 (online lecture). By assessing all of the SLO in one semester, it becomes clearer where students may be struggling and also where the SLO are in need of improvement. In Bio 240, looking at students' ability to perform a particular task or understand the tools of scientific inquiry is not accurately assessed by looking at one assignment at one point in the semester. A more accurate, albeit more complex strategy, of examining the actual progress of a student is looking at how well they are able to perform this task/acquisition of knowledge at the start of the course versus at the end of the course. Looking at SLO in this manner opens up new possibilities for both the instructor and the students. For the instructor, to be able to evaluate a student's growth over the course of a semester in relation to the SLO. For the student, they are able to see this growth in themselves and gain not only competence in the subject, but confidence in their abilities and what they have learned. In Bio 133, the assessment for the SLOs are done by activities that build in complexity throughout the semester. This demonstrated the process of learning of the students in contrast to only showing the product of learning,

which can be deceiving.

With both courses, it is clear that the SLOs need to be examined especially in regards to the number of SLO (6 SLO in Bio 240 and 9 SLO in Bio 133) to allow instructors to focus on examining the pedagogical framework for the courses, eliminate redundancy, and improve the data collected for the assessment.

However, it is also noted that with the change in assessment tools and strategy, the percent achievement of the SLO closely matches the percent success rates in the courses. This data will be used to help develop assessment tools for Bio 130 as the course SLOs are rewritten and the course is split into two separate classes, one focussing as a prerequisite and the other as a general education requirement for non-majors.

As mentioned above, here is an example of an SLO being assessed in Bio 140, in Spring 2021. Four sections were assessed on SLO 1 using the histology of two organs of the digestive tract. They were asked to compare and contrast the tunica mucosa for these two organs, indicating the associated specific tissue types. Students were asked to explain why the lining of the lumen differs in these two organs. The success rate in these four sections were 76%, 80%, 85%, and 100%. These success rates are great. Students demonstrated a good understanding of the lecture material which preceded this assignment. Students comprehended the organization of the wall of major organs of the digestive system and were able to justify how structure relates to function.

What we are not able to understand from this data is whether there are equity gaps in the learning of the material. What are the demographics of the ~20% who are not passing the SLO? Why are students successful in achieving the SLO, but struggling to be successful in the course? One strategy to better understand success rates in the course is to assess all SLO in one semester. It is also useful to think about when the assessment is occurring. For example, if it is towards the end of the semester, those students who are struggling may not have taken the assessment because they may have dropped the course. What has also been noted by the instructors for this course, is that students are not adequately prepared. The prerequisite courses (Bio 130/131) need to better prepare students for the rigor and curriculum of this course. We are hypothesizing that a change in curriculum of Bio 130 will correspond with an increase in student preparedness and success in Bio 140.

Page 4: IV. Degree and Certificate Programs

Q15

Yes

IV.1. Does your program offer any degree/certificate programs?

Page 5: IV. Degree and Certificate Programs

Q16

IV.2. For each degree and certificate, indicate how many awards were conferred in the past 5-years.

Biology Degrees 2016-2021 - Sheet1.pdf (27.4KB)

Q17

IV.3. Please indicate when each degree and certificate was last reviewed and updated (semester):

We are currently looking to evaluate the degrees in Spring 2022 as we look at reexamining our SLOs and PLO mapping.

Q18

Yes

IV.4. Can students complete the degree/certificate requirements within a 2-year period? **Requirement of Title 5, California Code of Regulations and Accreditation Standard II.A.

Q19

IV.5. How are you currently assessing your PLOs? *Note: The college requires assessment of PLOs within a 4-year cycle

Overall: We have worked with the department chairs in STEM to rewrite our PLOs in August of 2021. Meeting with the Math, Physics and Chemistry chairs addressed expected outcomes for students in Biology that fall outside of the discipline. These changes to the PLOs were minor and the mapping to specific course SLOs can remain the same. However, as we are examining our SLO and methodology of assessment in Spring 2022, we will evaluate and possibly change these mappings.

Discipline/Program: Biology AST & Biology Upon examining the Biology PLOs, they accurately reflect the outcomes of courses within the discipline. We are still examining how we can make the PLOs address the necessity of learning to operate as a member of a cross-functional team. Since pathways are driven by a goal to achieve career success, these components all seem to be necessary to give students a clear introduction to workplace expectations. We are planning on working together within the department to further develop these methodologies to link all the required coursework to the PLOs.

Discipline/Program: Biology Pre Allied Health Most of the PLOs apply strictly to the anatomy and physiology aspects of this program. The PLOs are being rewritten to ensure that they reflect the outcomes that are necessary for student success within the health field and that these outcomes are being met and assessed within the required courses. Similar to biology, the pathways in the allied health fields should be driven by a goal to achieve career success, and operation of cross functional teams, and an ability to understand and apply knowledge, skills and abilities from multiple disciplines is also important to the success of these students.

Q20

IV.6. Are the PLOs in the catalog an accurate reflection of the department or discipline's current learning objectives?

If No, briefly explain the plan to revise:

I will submit the paperwork to update the PLOs within the week. The changes to the PLO were not significant enough to alter the mappings to the SLOs at this point.

Page 6: IV. Degrees and Certificate Programs continued

Q21

Yes

IV.7. Are the PLOs mapped to the course SLOs?

Page 7: IV. Degree and Certificate Programs continued

Q22

IV.8. The College has set a 2024 goal of reaching a 77% course success rate (students passing with a grade A, B, C or P out of those enrolled at census) for the College as a whole. What is your department or discipline's 4-year (2024-25) goal for success rate across all courses in the department or discipline and how has the department of discipline's success rate across all courses changes within the past 4-years?

Instructional Comprehensive Program Review Fall 2021

The success rate for the department is pretty close to the College goal of 77% course success rates with an average of 70% over the last five years. Looking at course-level data, it is evident that Bio 130 and Bio 140 are courses that have lower than the targeted success rate of the college and are bringing down the success rate of the overall department as these are the lowest success rates and have the highest enrollment. The focus of our department over the next four years is to increase the retention and success rates of students in these courses, primarily to close equity gaps which will also serve to bring up the target success rate to the College goal.

Over the next four years we will perform data-driven explorations of our retention and success rates in order to better understand our equity gaps and increase student success. We will also explore the underrepresentation of students of color in our major-level courses. Our goal is to determine the obstacles to student enrollment and engagement. We have three hypotheses that we will be examining utilizing survey data:

1. Lack of underrepresented student enrollment in the biology program is caused by fear that the major is “too hard” from previous negative experiences in STEM, including our own course, Bio 130.

***We will be looking at data from the success and retention of Bio 130 throughout the redevelopment process; surveying students before and after taking the course.

***We will work with Counseling to develop clear and concise pathways for student transfer and completion. We will also work with Counseling to highlight more culturally diverse biology transferable courses such as Bio 133: Ethnoecology. Bio 134: Ethnobotany and Bio 135: Ethnoecology | Ethnobotany Lab.

2. Students may start out as biology majors and the prerequisite coursework in physics, math and/or chemistry may be creating obstacles to student success.

***Prerequisite courses will be examined in terms of retention, success and percentage of students of color. The questions we are trying to answer: is there a significant difference in percentage of students of color in these courses versus the major classes in biology? If so, why? How can we mitigate this? We will answer these questions using course retention and success data and surveying students.

***We will be working with the discipline leads to understand the data and the potential discrepancies as to why our students of color are not moving forward in the program. Currently, there is collaboration between Physics and Biology to develop the physics series to be more relatable to biology majors.

3. Students may not “see themselves” in the major.

***Inclusive marketing materials will showcase scientists and students of color that are successful in the field.

***We will also advertise the Kumeyaay Science courses that highlight the importance of indigenous science.

Within the next year, we are working on redesigning the curriculum for Bio 130, the general biology course which has our highest equity gaps. This course is an obstacle to success for our Allied Health majors to be successful in their subsequent courses, as this is a prerequisite. It can also be viewed as an obstacle to engagement for undecided students of color in becoming majors in biology. The goal of the redesign is to serve two purposes pushing us towards our equity-based goals:

1. Development of inclusive pedagogy and training for faculty that will both close gaps in success rates and encourage students to participate and/or major in Biology.

2. Ensure that the course is providing proper preparation for the courses that it is a requirement. The “job” of this course is to embrace students where they are at and get them to where they need to be in order to succeed in future coursework.

To this end, we are working with the HSI STEM grant to develop a community of practice in Spring 2022 within our department to collaborate and innovate to develop and make changes to our curriculum by educating ourselves about problems and best practices, devising solutions, and putting those changes into practice that center around the voices and experiences of our marginalized students and community members.

Q23

IV.9. What other qualitative or quantitative data (from any source) is the program using to inform its planning for this comprehensive program review? Please reference additional internal or external data, such as retention and enrollment, student survey results, focus groups, student throughput, or other data, if there are any notable trends.

Data is being collected for the HSI STEM grant. Student surveys and intervention program data is being used to better understand student needs. One of these student surveys was collected from the Bio 130 courses. The disaggregated data has been highly useful to evaluate the issues that our Hispanic/Latinx and African-American students have been experiencing. As our equity gaps are most apparent in Bio 130, it is important to get a better picture of what is happening in these courses. These surveys have led us to the conclusion that a new faculty member is critical to closing this equity gap. This course serves the most students (over the past 5 years 4,906 students enrolled in this course) yet does not have a full-time instructor designated to lead the course.

Some notable findings from this survey are that since 2016 the average retention rate for the Biology 130 course has been 89%, however the average success rate has been 66%, indicating a potential barrier to degree or transfer in a timely manner for at least 34% of course enrollees. Students of color (African American/ Black Non-Hispanic, American Indian/ Alaskan Native, Asian, Hispanic/ Latinx, Pacific Islander, Multi-Racial) have represented 58% of enrollments, however these same students experienced equity gaps in their retention and success rates compared to White/ Non-Hispanic and Middle Eastern/North African students.

Hispanic/ Latinx students represent the largest population enrolled in Biology 130 since 2016, however their average retention (81%) and success rates (59 %) are considerably lower when compared to white students (89% and 75%). A study conducted in Spring 2021 assessed the number of times students attempted various entry level STEM courses. Data highlighted the following findings when compared to the student reference group (white students):

1. African-American/Black and Hispanic/Latinx students who enrolled in Biology 130 in Spring 2021 were more likely to have previously attempted this course
2. African-American/Black and Hispanic/Latinx students who enrolled in Biology 131 (Lab portion) in Spring 2021 were more likely to have previously attempted these courses

These numbers indicate that students of color are being impeded by this course in disproportionate numbers than their white counterparts. This is why our department is planning to focus our efforts on increasing culturally relevant curriculum to Bio 130. We have strong evidence from the high retention and success rates of our students of color in our Kumeyaay Science courses that this is effective. For example, a comparable course to Bio 130 (in-person lecture transferable GE), Bio 134, Ethnobotany has average success and retention rates over the past five years of:

1. American Indian/Alaskan Native: 93% retention, 87% success
2. Hispanic/Latinx: 96% retention, 89% success

Q24

IV.10. Please review the college-wide and program data sets, which have identified equity gaps based on the following criteria: 3% n=10 students/enrollments. Which groups are experiencing equity gaps in your program? Please discuss all equity gaps identified in the data.

The largest equity gaps that we are seeing in terms of retention and success are in Bio 130 and Bio 140. However, where we see equity gaps in our 200-level courses are in access to the program. The equity gaps seen in our department are in Hispanic/Latinx and African American students. This correlates to the lack of diversity that we see in our overall discipline.

The Kumeyaay Science courses (Bio 133, 134 and 135) have dramatically impacted our success rates with Native American students and Hispanic/Latinx students as mentioned in the above question. This demonstrates the importance of culturally relevant pedagogy to student success.

Q25

IV.11. What department/discipline (or institutional) factors may be contributing to these lower rates of success for these groups of students?

These lower rates are a common issue nationwide, which can be exacerbated in a STEM program. Other factors not able to be determined from the data for Cuyamaca College, but systemic issues that African-American and Hispanic students face include being a first generation college student, of a low income household and adjusting to a college life that is overwhelmingly not similar in ethnicity. These issues were being addressed prior to the pandemic by providing support systems to our students such as a STEM center that creates a sense of place and belonging, STEM counselors, faculty and student mentors, and success in STEM workshops and activities. We are hoping to have these support systems back in place by the hiring of a STEM specialist in the future.

Q26

IV.12. What action will the department or discipline take to address these equity gaps in the short-term (next year) and long-term (next four years)? Consider the specific steps your department will take to address equity gaps and discuss any plans for diversifying department faculty in alignment with the GCCCD Board Resolution 20-015.

The Biology Department is committed to, and inspired by, the work of equity and justice. As we pursue those aims, we simultaneously acknowledge that our discipline is implicated in the foundations of racism, sexism, and constructs of gender in this country. We also acknowledge that our department has often failed to live up to our own ideals and those of Cuyamaca College by not creating curricula, practices, or cultures that would support all students, particularly those from minoritized identities, to realize their own goals in our field. We are deeply driven and strive to eliminate inequities perpetuated by a lack of attention to policies and behaviors that would allow all students to thrive.

To this end, members of the department have passionately engaged in learning and thinking about equity and justice, with an aim of embracing anti-racist, anti-sexist, and anti-elitist standards and practices. Our department goals center on becoming more accessible to all students and increasing student success by eliminating the equity gaps we see in our 100-level classes. Data driven analyses will be used to determine our action steps and achieve these goals. Please note that our plan to increase student success completely centers around closing equity gaps. From the data, we can see that white students are able to achieve the campus goal of over 77% success rates, but it is our Hispanic/Latinx and African American student populations that are struggling and have lower success rates. It is these students that we need to focus our attention in order to increase our student success rates. The steps and our plan to close equity gaps and increase student success, both short and long term, are delineated above in question IV.8.

In order to diversify faculty, we have shifted our thinking about hiring processes and job descriptions, to reduce bias and value diversity, to recruit a more representative pool of applicants, and to strongly value experience with inclusive pedagogy. We are in desperate need of a full-time faculty member to help us achieve our goal in the development of an equity-minded general biology course and lab. This is critical to closing equity gaps we see in our department. We also have to keep in mind that it is not just about hiring people of color, but ensuring that the instructor is teaching in an equity minded pedagogy. New faculty hires will be strongly encouraged to enroll in EMTLI training.

Q27

IV.13. What did your program learn from the transition to remote teaching and operations over the past year? How can this be used to improve the student experience in the future?

Students experience personal crises all the time, not just during a pandemic. Support for students is critical, as is seeing students as human beings first. Extending our students as well as ourselves grace, was and is important in all of us getting through such a difficult experience.

The pandemic has created an opportunity for learning and innovation. Education shifted overnight. It was a collective process that required connection and compassion. It has shown us that we can be better and need to constantly evolve and enhance our curriculum and practices. We have also learned that the hybrid approach can be effective and increase access -technology can be used as an effective tool. However, it also highlighted the inequities and disproportionately affected students who faced limited access to computers, internet and other critical needs.

The Community College Research Center (CCRC) indicates that although online classes may have some advantages for some populations of students, the demographics of our student population does not support teaching most biology courses online. CCRC research has shown that, pre-COVID, students who were successful in online courses tended to be those who were more advantaged, older, more likely to have dependents, more likely to be employed full time, less likely to be ethnic minorities, less likely to be low-income, and less likely to be academically underprepared. The majority of these descriptors do not fit our population of younger students who are highly represented by ethnic minorities, are primarily low income, and are academically underprepared. Consequently, by offering classes in an online format, we have in fact taken a step backwards in efforts to resolve equity gaps that exist in biology. Additionally, the national digital divide still clearly exists, with one in three Black and Hispanic households not having access to computer technology in their homes; 35% of black households and 29% of Hispanic households do not have broadband Internet access. All of these things serve to widen rather than close the equity gaps that exist in the department.

We have truly learned the importance of in person interactions, especially when it comes to face-to-face learning and hands-on laboratory experiences and development of skills. Some students survived under the new paradigm that Covid 19 brought about, but many more became lost.

We take with us the important services, like Zoom office hours, that can increase student access to professors. We also have new strategies and materials to assist students who are unable to attend classes in-person due to illness or other personal problems. The switch to online teaching during the pandemic forced us to learn to teach in a new modality utilizing new technologies. This can only enhance our abilities as instructors as we are now able to provide a new level of access to our students. However, the most important takeaway from this experience is the humanizing of our students and ourselves. We were in it together, both students and professors. I believe this has brought about a new level of empathy for our students and drive to see them succeed.

Q28

Respondent skipped this question

OPTIONAL DOCUMENT UPLOAD 1: Please upload any data-related documents you would like to attach to your program review using the button below. PDF and Word documents may be uploaded.

Q29

Respondent skipped this question

OPTIONAL DOCUMENT UPLOAD 2: Please upload any other data-related documents you would like to attach to your program review using the button below. PDF and Word documents may be uploaded.

Page 8: IV. Degree and Certificate Programs continued

Q30

Yes

Does your program offer courses via distance education excluding emergency remote teaching in 2020-21 (classes that would have been taught in person, if not for the pandemic)?

Page 9: IV. Degree and Certificates Programs continued

Q31

No

IV.14. Are there differences in success rates for distance education (online) versus in-person sections?

Q32

IV.15. If there are differences in success rates for distance education (online) versus in-person classes, what will the program do to address these disparities?

We are not running courses that have sections in both modalities. There is currently one course run online, and this course only has one section. The course is Kumeyaay Ethnoecology, a science GE course with retention (90%) and success rates (86%), which are higher than in-person GE biology courses. The high success rates of this course demonstrates the importance of relevant course material to underrepresented student populations and their success. When the course was run in person, there were similar retention and success rates.

Q33

IV.16. What mechanisms are in place to ensure regular effective contact (Guided to Best Practices in Online Teaching) within online courses across the discipline or department?

The course that is in the online modality meets every week over Zoom. Contact with the professor occurs weekly within this modality. However, the instructor also communicates with weekly announcements and emails to keep students on track with assignments and course expectations.

Q34

IV.17. What innovative tools and strategies are you using in your online courses to engage students and support student success?

It is really the humanizing of the material and students that take the course are highly engaged in the content. Students work together in breakout rooms and have discussion assignments that increase engagement.

Page 10: IV. Degree and Certificate Programs continued

Q35

No

IV.18. Is your program a career education program (e.g., does it prepare student to directly enter the workforce)?

Page 11: IV. Degree and Certificate Programs continued

Q36

Respondent skipped this question

IV.19. Please share your observations about the employment rate for your program over the past several years.

Q37

Respondent skipped this question

IV.20. What is the institution-set standard for your program's employment rate? The institution set standard is what you would consider the lowest acceptable employment rate for your program (or "floor").

Q38

Respondent skipped this question

IV.21. What would you like your program's employment rate to be, ideally (stretch goal)?

Page 12: IV. Career Exploration and Program Demand (All Programs)

Q39

IV.22. What is your program doing to prepare students for successful transition (e.g. transfer and career readiness)? Please include information on how your program is helping students explore careers in your program area.

HSI Stem grant is providing summer research opportunities. Since 2018, the Stem Guided Pathways program has sent thirty-four Cuyamaca College students to partner institutions (USD & UCSD) to participate in research-based experiences.

We also have a faculty-student mentoring program that connects students with a faculty member that guides them through their academic career at Cuyamaca. Pre-Covid, we offered workshops for students to assist them in preparation for their studies and in transferring to a 4-year institution.

We started a SACNAS chapter this Fall 2021 to build community within our campus and also connect students to research scientists and students at the 4-year institutions they plan to transfer to.

Q40

IV.23. What do the latest labor market data reveal about the careers (including those for transfer students) for which your program prepares students? Consider what career information you would share with students on a career or transfer pathway in your area. Labor market data may be sourced from the California Employment Development Department. You can also contact the Institutional Effectiveness, Success, and Equity Office to access additional labor market information related to your program.

There are a number of career options for our students. Two major pathways that students can and often take are either Research and Development in the biotech and pharmaceutical industry or in a medical related field. Each of these pathways has a different educational path either through the Biology major or the Allied Health pathway. Both paths provide students with job opportunities that provide more than a livable wage in San Diego.

There are other career options that students may also take that provide a livable wage, but are often not as lucrative and in fewer supply are careers in environmental science (working for State and non-profit organizations) and in education.

The EMSI data shows aggressive demand for Biology Technicians demonstrating that San Diego-Chula Vista-Carlsbad is a hot spot for these types of jobs. San Diego is a hub for pharmaceutical and biotech companies. With this in mind, it is understandable that employment rates for our disciplines have increased over the past several years. The average job postings per month are 140 in other areas of the country of similar size, the postings are 49 per month. There is a rich opportunity for students graduating with a degree in Biology to find a job in research and development.

According to the San Diego Workforce Partnership, the healthcare sector employs 186,000 workers in San Diego County—5% of the population and 13% of overall employment. There is a high demand for Allied Health students in San Diego, but there is also an increase in demand nationwide. From the Bureau of Labor, healthcare occupations (both Allied Health and medical doctors) are expected to increase by 16% from 2020-2030.

Q41

Respondent skipped this question

OPTIONAL - If your program has labor market data to include in your program review, please use the upload button to attach the file.

Q42

IV.24. Please describe your program's strengths.

One of our program's strengths is both full and part-time faculty. Our faculty are dedicated to our students and their success, not just in the classroom, but to be properly prepared for their academic and career paths. Our faculty are committed to our students with 47% of our classes running in person this semester. Faculty put in countless extra hours adapting to the challenges of teaching in person in the midst of a pandemic. We have already seen the exemplary job the Biology faculty have done in adapting their courses online and they worked so hard to bridge online and in person instruction this semester.

Another one of our strengths is our incredible classified staff. Our laboratory technicians have helped keep our program running under extremely difficult conditions throughout the pandemic. They were incredibly innovative assisting faculty in putting together lab kits to provide hands-on learning experiences for our students in an online environment. They go above and beyond their job descriptions to keep our laboratory spaces working and assisting in the distribution of lab kits to students throughout the pandemic. Their work this semester to get our labs running in person was stellar, even though we were understaffed by two lab technicians -there is no way to describe our classified staff as anything but amazing.

Another one of our department's strengths is our commitment to diversifying our curriculum. Through our Kumeyaay Science courses (two lectures and one lab), we have developed innovative inclusive pedagogy that brings together modern and indigenous science. This has helped in building a strong relationship with the Kumeyaay Community College and community. We are so excited to see this community building in action with the Kumeyaay Village scheduled to be built in Spring 2022 utilizing our Cuyamaca students in the Kumeyaay Studies program.

We also have a commitment to guided pathways in STEM. Since 2018, the Stem Guided Pathways program has sent thirty-four Cuyamaca College students to partner institutions (USD & UCSD) to participate in research-based experiences. We also have faculty volunteering to start a SACNAS chapter on our campus, our goal being to develop community within our students and linking them up with researchers in academia for first-hand experiences and making important connections in the field. We are working to increase interventions and STEM experiences for our students to assist them in solidifying their academic pathway and career choices.

Q43

VI.25. Please describe your program's challenges.

One of our major challenges is the high turn-over rates of faculty teaching part-time. One of the highest turn over of adjuncts is in our General biology (Bio 130) which is primarily taught by part-time faculty -many of which may have just started teaching. This makes consistency within the sections difficult and a challenge. Also, without monthly department meetings, faculty within the department have become like silos. It is challenging to find a time for faculty to meet with each other, but it is worth the effort. Our faculty need the support of each other and buy-in with the department so we can keep them at Cuyamaca. Meeting once a semester during staff development is not a strong enough support system for our faculty.

Q44

IV.26. Please describe external influences that affect your program (both positively and negatively).

An external challenge is our discipline has been implicated in the foundations of racism, sexism, and constructs of gender. Therefore, individuals from marginalized populations are highly underrepresented within the field at large due to negative experiences either from science practitioners or educators. Underrepresented students struggle to see themselves within the field and may quit before they enter into a four-year institution and/or the workforce. This presents a challenge to diversify faculty as these individuals are lost in the system before they have the chance to earn the required educational background.

For example, something as seemingly innocuous as referencing the field as a part of "Western Science" can be demoralizing for students coming from a different cultural background. The word "science" has prestige, so classifying "Western Science" as the only "true science" creates a cultural imperialism at the expense of knowledge from other cultures. The Yupiaq scholar Dr. A. Oscar Kawagley has written that: "Such a narrow view of science not only diminishes the legitimacy of knowledge derived through generations of naturalistic observation and insight, it simultaneously devalues those cultures which traditionally rely heavily on naturalistic observation and insight." In our biology department, we have worked hard to counter this epistemological hegemony. Our Kumeyaay Science courses work to build a bridge between modern and indigenous science. We can find common ground in seeking truth about the natural world. The worldview and negative experiences students have felt before attending our courses is a challenge we are meeting and will continue to make progress as we work on enhancing our curriculum to include more culturally inclusive curriculum.

Q45

IV.27. Given these factors, what opportunities exist for the program to advance student success and equity in the next 4 years?

Advancing student equity is our primary focus in the upcoming four years. Both of our department goals are targeted at improving both success and retention rates for our students of color as well as access to the major. Our goal is to help mitigate the negative past experiences students have experienced in STEM and increase success and access in the process. Opportunities include starting a SACNAS Chapter, coordination with counseling and advertising to increase student interest in the Kumeyaay Science courses, development of culturally relevant curriculum and faculty training and community building. Please refer to the goal section to better understand the action items that we are planning in order to achieve these goals.

Page 14: V. Previous Goals

Q46

1. Previous Goal 1:

Plans for Development of Cuyamaca College nature preserve. We have been unable to move forward with this goal because the faculty member who is responsible has been on reassigned time and is currently in a temporary administrative role. The goal is to move forward with this project as soon as we have adequate personnel to handle it.

Q47

Student Validation & Engagement

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

Q48

Deleted

3. Goal Status

Page 15: V. Previous Goals continued

Q49

Please describe the results or explain the reason for the deletion/completion of the goal:

This goal has been changed to an Action Item under Goal 1. The department has been working closely with the Kumeyaay Studies Program to develop a restoration plan that includes the traditional ecological knowledge of the Kumeyaay people. This goal has been adjusted to an action item that includes the development of a Kumeyaay Village in this location.

Q50

Yes

Would you like to submit another previous goal?

Page 16: V. Previous Goals continued

Q51

Respondent skipped this question

Would you like to submit another previous goal?

Page 17: V. Previous Goals continued

Q52

1. Previous Goal 2:

Develop and implement active learning curriculum for Bio 240.

Q53

Student Validation & Engagement

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

Q54

Completed

3. Goal Status

Page 18: V. Previous Goals continued

Q55

Please describe the results or explain the reason for the deletion/completion of the goal:

New curriculum is being developed all the time throughout the department that is focussed on active learning. This is not a goal, but what faculty within the department are expected to continuously work on. However, with this goal designated in 2021, new animal models that were purchased to achieve this goal have assisted in the development of new active learning curricula for this specific course.

Q56

Yes

Would you like to submit another previous goal?

Page 19: V. Previous Goals continued

Q57

Respondent skipped this question

Would you like to submit another previous goal?

Page 20: V. Previous Goals continued

Q58

1. Previous Goal 3:

Develop and implement new active learning botany curriculum for Bio 122, 134, 135 & 240.

Q59

Student Validation & Engagement

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

Q60

Deleted

3. Goal Status

Page 21: V. Previous Goals continued

Q61

Please describe the results or explain the reason for the deletion/completion of the goal:

None of the materials (microscope slides, growth chamber) were supplied in order for this goal to be completed.

Q62

Yes

Would you like to submit another previous goal?

Page 22: V. Previous Goals continued

Q63

Respondent skipped this question

Would you like to submit another previous goal?

Page 23: V. Previous Goals continued

Q64

1. Previous Goal 4:

Caring Campus for Faculty and iSTEM Faculty Training Program (this would be goal 5, which is not available, but this goal is being deleted as well)

Q65

Student Validation & Engagement

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

Q66

Deleted

3. Goal Status

Page 24: V. Previous Goals continued

Q67

Please describe the results or explain the reason for the deletion/completion of the goal:

This goal is moved to an action item for our new goals. A "caring campus" for faculty and iSTEM will be adjusted to developing a community of practice for our faculty, similar to the SEED program run and open to all STEM faculty.

Page 25: VI. 4-Year Goals

Q68

1. Goal 1:

Increase enrollment of marginalized populations in the Biology Major (access).

Q69

Student Validation & Engagement

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

Q70

3. Please describe how this goal advances the college strategic goal(s) identified above:

This goal increases student validation and engagement of historically underrepresented student populations in the STEM field. We are working to increase access to our major and in turn increase student access to the field of biology.

Q71

4. Please indicate how this goal was informed by SLO assessment results, PLO assessment results, student achievement data, or other qualitative or quantitative data (from any source):

This goal was formed after reviewing the disaggregated data for our 200-level courses and noting that there were very few students of color, which is highly underrepresented in the context of the demographics of the rest of the college. The lack of equity gaps in success and retention rates are misleading as there are so few students of color enrolled in the courses.

We see this goal is achievable by examining the demographics and course success rates of Bio 251: Human Dissection. This course is a model in our department that is a 200-level course that has provided equal access to our students of color while also eliminating equity gaps in both retention and success. The course has a 50:50 ratio of white students to students of color with NO equity gaps and has achieved both incredible access and success rates (over five years, retention rates are at 98% and success at 95%).

HSI Stem Grant survey data was also used to try to better understand the low enrollment Hispanic/Latinx and African-American students. Surveys from Bio 130 were used to note how many of these students were undecided for their major and of these students, so few were successful. If students are struggling and consistently failing Bio 130, why would they ever get excited about biology or feel they can be successful as a biology major? This data shows us we are not giving students a chance to become biology majors by low retention and success rates in 100-level courses. These courses should help inspire new majors, not discourage them.

Q72

5. Action Steps for the Next Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new laptop computers).

1. Hire equity minded full-time Bio 130 faculty -Develop gen bio as culturally relevant and highlight alternatives/have course embrace students instead of seen as a barrier to success

***Split Bio 130 into two courses (general biology for non-majors and as an Allied Health studies prerequisite).

***General Biology for non-majors course targeted to engage and encourage all students to inspire students to major in discipline

2. SACNAS chapter: The Society for Advancement of Chicanos/Hispanics and Native Americans in Science/STEM(SACNAS) is the nation's largest multidisciplinary and multicultural organization dedicated to increasing the number of traditionally underrepresented students in STEM and motivating them to become leaders. As our students transition to four-year institutions, they can connect with existing chapters at their new campuses to find support and establish their new STEM community.

3. Data dive and interdepartmental collaboration (SEED) to see if or where we are losing students. Are we losing students in the Math, Chemistry, and/or Physics requirements?

4. Advertisement Campaign to include representation of Scientists from different backgrounds

5. Kumeyaay Village -Advertise Kumeyaay Science courses and the importance of diversity in science.

6. Kumeyaay Installments/Heritage Garden behind the H-Building to enhance the space of the new laboratory spaces. This is to create a welcoming environment for students, encourage a sense of place or home for students and promote the importance of cultural diversity within the discipline.

Q73

6. How will this goal be evaluated?

This will be evaluated by looking at the disaggregated data for our major level courses, Bio 230 and Bio 240. We will look at if our enrollment for students of color is increasing. We can correlate with disaggregated data from Bio 130 and see if decreasing equity gaps in Bio 130 increases enrollment in our major level courses.

At the same time, if enrollment of underrepresented student populations increases as we hope, we must also ensure that equity gaps are not being created. Equity minded pedagogy is a must in major-level courses to achieve this goal by not just increasing under-represented students, but ensuring their success and retention as well.

Q74

Yes

Would you like to propose a new, 4-year goal?

Page 26: VI. 4-Year Goals continued

Q75

Goal 2:

Decrease equity gaps seen in retention and success rates of students of color in 100-level biology courses (success).

Q76

Student Validation & Engagement

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

Q77

3. Please describe how this goal advances the college strategic goal(s) identified above:

These 100-level courses that students, particularly students of color, are struggling with are acting as barriers for students to move forward in their chosen area of study, some may be giving up and changing majors. Bio 130 is a prerequisite course, that if a student fails, they are unable to take any of the four courses that this is a prerequisite for. This becomes a major impediment to the completion of students in their Allied Health program.

We are looking to decrease equity gaps in Human Anatomy, Bio 140 as well. We look at a more impactful prerequisite, but also an increase in the accessibility that students have to the anatomy models and also to provide representation (not all-white models) of the models as well.

Q78

4. Please indicate how this goal was informed by SLO assessment results, PLO assessment results, student achievement data, or other qualitative or quantitative data (from any source):

Disaggregated course level data was used to understand where the low success rates overall for the course were occurring. From the data, it is clear that there is a stark difference between white students and students of color.

HSI Stem Grant survey data was also used to try to better understand the disproportionately low retention and success rates for our Hispanic/Latinx and African-American students.

Q79

5. Action Steps for the Next Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new laptop computers).

1. Faculty hire dedicated to Bio 130 equity minded instructor to make course inclusive and engaging
 2. Split bio 130 into two courses (general biology for non-majors and as an Allied Health studies prerequisite). Develop Bio 130 as a successful prerequisite to the 100-level courses it is a prerequisite for (Bio 140, 141, 141L and 152)
***Work with Bio 140/141/152 faculty to determine student skills needed to be successful in these courses
***Development of culturally inclusive curriculum
 3. Purchase anatomy models to both increase access for students to participate and also to add models of color (Bio 140).
 4. Advertising of alternative courses to Bio 130 for non-majors, in particular Kumeyaay Science courses.
 5. Community of Practice (similar to SEED run by Physics faculty) in the development of new culturally relevant pedagogy while also developing a support system for faculty
 6. Development of Nature Preserve utilizing both restoration ecology and traditional ecological knowledge to build a Kumeyaay Village with student participation
 7. Professional development within department meetings and strong encouragement to enroll in EMTLI/get disaggregated data to individual instructors
 8. Monthly department meetings to promote community building, support and guidance for faculty
-

Q80

6. How will this goal be evaluated?

Disaggregated data for the courses will be used in order to measure whether equity gaps are being reduced.

Q81

No

Would you like to propose a new, 4-year goal?

Page 27: VI. 4-Year Goals continued

Q82

Respondent skipped this question

1. Goal 3:

Q83

Respondent skipped this question

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

Q84

Respondent skipped this question

3. Please describe how this goal advances the college strategic goal(s) identified above:

Q85

Respondent skipped this question

4. Please indicate how this goal was informed by SLO assessment results, PLO assessment results, student achievement data, or other qualitative or quantitative data (from any source):

Q86

Respondent skipped this question

5. Action Steps for the Next Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new laptop computers).

Q87

Respondent skipped this question

6. How will this goal be evaluated?

Q88

Respondent skipped this question

Would you like to propose a new, 4-year goal?

Page 28: VI. 4-Year Goals continued

Q89

Respondent skipped this question

Goal 4:

Q90

Respondent skipped this question

2. Which College Strategic Goal does this department goal most directly support? (Check only one)

Q91

Respondent skipped this question

3. Please describe how this goal advances the college strategic goal(s) identified above:

Q92

Respondent skipped this question

4. Please indicate how this goal was informed by SLO assessment results, PLO assessment results, student achievement data, or other qualitative or quantitative data (from any source):

Q93

Respondent skipped this question

5. Action Steps for the Next Year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g., submit technology request for new laptop computers).

Q94

Respondent skipped this question

6. How will this goal be evaluated?

Page 29: Resources Needed to Fully Achieve Goal(s)

Q95

**Faculty Resource Needs,
Supplies/Equipment and Other Resource Needs**

What resources is your program requesting this year to achieve the program's goals? (Check all that apply)

Page 31: Final Check

Q96

I am ready to submit my program review

Are you ready to submit your program review? If you would like to go back and review a section, select a section and click "Next."
