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 **College of Alameda**

2022-23 Program Review – Biology

**Lead Author:**

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| **Leslie Reiman** |

**Program Overview**

Provide your program’s mission statement. If your program does not have a mission statement, what is your timeline for creating a mission statement?

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| We strive to provide a learning environment that values diversity, intellectual discussion, critical thinking, and problem-solving. We provide students the opportunity to explore the science of life. We are committed to excellence in our teaching, and helping students acquire knowledge of basic facts and theories in Biology. |

List your program faculty and/or staff

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| Leslie Reiman, Tenured FacultyEdwin Ochong, Tenure-Track FacultyLeslie Bach, Adjunct Faculty Jonathan Siekmann Adjunct FacultyChieh Kuo Adjunct FacultyPeter Niloufari, Adjunct FacultyScott Shultz, Adjunct Faculty Karen Wedaman, Adjunct FacultyConstanze Weyhenmeyer, Adjunct FacultyMuwafaqu Alasad, Adjunct Faculty |

Describe your current utilization of facilities, including labs and other space

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| The Biology Department courses are being offered at the Science Annex located at 860 Atlantic Ave. In the building we share two classrooms (110 & 160) with Chemistry and Geology to hold our lectures for Biology 1A (General Biology, majors), 1B (General Biology, majors), 1 (Human Physiology), 1 (Microbiology), 2 (Human Anatomy), and 2 (Introduction to Biology) courses. In turn, we must hold some of our lectures in our laboratory rooms followed by their respective lab. This of course makes it challenging to schedule our courses in adequate space to support our students. The Biology 1A (General Biology, majors), 1B (General Biology, majors), Bio 4 (Human Physiology), and Biology 3 (Microbiology) laboratories are held in room 140 since it is the only room that has Bunsen burners and fume hoods. The Biology 10 (Introduction to Biology) is held in room 134 and Biology 2 (Human Anatomy) is held in room 130. Room 131 houses our cadaver, and a single leg. Room 135 is the office for the Laboratory Coordinator, which is directly attached to the Stock Room (136 & 137), the glassware is washed in room 144 and the Hazardous tissues and specimens are kept in room 143, while room 141 is used to grow plants for several experiments carried out in our Biology 1B course. Currently, the Science Annex is also being shared with Merritt College where they use the inner center of the laboratory spaces for a Genomics course. We offered Microbiology online for three previous semesters and we are offering Microbiology lecture and lab in-person for the first time this Fall of 2022.At this time, we have access to two Faculty offices in the building; however, with the new full-time faculty, we hope that the new building will allow for at least six offices for Full-time and Adjunct Faculty to meet with students and to carry out our daily work and responsibilities. One full-time Faculty has to share their office with an Adjunct Faculty.  |

List your program goals from your most recent Program Review or APU. Then, provide an update on the status of the goal. Has your program achieved the goal? Have any of your goals been revised or any still in progress? Lastly, make sure to discuss which College or District goal your program goal aligns to.

If no program goals exist or if this is your first program review, work to create 2-3 goals and align them with a College or District goal.

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| **Program Goal** | That our teaching online and in person meets and exceeds the needs of our students by providing them a variety of options to take their courses. |
| Status: In-Progress or Complete? | Complete—Several of our Faculty have taken courses to learn how to effectively teach online. In addition, some Faculty in our department have been teaching hybrid courses online for multiple years. Because of the pandemic we have had to revise our program and we now are providing a diverse schedule in Fall 2022 offering a variety of modalities to meet the needs of our students.  |
| Which college or district goal is aligned with your program goal? | Solve problems and make decisions in life and work using critical thinking, quantitative reasoning, community resources, and civil engagement.**and**Use technology and written and oral communication to discover, develop, and relate critical ideas in multiple environments. |

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| **Program Goal** | Provide students with skills necessary for critical thinking by integrating application exercises in each laboratory. |
| Status: In-Progress or Complete? | In-progressFor example we have created Canvas New Quizzes to provide students with their laboratory exercises during lab in our Anatomy courses electronically for easy access from home prior to lab and immediate feedback. |
| Which college or district goal is aligned with your program goal? | Critical thinking and applied skills is another vision and mission for our college. |

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| **Program Goal** | Provide appropriate series of courses and classes, which are necessary for our students to achieve their educational goals and/or to transfer to a 4-year college. |
| Status: In-Progress or Complete? | Although this is in-progress, we will continue to offer Biology 1A for students transferring to 4-year colleges in upcoming terms. |
| Which college or district goal is aligned with your program goal? | Our school and the district adapted Guided Pathway to help our students to achieve their education goals. |

**Enrollment Trends**



**[Enrollment Trends Dashboard link](https://app.powerbi.com/view?r=eyJrIjoiNWJlOWZmYTEtNTY0MC00MDhkLWE5OTAtYmJjZjIxNzJiNWViIiwidCI6ImVlYTE2YTE2LTQ4YWYtNDc3Yi05MTEzLTA1YjFjMDExMjNmZiIsImMiOjZ9&pageName=ReportSection86d6f65e2fb41a73da4d)**

Discuss enrollment trends over the past three years

*For additional analysis, click on the Enrollment Trends Dashboard, set the filters to Alameda and your discipline*

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| Productivity numbers were in line with the college until the beginning of the COVID pandemic. Having to switch from in-person to online classes along with the additional economic factors, has led to the decline of our productivity in our department as well as in other departments at our college. As shown in the 20-21 Academic Year, our productivity declined dramatically, but it has also declined in our sister colleges. Our department’s productivity (13.0) is higher than for our school (11.9) overall. |

Describe effective and innovative teaching strategies used by faculty to increase student learning and engagement.

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| To increase student learning and engagement I have implemented the use of a Google Voice # that my students have access to regularly. Students may call, text, and receive immediate access to their instructor to ask questions and receive an answer right away.For the Anatomy laboratories, Faculty are collaborating in the creation of new laboratories that students may carry out online with 85-95% automatically graded and some requiring manually grading to provide feedback via Canvas. Students love the fact that they can start their laboratory prior to attending their in-person lab and almost complete their labs prior to attending, this leaves them more time to prepare for their laboratory practical exams. |

How does the discipline, department, or program maintain the integrity and consistency of academic standards with all methods of delivery, including face to face, hybrid, and Distance Education courses?

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| For example, in Anatomy, we use the WileyPLUS software and Visible Body Courseware to provide students access to assignments, practice, and affordable alternatives for their success.WileyPLUS provides Adaptive Practice assessments that ‘adapt’ to each students’ weaknesses and strength to ensure they are guided to review as they go through each question in their assignments. In addition, the software provides 24/7 access to their video resources, practice quizzes, practice exams, spoken explanations of textbook illustrations, and immediate feedback so that students may change their study habits to increase their success.Some Faculty implement the use of Honorlock to freeze student’s browser when taking exams. Other Faculty provide students with different ways to attend office hours and give students the choice to meet in person or via Zoom. |

**Curriculum**

Have all your course outlines of record in CurriQunet been reviewed within the past three years?



**https://peralta.curricunet.com/**

☐ Yes ☐ No, please explain:

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| No, however, we will begin to work on this Spring 2023. |

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, state-wide transfer model curriculum).

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| We are limited to what we can offer at this time, but we are planning to offer a course on the ‘Biology of Sex’ that focuses on the anatomical changes that take place in the body after going through the transgender process both hormonally and physically. One trend I have noticed is the need to offer more Microbiology courses due to the requests I get from students in my current courses. |

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

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| Personally, I feel that our program has met the needs of our students in adapting the offering of online courses by several Faculty that had never taught in this modality before. In turn, some Faculty are continuing to heavily rely in their Learning Management System to promote access to their lectures, share lecture videos, provide resources to students, integrate resources from our textbook publishing company that adapt to the needs of each student.Furthermore, we are trying to offer our courses in a variety of modalities to ensure student learning.According to our Articulation Officer, CSU and UC will not accept online laboratories, in turn, our department is offering 95% of our labs in person. |

**Student Learning Outcomes Assessment**

List your Student Learning Outcomes

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| **Biol 2**1. Describe the functions and mechanisms of cells, organs, and organ systems.2. Demonstrate proper use of lab equipment such as microscopes and dissecting tools.3. Understand human organs and their relationships to each other.**Biol 1A**1. Understand and apply the scientific method in the biological experiments.2. Understand the structure of biomolecules and their role in a cell structure and function.3. Understand the functions of organelles, cellular processing, including respiration, photosynthesis, mitosis, meiosis, transcription/translation.4. Understand the concepts of DNA, genes, and biotechnology.**Biol 31** 1.    Identify and Recall classes of nutrients: Carbohydrate, lipid, protein, vitamins, and minerals; how to read food labels and compare them to the recommended amount.2.  Demonstrate how proper diet and physical activity affect mother and infant, child, teen and adult health.3.  Appraise, Evaluate, and Differentiate anecdotal, or popular beliefs and scientific data. Recognize credible sources of information.**Biol 4**1. Describe the functions and mechanisms of cells, organs, and organ systems.2. Demonstrate proper use of lab equipment such as microscopes, analytical balances, hydrometers, and sphygmomanometers.3. Correlate human anatomy with human physiology and summarize how modern medicine is based on our understanding of human physiology.**Biol 24**1. Define and correctly use terminology in regard to structure and function of the human body.2. Identify the elements and basic organization of each of the 11 human body systems.3. Relate introductory laboratory models, slides and specimens, to understanding of body systems.**Biol 10**1. Apply the scientific method to investigate biological phenomena, analyze data quantitatively and evaluate current issues 2. Follow instructions, work cooperatively and use appropriate laboratory skills and logical reasoning to solve problems in biology. 3. Explain the fundamentals of evolutionary theory emphasizing the role of evolution and natural selection in shaping life on Earth. Support the role and evidence of natural selection as the major underlying mechanism for evolution. 4. Explain and support the mechanisms of energy use and transformation within life processes at all levels from metabolism to evolution.**Biol 3**1. Demonstrate an understanding of basic microbiology, classification and basic characteristics of microorganisms. 2. Explain general bacteriology and microbial techniques 3. Describe body defenses, immunology, and hypersensitivity**Biol 1B**1. Explain the mechanisms of evolution: natural selection, genetic drift, and gene flow.2. Explain the principles of populations genetics, speciation, and extinction.3. Identify the diverse forms of plants, fungi, protista and microbes.4. Explain the classification and life cycles of prokaryotes, protista, fungi, and plants.**Biol 102**1. Student will be able to explain how the world’s oceans act as a dynamic force in shaping the earth, dominating its weather and climate, and providing foor, energy, mineral resources, and transportation opportunities for its inhabitants.2. Students will demonstrate use of the scientific method.3. Student will be able to describe and interpret the interactions of organisms within marine ecosystems. |

Please provide a high-level summary and your program’s interpretation of your SLO findings over the past year.

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| There is a need to continue work in this area and will move forward working with Faculty to ensure the completion of our SLO’s.  |

What were the most important things your department learned from assessment? Did implementation of your action plans result in better student learning?

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| The assessment is ongoing, and we will be able to provide a better summary in the next Annual Program Review. Learned that the use of technology and the need to offer online courses are here to stay. Also, that for our students to succeed, we must meet their needs and that Faculty who work directly with students must adjust and accommodate to our student’s needs. That our students need and want to feel connected to Faculty by having access to them directly, hence the implementation of Google Voice # for students to text and call when they feel they need to. For example, integrating Visible Body 3-D software in our Human Anatomy courses has augmented student learning and understanding for students to practice even though they are attending in-person laboratories. In addition, this 3-D software has replaced the use of a one-dimensional book that does not allow for interaction and immediate feedback as that provided by Visible Body.In addition, the integration of Adaptive Practice assessments online in some of our courses allows Faculty to determine what are the weaknesses in student learning for us to adapt to their needs. |

Have you assessed your program learning outcomes (PLOs) within the past few years? How have your assessments informed improvements/changes to your program. If you have not assessed your PLOs, explain the plan to assess and the expected timeline.

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| **Program Learning Outcomes**Design the scientific method to formulate questions, explore experiments to test hypotheses, interpret experimental results to draw conclusions, communicate results both orally and in writing, and evaluate the use of the scientific method from published sources critically.Apply evolutionary theory at the molecular, cellular, organismal and population levels to explain the unity and diversity of living things.**COME BACK TO THIS… Dominique will reach out to Andrew Parks and will get back to me. To figure out how to answer**  |

College of Alameda Institutional Learning Outcomes (ILOs) were created to guide educational programs and services. They include:

* **Problem Solving:** Solve problems and make decisions in life and work using critical thinking, quantitative reasoning, community resources, and civil engagement.
* **Communication and Technology:** Use technology and written and oral communication to discover, develop, and relate critical ideas in multiple environments.
* **Creativity:** Exhibit aesthetic reflection to promote, participate and contribute to human development, expression, creativity, and curiosity.
* **Diversity:** Engage in respectful interpersonal communications, acknowledging ideas and values of diverse individuals that represent different ethnic, racial, cultural, and gender expressions.
* **Civic Responsibility:** Accept personal, civic, social and environmental responsibility in order to become a productive local and global community member.

How does your program participate in assessing the Institutional Learning Outcomes (ILOs)? If your program has not participated, how will you plan to incorporate these outcomes within your program?

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| Yes, because I attend forums campus wide, and I am always connected with my colleagues and engage in constant conversations with them via Zoom, text, and phone calls.As Biology Department Chair, I am part of College Council. However, in the past three years our department has not addressed the ILOs**DOMINIQUE WILL PROVIDE SOME OF THE EVENTS THAT TOOK PLACE!** |

**Course Completion**

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| College | Academic Year | Subject  | Total Graded | Course Completion | Course Completion Rate |
| Alameda | 2022 | BIOL | 670 | 452 | 67% |
| Alameda | 2021 | BIOL | 837 | 557 | 67% |
| Alameda | 2020 | BIOL | 922 | 721 | 78% |
| Alameda | 2019 | BIOL | 1114 | 769 | 69% |
| Alameda | 2018 | BIOL | 1406 | 902 | 64% |

Consider your course completion rates over the past three to five years (% of student who earned a grade of "C" or better).

[**Course Completion Dashboard link**](https://app.powerbi.com/view?r=eyJrIjoiNjc2MDhiNTEtNTJhZi00MDM0LTk5NDItNTRiY2EzMGI1NTZiIiwidCI6ImVlYTE2YTE2LTQ4YWYtNDc3Yi05MTEzLTA1YjFjMDExMjNmZiIsImMiOjZ9&pageName=ReportSection86d6f65e2fb41a73da4d)

How does the course completion rate for your program or discipline compared to your college's Institution-Set Standard for course completion of **67%**?

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| The completion rate for the Biology Department is in line with the College Standard. Over the past five years it has been inline, or it has exceeded the College Standard. |

Are there substantial differences in course completion rates between face to face and Distance Education/hybrid courses? If so, how does the discipline, department, or program address this?

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| Yes, there is a difference, there are higher success rates for in-person classes…. Due to the diverse make up of our student population we must adapt to satisfy their needs by providing a variety of modalities. Students are requesting for more courses to be offered online, or at least that the lecture portion of the course to be offered online to save student’s time and money. However, according to Articulation Officer, online laboratories do not articulate with California State Universities, or Universities of California. In Spring 2023 the Biology Department will be offering more face-to-face lectures, and some synchronous lectures online. However, most laboratories offered will be in person. |

If your program offers dual enrollment courses, examine the data, and discuss the course completion rates compared to the overall program rate.

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| N/A |

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| College | Academic Year | Subject | Total Graded | Total Retained | Course Retention Rate |
| Alameda | 2021-2022 | BIOL | 670 | 535 | 80% |
| Alameda | 2020-2021 | BIOL | 837 | 645 | 77% |
| Alameda | 2019-2020 | BIOL | 922 | 814 | 88% |
| Alameda | 2018-2019 | BIOL | 1114 | 922 | 83% |
| Alameda | 2017-2018 | BIOL | 1406 | 1141 | 81% |

On average the course retention rate (number of students are retained in the course) for College of Alameda has been **85%** for the past three years. Examine the course retention rates for your program over the last three years. How does your program or discipline course retention rates compare to the college?

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| Our course retention rate is 80%, somewhat lower than that of College of Alameda. Due to the competitiveness that our courses transfer into, students must earn an A or B to be accepted. In turn, the moment students earn a C or lower, they withdraw from our courses. This naturally affects our course retention rate. |

College of Alameda continues to focus on access, equity, and success. The goal is to create an inclusive environment where all students can thrive and meet their education and career goals.

To address equity gaps and work towards achieving equity in educational outcomes, examine your program data for evidence of disproportionate impact (DI). Using the percentage point gap method to identify DI, subgroups whose course completion rate falls more than -3 percentage points below the All Students success rate are highlighted red. The Margin of Error value (MOE) is used to determine the presence of DI using the Point Gap Method. Values lower than the corresponding MOE are reflective of disproportionate impact (i.e., pink highlighted cells). Groups with 10 students or less are excluded from the analysis.

Note: The table reflected use 2021-22 course data to calculate DI.

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| **College** | **Subject** | **Target Population** | **Census Enrollment** | **Success Rate** | **PPG Index** | **MOE**  | **DI Identified** |
| Alameda | BIOL | All Students | 670 | 67.5 |   |   |   |
| Alameda | BIOL | Asian | 193 | 68.4 | 0.9 | -6.6 | FALSE |
| Alameda | BIOL | Black / African American | 111 | 62.2 | -5.3 | -8.7 | FALSE |
| Alameda | BIOL | Decline to State / Unknown | 22 | 72.7 | 5.3 | -19.6 | FALSE |
| Alameda | BIOL | DSPS/SAS | 33 | 57.6 | -9.9 | -16.0 | FALSE |
| Alameda | BIOL | Female | 472 | 66.3 | -1.1 | -4.2 | FALSE |
| Alameda | BIOL | First Generation | 380 | 67.4 | -0.1 | -4.7 | FALSE |
| Alameda | BIOL | Hispanic / Latino | 187 | 65.2 | -2.2 | -6.7 | FALSE |
| Alameda | BIOL | Male | 177 | 69.5 | 2.0 | -6.9 | FALSE |
| Alameda | BIOL | Two or More | 53 | 67.9 | 0.5 | -12.6 | FALSE |
| Alameda | BIOL | Unknown / NR | 24 | 58.3 | -9.1 | -18.7 | FALSE |
| Alameda | BIOL | White | 99 | 76.8 | 9.3 | -9.2 | FALSE |

What can your discipline, department, or program do to improve course completion for disproportionate impacted groups?

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| Reviewing the analysis in Biology I see that no subgroups have been negatively impacted.For example, the Anatomy Faculty, reach out to students when they are failing. This is something that I strongly believe in and have encouraged other Faculty in the department to do so and I know that they have carried out my suggestion.Our own Dean as suggested for us to be more supportive and I strongly agree with them, this is partly why we reach out to our students. However, this is something that I have always done and students whom I have spoken to over the phone or via Zoom have been positively responded to my reaching out by putting in more effort and sticking in with our classes.In addition, I have students in my course retake their first exam in our Anatomy courses. This gives an opportunity to learn the material they had not mastered and to gain enough confidence to complete the course successfully. This is especially important since the first few chapters are the foundation for the rest of the course.Since the pandemic I felt necessary to provide students a way to contact me directly. In turn, I obtained a Google Voice # so that they may text me or call me if they run into issues in Canvas, they have an emergency, or they have a simple question. Students have been responsive and have appreciated being able to call me at night and on the weekends, times that they are not working. In addition, to offering office hours in person for those students attending in-person labs, we are offering office hours via Zoom to be more accessible to our students.Furthermore, some Faculty have conducted surveys to accommodate student needs in their course to provide them the option of a modality that works best in their course.  |

**Degrees & Certificates Conferred**

Does your program offer any degree/certificate programs? If your program does not, skip this section and continue to **Engagement**

Since the last program review, what has the discipline, department, or program done to improve the number of degrees and certificates awarded?

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| We have gotten involved in campus wide events to promote and encourage students to become Biology majors, such as the Rock’Enroll Marathon this Fall 2022. I encourage Biology Faculty to join in participating in the Rock’Enroll Marathon event and a couple of them did so. I have personally been involved in the NSF Grant planning as it got started which became the gateway for the MESA Connect program. In addition, I have also attended Festivals in Alameda where I passed out flyers of our courses as I walked the entire event. |

For more information on awards: [**Degrees & Certificates Dashboard link**](https://app.powerbi.com/view?r=eyJrIjoiZjU2M2M5MzItOTcwZi00Y2U1LWJmODUtYTc0YjlhZGI2ZDhjIiwidCI6ImVlYTE2YTE2LTQ4YWYtNDc3Yi05MTEzLTA1YjFjMDExMjNmZiIsImMiOjZ9&pageName=ReportSectionde32556e136b0a8caccd)

Increasing the number of students who complete a certificate or degree is a shared goal across CoA’s Ed Master Plan Goals, PCCD Goals, the Chancellor’s Office Vision for Success, the Student-Centered Funding Formula, and Guided Pathways. What is planned for the next 3 years to increase the number of certificates and degrees awarded?

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| Although there are not a lot of degrees, we are happy to see that the number has increased.To increase the number of certificates and degrees awarded, we are planning to reach out to the students in our immediate High Schools as well as those in Oakland, offer courses in a variety of modalities, and reach out to students through the MESA Connect Program.  |

**Engagement**

Discuss how faculty and staff have engaged in institutional efforts such as committees, presentations, and departmental activities. Please list the committees that full-time faculty participate in.

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| * As Department Chair, I am a member of College Council
* Support new hire and new tenure track faculty
* Participated in the hiring of the PUENTE HSI Director
* As Dept chair for Bio, I engage in college wide conversations and flex day
* I plan to advise new Tenure Track Faculty to engage in committee work Spring 23
 |

Discuss how faculty and staff have engaged in community activities, partnerships and/or collaborations.

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| I am a strong supporter of Girls Incorporated, Island of Alameda Chapter to expose young students with experiences in Science during the Summer.I am involved with the MESA Connect program to recruit students into the STEM fields and courses.Encouraged Faculty to attend campus wide events such as the Rock’Enroll Marathon event Fall 2022, and I am pleased to say that a couple of Faculty did attend the event.Attended Festival in Alameda where I passed out flyers of Biology courses to encourage enrollment and bring visibility to our college.Formed a partnership with Emery Pharma, who presented during a STEM workshop at the Science Annex and graciously hosted internships for some of my students.The pandemic has decreased our interactions with our immediate community, but we are slowly reigniting previous partnerships.This is a particularly difficult task, since our department consists mainly of Adjunct Faculty, but we made some progress this Fall! |

Discuss how adjunct faculty members are included in departmental training, discussions, and decision-making.

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| Communication with Adjunct Faculty members takes place during Departmental meetings, and via email and Face Time calls.Due to personal schedules, it is challenging to coordinate departmental training, but they are encouraged to attend Flex-day activities. However, adjunct Faculty are invited and encouraged to take part in Campus-wide events. |

**Prioritized Resource Requests Summary**

In the boxes below, please add resource requests for your program. If there are no resource requested, leave the boxes blank.

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| **Resource Category** | **Description/Justification** | **Total Estimated Cost** |
| Personnel: Classified Staff |  |  |
| Personnel: Student Worker | Student worker to support Lab Coordinator  | $7,000 |
| Personnel: Part Time Faculty | Adjunct Faculty/Justification: all of our courses filled quickly pre-pandemic and courses are needed for students to transfer to 4 year schools and are aligned with the new NSF Grant we were just awarded that aims to address issues with equity in higher education which is the vision and mission of COA in many ways and by aiming to increase the enrollment of Latinx students at College of Alameda STEM programs and positively impact rates of success and retention in STEM courses. We are optimistic in that things will return to normal and our courses will fill quickly Spring 2023. |  |
| Personnel: Full Time Faculty  |  |  |

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| **Resource Category** | **Description/Justification** | **Total Estimated Cost** |
| Professional Development: Department wide PD needed | **Faculty attendance at Conferences**. For example, the American Association for the Advancement of Science and the Human Anatomy and Physiology Society | ~$4000 |
| Professional Development: Personal/Individual PD needed | **Faculty attendance at Conferences.** For example, the American Association for the Advancement of Science and the Human Anatomy and Physiology Society | ~$4,000 |
| Supplies: Software | **Physiology software upgrades.** These upgrades are regularly needed to support students carry out their laboratories in physiology.**Labster license.** All of our Biology courses would benefit from having access to the software especially  | ~$2,000~$1,500 |
| Supplies: Books, Magazines, and/or Periodicals | **Science** scientific journalto keep up to date with the latest scientific breakthroughs to support all of our Biology courses. | $200/year |
| Supplies: Instructional Supplies | **Seven microphones.** We will need microphones for each Faculty so that students can adequately hear our lectures since we Faculty will be using masks. Students will need to be able to hear our lectures and instructions for laboratory as well as instructions for safety before carrying a lab and at the end of the lab.  | ~1,000 |
| Supplies: Non-Instructional Supplies | **Two high Ergonomic chairs** for the Laboratory**One ergonomic chair** for one office | $800$500 |
| Supplies: Library Collections |  |  |
| Technology & Equipment (New) | **All the items below are needed for Spring 2022, Fall 2022, Spring 2023, and beyond****1. Autoclave** is needed to sterilize media to grow bacteria that must be used in every single Bio 3 (Microbiology) laboratory. In addition, media must be sterilized to be used in several experiments in our Bio 1A (General Biology, majors), and for an experiment in Bio 10 (Introduction to Biology). This device must also be used to sterilize all equipment that will come in direct contact with bacteria that must be grown during experiments in several of our courses. **2. Refrigerator (2)** is needed to store petri plates with media, and bacteria that must be used for every single experiment in Bio 3 (Microbiology). In addition, a refrigerator is needed to store some bacterial isolates that will be used, and for the bacterial plates containing the bacteria that students will be growing within those plates prior to carrying out further biochemical tests. In addition, a refrigerator must be dedicated solely for microbiology to reduce bacterial cross-contamination. The **4.** **Thirty** **Microscopes** will be needed to identify the bacterial isolates from the various cultures and stains (Gram, endospore, acid-fast, negative stains) that will be carried out in every Bio 3 (Microbiology) laboratory, several Bio 1A (General Biology, majors) and Bio 10 (Introduction to Biology) laboratories. Our microscopes have not been replaced for the past 20 years and several of them are broken and will not be possible to replace them. Microscopes are also used heavily in our Bio 2 (Human Anatomy) and Bio 4 (Human Physiology).**5. Two EKG machine** will be needed to support laboratories carried out in our Bio 4 (Human Physiology) course. Students taking the course gain critical thinking skills and hands-on use of equipment to measure the heart rhythm as the many of them will be entering a variety of Allied Health Fields.6. **Anatomical models** will be needed to support the laboratories carried out in our Bio 2 (Human Anatomy) course. Students taking the course gain critical thinking skills, and the ability to understand the spatial location of the various organs, muscles, and structures in the human body. Several of the models have broken over the years due to wear and tear, in turn, we do not have an adequate number of models to support the success of our students.7. **Biology models** will be needed to support our Biology 10, 1A, and 1B courses. **Flower model** (Giant Dicot model)**Eight DNA models** **Two seed models****Early Man and Primate Skull Comparison Set**8. **pH meter** will be needed to support our Biology 3 (Microbiology) since media must be prepared at the proper pH. Biology 1A, Biology 1B, Biology 10, and Biology 4.9. **High precision digital scale** to measure media needed for Biology 3 (Microbiology) since media must be prepared at the proper pH. Biology 1A, Biology 1B, Biology 10, and Biology 4.10. **Balances** to support our Bio 10, Bio 1A, and Bio 1B.11. **Micro incinerators** to ensure the safety of our students.**Further justifications to support the Biology Department request of the equipment above**:We are thrilled and thankful that Microbiology was approved in Fall 2021 by our Dean and VPI. This course is highly sought out and it was a fully enrolled class. In addition, Microbiology is aligned with the new NSF Grant we were just awarded that aims to address issues with equity in higher education which is the vision and mission of COA in many ways and by aiming to increase the enrollment of Latinx students at College of Alameda STEM programs and positively impact rates of success and retention in STEM courses.Now that we are in Spring 2022, we are thrilled and very thankful that our current President is fully supporting our Microbiology course by providing funds for the Autoclave since we have been without this crucial device since the beginning of the Spring 22 semester. | ~$24,000(Crucial for Microbiology and Gen Bio)~$2,500~$20,000(Crucial for Microbiology)$5,000~$15,000~$1,000~$2,000~$1,500~$400~$2,500~$1,500.00~$2,600.00~$1,000.00~$5,000 |
| **Technology & Equipment: Replacement** | Wireless Internet access at 860 Atlantic (Science Building) is not reliable and we have a difficult time to use online resources. In addition, there is no dedicated computer laboratory room at the Science Building. In turn, students periodically had to drive to the main building and drive back to the 860 during for a 3-hour lab, which is not the best practice.Students continue to have connection issues Fall 22 semester. |  |
| Library: Library materials/collections |  |  |
| Facilities: Classrooms/Labs | **Please Note:**1. Our Laboratory spaces are extremely limited, and we simply do not have enough space to offer the courses we need to support student success.**All the items below are needed for Spring 2022, Fall 2022, Spring 2023, and beyond****1. Autoclave** is needed to sterilize media to grow bacteria that must be used in every single Bio 3 (Microbiology) laboratory. In addition, media must be sterilized to be used in several experiments in our Bio 1A (General Biology, majors), and for an experiment in Bio 10 (Introduction to Biology). This device must also be used to sterilize all equipment that will come in direct contact with bacteria that must be grown during experiments in several of our courses. **2. Refrigerator** is needed to store pretri plates with media, and bacteria that must be used for every single experiment in Bio 3 (Microbiology). In addition, a refrigerator is needed to store some bacterial isolates that will be used, and for the bacterial plates containing the bacteria that students will be growing within those plates prior to carrying out further biochemical tests. In addition, a refrigerator must be dedicated solely for microbiology to reduce bacterial cross-contamination.**3.** **Thirty** **Microscopes** will be needed to identify the bacterial isolates from the various cultures and stains (Gram, endospore, acid-fast, negative stains) that will be carried out in every Bio 3 (Microbiology) laboratory, several Bio 1A (General Biology, majors) and Bio 10 (Introduction to Biology) laboratories. Our microscopes have not been replaced for the past 20 years and several of them are broken and will not be possible to replace them. Microscopes are also used heavily in our Bio 2 (Human Anatomy) and Bio 4 (Human Physiology).**5. Two EKG machines** will be needed to support laboratories carried out in our Bio 4 (Human Physiology) course. Students taking the course gain critical thinking skills and hands-on use of equipment to measure the heart rhythm as the many of them will be entering a variety of Allied Health Fields.6. **Anatomical models** will be needed to support the laboratories carried out in our Bio 2 (Human Anatomy) course. Students taking the course gain critical thinking skills, and the ability to understand the spatial location of the various organs, muscles, and structures in the human body. Several of the models have broken over the years due to wear and tear, in turn, we do not have an adequate number of models to support the success of our students.7. **Biology models** will be needed to support our Biology 10, 1A, and 1B courses. **Flower model** (Giant Dicot model)**Eight DNA models** **Two seed models****Early Man and Primate Skull Comparison Set**8. **pH meter** will be needed to support our Biology 3 (Microbiology) since media must be prepared at the proper pH. Biology 1A, Biology 1B, Biology 10, and Biology 4.9. **High precision digital scale** to measure media needed for Biology 3 (Microbiology) since media must be prepared at the proper pH. Biology 1A, Biology 1B, Biology 10, and Biology 4.10. **Balances** to support our Bio 10, Bio 1A, and Bio 1B.11. **Micro incinerators** to ensure the safety of our students.**Further justifications to support the Biology Department request of the equipment above**:We are thrilled and thankful that Microbiology was approved in Fall 2021 by our Dean and VPI. This course is highly sought out and it was a fully enrolled class. In addition, Microbiology is aligned with the new NSF Grant we were just awarded that aims to address issues with equity in higher education which is the vision and mission of COA in many ways and by aiming to increase the enrollment of Latinx students at College of Alameda STEM programs and positively impact rates of success and retention in STEM courses. | **Unknown**~$24,000(Crucial for Microbiology and Gen Bio)~$2,500~$20,000(Crucial for Microbiology)~$5,000~$7,000~$800~$2,000~$1,500~$400~$2,500~$1,500.00~$2,600.00~$1,000.00~$5,000 |
| Facilities: Offices | We have access to two offices and we have two full time faculty. In the future, we will have three full time faculty when the Dean returns in their role as Faculty. In turn, we hope that the new building being built will provide us access to at least 7 offices to ensure students can have access to a space for Office hours. | **Unknown** |
| Other | Could the COA Biology Department have access to some equipment and/or space used by Merritt College? |  |