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**College of Alameda**

2022-23 Program Review – Physics

**Lead Author:**

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| **Andrew Park** |

**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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| The mission of the Physics Department at College of Alameda is to integrate problem-solving with a firm conceptual foundation and laboratory exercises. Students spend time working with other students in class, discussing physics concepts and solving problems together. |

List your program faculty and/or staff

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| Andrew Park  Stephen Asztalos  (Below are ASTR instructors, who also have FSA in PHYS.)  Andrew Fittingoff  Dietmar Krauss-Varban (retiring Fall 2022)  Araceli Lopez-Garibay (incoming hire Spring 2023)  Amanda Truitt (incoming hire Fall 2022 intersession) |

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

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| All facilities needs for PHYS, inclusive of scheduling of in-person lab and lecture classes, are met through the exclusive use of ATLAN 100. Attached smaller rooms inside ATLAN 100 serve both as office space and lab equipment/lecture demo storage. Classes are scheduled within the limitation of a single classroom availability. |

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** | Continue to maintain Physics lab equipment |
| Status: In-Progress or Complete? | In-Progress |
| Which college or district goal is aligned with your program goal? | College Goal 6: Teaching and Learning |

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| **Program Goal** | Regular online ASTR/PHYS faculty meeting during semester; hold the first meeting by February 2023 |
| Status: In-Progress or Complete? | In-Progress;  Modified previous goal to match the same goal in ASTR |
| Which college or district goal is aligned with your program goal? | College Goal 6: Teaching and Learning |

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| **Program Goal** | As part of regular online ASTR/PHYS faculty meeting, continue evaluating effectiveness of online mode of lecture instruction for PHYS 10 and PHYS 4 and seek ways to improve it. |
| Status: In-Progress or Complete? | In-Progress; modified previous goal to tie this goal to ASTR/PHYS faculty meeting |
| Which college or district goal is aligned with your program goal? | College Goal 6: Teaching and Learning |

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| **Program Goal** | Start Offering, by Spring 2024 or Fall 2024, PHYS 3A and PHYS 3B (new goal for AY 2021-2022), with an aim of replacing PHYS 4A-4B-4C offering with PHYS 3A-3B offering. |
| Status: In-Progress or Complete? | In-Progress (updated with timeline);  PHYS 3A/3B are in CoA catalog as of Fall 2022; they still need to be approved for CSU/UC articulation |
| Which college or district goal is aligned with your program goal? | College Goal 6: Teaching and Learning  College Goal 7: Data-Driven Decision Making |

**Enrollment Trends**

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**[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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| PHYS enrollment trends show continuing struggle, although the aggregate data conceal underlying pattern.  \* When it comes to PHYS 10/10L, enrollment numbers are strong, with any reduction in numbers being a result of no PHYS 10 section being offered (no summer session offering since Summer 2019; no fall offering in Fall 2020). When possible, we should consider offering additional sections of PHYS 10, either online or hybrid.  \* PHYS 4A/4B/4C enrollments show continued weakness. The declines track corresponding decline (BCC) or steady enrollments at sister colleges (Merritt and Laney). Fundamentally, this is the reason for the department recommendation to switch to PHYS 3A/3B sequence (while Laney and BCC’s existing enrollment data show relatively constant demand, we believe there are areas of unmet needs---PHYS 3A in Spring and PHYS 3B in Fall---that do not show on data). |

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

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| Andrew Park developed an extensive set of lecture videos (available at department YouTube channel, both publicly and as part of Canvas course, youtube.com/c/CoAPhysics), as well as sets of assessment materials aligned with OpenStax *University Physics*, an open educational resource (OER) that is freely available to students. Stephen Asztalos brings his teaching philosophy from years of teaching comparable courses at CSU. |

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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| After a brief experimentation with online lab during the COVID years, a departmental decision has been made to maintain in-person lab component (for PHYS 4A, 4B, and 4C), precisely so that we can “maintain the integrity and consistency of academic standards.” While the lecture component remains online, with the linked lecture-lab setup, students’ performance in lab can be used to complement academic standards maintained in lecture. |

**Curriculum**

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

[](https://peralta.curricunet.com/)

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

☐ Yes ☒ No, please explain:

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| PHYS 10 was last updated in Spring 2018 and 10L last updated in Spring 2019. They are in need of curriculum review.  All other courses were reviewed within the past three years (PHYS 4A, 4B, and 4C in Spring 2021; PHYS 3A and 3B are new courses in Fall 2022). |

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 plan to switch from offering PHYS 4 sequence to PHYS 3 sequence, for the reasons of enrollment management discussed above. PHYS 3A and 3B courses have been approved locally; we need to see articulation agreements with CSUs and UCs before scheduling the courses at CoA. |

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

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| Our PHYS 10 offering meets the physical science general education requirements (and a small number of students who may be preparing for PHYS 4A), as well as students going into vocational programs with a single-semester physics requirement (e.g. radiology tech programs).  Our PHYS 4A, 4B, and 4C courses meet the needs of students intending to major in physical sciences and engineering programs by teaching them fundamental physics problem-solving skills necessary for success in their upper division courses and later in their profession. |

**Student Learning Outcomes Assessment**

List your Student Learning Outcomes

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| PHYS 10:  SLO1 - Using written language, students explain and discuss the physics concepts listed in the course content, and apply them to everyday phenomena and interdisciplinary examples.  SLO2 - Students apply simple formulas to calculate measurable quantities that describe the physical environment related to the concepts of physics.  SLO3 - Students explain and discuss physical principles underlying classroom demonstrations.  PHYS 10L:  SLO1 - Students set up laboratory equipment safely, plan and carry out experimental procedures, identify possible sources of error, reduce and interpret data, and prepare clear written reports.  SLO2 - Students apply simple formulas to calculate measurable quantities that describe the physical environment related to the concepts of physics.  SLO3 - Students explain and discuss physical principles underlying laboratory experiments.  PHYS 4A:  SLO1 - Discuss the concepts of physics, and apply them to situations relevant to the course.  SLO2 - Develop descriptions of physical systems using mathematics and calculate measurable quantities.  SLO3 - Set up laboratory equipment safely, Plan and carry out experimental procedures, Identify possible sources of error, Reduce and interpret data, and Prepare clear written reports.  PHYS 4B: (intentionally similar to PHYS 4A SLOs)  SLO1 - Discuss the concepts of physics, and apply them to situations relevant to the course.  SLO2 - Develop descriptions of physical systems using mathematics and calculate measurable quantities.  SLO3 - Set up laboratory equipment safely, Plan and carry out experimental procedures, Identify possible sources of error, Reduce and interpret data, and Prepare clear written reports.  PHYS 4C: (intentionally similar to PHYS 4A and 4B SLOs)  SLO1 - Discuss the concepts of physics, and apply them to situations relevant to the course.  SLO2 - Develop descriptions of physical systems using mathematics and calculate measurable quantities.  SLO3 - Set up laboratory equipment safely, Plan and carry out experimental procedures, Identify possible sources of error, Reduce and interpret data, and Prepare clear written reports.  (Below two are new courses that have not yet been offered at CoA)  PHYS 3A:  SLO1 - Discuss the concepts of physics, and apply them to situations relevant to the course and in biological sciences.  SLO2 - Develop descriptions of physical systems using mathematics and calculate measurable quantities.  SLO3 - Set up laboratory equipment safely, Plan and carry out experimental procedures, Identify possible sources of error, Reduce and interpret data, and Prepare clear written reports.  PHYS 3B: (intentionally similar to PHYS 3A SLOs)  SLO1 - Discuss the concepts of physics, and apply them to situations relevant to the course and in biological sciences.  SLO2 - Develop descriptions of physical systems using mathematics and calculate measurable quantities.  SLO3 - Set up laboratory equipment safely, Plan and carry out experimental procedures, Identify possible sources of error, Reduce and interpret data, and Prepare clear written reports. |

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

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| Considering SLO assessments completed for 2019 and 2020 (we are a little behind and need to get caught up), most areas of learning gaps corresponded to the types of problem-solving requiring deeper knowledge/understanding or integrating techniques learned over a length of time (i.e. types of problems not easily solved by rote memorization). Instructors planned on providing more guidance or hands-on help during the semester. |

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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| We are still in early stages of assessment cycles to assess improvements in student learning. So far, the main lesson is the importance of assessment and reflection separate from submission of grade rosters—there are gaps that are not fully captured in grades of A, B, and C. |

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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| PHYS department does not have a certificate or a degree with associated PLOs. We would like to participate in PLO assessments for degrees that list PHYS courses for breadth or degree-specific requirements (e.g. associate in liberal arts; Biology degrees). |

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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| We have not participated; we will discuss ILOs at the next online meeting of ASTR/PHYS faculty. |

**Course Completion**

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| College | Academic Year | Subject | Total Graded | Course Completion | Course Completion Rate |
| Alameda | 2022 | PHYS | 125 | 91 | 73% |
| Alameda | 2021 | PHYS | 119 | 97 | 82% |
| Alameda | 2020 | PHYS | 167 | 135 | 81% |
| Alameda | 2019 | PHYS | 219 | 174 | 79% |
| Alameda | 2018 | PHYS | 194 | 141 | 73% |

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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| Completion rate for PHYS meets or exceeds the institution-set 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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| CoA PHYS department only offers hybrid (100% online lecture; 100% in-person lab) PHYS 4A/4B/4C courses, and PHYS 10 is only offered 100% online. Above shown data is for mostly hybrid/online courses. |

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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| PHYS department does not offer dual enrollment courses, although we would welcome the opportunity to offer dual enrollment courses (PHYS 10/10L combination could particularly be effective as dual enrollment courses). |

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| Alameda | 2018 | PHYS | 194 | 141 | 73% |

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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| Table above is for completion rate; retention rates I can look up from the dashboard link are:  2021-2022 – retention rate w/o MW or EW at 76.4% (out of 123)  2020-2021 – retention rate w/o MW or EW at 83.6% (out of 121)  2019-2020 – retention rate w/o MW or EW at 84.7% (out of 179)  Retention rate for PHYS is comparable to the average course retention rate at the college. |

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 | PHYS | All Students | 125 | 72.8 |  |  |  |
| Alameda | PHYS | Asian | 43 | 72.1 | -0.7 | -13.3 | FALSE |
| Alameda | PHYS | Black / African American | 22 | 63.6 | -9.2 | -18.6 | FALSE |
| Alameda | PHYS | Female | 58 | 75.9 | 3.1 | -11.5 | FALSE |
| Alameda | PHYS | First Generation | 62 | 64.5 | -8.3 | -11.1 | FALSE |
| Alameda | PHYS | Hispanic / Latino | 30 | 63.3 | -9.5 | -15.9 | FALSE |
| Alameda | PHYS | Male | 65 | 70.8 | -2.0 | -10.8 | FALSE |
| Alameda | PHYS | White | 21 | 95.2 | 22.4 | -19.0 | FALSE |

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

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| While there is no disparate impact identified (due to large margin of error on small sample size), performance gap in Black / African American, First Generation, and Hispanic / Latino students still merits monitoring and consideration in evaluation of teaching methods.  At the online meeting of PHYS/ASTR faculty, we will discuss what this data means and how it matches to what we observe in individual classrooms. |

**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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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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**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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| Andrew Park – Following are institutional efforts by the sole PHYS full-timer, roughly in the order of amount of time taken in a typical week:  \* Faculty union rep: serves as one of the two campus co-chairs for CoA; primarily functions as a liaison for faculty experiencing working condition/salary issues, and provides advice on matters of CBA interpretation.  \* Academic senates – serves on CoA academic senate and district academic senate (DAS) as treasurer; oversaw establishment of CoA academic senate scholarship fund; handles logistics for ASCCC events funded through DAS fund.  \* SLOAC for STEM division – serves on approval queue in CurriQunet META for SLOAC role; answers questions related to SLOs and CurriQunet META  \* Institutional Effectiveness Committee – serves as one of the three co-chairs for the committee; note-taker at most meetings.  \* Other informal participations, particularly in matters relating to open educational resources (OER). |

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

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| The part-time faculty in PHYS teach across the district at our sister campuses, such as Merritt, and at neighboring universities. |

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

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| We communicate regularly by email, but we still need to include some real-time discussion opportunities, which is the reason we want to hold regular online meeting of PHYS/ASTR faculty at CoA. |

**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 |  |  |
| Personnel: Part Time Faculty | The sole full-timer in PHYS is currently regularly overloaded. When transition to PHYS 3A/3B is complete, one of these sections should be taught by a part-time faculty. | ?? |
| Personnel: Full Time Faculty |  |  |

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| **Resource Category** | **Description/Justification** | **Total Estimated Cost** |
| Professional Development: Department wide PD needed | Support for department-wide meeting and SLO assessment efforts is needed. We would like to request a small stipend payment for time part-time faculty spend on assessing SLOs and attend department-wide meeting to discuss SLO assessment results. | $500 - $1000 for all PT faculty participating (this is same as the request in ASTR, not to be duplicated) |
| Professional Development: Personal/Individual PD needed | Individual faculty will request through PD committee. |  |
| Supplies: Software |  |  |
| Supplies: Books, Magazines, and/or Periodicals |  |  |
| Supplies: Instructional Supplies | Physics lab requires ongoing maintenance, both for repair and replacement of existing lab activities and for designing and offering new lab activities. We request continued supplies funding. | $1000 |
| Supplies: Non-Instructional Supplies |  |  |
| Supplies: Library Collections |  |  |
| Technology & Equipment | New equipment (e.g. modern oscilloscopes; smart carts, etc.) needed to fully furnish Physics lab. | $5000 |
| Library: Library materials/collections |  |  |
| Facilities: Classrooms/Labs | We request continued exclusive use of ATLAN 100 for Physics purposes (Physics lecture/lab classes) only. | $0 |
| Facilities: Offices | We request continued exclusive use of ATLAN 100 for Physics, so that Physics full-timer can access ATLAN 102 (office space inside ATLAN 100) at predictable times. | $0 |
| Other |  |  |