Welcome to Program Review

College of Alameda - 2019

PHYS - Instruction

Program Review

Program Overview

Please verify the mission statement for your program. If your program has not created a mission statement, provide details on how your program supports and contributes to the College mission.

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.

We provide comprehensive and flexible programs that empower students to achieve their goals. For example, many students enroll in Physics 10, which is offered as an online course, to satisfy prerequisites for Allied Health programs. Most students enroll in the Physics 4A-4B-4C sequence to satisfy prerequisites for engineering and physical sciences.

Program Total Faculty and/or Staff

Full Time	Part Time
Andrew Park	Benjamin Stahl Dietmar Krauss-Varban Andrew Fittingoff

The Program Goals below are from your most recent Program Review or APU. If none are listed, please add your most recent program goals. Then, indicate the status of this goal, and which College and District goal your program goal aligns to. If your goal has been completed, please answer the follow up question regarding how you measured the achievement of this goal.

Continue SLO assessments, especially assessment of Physics 4B at end of Fall 2015 semester.

Status
Completed

College Goal
Advance CoA teaching and learning

District Goal
Advance Student Access, Equity, and Success

If Completed, What evidence supports completion of this goal? How did you measure the achievement of this goal?
Completed as of AY 2018-2019 and reported as completed in APU in AY 2018-2019.

In Spring 2016: Complete curricular materials for PHYS 4ABC, Complete updates of course outlines. Continue investigating AS-T degree. New physics faculty member may want to expand courses.

Status

Completed

College Goal

Increase access to college programs/coursework through collaboration with other PCCD colleges in redesigning college schedules & offerings

District Goal

Build Programs of Distinction

If Completed, What evidence supports completion of this goal? How did you measure the achievement of this goal?
Completed as of AY 2018-2019 and reported as completed in APU in AY 2018-2019.

Introduce PHYS 10 as optional online or hybrid course beginning Fall 2016.

Status

Completed

College Goal

Advance CoA teaching and learning

District Goal

Advance Student Access, Equity, and Success

If Completed, What evidence supports completion of this goal? How did you measure the achievement of this goal?
Choosing "Completed" to be able to add this text note. In AY 2018-2019 APU, this goal was noted as revised with this explanation:
> PHYS 10 will not be taught as hybrid, as introducing any required in-person meeting will reduce the value of the course to many students who currently take PHYS 10 for the flexibility it offers (the online midterm exam, introduced in Spring 2017, remains popular with students, with about half of students choosing the online option). However, the *online instruction delivery method* is currently being evaluated and revised to ensure equal or greater quality of instruction as face-to-face class sessions.

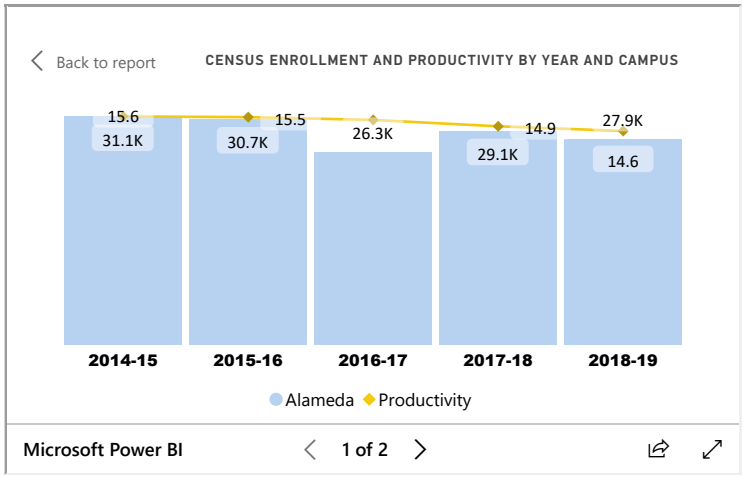
Describe your current utilization of facilities, including labs and other space

ATLAN 100, the Physics Lab, is the main room used for the Physics program. All physics lab sections are held in ATLAN 100. The lab room also serves as space to proctor in-person exams for the online physics lecture sections.

Enrollment Trends

College Level - Program and Department comparison

Chart



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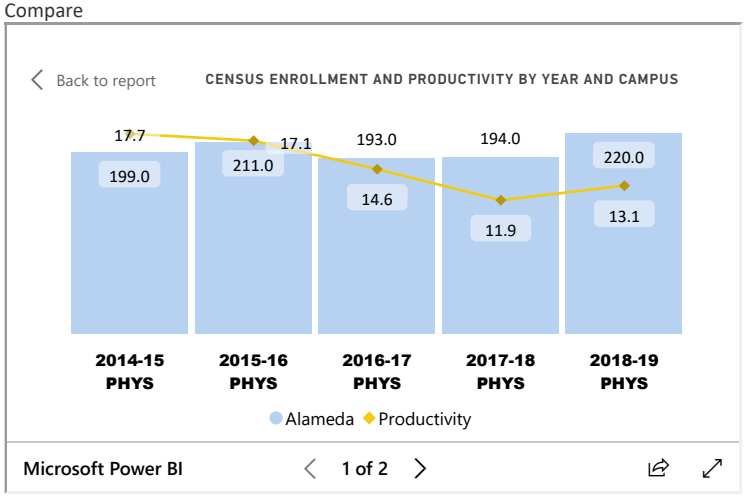


Using the Enrollment Trends dashboard filter to your college and subject area. Reflect on the enrollment trends over the past three years. How does the enrollment trend for your program compare to the overall college trend? What factors could be attributing to this trend?

We are beginning to reverse the downward trend in enrollment and productivity. AY 2017-18 marks the lowest year in enrollment and productivity, and despite offering a new course for the first time (which would tend to reduce productivity as the new course gets going for a few years), the productivity in AY 2018-19 remains higher than AY 2017-18. The 100% online PHYS 10 lecture section remains the main driver for productivity, with year-over-year increases in enrollment.

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

We have moved all our lecture sections to online. This continues the practice we started with PHYS 10 many years ago, where we utilize the online course offering to offer more flexible options for students needing to fulfill physics requirements for transfer or other programs they are already enrolled in. While this allows us to schedule courses (remaining face-to-face lab sections) in a way to meet students' scheduling needs best, it also necessitates improvements in online teaching strategies. Both faculty currently teaching online sections regularly engage in new course material development (lecture videos, and free online homework systems) and seek ways to increase student engagement aligned to the Title 5 requirement on regular and effective contact.

How is technology used by the discipline, department?

The faculty record lecture videos and upload them on the department YouTube channel ("COA Physics") to make the videos available to students (linked from Canvas). We also make use of the lab equipment and lecture demonstration setup built up and maintained by discipline faculty.

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?

Both faculty currently teaching online sections regularly engage in new course material development (lecture videos, and free online homework systems) and seek ways to increase student engagement aligned to the Title 5 requirement on regular and effective contact [this sentence copied from above]. Specifically, the online-teaching faculty utilize Canvas Discussion and Peer Grading features to encourage student-to-student interaction.

As for academic standards, the in-person exam remains the standard. We continue to give the same exam we would have given for the face-to-face lecture, and we try to meet the same standards of success we would expect for face-to-face lecture sections.

In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Action

Improvement Actions

Improvement Action

Action Item	Description	To be completed By	Responsible Person
Ensure availability of ATLAN 100 for Physics course needs.	Especially for online sections of Physics courses, because the course does not meet regularly, it is especially important that ATLAN 100 be kept available at times when in-person exam proctoring options are offered. The faculty have repeatedly asked that the faculty be consulted whenever non-Physics courses are scheduled in ATLAN 100, but that has not happened to date, requiring the faculty to spend their valuable time monitoring college-wide schedule and proactively ask that conflicting classes be moved out of ATLAN 100.	1/31/2020	Ana McClanahan, Don Miller

Resource Request

Facilities	Classrooms

Description/Justification	Estimated Cost
Especially for online sections of Physics courses, because the course does not meet regularly, it is especially important that ATLAN 100 be kept available at times when in-person exam proctoring options are offered. The faculty have repeatedly asked that the faculty be consulted whenever non-Physics courses are scheduled in ATLAN 100, but that has not happened to date, requiring the faculty to spend their valuable time monitoring college-wide schedule and proactively ask that conflicting classes be moved out of ATLAN 100.	0

Curriculum

Please review your course outlines of record to determine if they have been updated or deactivated in the past three years. Use the pull-down menus to identify courses that still need updating or deactivation and specify when your department will update each one, within the next three years.

Name	Last updated date	Semester and Year	To be updated on	To be deactivated on
PHYS 010 - Introduction to Physics	April, 25 2018 11:16:47	Spring 2017 - 18		
PHYS 004A - General Physics with C...	December, 17 2018 15:16:57	Fall 2018 - 19		
PHYS 004B - General Physics with C...	December, 17 2018 15:17:30	Fall 2018 - 19		
PHYS 004C - General Physics with C...	December, 17 2018 15:19:14	Fall 2018 - 19		
PHYS 010L - Introduction to Physics ...	December, 17 2018 15:20:47	Fall 2018 - 19		

Please summarize your plans for curriculum improvement/development, including details on specific courses or programs you plan to improve/develop.

We are currently in consultation process for adding PHYS 3A and 3B to our catalog, so that these courses (offered by our sister campuses) can be used for Biological Sciences major requirements. We also need to update Physics 10, possibly with new pre-requisites, in order to restore UC transferability of the course.

In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Actions	Improvement Action

Improvement Action

Action Item	Description	To be completed By	Responsible Person
Obtain detailed enrollment data for PHYS 10 district-wide	UC transfer guidelines require that Physics 10 have a pre-requisite of Intermediate Algebra. As a part of on-going conversation among district-wide Physics faculty, we need data to determine whether this increased math pre-requisite for Physics 10 will: (1) not hurt any current student populations being served with Physics 10, and (2) help enough students who intend to transfer to CSUs and UCs.	1/31/2020	Andrew Park, COA full-time researcher

Resource Request

Other	Other

Description/Justification
We need a full-time researcher for the college who can carry out this custom data-pull request.

Estimated Cost
0

Improvement Action

Action Item	Description	To be completed By	Responsible Person
Continue to maintain Physics lab equipment	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 and equipment funding.	5/31/2020	Budget Committee?

Resource Request

Supplies	Instructional Supplies and Materials

Description/Justification
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.

Estimated Cost
1000

Resource Request

Technology and Equipment	New

Description/Justification	Estimated Cost
New oscilloscopes and van de Graaff generators are needed to fully furnish Physics lab.	5000

Instruction - Assessment

Student Learning Outcomes Assessment

List your Student Learning Outcomes. SLOs are specific, measurable statements of what students will know, be able to do, or be able to demonstrate when they complete a course. An SLO focuses on specific knowledge, attitudes, or behaviors that students will demonstrate or possess as a result of instruction.

Course	Student Learning Outcomes (SLO)	Last date Assessed	Planned Assessment Date	Attachments
PHYS 010 - Introduction to Physics	Using written language, students explain and discuss the physics concepts listed in the course content, and apply them to everyday phenomena and interdisciplinary examples.	5/31/2018	5/31/2021	
PHYS 010 - Introduction to Physics	Students apply simple formulas to calculate measurable quantities that describe the physical environment related to the concepts of physics.		5/31/2019	
PHYS 010 - Introduction to Physics	Students explain and discuss physical principles underlying classroom demonstrations.		5/31/2020	
PHYS 004A - General Physics with Calculus	Students discuss the concepts of physics, and apply them to situations relevant to the course.		12/31/2019	
PHYS 004A - General Physics with Calculus	Students develop descriptions of physical systems using mathematics and calculate measurable quantities.		5/31/2020	
PHYS 004A - General Physics with Calculus	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.		5/31/2021	
PHYS 004B - General Physics with Calculus	Students discuss the concepts of physics, and apply them to situations relevant to the course.	12/31/2018		
PHYS 004B - General Physics with Calculus	Students develop descriptions of physical systems using mathematics and calculate measurable quantities.		12/31/2019	
PHYS 004B - General Physics with Calculus	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.		12/31/2020	

PHYS 004C - General Physics with Calculus	Students discuss the concepts of physics, and apply them to situations relevant to the course.	5/31/2018	
PHYS 004C - General Physics with Calculus	Students develop descriptions of physical systems using mathematics and calculate measurable quantities.	5/31/2019	
PHYS 004C - General Physics with Calculus	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.		5/31/2020
PHYS 010L - Introduction to Physics Laboratory	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.	5/31/2019	
PHYS 010L - Introduction to Physics Laboratory	Students apply simple formulas to calculate measurable quantities that describe the physical environment related to the concepts of physics.		12/31/2020
PHYS 010L - Introduction to Physics Laboratory	Students explain and discuss physical principles underlying laboratory experiments.		5/31/2021

How has your department worked together on assessment? Provide examples on collaboration, leadership, planning exercises, and data analysis. What aspects of assessment work went especially well in your department and what improvements are most needed?

Because PHYS is a small discipline (only one section of each course is offered each semester), most assessment occurs individually. For sequence courses, such as Physics 4A, 4B, and 4C, some collaboration has occurred in the past. For example, identification of a need to teach integrated problem-solving in Physics 4B led to a change in Physics 4A curriculum, designed to introduce an aspect of the more complex problem-solving in the later half of Physics 4A, with the intention that students who go on to Physics 4B will be able to draw on that experience.

What were the most important things your department learned from assessment? If implementation of your action plans resulted in better student learning and/or changes in curriculum, detail the results

Students continue to need support and scaffolding in multi-step problem-solving exercises. Action plan implementations are currently on-going.

Give us an update on your Program Learning Outcomes (PLOs). A complete program assessment means all PLOs have been assessed for that program. Attach any evidence, i.e. reports from Task Stream or Curricunet Meta.

There is no degree program in physics (yet), and there are no PLOs to be assessed.

Does your department participate in the assessment of multidisciplinary programs?

No

If Yes, Describe your department's participation and what you learned from the assessment of the program that was applicable to your own discipline.

Writing just to explain that the "No" answer above is that we haven't been invited to participate in the assessment of multidisciplinary programs. There are programs that do require Physics courses either as major requirement or elective, and Physics department would welcome an invitation to participate in their program assessment.

Does your department participate in your college's Institutional Learning Outcomes (ILOs) assessment?

No

If Yes, Please describe your departments participation in assessing Institutional Learning Outcomes.

Writing just to explain that the "No" answer above is that we haven't been invited to participate in assessing ILOs. We would welcome an invitation.

What support does your department need from administrators, assessment coordinators and/or your campus assessment committee to continue to make progress in assessment of outcomes and implementation of action plans?

We need stipends for part-time faculty who assess SLOs. The only SLOs assessed so far have been by full-time faculty, because SLO assessment is part of job description of full-time faculty but not part of job description of part-time faculty. We are told we have this funding for AY 2019-2020 and intend to make use of it; continued funding is needed for future years.

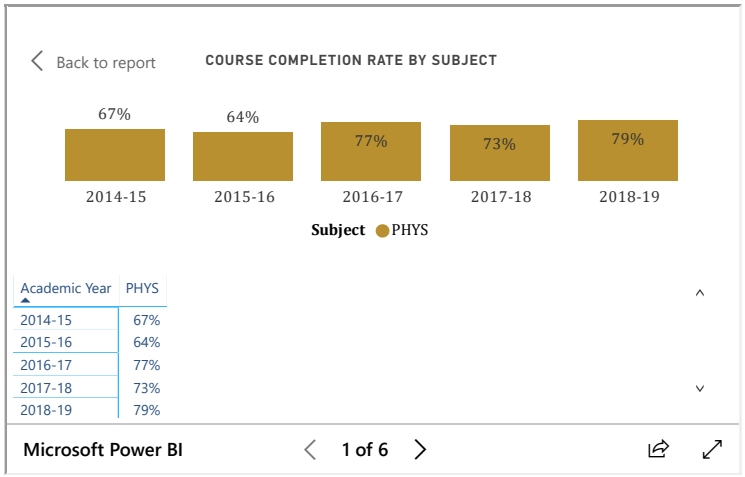
In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Actions	No Actions/Requests

Course Completion

College Level - Program and Department comparison

Chart



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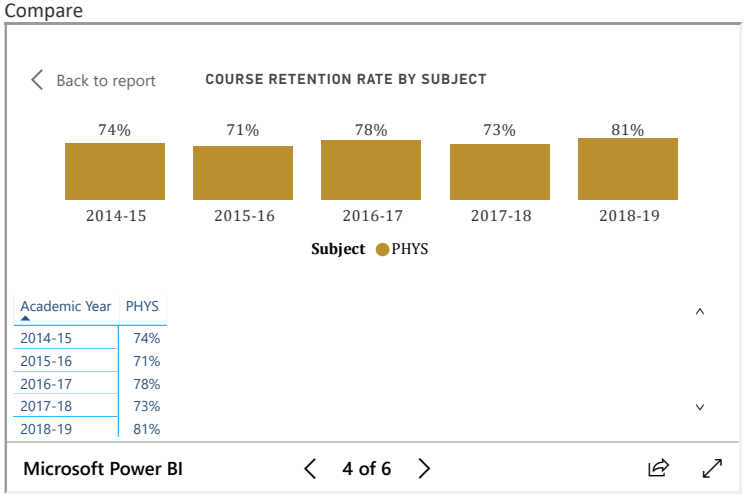


Consider your course completion rates over the past three years (% of student who earned a grade of "C" or better).

Name	2016 - 17 Completion Rate (%)	2017 - 18 Completion Rate (%)	2018 - 19 Completion Rate (%)
PHYS 10 INTRO TO PHYSICS	69	64	77
PHYS 4A GEN PHYSICS W/CALCULUS	78	75	85
PHYS 4B GEN PHYSICS W/CALCULUS	84	100	75

PHYS 4C GEN PHYSICS W/CALCULUS	91	88	89
PHYS 10L Introduction to Physics Laboratory			67

Use the filters on the top and right of the graphs to disaggregate your program or discipline data. When disaggregated, are there any groups whose course completion rate falls more than 3% points below the discipline average? If so, indicate yes and explain what your department is doing to address the disproportionate impact for the group.

Age	○ Yes ◉ No	In AY 2018-19, age 30-34 group is completing at a significantly lower rate, but this may be just a one-year fluctuation. I do not see a consistent pattern of lower completion rate in prior years.
Ethnicity	○ Yes ◉ No	In AY 2017-18 and prior, Black / African American group completed at a significantly lower rate, but the data for AY 2018-19 shows hopeful trend. We will continue to monitor and reflect on our teaching practices.
Gender	○ Yes ◉ No	
Foster Youth Status	○ Yes ◉ No	
Disability Status	○ Yes ◉ No	
Low Income Status	○ Yes ◉ No	
Veteran Status	○ Yes ◉ No	

Consider your course completion rates over the past three years by mode of instruction. What do you observe?

How do the course completion rates for your program or discipline compare to your college's Institution-Set Standard for course completion?

The institution-set standard, last reviewed Spring 2015, sets the standard at 66%, and students in PHYS courses succeed at a rate above the 66% and the college average.

How do the department's Hybrid course completion rates compare to the college course completion standard?

Students in hybrid courses succeed at a rate comparable to or better than face-to-face courses, although direct comparison is difficult as hybrid courses are not offered in the same semesters that the face-to-face courses were offered.

Are there differences in course completion rates between face to face and Distance Education/hybrid courses? If so, how does the discipline, department or program deal with this situation? How do you assess the overall effectiveness of Distance Education/hybrid course?

There are no significant differences. This is something we have been working on since last program review, and although we still have areas of improvement (reducing attrition before census, and finding a way to organically establish regular and effective contact), at least the course completion rate for DE courses are comparable to face-to-face courses.

Describe the course retention rates over the last three years. If your college has an Institution-Set Standard for course retention, how does your program or discipline course retention rates compare to the standard?

The institution-set standard, last reviewed Fall 2012, sets the standard at 47% (oh, this can't be right---neither the last review date nor the retention late, but this *is* what's at https://alameda.peralta.edu/institutional-effectiveness/institutional-set-standards/), and students in PHYS courses are retained (i.e. did not drop after census) at a rate above the college average and the 47%.

What has the discipline, department, or program done to improve course completion and retention rates?

Our PHYS faculty teach with the student-centered mindset---we follow up with students who fall behind; we give extensions on assignments when needed; we do the things we are supposed to do in an educational institution meant to serve the community.

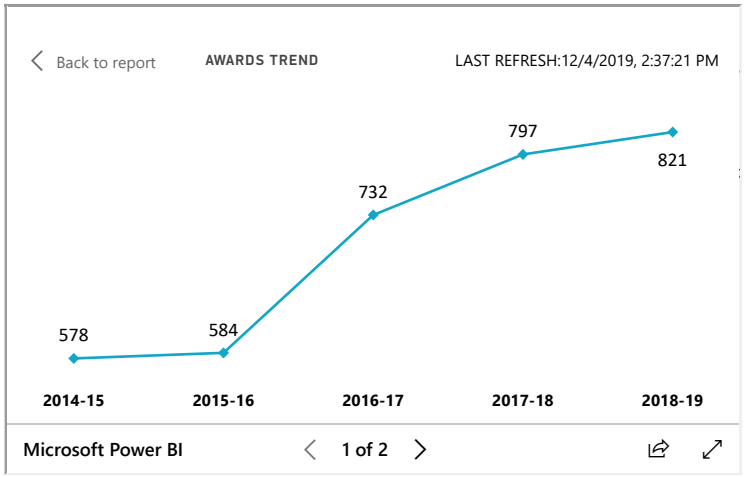
In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Actions	No Actions/Requests

Degrees and Certificates

College Level - Program and Department comparison

Chart



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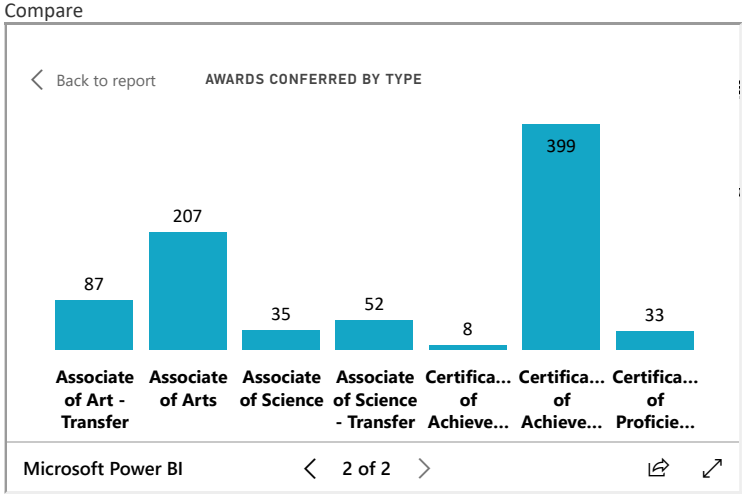

What has the discipline, department, or program done to improve the number of degrees and certificates awarded? Include the number of degrees and certificates awarded by year, for the past three years.

N/A

Over the next 3 years, will you be focusing on increasing the number of degrees and certificates awarded?

Yes

What is planned for the next 3 years to increase the number of certificates and degrees awarded?

We plan to put together a local Physics AS degree. (It is not possible to put together an AS-T degree within the 60-unit limit.)

In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Actions

Improvement Action

Improvement Action

Action Item	Description	To be completed By	Responsible Person
Offer a new Physics AS degree	While it is not possible to put together an AS-T degree within the 60-unit limit, a new Physics AS degree is possible. In light of the new UCTP announced earlier in the year, there is value in offering a Physics AS degree.	5/31/2020	Andrew Park

Resource Request

Choose an Option

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.

The sole full-time faculty (Andrew Park) currently serves in following institutional roles:
* COA academic senate (representing STEAM division and serving as treasurer)
* Institutional Effectiveness Committee (faculty co-chair)
* SLO assessment coordinator for STEAM division
* PFT campus co-chair

Andrew Park has also presented at the district flex day (Spring 2019 plenary session and Fall 2019 break-out session) and at the college flex day (in the SLOAC role), as well as at other opportunities in collaboration with the district staff development officer and other faculty.

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

The discipline faculty is engaged in physics community (Northern California-Nevada section of American Association of Physics Teachers) and open educational resource (OER) community. The part-time faculty Benjamin Stahl is seeking a new grant opportunity with ASCCC OER Initiative in collaboration with physics faculty at COA and elsewhere.

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

We communicate regularly by email. Andrew Park is exploring a possible ConferZoom meeting during the semester, in order to accommodate schedule and availability of part-time faculty teaching mostly online.

In the boxes below, please add improvement actions and resource requests that are directly related to the questions answered in this section. If there are no improvement actions or resource requested in this area, leave blank.

Improvement Actions

Improvement Action

Improvement Action

Action Item	Description	To be completed By	Responsible Person
Hold a ConferZoom meeting for discipline faculty during...	Although the discipline faculty communicate regularly by email, there is some benefit to real-time communication. We would like to explore feasibility of a ConferZoom meeting during the semester.	5/31/2020	Andrew Park

Resource Request

Choose an Option

Action Plan Summary and New Program Goals

Total Improvement Plans: 5
Total Resource Request: 6

Review, add or modify the following actions plans that were entered in each section. Then review the Program Goals that were marked as in progress. Determine if you would like to keep the in progress goals and draft new 3-year goals for your department or program. The action plan items should support your new program goals. Align your program goals to the college strategic goals and District Strategic Goals.

Section / Head	Description		
Instruction			
Enrollment Trends			
Ensure availability of ATLAN 100 for Physics course needs.	Especially for online sections of Physics courses, because the course does not meet regularly, it is especially important that ATLAN 100 be kept available at times when in-person exam proctoring options are offered. The faculty have repeatedly asked that the faculty be consulted whenever non-Physics courses are scheduled in ATLAN 100, but that has not happened to date, requiring the faculty to spend their valuable time monitoring college-wide schedule and proactively ask that conflicting classes be moved out of ATLAN 100.	1/31/2020	Completed Date Annual Progress Update Date
Curriculum			
Obtain detailed enrollment data for PHYS 10 district-wide	UC transfer guidelines require that Physics 10 have a pre-requisite of Intermediate Algebra. As a part of on-going conversation among district-wide Physics faculty, we need data to determine whether this increased math pre-requisite for Physics 10 will: (1) not hurt any current student populations being served with Physics 10, and (2) help enough students who intend to transfer to CSUs and UCs.	1/31/2020	Completed Date Annual Progress Update Date
Continue to maintain Physics lab equipment	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 and equipment funding.	5/31/2020	Completed Date Annual Progress Update Date
Degrees and Certificates			
Offer a new Physics AS degree	While it is not possible to put together an AS-T degree within the 60-unit limit, a new Physics AS degree is possible. In light of the new UCTP announced earlier in the year, there is value in offering a Physics AS degree.	5/31/2020	Completed Date Annual Progress Update Date
Engagement			
Engagement			
Hold a ConferZoom meeting for discipline faculty during the semester.	Although the discipline faculty communicate regularly by email, there is some benefit to real-time communication. We would like to explore feasibility of a ConferZoom meeting during the semester.	5/31/2020	Completed Date Annual Progress Update Date

New and Continuing Goals

Discipline, Department or Program Goal	College Goal	PCCD Goal

Continue evaluating effectiveness of online mode of lecture instruction for PHYS 10 and PHYS 4 and seek ways to improve it.	Strengthen Data-driven / informed decision making	Build Programs of Distinction

Sign and Submit

Please provide the list of members who participated in completing this program review.

Andrew Park

Please enter the name of the person submitting this program review.

Andrew Park