Section Two: Current Topics (Required for All Programs)

A. Program-Set Standard (Instructional Programs Only): The program-set standard is a baseline that alerts programs if their student success rates have dipped suddenly. There may be many valid reasons a program does not meet the Program Set Standard; when a program does not meet this standard, they are simply asked to examine possible reasons and note any actions that should be taken, if appropriate.

Program-set standard data can be found on this page:
http://www.laspositascollege.edu/research/outcomes.php

(Data for AY 18-19 will be available by the beginning of Fall 2019).

Did your program meet its program-set standard for successful course completion?
__x__yes _____no

If your program did not meet your program-set standard, discuss possible reasons and how this may affect program planning or resource requests.

Both Astronomy and Physics met the standard.

B. SLOs/SAOs: Describe an example of how your program used course SLO data (SLOs) or SAO data from last year (2018-19) to impact student learning, access, achievement, or other services to students. (Copy the box below if you would like to discuss multiple examples).

Course (SLOs only): Astronomy 10, Astronomy 20
SLO or SAO: Upon completion of ASTR 10 (ASTR 20), students should be able to use quantitative reasoning to determine relationships between physical quantities in astronomy.
Describe the quantitative or qualitative results: Generally the SLO scores were very low for this SLO. Faculty reported very little success with this SLO across multiple different course sections (for example, average scores of 1.78 out of 4, which would equate to a D+).
Discuss any actions taken so far (and results, if known): At our department meeting we discussed what is really meant by this SLO; i.e., does "quantitative reasoning" imply ability to do math problems with correct numerical values and units? Or are we talking about numerical values of ratios and proportions? Or do we simply mean qualitative relationships between variables, such as whether a star's luminosity increases or decreases with temperature? Each faculty member was holding their students to a different standard. In the discussion, we decided that for our purposes quantitative reasoning did not mean students were required to perform mathematical calculations (as there is no math prerequisite for the course), but we did want them

to understand how an equation can be used to relate different variables together and show trends between these variables.
Discuss your action plan for the future: We are still leaving it up to the instructor how far they are planning to take their students along the path of "mathematical" astronomy. However, the wide variety of mathematical preparation (or lack thereof) of our students means instructors may want to be creative with how they use equations to demonstrate the relationships between variables, and de-emphasize "plug and chug" mathematical calculations in favor of the more meaningful qualitative interpretation of the equation. We hope in this way that students will be able to use the equations to help them solidify astronomical concepts, rather than seeing calculations through a math-phonic lens, as a barrier that they will never be able to overcome.

C. **Program SLOs (Degree/Certificate granting programs only**): Describe an example of how your program used program-level SLO data (PSLOs) from last year (2018-19) to impact student learning or achievement. (Copy the box below if you would like to discuss multiple examples).

Degree/Certificate: Physics AS
Program SLO: Upon successful completion of an AS in Physics, students are able analyze physical situations quantitatively using fundamental physics principles, ranging from Newtonian mechanics to modern physics.
Describe the quantitative or qualitative results: This PSLO is measured by a specific CSLO from every class in the physics sequence (Physics 1A-1D). Usually the SLO is measured by average student exam scores in the class. We looked at this SLO through the full physics program, and found that in general average scores were around a 2.5 or 3 (corresponding to B- or B exam grades). The general distribution did not change much throughout the sequence (i.e., number of As, Bs, and Cs remained roughly consistent) but there were fewer failing grades (D,F) as the students progressed through the sequence. However, in last year's data there seemed to be a relatively large percentage of students (~20%) in Physics 1B that did not pass Physics 1B, and a higher-than-average set of SLO scores for Physics 1A. Most instructors agreed that the distribution of Physics 1A scores was anomalously high, although it was not possible to pin down exactly where those scores came from.
Discuss any actions taken so far (and results, if known): We discussed these trends and possible reasons for them in our SLO department meeting. Regarding the anomalously high Physics 1A scores and the failing students in Physics 1B, we discussed that the instructor needs to set (and maintain) high standards for passing grades so that students who leave Physics 1A are prepared for Physics 1B, which builds upon the same skillset.
Discuss your action plan for the future: We will continue to monitor this PSLO in future to see if these trends persist, or if they were a fluke from this year's data. **NOTE: We also discuss different PSLO results in the equity section, G1, below.**

D1. SLO/SAO Progress Review: To see if your program is up to date with the creation of SLO/SAOs, please consult the list available here: https://bit.ly/2LggoKv. List any courses or services areas that do not have SLOs or SAOs approved. These SLOs/SAOs need to be submitted to eLumen by November 18 to become active for Spring 2020; please work with your SLO/SAO coordinator.

All courses are up-to-date.

D2. List any courses or service areas that do have approved SLOs/SAOs but do not have any SLOs or SAOs with recorded assessments during the past three years (Fall 2016-Spring 2019).

All courses have SLO data recorded.

D3. Describe your plans for assessing the SLOs or SAOs listed under Question D2 above.

We assess all SLOs for every course each time it is taught.

E. SLO/SAO Suggestions (optional): What questions or suggestions do you have regarding SLO/SAO planning, assessment and reporting?

F. Student-Centered Funding Formula (SCFF): The state funding allocation model has shifted to include socio-economic status and student achievement metrics. LPC will begin to be funded by this model by AY 21-22. The district and college are using this opportunity to develop projects that support these funding considerations and the needs of our students. The projects should help LPC achieve the goals listed below.

Goals for SCFF Projects
• Ensuring eligible students receive financial aid, if desired • Removing barriers that hinder students from moving toward their goals • Offering additional information and support about educational pathways • Offering academic support that increases English/math completion in the first year • Enhancing career readiness through coursework • Increasing completion of degrees and certificates • Increasing transfers and transfer readiness

F1. SCFF Actions Taken: Describe one initiative or action your program or area has taken in support of one of the goals in the list above.

- **What was the action?**
- **What was the result, if known?**
- **If your action or initiative was successful, please explain why and whether it could be used in other areas or scaled for use across the campus.**
- **If your action or initiative was not successful, please indicate why (lack of resources, unforeseen variables, etc.)**
- **If you did not take any actions in support of the goals above, you may write "N/A."**

As discussed below in Section G1, we have sought to improve enrollment and speed up the time to transfer by scheduling physics courses with respect to a STEM course matrix that lists all STEM courses that students may be taking. In this way, we can avoid scheduling conflicts between courses students typically enroll in concurrently. We believe this is already helping enrollment and we have seen dramatic increase in physics enrollment in recent semesters, which we are hoping may be partially due to our scheduling efforts. This type of scheduling plan would be easily applicable to other disciplines with lots of prerequisites and defined course sequences.

F2. Future Strategies (optional): Please describe any possible strategies or actions that your program or the college could use to support the goals listed above. What resources would be needed?

G. Student Equity and Achievement Program: To ensure equitable outcomes for vulnerable student populations, Las Positas College plans to close equity gaps in the areas listed below. For each area/metric, the listed impacted groups have had proportionately lower rates than other groups.*

Area/Metric	Impacted Groups
Access: Enrollment at LPC	Black or African American (Female), Black or African American (Male), Filipino (Female), White (Female)
Readiness: Completion of both transfer-level Math & English	American Indian or Alaska Native (Female), Black or African American (Female), Black or African American (Male), Hispanic or Latino (Male/All), First Generation (Male/All), Foster Youth (Female), Foster Youth (Male), LGBT (All)
Retention: Retention from Fall to Spring	Black or African American (Female/All), First Generation (Female/All), Foster Youth (Male)
Completion: Completion of an Associate Degree, Certificate	American Indian or Alaska Native (Male/All), Asian (Male), Black or African American (Male/All), Native Hawaiian or other Pacific Islander (Female), Native Hawaiian or other Pacific Islander (Male), Foster Youth (Male), LGBT (Female), LGBT (Male)

Completion: Transfer to a Four-Year Institution	Disabled (Male/All), Black or African American (Female), Hispanic or Latino (Male), Native Hawaiian or other Pacific Islander (Female), Native Hawaiian or other Pacific Islander (Male), First Generation (Female), Foster Youth (Male), LGBT (Female)

*The full list of impacted groups with supporting data can be found here: https://bit.ly/2XZVGDb

G1. Equity Actions: Describe any actions your program has taken in the past two years (2017-2019) or actions currently in progress to improve the metrics above for the impacted groups listed (for example, to increase the ability for African American students to enroll in classes at LPC, or to increase the ability of LGBT students to complete Associate's Degrees or Certificates). What has been the effect of these actions, if known?

To improve enrollment and speed up the time to transfer, physics STEM courses are now being scheduled with respect to a STEM course matrix that lists all STEM courses that students may be taking. Care is being taken to avoid conflicts between courses students typically enroll in concurrently. We believe this is already helping enrollment!

Individual faculty are trying to address equity gaps in class, often one-on-one with students. In our syllabi and in class, we advise students about tutoring resources and DSPS accommodations. Additionally, in physics, there is a traditionally large gender gap between men and women (both in enrollment and retention). As faculty we try to encourage and support al female students in the sciences. Additionally, research (for example, https://arxiv.org/pdf/1608.07565.pdf) has shown that men receive higher grades than women in most STEM lecture courses, but men and women receive equal grades in lab courses. The culprit here would be the style of examinations in lecture courses.

To consider the issue of equity, we have looked at the PSLO results for the physics program. One of our Physics-AS PSLOs measures exam performance, while the other two PSLOs measure lab performance (experimentation and communication, respectively). The SLO disaggregation results show that female and male physics students at LPC score equally well in experimentation, and women score better than men in exam performance and communication. So the typical gender gap in most institutions is not found here at LPC. (Hooray!!)

However, we do see equity gaps in all three SLOs when we disaggregate by race/ethnicity, with white and Asian students performing at higher levels than other ethnic groups. This is an issue across all three SLOs, and it is something we plan to address as a department at our next department meeting, to discuss possible causes and interventions/pedagogy we can use to help close these gaps.

G2. Equity Challenges: Describe any challenges your program has faced in promoting equity and equity-based decision making in the metrics listed above (or any other areas).

So far, the biggest challenge our program has faced in terms of equity is obtaining the information about where our equity gaps are. In the response below, we examine some equity gaps found in the physics program, using the data from the website: http://www.laspositascollege.edu/research/outcomes.php It would be even more useful if it were possible to identify particular courses (rather than the entire program), and then analyze the demographic trends for those courses, as each course sequence serves a different student demographic. The SLO data can also be used to look at equity across programs (as discussed

in the previous question, G1), but I don't believe SLOs can be disaggregated within a specific course.

Looking at enrollment trends over the past 5 years, physics courses generally comprise about 25-30% female students, and 1-2% who categorize themselves as other, with the remaining students being male. There have been no significant changes in these numbers over the past 6 years. The success rate in physics is basically the same for men and women; however, women seem more likely to withdraw (W) from the class, whereas men who do not pass tend to stick it out and get the D or F. The difference in withdrawl rates between genders is about 1-2% and can be seen in most years.

In terms of ethnic background, there are lower success rates in physics for every student who does not identify as white. This mirrors the disaggregation results found by looking at PSLOs. This discrepancy is very concerning to us, and as a department we plan to discuss what we might be able to do to help solve this problem.

Looking at physics students with low-income vs. not low-income, there was a 15% equity gap in success rates for low-income students 6 years ago, which has gone down steadily over the past 6 years to 6%, and now 2%. We are not sure what caused this trend.

Looking at physics students with disabilities, the success rates are similar to, but a few percentage points lower, than success rates of students without disabilities. The marked exception was 6 years ago, when there was a 25% equity gap for disabled students, and this past year, when there was an 8% gap. Every other year gave a significantly lower equity gap. Most of the equity gap is in the students withdrawing (W) from the course, rather than earning a failing grade if they stay enrolled.

It is worth noting that all of the years corresponding to the largest equity gaps (6 years ago, and last year) are years in which the two full-time faculty have been on leave or out of commission in some way (maternity, load banking, illness, etc.). It seems that full-time faculty taking leave disproportionally impacts the success of minority students.

H. Program Review Suggestions (optional): What questions or suggestions do you have regarding the Program Review forms or process?