

Program: Physics & Astronomy

Division: STEM

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With the approval of the Academic Senate and the Institutional Planning and Effectiveness Committee, we are moving to a bi-annual cycle of program review updates and full program reviews. **Fall 2023 is a Program Update cycle.**

Please note: Program Update is NOT in itself a vehicle for making requests. All requests should be made through appropriate processes (e.g., Instructional Equipment Requests) or directed to your dean or supervisor.

Time Frame: This Program Update *should reflect* on program status during the 2022-23 academic year. It should *describe plans* starting now and continuing through 2023-24.

Key Terms: The Program Review Glossary defines key terms that you can review before writing: <https://bit.ly/2LqPxOW>

HELPFUL LINKS:

- 1) [Program Review Committee Page for Writers](#)
- 2) [Fall 2022 Program Reviews](#)
- 3) [Frequently Asked Questions](#)

For Help: Contact Nadiyah Taylor: ntaylor@laspositascollege.edu.

INSTRUCTIONS:

- 1) Please respond to each question with enough detail to present your information, but it doesn't have to be very long.
- 2) If the requested information does not apply to your program, write "Not Applicable."
- 3) Suggested: Communicate with your dean while completing this document.
- 4) Send an electronic copy of this form to Nadiyah Taylor and your dean **by November 1, 2023**

IMPORTANT CHANGES AND REMINDERS

Some sections have been removed for ease of completion. However, these important tasks will need to be reviewed by programs:

- ✓ **Check for Title V updates required for any of your courses or Programs:**
 1. To check on the status of courses and programs to see if any updates are required
 - a. Log in to CurricUNET
 - b. Select "Course Outline Report" under "Reports/Interfaces"
 - c. Select the report as an Excel file or as HTML)
 2. If updates are needed, submit these updates to the Curriculum Committee
 3. Then, compare each Program Map to your current course offerings and course sequencing. Pay close attention to prerequisite information and to classes that may only be offered during certain semesters.
 - a. If your map requires a **non-Curricular** change (i.e., course sequencing) consult your [Pathway counseling faculty liaison](#) to initiate any changes.
 - b. If your map requires a **Curricular Change** (Program modifications) - these are initiated through the Curriculum Committee.
- ✓ **Review your programs to see if there are any modifications needed**
- ✓ **Review your programs and courses to see if any will be sunset or deactivate**

HAS YOUR PROGRAM HAD ANY SIGNIFICANT UPDATES SINCE THE LAST PROGRAM REVIEW?

- No, I'd like to skip the update this year, and I understand that I can only do this twice in three years.**

THERE ARE TWO SECTIONS:

1. Updates - *All programs* (page 3)
2. CTE Review – *CTE programs only* (pages 4-7)

ALL PROGRAMS: SECTION ONE

1. Please describe the most important updates, achievements, challenges, or barriers to your program in academic year 22-23.

This past academic year we began a Physics Club (faculty advisor: Jenny Siders) and it became an official chapter of the Society for Physics Students (SPS). It has attracted students across several STEM disciplines and promoted community among them. SPS Fieldtrips to local laboratories and STEM employers have positively impacted student employment/internships as well and have inspired students to persist in STEM.

At the end of spring 2022 the astronomy department acquired a new eVscope (a digital telescope) through IER that has been used for astronomy lab classes, the SPS physics club, and public outreach (both at local schools and on-campus star parties). This telescope has improved the quality of the observing the students can do in astronomy labs. In the future we plan to purchase a diffraction grating and software that will allow students to perform spectroscopy on stars and nebulae.

Finding enough part-time faculty to staff our classes is an ongoing problem. However, with constant interviews last year we currently have enough faculty to staff all classes.

2. What are the most important things your program observed with respect to student learning, equity, and success in 22-23? This could be related to your SLOs or from other sources.

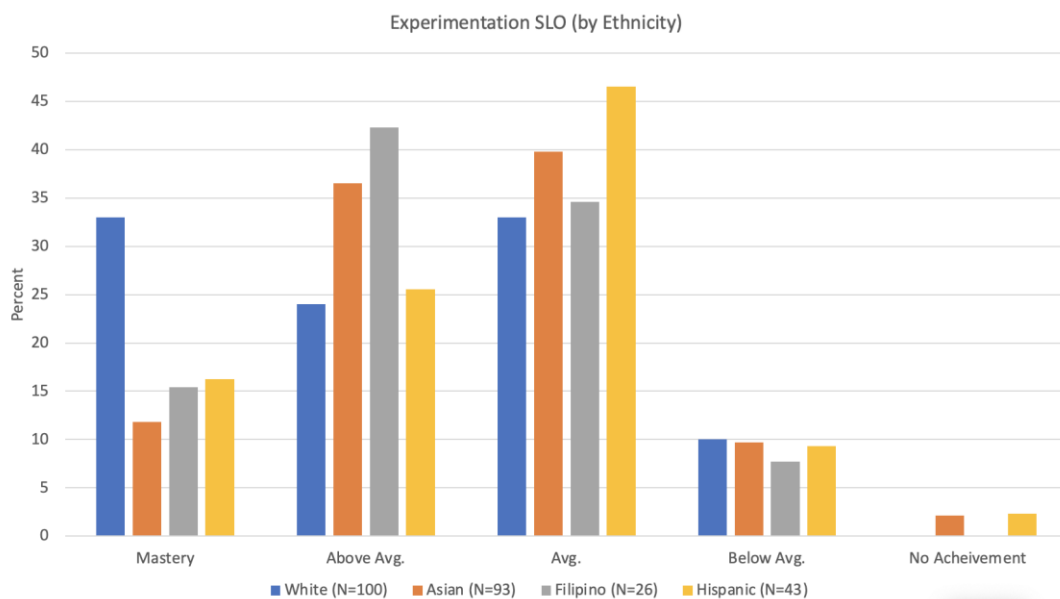
(see next page)

The SLO the physics department analyzed during the 22-23 academic year focused on using the scientific method during laboratory class. We disaggregated the SLO data with respect to gender, age, and ethnicity.

There were no statistical differences in SLO performance based on gender, which is good! (This is also a result that has been seen in professional studies of STEM college courses that evaluate lab skills based on gender.)

The age categories in eLumen group students in 2 categories: 21 or younger, and 22 or older. There were fewer passing scores in the older student category; during our department discussion we hypothesized that perhaps this is because of a hiatus from schooling, or perhaps because those students had more difficulty with college courses, and were taking longer to graduate. (The discrepancy between age groups was small, in any case, and possibly not statistically significant.)

The largest discrepancies in our data were between different racial demographics, as shown in the plot below. Interpreting this plot is a little tricky. We hypothesized that the “Asian” category represents what is close to the “average” population. The shape of the “Asian” curve is a bell curve (which is what is expected from a large, diverse population). Furthermore, the demographic category “Asian” is really too broad to be meaningful, given that it lumps Middle Eastern, Indian, East Asian, and South Asian students in one group. What it does show, however, is that white students and Hispanic students differ significantly from this “average” bell curve, which white students scoring higher and Hispanic students scoring lower. We hypothesize that this comes from a disparity in the “STEM preparedness” of students due to socioeconomic background. Interestingly, in the past, the white and Asian categories have traced each other closely. We hypothesize that the disparity this year is two-fold: (1) the local Asian demographic is changing and encompassing a different set of Asian ethnicities than it did during our previous analysis 6 years ago (2) a larger portion of economically-advantaged white students are attending community college instead of 4-year schools because of the aftermath of COVID. We don’t know if there is data supporting point (2), but anecdotally, the department is seeing a larger number of students from local Cal-State colleges taking our physics classes even though they are not full-time community college students. (Especially during the newly-offered summer courses.)



3. Got anything new planned for 23-24?

Our department is beginning to work with a newly funded program run by Lick Observatory to use real telescope data in our lab classes. It may also provide data for honors students to work with, or facilitate student field trips to the observatory.

Additionally, starting Fall 23 we are encouraging all faculty teaching the Physics 1 series (calculus-based physics) to teach students to write lab reports in the professional typesetting language LaTeX. The goal is to introduce students to the industry standard for technical documents in many STEM fields (physics, engineering, computer science, etc.) and to standardize lab report writing throughout the 4-part physics sequence.

CTE UPDATE (CTE PROGRAMS ONLY): SECTION TWO

Vicki Shipman will provide you with or support any data needs

LABOR MARKET CONDITIONS: EXAMINE YOUR MOST RECENT LABOR MARKET DATA (WITHIN THE LAST 2 YEARS).

1. Demonstrate labor market need (demand – completers = need); projected growth for the next five years.
2. What is the median income for occupations within your program?

ADVISORY BOARDS:

1. Has your program complied with advisory board recommendations?
 - i. _____ YES _____ No
2. If not, please explain.

STRONG WORKFORCE PROGRAM METRICS: UTILIZING LAUNCHBOARD, REVIEW THE STRONG WORKFORCE PROGRAM METRICS. REVIEW THE DATA AND THEN REPORT ON YOUR SPECIFIC PROGRAM.

Data Reporting Notes:

Data are suppressed according to FERPA to protect students' personally identifiable information. Suppression takes place when too few students are included in the metric. Meaning, if there is not data, your program did not have a minimum of ten (10) students for this metric.

LaunchBoard data metrics lag in terms of academic year reporting. For your program review SWP metrics, report on the latest year available with a notation of the year. Meaning, if there is not data, your program did not have a minimum of ten (10) students for this metric.

CI. STRONG WORKFORCE PROGRAM STUDENTS

Report on students in your program who took at least 0.5 units in any single credit course or who had at least 12 positive attendance hours in any noncredit course(s) in the selected year or who enrolled in noncredit course(s) in Spring 2020 or any term in academic year 2021 and who enrolled on a TOP code that is assigned to a vocational industry sector in the selected year.

How may these metrics improve?

C2. SWP STUDENTS WHO EARNED 9 OR MORE CAREER EDUCATION UNITS IN THE DISTRICT IN A SINGLE YEAR

Report on students in your program, the proportion who successfully completed nine or more career education semester units in the selected year within a single district

How may these metrics improve?

C3. SWP STUDENTS WHO COMPLETED A NONCREDIT CTE OR WORKFORCE PREPARATION COURSE

Report on students in your program with a noncredit enrollment on a CTE TOP code or a noncredit enrollment in a workforce preparation course, the proportion who completed a noncredit CTE or workforce preparation course or had 48 or more contact hours in a noncredit CTE or workforce preparation course(s) in the selected year

How may these metrics improve?

LPC Equity Definition: Equity is parity in student educational outcomes. It places student success and belonging for students of color and disproportionately impacted students at the center of focus.

C4. SWP STUDENTS WHO EARNED A DEGREE OR CERTIFICATE OR ATTAINED APPRENTICESHIP JOURNEY STATUS

Report on students in your program the number of unduplicated SWP students in your program who earned a noncredit certificate, Chancellor's Office approved certificate, associate degree, and/or CCC baccalaureate degree on a TOP code assigned to a vocational sector and who were enrolled in the district on any TOP code in the selected year or who attained apprenticeship journey status on a vocationally flagged TOP code in the selected year and who were enrolled at any community college at the start of the apprenticeship program on a vocationally flagged TOP code

How may these metrics improve?

C5. SWP STUDENTS WHO TRANSFERRED TO A FOUR-YEAR POSTSECONDARY INSTITUTION

Report on students in your program who earned 12 or more units at any time and at any college at any time up to and including the selected year and who exited the community college system, the number of students who enrolled in any four-year postsecondary institution in the subsequent year

How may these metrics improve?

C6. SWP STUDENTS WITH A JOB CLOSELY RELATED TO THEIR FIELD OF STUDY

Report on students in your program who responded to the CTE Outcomes Survey and did not transfer to any postsecondary institution, the proportion who reported that they are working in a job very closely or closely related to their field of study.

How may these metrics improve?

C7. MEDIAN ANNUAL EARNINGS FOR SWP EXITING STUDENTS

Report on students in your program who exited the community college system and who did not transfer to any postsecondary institution, median earnings following the academic year of exit

How may these metrics improve?

C8. MEDIAN CHANGE IN EARNINGS FOR SWP EXITING STUDENTS

Report on students in your program students who exited and who did not transfer to any postsecondary institution, median change in earnings between the second quarter prior to the beginning of the academic year of entry (for the first time ever as a non-Special Admit or return to any community college after an absence of one or more academic years) and the second quarter after the end of the academic year of exit from the last college attended.

How may these metrics improve?

C9. SWP EXITING STUDENTS WHO ATTAINED THE LIVING WAGE

Report on students in your program who exited college and did not transfer to any postsecondary institution, the proportion who attained the district county living wage for a single adult measured immediately following academic year of exit.

How may these metrics improve?