PROGRAM REVIEW Fall 2022

Program: Physics and Astronomy

Division: Science, Technology, Engineering and Mathematics

Date: Oct 21, 2022

Writer(s): Robin Rehagen

SLO/SAO Point-Person: Robin Rehagen

Audience: Deans, Vice Presidents of Student Services and Academic Services, All Planning and Allocation Committees. This document will be available to the public.

Uses: This Program Review will be used to inform the campus and community about your program. It will also be used in creating Division Summaries, determining College Planning Priorities, and allocating resources. The final use is to document fulfillment of accreditation requirements.

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

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

Sections: There are two sections to this document. Sections and questions identify the name of the committee or office that will use the information and where you can get additional help.

- The first section focuses on general program reflection and planning.
- The second section focuses on data analysis, including SLOs/SAOs/PSLOs
- The final section is a review of your pathway maps and curriculum, to be filled out only by programs with curriculum offerings.

Topics: The Program Review Glossary defines key terms. Writers should review this glossary before writing: https://bit.ly/2LqPxOW

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

A list of contacts for help with specific sections is provided on the Program Review website under the “tools for writers” tab. [https://bit.ly/3fY7Ead]

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) Optional/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, 2022**

Helpful Links:

Program Review Home Page

Fall 2021 Program Reviews

Frequently Asked Questions

Throughout this document you'll see that equity is a guiding principle.
Here is the LPC definition:

Las Positas College will achieve equity by changing the impacts of structural racism, ableism, homophobia, and systematic poverty on student success and access to higher education, achieved through continuous evaluation and improvement of all services. We believe in a high-quality education focused on learning and an inclusive, culturally-relevant environment that meets the diverse needs of all our students.

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.

Section One: Your Program In 21-22 – Please check N/A where relevant

A. Accomplishments: Identify accomplishments from the 21-22 AY.

Some areas you may want to note in your explanation are:

- Did your accomplishments support your program's plans identified in 21-22 PR
- Did they relate to guided pathways, and/or
- Did they support areas in the equity definition above

_____N/A

Accomplishments
1 – As a small department with only 2 full-time faculty and a handful of adjunct faculty, our main issues recently have been staffing. In the last few months, we've hired a replacement for a full-time faculty position (after a retirement), a new laboratory technician, and several new part-time faculty.
2 – We ordered lots of new equipment to support our expansion into two laboratory classrooms. We are in the process of reorganizing our lab classrooms and equipment storage areas.
3 – We purchased a new telescope that attaches to a digital screen, which makes the astronomy lab more accessible to students who may have difficulty standing at a telescope and looking through an eyepiece. We have already used this telescope to help a student in wheelchair. The new telescope also facilitates observations of things like galaxies and nebulae that cannot be seen through the eyepiece.
4
5
6

Tab to add more lines as needed

B. Challenges, Pain Points, and Needs:

What significant challenges or obstacles did your Program face during AY 21-22 especially related to accomplishing program goals/plans? You may want to consider areas in the equity definition on page 2.

_____N/A

Challenges/Pain Points/Needs
1 – Staffing has been a major problem, with several full-time and part-time faculty retiring. However, lots of interviews last semester have hopefully solved this issue for the time being.
2 – Enrollment in courses has been low, causing several of our courses to get cancelled. In the physics 1A-1B-1C-1D series, low enrollments and low success rates in previous semesters (due to COVID, online classes, etc.) have propagated down the "chain" of higher-level classes, making it very difficult to get enough students enrolled to even run the higher-level classes. For example, Physics 1D in Spring 2022 only had 3 students enrolled and was cancelled. We have taken measures to address this (speaking to students in lower-level classes and identifying the necessary prerequisites). We are hoping the low enrollment issue will fix itself this coming spring because of these efforts. Low enrollment has also affected our GE astronomy courses. Most in-person astronomy courses had <10 students and were either cancelled or converted to online. In the near future, we are planning to offer online-only courses for those subjects, but we hope that there will eventually be a transition back to face-to-face teaching.
3.
4.
5.
6.

Tab to add more lines as needed

C. Reflecting on your program's experiences from 2020 - to 2022, what innovations or new processes did you integrate that you would like to continue?

_____N/A

This fall we have begun scheduling physics, engineering, chemistry, biology, and math classes side-by-side with the department coordinators for all three disciplines in order to avoid schedule conflicts. We plan to develop a (somewhat) static course offering schedule in the future, if possible, so that (in particular) the physics/engineering/math course sequences will always line up the same way.

D. Explain one way that your program is connected to the College Mission and/or Educational Master Plan. Identify the specific elements.

- *College Mission*
- *Educational Master Plan (see pages 72-76)*

_____N/A

Part of the college mission is to respond to the changing needs of society. For us as a department, this had meant offering more general education courses online (specifically, astronomy) than we had previously. It also means we are being more flexible in accepting concurrent enrollment with course prerequisites for some students (only when the request is academically sound), so that they can graduate in fewer semesters.

E. Planning: What are the most important plans, either new or continuing, for your Program?

_____N/A

Plan	New	Continuing	Short term	Long term
Reorganize lab equipment and develop searchable database to log available equipment		x		X
Find a way to ensure that Physics 1D is able to run each spring and that physics majors can complete their transfer requirements.		x	x	X
We plan to increase astronomy outreach to get students interested in taking astronomy, thus increasing our enrollment. (Especially in face-to-face astronomy classes, which have not been enrolling well since the pandemic.). We have already hosted a very successful star party on campus, jointly with the Tri-Valley Stargazers, for International Observe the Moon Night.	x			x
We have opened discussions with the director of UC observatories about making ties with Lick Observatory to allow students to use their telescope facilities (possibly for honors projects). This is a proposal for a grant, and if funded would also likely	x			x

include professional development opportunities for faculty.				

F. If you have outreached to students in your department, program, or classes, please share information about what you discovered and how you have used the feedback.

_____N/A

Describe student outreach used to gather feedback. For example, through surveys, conversations, etc.	We survey students about which courses they are planning to take NEXT semester to ensure that we schedule the correct number of sections and maintain enrollment.
What did you learn?	Information about how many students will continue on in the physics sequence.
How will you use the feedback?	To help with course scheduling.

G. Are there institutional barriers to the equity work that your program would like to engage in, and what suggestions do you have for minimizing or eliminating these barriers? (See page 2, for the equity definition)

___x____N/A

Barrier	Suggestions

Section Two: Data Analysis – Quantitative and Qualitative

A. IR Data Review: Discuss any significant trends in the data provided by the Office of Institutional Research and Planning (or any other data you use for decision-making and planning).

(Note: Not all Programs have IR data available; if your program does not have a data packet or dashboard data, you may note that in the response box.)

- IR Data packets are available here (posted Fall 22): https://bit.ly/2IYaFu7

- Course Set Standard Overview & Success Rates Dashboard can be found in the middle of this page: https://bit.ly/2Y9vGpl

- As discussed earlier, overall enrollment in physics courses has declined since the start of the pandemic, with the past academic year (F21-SP22) being an all-time low. Enrollment is down 18% from pre-pandemic levels.
- Student demographics have been shifting to younger students since the pandemic. Last academic year, there were NO students older than 50 (we usually have a few). The percent of students 19 or younger has gone up by 12%.
- There have been no large-scale changes in student race/ethnicity demographics.
- It is possible that grade inflation occurred during the pandemic period. The percent of As awarded in physics went from 20% (pre-pandemic) to 30% (during-pandemic). Bs also went up, and Cs went down. During the pandemic, there have been overall more passing scores than there were in the past. This is concerning if it is truly grade inflation, because it means students may not be as prepared as they think they are for courses later in the sequence. The other possibility is that the higher scores are real, because low-performing students couldn't succeed in online physics courses and dropped out early on, or chose not to enroll. It will be interesting to see whether this "higher grades" trend continues now that courses are back to in-person.

B. 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 are 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

- 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.

C. SLOs/SAOs: Assessment of Student Learning and Support

Program Review is our major source of data on student learning for the college and is therefore regularly reviewed. *Each year programs must discuss how their PSLOs, CSLOs, or Service Area Outcomes (SAOs) support the College Mission. This helps us to see how our students are progressing in their learning.*

For assistance with these questions and instructions on how to run the necessary reports in eLumen, click here.

You should complete at least one of the following three sections. Please choose the option(s) below that are appropriate for your program - Go directly to the section(s) you chose.

- C1: Instructional Programs with PSLOs (disaggregated PSLOs)
- C2: Instructional Programs with CSLOs *(Departments without degrees, non-major courses, and/or other courses up for assessment)*
- C3: Non-Instructional Programs (SAOs)

C1: Instructional Programs with PSLOs (disaggregated PSLOs)

1) To assess PSLOs, CSLOs must be correctly mapped to only one PSLO within eLumen and every mapped CSLO must have assessment data. Please insert a checkmark in one of the following options that correctly describes your data and move on accordingly.
    a. If the CSLOs are mapped correctly and there is data for each CSLO, then continue to question 2.
    b. If the CSLOs have assessment data and the mapping needs to be completed, then complete the mapping within eLumen (See SLO Handbook, p. 7) and continue to question 2.
    c. If not all of the mapped CSLOs have assessment data, then you cannot assess the PSLO. In this case, continue to question C2.

2. Based on your current 3-year plan, list the PSLO(s) for the academic year 2021-2022 that your program selected to review and explain why these were chosen.

PSLO: Upon completion of an AS in Physics, students are able to effectively communicate the methods, analysis, results, and conclusions of their own scientific experiments. There are 3 PSLOs for our Physics AS degree, so we are rotating through them on a 3-year cycle.

2) What percentage of faculty completed the planned assessments for the selected PSLO? (run Faculty Participation report from last year). ___roughly 75%__(hopefully 100% in a few weeks, after some more nudging…)_____

3) Non-disaggregated Analysis of PSLO(s): In general, what conclusions can be drawn about student learning in your program?

> Scientific communication is stressed differently and taught differently in each course, with a majority of faculty requiring some sort combination of written lab reports and oral presentations. The guidance and grading criteria differ heavily between faculty. This necessarily means that student learning varies from class to class and is difficult to assess objectively. Ideally, we will be moving toward a set of more standardized communication requirements across the physics course series, and we plan to discuss this during our annual SLO meeting.

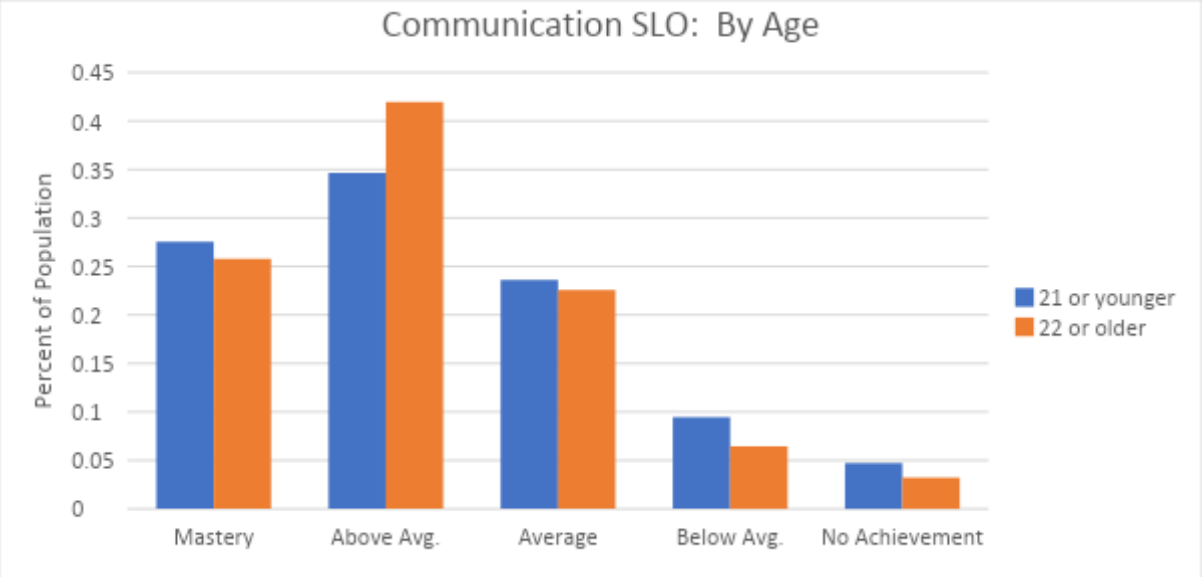
4) Disaggregated Analysis of PSLO(s) to identify potential inequity: Disaggregation allows you to examine inequities in student learning outcomes within sub-populations in your program. See the Guide for instructions on how to disaggregate PSLO data.

Which variables did you use to disaggregate the data? Mark all the apply.

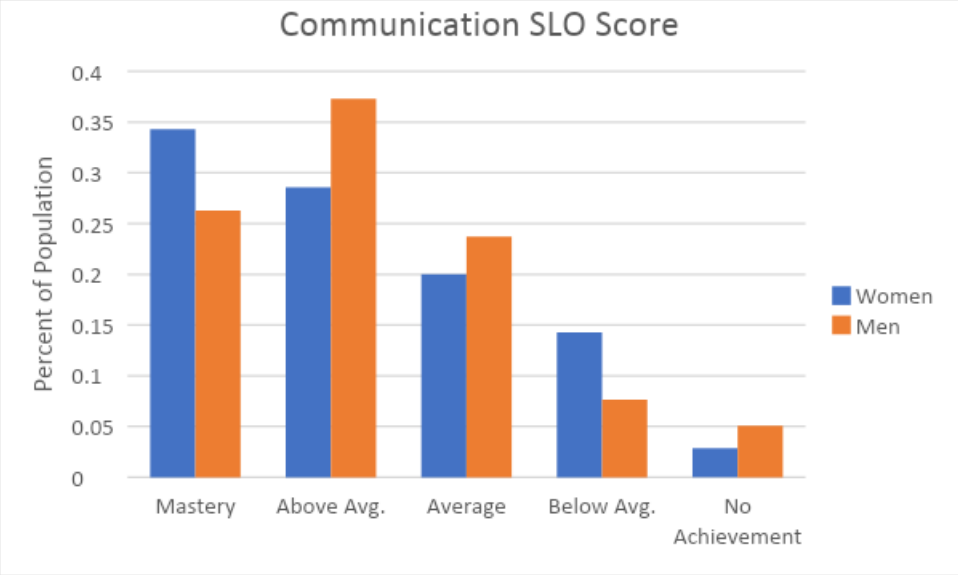
- Gender
- Age
- Ethnicity
- EOPS
- Veteran
- BOG Recipient
- First Generation
- DE
- Online
- Hybrid
- Fact-to-Face

5) Did your data reveal any patterns of inequity? If so, please explain those patterns.

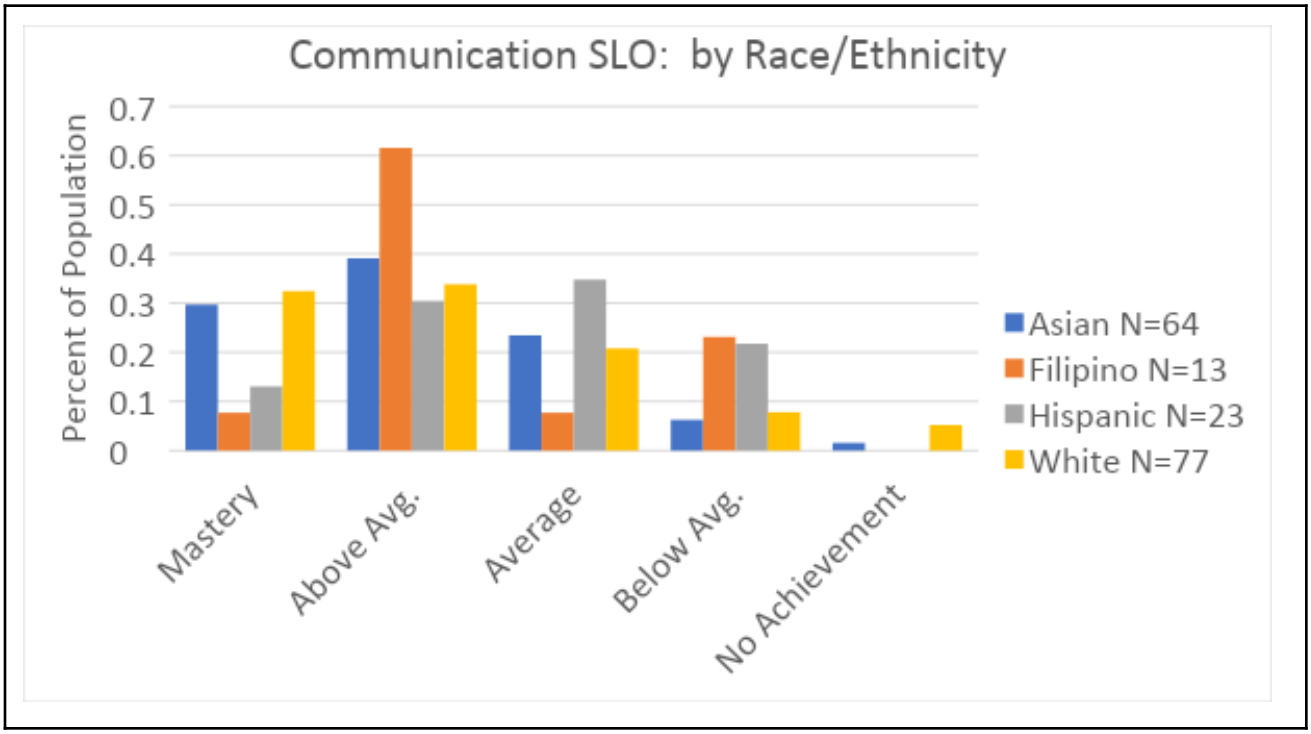
> **Research Question:** Do certain demographic groups of students perform differently on the Communication PSLO?
>
> **Data and Results:**
> - There is no significant achievement difference between 1st generation and not 1st generation college students
> - There is no significant achievement difference between older and younger students. (The distribution means are identical within <1%, and the shape of the distribution can be seen below)



- Women performed better on average than men



- Performance differs by race/ethnicity.
    - White and Asian students perform about the same (bell curve around a B)
    - Filipino students have a slightly lower average SLO score
    - Hispanic students have the lowest SLO score (bell curve around a C)



6) Identify any challenges facing your department that may contribute to inequitable outcomes as revealed by your disaggregated PSLO data. (Refer to section 1B if needed)

Since this PSLO focuses on written and verbal communication, students from different ethnic groups may have different language abilities (for example, growing up with English as a second language). Additionally, there are no English prerequisites for taking physics courses, so we have no way of knowing what level of college English has been completed by our students.

7) Based on discussion with others in your program, explain potential changes that will improve student learning and address inequities identified through analysis of disaggregated PSLO data.

Faculty will be sure to provide resources (and reiterate the existence of these resources throughout the semester) for all students to improve their writing. For example, we can offer to read through sections of the students' reports in office hours ahead of the due date and give direct one-on-one feedback. We can also inform students of the writing resources on campus, such as the RAW Center.

8) The 2022-2023 Academic year is the last year in our 3-year assessment cycle. Please review your 3-year plan and verify that all of your courses will be assessed by June 2023.

Will all of your courses be assessed by June 2023?

__x_ Yes _____No

If not, please update your 3-year plan to include any courses you missed or if you plan to revise your 3-year plan, then send your updated plan to the Curriculum and SLO Specialist, and the SLO Chair.

9) Are you planning on updating any CSLOs or PSLOs?

_____YES ____x_____NO

(If yes, then you may do this through eLumen, see the SLO Handbook if you need instructions on how to do this.)

10) If you experienced any challenges in completing your PSLO assessment process please list those in the box below along with any items that would help you improve this process in the future.

While we can do an in-depth disaggregation analysis for PSLOs, it would be nice to be able to do this for our GE courses as well. We wish eLumen would let us disaggregate any group of courses that we wanted to…

C2: Instructional Programs With CSLOs - Departments without degrees, non-major courses, and/or other courses up for assessment

1. Based on your current 3-year plan, list the CSLO(s) for the academic year 2021-2022 that your program selected to review and explain why these were chosen.

2. What percentage of faculty completed the planned assessments for the selected CSLO? (run Faculty Participation report from last year). _____%

3. Using the CSLO data and reflection questions, what are some conclusions?

4. List changes that you plan on making to improve student learning.

5. The 2022-2023 Academic year is the last year in our 3-year assessment cycle. Please review your 3-year plan and verify that all of your courses will be assessed by June 2023.

   Will all of your courses be assessed by June 2023?

   ____Yes _____No

   If not, please update your 3-year plan to include any courses you missed or if you plan to revise your 3-year plan, then send your updated plan to the Curriculum and SLO Specialist, and the SLO Chair.

6. Are you planning on updating any CSLOs?

   _____YES _____NO

   (If yes, then you may do this through eLumen, see the SLO Handbook if you need instructions on how to do this.)

7. If you experienced any challenges in completing your CSLO assessment process please list those in the box below along with any items that would help you improve this process in the future.

C3: Non-Instructional Programs (SAOs)

1. Based on your current 3-year plan, list the SAO(s) for the academic year 2021-2022 that your program selected to review and explain why these were chosen.

2. What percentage of staff completed the planned assessments for the selected SAO(s)? (run Faculty Participation report from last year). _____%

3. Based on discussion with others in your area: Using the SAO data and reflection questions or other sources of data, what conclusions can be made?

   * If you used other sources of data, briefly explain below.

4. List changes that you plan to improve outcomes in your service area.

5. The 2022-2023 Academic year is the last year in our 3-year assessment cycle. Please review your 3-year plan and verify that all of your courses will be assessed by June 2023.

   Will all of your courses be assessed by June 2023?

   ____Yes _____No

   If not, please update your 3-year plan to include any courses you missed, or if you plan to revise your 3-year plan, then send your updated plan to the Curriculum and SLO Specialist, and the SLO Chair.

6. Are you planning on updating any SAOs?

   _____YES _____NO

   (If yes, then you may do this through eLumen, see the SLO Handbook if you need instructions on how to do this.)

7. If you experienced any challenges in completing your SAO assessment process please list those below, along with any items that would help you improve this process in the future.

Note: There is an opportunity to give feedback on the PR template on the last page if you won't be completing the next sections

Section Three: Guided Pathways & Curriculum Review

(Programs with Courses Only)

For assistance with these questions, contact the Curriculum Committee Chair

Part One: Guided Pathways: Your program's work with guided pathways

A. Program Maps - The Program Maps (degree and certificate course sequences) are found in Academic & Career Pathways

Up-to-date Program Maps are used by students in your pathway, for data collection to support in-reach to students in your Pathway, predictive scheduling recommendations for Discipline Plans, and may influence the allocation of FTEF.

Please 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 particular terms.

1) Are your Program Maps accurate?

- Yes, all of my maps are accurate

Part Two: Curriculum Review

For assistance with this section, contact the Curriculum Committee Chair.

The following questions ask you to review your program's curriculum. To see the last outline revision date and revision due date follow the directions below:

1. Log in to CurricUNET
2. Select "Course Outline Report" under "Reports/Interfaces"
3. Select the report as an Excel file or as HTML

A. Title V Updates [Curriculum Committee]: Do you need to update any courses to stay within the 5-year cycle? List courses requiring updates below.

Reminder: updates to course title or units, and course deactivations, will require updating any program they are associated with. List programs requiring updating in question (C).

____x___YES _____No

Course Name & Number
ASTR 29 Independent Study, Astronomy (Active). Due: 11/06/2022
ASTR 30L Introduction to Astronomy Lab (Active). Due: 12/04/2022
PHYS 29 Independent Study, Physics (Active). Due: 11/06/2022
**We are working on these and plan to submit them by the end of October

B. Degree/Certificate Updates [Curriculum Committee]: Do any programs require modification in this cycle? If yes, list them below.

Reminder: Program modifications sent to the Curriculum Committee for approval require an updated Program Map. For mapping and curriculum support please contact the Curriculum & SLO Specialist.

_____YES _____x_____No

Certificate or Degree

C. Are there any courses or programs for which a non-mandatory update is planned?

Reminder: Program modifications sent to the Curriculum Committee for approval require an updated Program Map. For mapping and curriculum support please contact the Curriculum & SLO Specialist.

_____YES _____x_____Not at this time

If yes, explain details, rationale, or any support that might be helpful to the committee.

D. Does your program plan to create any new courses or programs this year?

*Reminder:: New program proposals require a Program Map for Senate approval. Please **contact the Curriculum & SLO Specialist if you are planning a new program.***

_____YES _____x_____No

If yes, please provide details and the rationale

E. Are there any courses that you plan to deactivate or sunset?

_____YES _____x_____No

Course Name & Number

Program Review Suggestions (optional): What questions or suggestions do you have regarding this year's Program Review forms or process?

None, it was very straightforward!