

Las Positas College
PROGRAM PLANNING UPDATE (Instructional) AY 2015-2016

Name of Program	Division	Author(s)
Physics and Astronomy	STEMPS	E. Harpell

INSTRUCTIONS:

1. This Program Planning Update covers the academic years 2012-2013 and 2013-2014.
2. The planning should be for the academic year 2015-2016.
3. Use the Save As feature in Word to save this template with your program name, so that you do not overwrite the original template. Please use your program’s catalog rubric and this format when naming your document:

Rubric INS PPU 15_16

e.g., ESL INS PPU 15_16

4. If the document displays in large type with only File, Tools, and View tabs at the top of the page, select **View, Edit Document**. You will then be able to type where it says “Click here to enter text” and you will be able to click on the check boxes to select them.
5. In each section, click in the box under the instructions and fill in your information. The box will expand as you type. If a section is not pertinent to your program enter N/A in the box; do not leave it blank.
6. When you have completed the form, run the spell-checker (**click inside the text in the first box**, then click on the Review tab and find Spell-Check in the far left corner of the ribbon).
7. Please address your questions to your Program Review Committee representatives or the PR Chair Karin Spirn. Concerns, feedback and suggestions are welcome at any time to PRC representatives or co-chairs.
8. Instructions for submitting your Program Planning Update will be available at the start of the fall semester.

I. STUDENT LEARNING OUTCOMES

Review of academic years 2012-13 and 2013-14

SLO Assessment Review

Review your program’s SLO assessment results through spring 2014 and respond to the following questions.

1. Discuss how assessment results indicate success in student learning. Identify results that indicate a need for improvement.

For Astronomy 10 Our SLO is: demonstrate understanding of distances and time scales in the solar system and the cosmos, differentiate between astronomical science and other systems of thought, and understand basic concepts of planetary science.

Our Criterion for Success is:

1. Greater than 30% of students achieving a score of 3-4 (70th percentile and above).
2. At least 70% in the 2-4 range (30th percentile and above).

Our analysis indicates:

1. In the 4 semesters this SLO has been assessed using the 0-4 rubric, the number of students achieving a score of 3 or greater rose dramatically in the last semester assessed (Fall 2013) to 93% from prior semesters averages of 70 to 75%
2. 100% of assessed students received scores of 2 or greater in all four semesters. .

Actions to be taken:

1. Continue to assess using the same SLO.
2. Since students who complete the course are performing well on this SLO, a reasonable goal is to increase numbers of students at the end of the course (final exam) to create a larger sample size. This will have the added benefit of improving retention and student success.
3. Add an additional SLO involving a wider scope of course skills and knowledge.

For Astronomy 20 our SLO is: demonstrate mastery of concepts and course knowledge through performance on a comprehensive final examination.

Our Criterion for Success is:

1. Greater than 30% of students achieving a score of 3-4 (70th percentile and above).
2. At least 70% in the 2-4 range (30th percentile and above).

Our analysis indicates:

1. In the 1 semester this SLO has been assessed using the 0-4 rubric, the number of students achieving a score of 3 or greater is 77%
2. In the same semester, 93% achieved a score of 2 or greater.
3. 7% received a score of 0 to 1

Actions to be taken:

1. Continue to assess using the same general SLO.
2. Strongly encourage adjunct instructors who currently teaching astro 20 to assess this course using the same SLO.
3. Add an additional SLOs testing specific aspect of course knowledge such as scale of the Universe, Cosmology, properties of stars and Galaxies, and tools of the astronomer.

For Astronomy 30 our Criterion is:

Final Project or Exam / Full Semester

students will demonstrate their understanding of principles, techniques, and methods of analysis for observational astronomy, including constellation and bright star identification, and awareness of seasonal changes in the night sky.

Our analysis indicates:

1. In both semesters evaluated, scores in the 3 – 4 range are very high, 80, and 90% respectively.
2. 100% of students evaluated scored 2 or higher.

Actions to be Taken:

1. Continue to assess using the same SLO each semester, including those semesters where the course is only taught by adjunct instructors.
2. Assess the same in both distance education and on campus sections to allow for a comparison.
3. Try to increase retention both for student success and to increase the validity of the assessment. At present, only students remain in the class who are likely to succeed at a high level on the SLO.
4. Assess students using other current SLO's that test specific learning outcomes in constellation recognition, data analysis, and telescope use.

For Physics 10 our SLO is performance on a comprehensive final exam. Our Criterion for success is:

1. Greater than 30% of students achieving a score of 3-4 (70th percentile and above).
2. At least 70% in the 2-4 range (30th percentile and above).

Our analysis indicates:

1. From SP13 - SP14, there is a general increase in the % of students getting a score of 3-4 (70th percentile and above) from 30% to 43.5%.
2. Also, the number of students scoring 2-4 (in the 30th percentile or above) has gone from 90% to 96% from SP13 to SP14.

Actions to be taken:

1. Continue to assess and monitor achievement of criteria for success.
2. Add a new SLO involving lab skills and use of instrumentation.
- 3.

For Physics 10L our SLO is performance on a comprehensive Lab Practicum and our Criterion for success is:

1. Greater than 30% of students achieving a score of 3-4 (70th percentile and above).
2. At least 80% in the 2-4 range (30th percentile and above).

Our analysis indicates:

1. In both Semesters assessed (Fall 12 and Fall 13), 100% of students received a score of 3 – 4.
2. In fall 2012 70% of students received a score of 4, while 30% received a score of 3. In fall of 2013, the ratio improved to 100% receiving a score of 4.

Actions to be taken:

3. Implement other SLO such as a comprehensive final exam
4. Continue to assess future sections to get a representative data set, as both semesters assessed had a relatively small number of students who had completed the course.

**For our 8A Our SLO is a: A comprehensive Final Exam:
our criterion for Success is:**

1. Greater than 30% of students achieving a score of 4-6 (67th percentile and above).
2. At least 75% in the 3-6 range (50th percentile and above).

Our analysis indicated:

No Assessments have been done for any physics 8A sections during this assessment period.

Actions to be taken:

1. Current SLO Assessments will be performed for both sections currently being taught in fall 2014. In addition, there will be three sections taught in spring of 2015 and assessments will be performed for those sections. Since we have a new full time instructor teaching physics 8A, SLO assessments will be performed in fall 2015 and in all subsequent semesters.
2. Agreement to perform SLO's should be made part of the agreement for an adjunct instructor to accept a physics course, particularly in physics 8A.

**For 8B, 8C, 8D Our SLO is a: A comprehensive Final Exam:
our criterion for Success is:**

1. Greater than 30% of students achieving a score of 4-6 (67th percentile and above).
2. At least 75% in the 3-6 range (50th percentile and above).

Our analysis indicates:

1. Students in the single Assessed sections of 8C, and 8C had a wide range of outcomes, but our success criterion was easily met, with 62.5% of students with scores in the 67% or above, and 94% of students in the 30% or above on the SLO

Actions to be taken:

1. Primary action required is additional assessments of courses taught by adjunct and new Full time instructors.
2. A second SLO should be assessed that measures the student's ability to conduct experiments and analyze data.
3. No other changes are indicated at present. Due to lack of assessments, more data is required.

**For Physics 2A and 2B: Our SLO is A comprehensive Final Exam:
Our criteria for success is:**

1. Greater than 30% of students achieving a score of 4-6 (67th percentile and above).
2. At least 75% in the 3-6 range (50th percentile and above).

Our analysis indicates:
No Assessments have been done for any physics 2A and 2B sections during this assessment period.

Actions to be taken:

3. Current SLO Assessments will be performed for sections currently being taught in fall 2014. In addition, there will be a section taught in spring of 2015. Assessments will be performed for that and future sections. Since we have a new full time instructor teaching physics 8A, SLO assessments will be performed in fall 2015 and in all subsequent semesters.
1. Agreement to perform SLO's should be made part of the agreement for an adjunct instructor to accept a physics course, particularly in physics 2A.

2. Discuss how distance education courses assessment results compare to face-to-face courses, if applicable? (*Respond to this question if your program has distance education courses.*)

Assessments have been done for only distance education classes in astronomy 10, 20, and 30, and only distance education classes for physics 10, and 10L. Conversely, assessments have only been done for on campus sections of Physics 8A, 8B, 8C, 8D.

No assessments have been done for physics 2A and 2B.

3. Discuss how your discipline, or someone in your discipline, made changes in pedagogy as a result of SLO assessment results.

There have been no changes in pedagogy as a result of SLO assessment. This is less a result of program review data, and more a result of turnover in the physics and astronomy department, and lack of consensus between instructors, including adjuncts and our recently departed full time instructor. It is believed from what SLO data exists, that physics 8A-8D is succeeding as is, so that no substantial pedagogical changes are required. However, SLO data has highlighted that a relatively small numbers of students complete physics 10L and astronomy 30. In these courses. As a result we have chosen not to schedule physics 10L for Fall and spring 2014. Astronomy 30 is being taught as an on-campus, rather than a Hybrid class with the hope that this will improve student success.

Furthermore, we have added a full time instructor for Physics and Astronomy. It is our belief that this will improve continuity and retention overall.

4. Give an example of a change in the number of units and/or lab hours based on assessment data, if applicable.

N/A

5. Did your program discover the need for additional resources (for AY 2015-16) based on the assessment results? YES NO

If yes, please explain.

[Click here to enter text.](#)

SLO Process

1. Describe how your program reaches consensus when writing student learning outcomes that are used in multiple sections.

My program offers only one section of each course.

Prior to Fall of 2015, there was little or no consensus in our programs. There was some conversation between our adjunct instructors and one of our full time instructors (Harpell), but absolutely no conversation between the full time instructors as a result of poor health and disinterest by of the instructors. Since that instructor has passed away and been replaced by a new full time instructor, coordination has improved dramatically. There are weekly meetings between the full time instructors—usually in the laboratory—and frequent impromptu meetings between adjunct instructors and full time instructors, typically including the laboratory technician. Although there are rarely formal agendas for these meetings, virtually all areas of instruction are discussed. The next step will be to more fully integrate our full time instructor in all departmental areas such budgeting, staffing, and laboratory pedagogy and equipment. Generally New faculty members in Science are expected to focus on teaching

during their first semester.

2. Describe how your program reaches consensus when developing and evaluating assessment results for student learning outcomes that are used in multiple sections.

My program offers only one section of each course.

There has been no consensus regarding SLOs. This situation is currently changing. Prior to Fall 2015, only one instructor (Harpell) has done SLOs in our department. However, with the arrival of our full time instructor, and the new contract adjunct participation in SLO's, we believe that there will be significant improvement in consensus and discussion among faculty, particularly with regard to SLO's.

3. What methods does your program use for documenting SLO related discussions? Check all that apply.

Program emails

Program meeting minutes/agendas

Blackboard/other website

Other (please describe):

Our department meetings are generally informal discussions between adjunct and full time instructors. More coordination has occurred interdepartmentally, particularly between math, chemistry, and physics.

II. PROGRAM ANALYSIS

Review of academic years 2012-13 and 2013-14

Review the student data provided by the Office of Institutional Research and any additional data your program has collected. Then respond to the sections below.

A. Data Review

If applicable, summarize any **changes** in your program's data since the Annual Program Review of 2011-12 or observed significant trends that will affect program planning or resource requests.

NOTE: Only include changes that affect student learning, program planning or resource requests.

For Astronomy:

The number of Latino students taking astronomy have nearly doubled, from about 15 to 29% since the last program review. Otherwise, trends are amazingly consistent in success, fill rate, and completion rate. Likewise, FTEF, FTEF, and WSH have been very consistent from 2011 to 2014.

For Physics:

The number of all students taking physics jumped significantly in Fall 2012, by 43% over the number of all physics students in Fall of 2011. A similar increase was seen in spring 2013 compared with spring of 2012. The number of students has held steady in fall 2013 and spring of 2014.

As with astronomy, the number of Latino students has increased by nearly 100% since 2011, reflecting an overall campus wide increase.

Along with an increase in the total number of students taking physics classes, there has been a slight and expected decrease of about 5% in the percentage of students completing the classes. This can likely be seen as a wider scope of students attempting physics than in 2011.

Another expected change has been an increase in the FTES of about 15%, and a drop in WSCH/FTEF of about 5%.

Clearly, our physics program has expanded significantly.

B. Program-Set Standard for Successful Course Completion Rates

Your program-set standard for successful course completion rates (i.e., number of grades of 'A', 'B', 'C', 'CR', and 'P' divided by total grades) is calculated by averaging successful course completion rates for your program over a five-year period and then multiplying that result by 95%.

In order to determine if you have achieved your program-set standard for successful course completion rates for a given year (e.g., 2012-13), you will need to assess if your program met or exceeded 95% of the previous 5-year average (i.e., 2007-08 through 2011-12) for your program; these calculations are done for you (*see links below*).

1. What was your program-set standard for successful course completion rates in 2012-13 and 2013-14?

	Program-Set Standard for successful course completion	Did you meet your program-set standard? (Yes or No)
2012-13	http://tinyurl.com/mmfwgfe	Yes
2013-14	http://tinyurl.com/q6dah55	Yes

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

Both were yes.

C. Curriculum Review

1. Review your program’s current curriculum. If applicable, describe any internal or external impacts which will affect your curriculum plans for 2015-16.

All physics courses are due for a Title V update, with physics 10, 2A, 2B, 10L outlines the least recently updated. These will be updated as soon as time permits, as well as the 8A-8D outlines, in concert with the development of the ADT degree in physics. Currently, we are at an impasse regarding the Unit value required for an ADT degree. Since Mathematics is a prerequisite for physics, and math 1, and 2 are 5 unit classes, this places a burden on physics to reduce its unit load for physics 8A,8B,and 8C from 5 unit to four units, and or eliminate physics 8D. Since our SLO data indicates that physics is going well as is, and none of our students have indicated a desire to transfer to CSU in physics, we are so far reluctant to make any unilateral changes to our curriculum.

D. Human Resources

1. Have there been changes in the number of full-time or part-time faculty associated with your program since the Annual Program Review of 2011-12? If yes, briefly describe the changes.

We have hired a new full time instructor for Physics and Astronomy. This instructor replaces a full time instructor who passed away. Due to illness, and the time required to replace him, there were more sections taught by Adjuncts in 2013 and 2014 than in previous

semester. Sections taught by adjunct faculty have remained roughly constant from 2011 to Spring 2013. In Fall of 2014 the number of sections taught by adjuncts has increased by approximately 4—the number that taught by our departed full time instructor. In the Spring of 2014, the number of adjunct instructors increased by two, due to sabbatical leave of the one remaining full time instructor. Both adjuncts have stayed on to teach in Fall of 2014. In Fall of 2015, the number of sections taught by adjuncts in physics is 1 (physics 8B), and in astronomy 2 (astronomy 10, and astronomy 30). It is anticipated that this level will remain constant for the foreseeable future.

2. Have there been changes in the number of full-time or part-time classified staff associated with your program since the Annual Program Review of 2011-12? If yes, briefly describe the changes.

The number of classified staff for our department remains constant at one full time ten month laboratory technician that supports both physics and Engineering. A proposal has been submitted to increase the lab tech position to full time 12 months. We believe this change is necessary to support the increased number of students in both physics and Engineering

3. If applicable, describe how the changes indicated in 1 and 2 have impacted student learning?

N/A

E. Other information pertinent to the program

The hiring in Fall 2015 of a Full time instructor in physics and Astronomy is a welcome addition, It is certain that her arrival will permit the senior faculty member (Harpell) to reduce his large teaching load, and traditional 100 % share of departmental responsibilities

III. PLANNING

A. Planning Update

Summarize your program's plans, initiatives, and objectives accomplished since the Annual Program Review of AY 2011-12 (include accomplishments for the academic years 2012-13 and 2013-14).

1. We have applied for and received one institutional grant and one foundation grant to keep our equipment in synch with changing technology, and increasing numbers of students.
2. We are in the process of applying for another instructional grant for 2015 similar in scope to our grant in 2014. This grant will allow us to reduce the size of our lab groups from 4 or 5, to 2 or 3, providing more individual hands-on experience and problem solving. The grant will also allow us to move our telescope dome from its current area under bright lights to a much darker but accessible spot on campus owned land.
3. We have maintained the continuity of our classes and programs in spite of the death of a full time instructor, the loss of our lab technician and hiring of his replacement, and the sabbatical leave of our remaining full time instructor. In fact, their replacements have improved the level of instruction and satisfaction for both students and staff.

B. Program Planning for AY 2015-16

As appropriate for your program, please address each of the following areas. For each area, describe your program's plans, initiatives, and objectives for the academic year 2015-16. Focus on how planning will impact student learning or the student experience at Las Positas College.

1. SLO assessments. NOTE: 100% of courses in your disciplines should be assessed a minimum of once every two years. As a guideline, each program should be assessing 25% of its courses every semester.
 1. How does your program plan to use assessment results for the continuous improvement of student learning? Examples might include (Your responses may vary.):
 - changing number of units/lab hours
 - changing pedagogy/curriculum
 - changing assessments

SLO's will continue to be assessed in every course taught by our full time instructor.

Adjunct instructors will be encouraged more strongly to assess their sections using existing SLO's and/or their own SLO's. We have no current plans to change lab or lecture hours in any of courses. However, we are strongly considering what changes could be made should we be required to offer an ADT in Physics.

2. Have your assessment results shown a need for new SLOs? YES NO
 If yes, in the table below, state the number of courses in your program and estimate the percentage of courses for which your program will write new SLOs.

Number of Courses	Estimated Percentage for which new SLOs will be written
11	55%

3. What percentage of courses will your program assess in the next academic year (2015-16)?

90% (physics 10L will not be offered in 2015-2016)

4. In order to budget to pay part-time faculty to work on SLOs during the academic year 2015-16, estimate the number of part-time faculty in your program and the percentage of them who are likely to participate in the SLO process in 2015-16.

Estimated Number of Part-time faculty	Estimated Percentage who will participate in the SLO process
2	100%

4. Curriculum

- a. Considering the criteria of relevance, appropriateness, achievement of course objectives, currency, and future needs and plans, will your program be making any changes to **existing** curriculum to address any of these criteria? If yes, please describe the changes and your program's reasons for the changes. Please provide any data which supports your program's reasons for the changes to your curriculum. Include a discussion of how the changes will improve student learning.

There are no direct changes in curriculum planned. However, new laboratories for physics 8A, 8B, 8C and 8D, along with worksheet based problem solving sections are being tested this semester. These will help the students taken on a more investigative role in learning physics, and provide more opportunities for collaborative problem solving—a skill

becoming increasingly more important in physics and Engineering.

- b. Will new curriculum be submitted to the Curriculum Committee for the academic year 2015-2016? If yes, please describe briefly what new curriculum is planned and the rationale for the new curriculum. Please provide any data which supports your reasons for the new curriculum. Include a discussion of how the changes will improve student learning.

As time permits, new course outlines for physics 10, 2A, and physics 10 to reflect updated Title V standards will be submitted prior to the next program review. Due to the debate over the ADT, it is likely that the outline updates for physics 8A-8D will be submitted later.

5. General Program Planning

Use this area to describe any program plans, initiative, or objectives your program wishes to accomplish in 2015-16 and their impact on student learning or the student experience. Focus on what the plans are and how they are to be accomplished (not resources needed).

As mentioned, new laboratories are being designed and tested as time permits by our full time instructor, and most recently by one of our adjunct faculty members (White). These labs will help unify the physics 8 series curriculum to facilitate collaborative problem solving, data analysis, and numerical modeling—reflective of changes taking place in physics and engineering at transfer institutions and in the workplace. Our New full time faculty member is also adapting and changing physics laboratory experiments to fit her teaching style and the needs of her students. Our instructional grant for Fall 2015 will allow us to scale up our prototype experiments so that they can be done by each lab group. Furthermore, we are applying for funds to increase the number of “sets” of lab equipment from 6 to 8 or 12 so that less students will have to work together on the same piece of equipment.

We also hope to integrate a more active astronomical observation program in our astronomy course by having a dark location on campus for students to access our large telescopes. The instructional grant for fall 2015 requests funding for this program.

IV. Resource Requests for AY2015-16

Complete all areas that apply to your program's resource needs for 2015-16 (**not all areas apply to all programs**).

For each request, in the rationale section:

- Describe how meeting this request will improve student learning or the student experience.
- Provide any data or evidence which supports this request.

A. Enrollment Management

1. Request: New FTEF. Indicate amount being requested.

We would like to increase our FTEF by approximately .5 in order to “split” the current double sections of physics 8A and 8B.

2. Rationale for request(s).

Our total number of physics students has increased by 40% over 2011 levels. In addition, we believe that a double section of physics 8A, 8B, and 8C is not optimal pedagogy, although it is in some cases a necessary strategy for accommodating a temporally large number of physics students. However, as numbers of students continue to hold a current levels, we believe that planning for these students requires us to add sections. In addition to the larger uncompensated load for the instructor, a double section does not allow for the needed flexibility to use the lab sessions to help with collaborative problem solving, remediation, review, and ultimately improved student success.

B. Human Resources

1. Request: New or replacement faculty position(s).

Fortunately, our new faculty member is now hired and teaching classes as of Fall 2015.

2. Rationale for faculty position request(s).

N/A

3. Request: Classified staff position(s) (for example, new or replacement classified staff position(s) or increasing classified hours/position level).

Our classified need is met with one qualified individual at present. However, the classification of our lab assistant and the tenth month schedule make it difficult to retain talented individuals, and address the needs of a much larger (and growing) physics and engineering program than was typical when the position was originally funded. As a result, we have submitted a proposal to increase our laboratory technician position for physics and Engineering from a ten month to a twelve month position.

4. Rationale for classified staff position request(s).

although our laboratory technician for physics and Engineering is doing exemplary work, the near doubling in the number of students and laboratory sections has made the task of repairing and replacing equipment, building new demonstration equipment, organizing, budgeting, and assisting instructors utilizing and properly maintaining hardware a task beyond the scope of one individual in a 10 month position. In addition, longer term maintenance and repair projects that are left unfinished during the busy Fall and spring Semesters can be completed in the summer.

C. Financial

1. Request: Maintenance of, or increase in, existing program budget (e.g., for supplies, etc.).

Our supply budget is adequate if we only need to purchase consumables. However, physics equipment frequently breaks down and needs replacement. Given the current climate, we believe that the current budget for physics and astronomy is sufficient. However, Engineering does not have its own budget and is effectively sharing with physics and astronomy. We strongly suggest that Engineering be given its own budget without cutting the physics and astronomy budget. When equipment breaks and must be replaced, this comes out

of the supply budget. If Engineering equipment and supplies are included, then we have far too little funding to support both programs sustainably.

2. Rationale for financial request(s).

See above.

D. Technology (software only – discuss hardware in section E)

1. Request: Upgrade existing software or purchase new software.

.Software is adequate but control of software is too limited....we cannot update or download necessary components of programs without IT assistance, which is often days, weeks or possibly months in arriving. For example, the physics laptop computers we use almost exclusively to run one particular software program (Vernier Labpro) are set to wipe out driver for the program every time.

2. Rationale for technology request(s).

See above.

E. Facilities, Equipment (include technology hardware), and Supplies

1. Request: Renovation or upgrade of existing facilities or new facilities.

As mentioned, we are seeking to purchase a small portable astronomy dome and shed so that our telescope and related equipment can be housed on a dark spot on campus where it can be used effectively.

2. Rationale for facilities request(s).

See above.

3. Request: Upgrading of existing equipment or purchase of new equipment.

The current astronomy dome is beyond repair. The current location for the dome is now besides M and O, and the lit athletic fields—none of which was the case when it was constructed over a decade ago.

4. Rationale for equipment request(s).

See above

5. Request: New supplies

Engineering will need its own supply budget so that physics can purchase its own supplies and fix its own equipment.

6. Rationale for supplies request(s).

There just isn't enough money for both programs to share in the long term. Physics has adequate supplies at present.