- APRU Complete for: 2017-18
- Program Mission Statement: The mission of the physics program is to convey an understanding of the fundamental laws of nature such that also developed is a student's ability to think critically and independently for herself. By learning the established scientific procedures of posing hypotheses and testing them with experimental data, a successful student leaves our department with the ability to logically analyze and evaluate information with confidence. This ability allows the student to gain insight and make meaningful and logical conclusions about the problems encountered throughout the course of her life.

Our PLOs connect to the school's mission and core competencies by developing the intellect in encouraging thoughtful, deliberate, mindful, and patient reasoning and the methods learned empower the student as a valuable player in any problem solving environment within the community and society at large. Students hone their communication skills when participating in oral and written assignments by writing lab reports, completing lab projects and convincingly expressing their thoughts and opinions to their peers and professors. We develop the science and art of critical thinking by inculcating the use of logical reasoning in the application of the fundamental laws of nature to our world.

- I.A.1 What is the Primary Focus of Your Program?: Transfer
- I.A.2 Choose a Secondary Focus of Your Program?: Personal Enrichment
- I.B.1 Number Certificates of Achievment Awarded:
- I.B.2 Number Certif of Achievment-Advanced Awarded:
- I.B.3 #ADTs (Associate Degrees for Transfer) Awarded:
- I.B.4 # AA and/or AS Degrees Awarded:
- I.C.1. CTE Programs: Impact of External Trends: N/A
- I.C.2 CTE Programs: Advisory Board Input: N/A
- I.D.1 Academic Services & Learning Resources: #Faculty served:
- I.D.2 Academic Services & Learning Resources: #Students served:
- I.D.3 Academic Services & Learning Resources: #Staff Served:
- I.E.1 Full time faculty (FTEF): 8.5
- I.E.2 #Student Employees: 0
- I.E.3 % Full-time : 35 %. It has not changes significantly.
- I.E.4 #Staff Employees: 0
- I.E.5 Changes in Employees/Resources: Starting n 2013-2014 our program has been negatively impacted by the loss of our lab technician position. The lab technician allowed us to:

a) perform physics demonstrations (by setting them up) in the lecture that positively impact targeted student populations

b) have a physical presence on the campus with displays that encouraged participation in the program particularly for targeted groups that may not have a background that involved exposure to the direct application of physics principles in the community (solar cells for example a conservation energy idea)

c) use lab equipment that was ensured to be working because the tech made it so before the lab began. Have equipped not maintained (our current state) deceases the number of physical

experiments that can be conducted causing larger lab groups (two is optimal, four per station is unacceptable) which tends to decrease participation particularly among students in targeted groups who are likely to become passive and allow other students to take the lead.

d) have more time for lab instruction rather than wasting class time repair equipment on the fly while students passively stare at their cell phones.

- II.A Enrollment Trends: We have a current targeted group success percentage of 54%. This is up from a 2014-2015 value of 46%. That is a 17% increase.
- II.B.1 Overall Success Rate: Success rate is up from 54% three years ago to 64% for the last two years.
- II.B.2 Plan if Success Rate of Program is Below 60%: Success rate is 60% or higher
- II.C Changes Imposed by Internal/External Regulations: N/A
- III.A Growth and Decline of Targeted Student Populations: We have seen a small improvement in overall success rates and the equity gap during the past 5 years. In the flagship class of the physics department, 4A, there has been a significant 21% increase in overall success and a reduction in the equity gap from 22% to 11%.
- III.B Closing the Student Equity Gap: The success rate is holding steady within typical, and not unusual, statistical fluctuations at about 64 to 66%.
- III.C Plan if Success Rate of Targeted Group(s) is Below 60%: Our rate is below 60%.

Having faculty identify targeted students needing help and support is an effective method to help reduce the equity gap. We have held a meeting to discuss a plan that focuses on early intervention (first two weeks of classes) for targeted groups.

Action: All faculty have been encouraged to have a plan to address students who are struggling during first two weeks of class.

It is essential that our lab technician position be restored if we have a realistic chance of significant change in the success rate of targeted groups. Targeted groups are affected disproportionately because of the absence of a lab technician that helps bring the subject matter "alive" for students coming from disadvantaged backgrounds. A lab technician allows the department to

a) conduct lectures with relevant physical demonstrations that positively impact targeted student populations

b) have a physical presence on the campus with displays that encourage participation in the program particularly for targeted groups that may not have a background that involved exposure to the direct application of physics principles in the community (solar cells are for example a conservation energy idea: a large display of this would draw attention of students). There should be a different display every two weeks on the quad to bring in students with a "show me" mindset. Without the lab tech we can't do this. With a lab technician these outdoor activities would lift up the creative spirit of the physical sciences on campus

c) maintained lab equipment. Failing equipment deceases the number of "setups" for

experiments that can be conducted; this causes larger lab groups and decreased participation particularly among students in targeted groups who are likely to "hang back" and allow other students to take the lead (in a student group of 3 or 4 instead of 2)

d) lab instruction is reduced as professors spend more time doing provisioning of equipment during

e) Our department has been growing in enrollment (about 6 % per year) and classes over the last two years and each of these problems listed becomes even more problematic

Action: We plan to advocate for a restoration of our lab technician position

Mentoring, support, and counseling from other support programs such as EOPS, PUENTE and BASIC SKILLS are critical in continuing the effort to reducing the equity gap.

Action: We plan to encourage participation in these programs by contacting the programs to figure out the best ways to work the respective programs.

- III.D Departmental Equity Planning and Progress: Our equity gap decreased for the 2014-2015 year from 19 % difference to 14 % difference.

See above for our plans to address the equity gap.

- IV.A Cycle 2 PLOAC Summary (since June 30, 2014): 0%
- IV.B Cycle 2 SLOAC Summary (since June 30, 2014): 0%
- V.A Budget Trends:
- V.B Funding Impact on Enrollment Trends:
- V.C.1 Faculty Position(s) Needed: Growth
- V.C.2 Justification for Faculty Position(s): The percentage of courses taught by full timers has decreased from approximately 40% to lower than 35% and the percentage of courses taught by part timers has increased over the same time period to a current value of over 48%, a 36% increase. The quality of instruction would improve with a reversal of this negative trend by the hiring of a 4th full time physics instructor.

Full-time faculty typically have a stronger physical presence on campus than part timers and give added value to the student experience. Full-time faculty are often more generally available than part-time faculty and have a long term perspective.

The recruitment, hiring, mentoring and evaluation of part=-time faculty members taxes the fulltime faculty members and part-time faculty members often have a learning curve as they become more effective at conducting classes. This extra pressure on the department would be lifted significantly if a new full-time faculty member was hired.

- V.D.1 Staff Position(s) Needed: Growth position
- V.D.2 Justification for Staff Position(s):: a) conduct lectures with relevant physical demonstrations that positively impact targeted student populations

b) have a physical presence on the campus with displays that encourage participation in the program particularly for targeted groups that may not have a background that involved exposure

to the direct application of physics principles in the community (solar cells are for example a conservation energy idea: a large display of this would draw attention of students). There should be a different display every two weeks on the quad to bring in students with a “show me” mindset. Without the lab tech we can’t do this. With a lab technician these outdoor activities would lift up the creative spirit of the physical sciences on campus

c) Lab equipment has not been maintained which deceases the number of physical experiments that can be conducted; this causes larger lab groups and decreased participation particularly among students in targeted groups where other students may tend to dominate the use of equipment (in a student group of 3 or 4 instead of 2, it is far easier for a participant to go passive and tune out).

d) lab instruction is reduced as professors spend time doing provisioning of equipment during

e) Our department has been growing in enrollment and classes over the last two years and each of these problems listed becomes even more problematic

- V.E.1 Equipment Requests: Over $1,000
- V.E.2 Equipment Title, Description, and Quantity: We need twenty lap tops for the laboratories, ten in each lab. These are to replace the desktop computers that have occupied the same location for many years and have now been removed. They would be of the district's standard laptop for Windows, the Dell Latitude E5540. The cost would be about $30,000, total.
- V.E.3 Equipment Justification: Modern computer controlled lab experiments bring the physics “alive” in a way that has appeal to students who do not have a strong background, or personal familiarity with the uses of physics. It is expected that the majority of this equipment will be used in the regular sequence of physics classes and replace older labs that are less interactive. Some of the equipment will be used for demonstrations in the non-sequence (GE level) classes which often channel students into the regular sequences classes, increasing our enrollment.
- V.F.1 Facility Request: Both physics labs are already fully equipped for electricity and internet connections because the same space has already had computers there. Nothing new would be needed except the anchoring of the laptops to the lab's side bench.
- V.F.2 Facility Justification: None needed since it is ready right now.
- V.G Equity Planning and Support:
- V.H.1 Other Needed Resources:
- V.H.2 Other Needed Resources Justification:
- V.J. "B" Budget Augmentation:
- V.K.1 Staff Development Needs:
- V.K.2 Staff Development Needs Justification:
- V.L Closing the Loop:
- For 2016-17 Submitted by: David Newton ext 8668
- Last Updated: 04/10/2018
- #SLO STATEMENTS Archived from ECMS: