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1. 2018-19 Annual Program Review Update Submitted By: David Newton
2. APRU Complete for: 2018-19
3. 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. 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 a career in a variety of fields especially within the STEM arena.

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.

4. I.A.1 What is the Primary Focus of Your Program?: Transfer
5. I.A.2 Choose a Secondary Focus of Your Program?: Personal Enrichment
6. I.B.1 Number Certificates of Achievement Awarded:
7. I.B.2 Number Certif of Achievement-Advanced Awarded:
8. I.B.3 #ADTs (Associate Degrees for Transfer) Awarded:
9. I.B.4 # AA and/or AS Degrees Awarded:
10. I.B.5 Strategies to Increase Awards :
11. I.C.1. CTE Programs: Review of Perkins Core Indicator and SWP Outcomes Metrics: N/A
12. I.C.2 CTE Programs: Labor Market Demand and Industry Trends :: N/A
13. I.D.1 Academic Services & Learning Resources: #Faculty served:
14. I.D.2 Academic Services & Learning Resources: #Students served:
15. I.D.3 Academic Services & Learning Resources: #Staff Served:
16. I.E.1 Full time faculty (FTEF): 7.9
17. I.E.2 #Student Employees:
18. I.E.3 Ratio % of Full -time Faculty Compared to % Part-time Faculty Teaching: 38 %. Up from 35.
19. I.E.4 # Staff Employees: Ching Bays does a fantastic job as our computer tech.
20. I.E.4 #Staff Employees: 0
21. 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) decreases 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.

22. II.A Enrollment Trends: We have a current targeted group success percentage of 46%. This is back to our 2014-2015 value from a high of 54.

23. II.B Overall Success Rate: Success rate is 60%.

24. II.C Changes Imposed by Internal/External Regulations: N/A

25. III.A.1 Growth and Decline of Targeted Student Populations: 2017-18

Enrollment: 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%.

26. III.A.2 Targeted Student Populations: Growth and Decline: African-American is at a five year low of 40 enrollment. Filipinx is pretty good at 112. Latinx is strongly up to 246 from 196 last year.

27. III.B.1 Closing the Student Equity Gap: Success Rates: African-America 38%. Filipinx 43%. Latinx 50%. Pacific Islander 44%. Asian 63% White 66%.

28. III.B.2 Closing the Student Equity Gap: Withdrawal Rates: African-America 40%. Filipinx 32%. Latinx 35%. Pacific Islander 33%. Asian 21% White 21%.

29. III.B.3 Closing the Student Equity Gap: 2017-18 Gap: 69% is the non-targeted success rate: sample calculation $50-69 = -19$ for the first number found below.

13-14 African-America -19. Filipinx -13. Latinx -23. Pacific Islander 0. Asian -1 White 2.

14-15 African-America -29. Filipinx -10. Latinx -23. Pacific Islander 0. Asian -1 White 2 .

15-16 African-America -11 Filipinx -3. Latinx -14. Pacific Islander 0 . Asian-3 White 2 .

16-17 African-America -13 . Filipinx -2. Latinx -13. Pacific Islander 44. Asian -3 White 5.

17-18 African-America -31 . Filipinx -26. Latinx -19. Pacific Islander -25. Asian -6 White 3 .

30. III.C Action Plan for Targeted Group(s): Our rate is below 60% and is unacceptable.

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 decreases 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.

31. 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.

32. III.E Assistance Needed to close Equity Gap:
33. III.F Integrated Plan goals: current student equity data and action plan:
34. IV.A Cycle 2 PLOAC Summary (since June 30, 2014): 0%
35. IV.B Cycle 2 SLOAC Summary (since June 30, 2014): 0%
36. V.A Budget Trends:
37. V.B Funding Impact on Enrollment Trends:
38. V.C.1 Faculty Position(s) Needed: Growth
39. V.C.2 Justification for Faculty Position(s): The percentage of courses taught by full timers is 38%, well below a value where one would expect a thriving, upbeat department. As the full time cadre of teachers grow long in the tooth, having only a younger set of part-timers damages the progress of the department into the future of teaching. Transfusion alert: the department needs new blood, full-time blood. For the first time in over thirty years, your writer is now concerned that even his own position will not be renewed after retirement comes, whittling the full time department down even further. Can this be allowed?

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 full-time 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.

40. V.D.1 Staff Position(s) Needed: Growth position
41. 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 decreases 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

42. V.E.1 Equipment Requests: Over \$1,000

43. 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.

44. 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.

45. 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.

46. V.F.2 Facility Justification: None needed since it is ready right now.

47. V.G Equity Planning and Support:

48. V.H.1 Other Needed Resources:

49. V.H.2 Other Needed Resources Justification:

50. V.J. "B" Budget Augmentation:

51. V.K.1 Staff Development Needs:

52. V.K.2 Staff Development Needs Justification:

53. V.L Closing the Loop:

54. Last Updated: 04/10/2018

55. #SLO STATEMENTS Archived from ECMS: