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2019-20 Annual Program Review Update Submitted By: Jerry Rosenberg

APRU Complete for: 2019-20

Program Mission Statement: The Program Mission Statement is expressed in terms of the Department PLO's:

• Students will demonstrate familiarity with the wide range of engineering disciplines and the general requirements and skills necessary to pursue a career in those areas.
• Students will demonstrate a general understanding of engineering project development cycle including analysis, design, implementation, documentation, and refinement. They will also demonstrate a familiarity with the tools commonly used during those phases.
• Students will demonstrate the necessary discipline specific technical knowledge and skills required to successfully transfer to an engineering baccalaureate program.

The Department Mission aligns with the College Mission and Core Competencies by:
• challenging students of every background to develop their intellect, character and abilities and skills in relation to engineering – including the development of "soft" skills such as group and community action and leadership and social responsibility

• preparing students who wish to pursue studies and/or careers in engineering to realize their goals;
• preparing students to effectively communicate technical and other ideas through writing and speaking
• expecting students to be able to find and generate information and to judge its validity and usefulness through critical judgement
• establishing connections between engineering and cultural, social and environmental values and actions

I.A.1 What is the Primary Focus of Your Program?: Transfer

I.A.2 Choose a Secondary Focus of Your Program?: Basic skills

I.B.1 Number Certificates of Achievment Awarded: 0

I.B.2 Number Certif of Achievment-Advanced Awarded: 0

I.B.3 #ADTs (Associate Degrees for Transfer) Awarded:

I.B.4 # AA and/or AS Degrees Awarded:

I.B.5 Trends in # Degrees Awarded:

I.B.6 Strategies to Increase Awards:

I.C.1. CTE Programs: Review of Perkins Core Indicator and SWP Outcomes Metrics:

I.C.2 CTE Programs: Labor Market Demand and Industry Trends ::

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): 0

I.E.2 #Student Employees: 0

I.E.3 Full Time Load as a %: 0.0%

I.E.4 # Staff Employees: Although the Engineering Department has no staff employee specifically assigned to it, the PSME Division's Computer Laboratory Administrator, Ching Bays, has been very helpful in supporting various Engineering classes and their laboratory operations and equipment.

I.E.4 #Staff Employees:

I.E.5 Changes in Employees/Resources:

II.A Enrollment Trends: Enrollment declined during the past 5 year review period by 19%, which is slightly less than the overall campus decline during the same period of 19.8%. However, very large fluctuations in enrollment have occurred during those five years, including a positive growth of about 20% and a subsequent large decline. These fluctuations are to a large part a result of the number of qualified instructors who are available to teach in this discipline from year to year. The sudden and unexpected death of a popular and effective instructor about three years ago initiated a steep decline in enrollment, and a leave taken by another instructor last year further exacerbated the problem. During the past year we have lost instructors who have found full-time positions in other Colleges and in industry. The enrollment potential for the department is relatively high and enrollments are limited by lack of any full-time faculty in the department and by the time and effort required to recruit, train, and retain qualified part-timers. Enrollment for the current Fall and Winter quarters (2019-20) show a modest 5% upward trend from the last report year; however, significant future growth will require a recruiting effort to find highly qualified part-time instructors and a commitment to provide funding to encourage curriculum and program development, including the revamping of courses to better match the needs of students and the development of new courses and certificate programs in conjunction with other College departments.

II.B Overall Success Rate: The overall success rate has increased from 87% to 90% during the past 5 year review period. This is an improvement over past rates and is significantly above other PSME Division departments, well above the 78% overall College success rate, and far above the 69% Foothill Engineering Department success rate.

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II.C Changes Imposed by Internal/External Regulations:

III.A Program Success: See entries below.

III.B Enrollment Trends - Equity Lens: During the past five year report period the engineering enrollment of African American, LatinX, and FilipinX students has increased by 6% in contrast to a 22% decrease in enrollment of the same groups in the College as a whole. Again, this increase in absolute numbers of underrepresented students occurred despite a steep decline in general engineering enrollment and all College enrollment in general. Though the numbers of underrepresented students in engineering increased over the years, they still remain underrepresented as 27% of the total engineering enrollment as opposed to 36% of the College enrollment as a whole. These numbers are far higher than national averages, but still leave significant room for improvement.

III.C Success, Non-Success and Withdraw Rates: Current engineering success rates for African American, LatinX, and Filipinx students differ by less than 1% from those of all other students in the program. This is especially notable when compared to a corresponding 14% gap in the College overall and a 19% gap in all PSME enrollments. There is no substantial difference in engineering withdrawal rates for underrepresented students, though the numbers are too small for significant comparison.

III.D Equity Planning and Support: As can be seen in the almost total elimination of equity gap, the Department has been relatively successful in maintaining equitable opportunities for those students currently enrolled in its courses. There are two areas however in which improvement and focus are needed; 1) increasing the absolute numbers of African American, LatinX, and FilipinX students entering engineering and 2) increasing the number of women participating in engineering programs. Many areas which traditionally form a recruiting pool for engineering (such as mathematics, physics, computer science, and the applied technologies) share a similar recruiting issue. A campus wide effort to increase the numbers of underrepresented students in science and engineering is required. The Department needs to work more closely with the STEM Success Program to recruit underrepresented students and to continue to support them toward a successful fulfillment of their educational goals. An additional STEM Success Counselor who could dedicate themselves to organizing such a recruitment and support system would be invaluable.

III.E Departmental Equity Planning and Progress: Given that no full-time instructors have assignments in engineering, there has been little opportunity for equity planning at the departmental level. However, Yvette Campbell, the STEM Success Program Director will be working with the Department faculty and Dean and reach out to various campus constituencies, including counseling and the Learning Communities, in order to encourage and recruit underrepresented students into our

engineering program. Again, the hiring of a STEM Success Counselor would facilitate the above actions.

III.F Assistance Needed to close Equity Gap: Yes

IV. A. SLOAC Summary:

IV.B Assessment Planning: SLOAC assessments are being carried out this (winter) quarter for ENGR 10 and ENGR 37.

V.A Budget Trends:

V.B Funding Impact on Enrollment Trends: Providing a modest equipment budget for the engineering program will encourage student projects that enhance their educational experience, provide engagement and excitement, and meet the hands on component of curriculum required by transfer institutions.

V.C.1 Faculty Position(s) Needed: Growth

V.C.2 Justification for Faculty Position(s): With 100% of sections taught by part-time faculty and with long term potential growth dependent on the active participation of a full-time faculty member, we anticipate a need for a full time faculty member in the future

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

V.D.2 Justification for Staff Position(s):: Shared STEM Success Counselor; see equity discussion above

V.E Equipment Requests: Equipment resource requests listed on spreadsheet

V.F Facility Request: See Spreadsheet

V.G Other Needed Resources:

V.H.1 Staff Development Needs: Equity training addressing very specific STEM issues, including adequate funding for (100%) part-time faculty. Additional funding for part-time faculty to update and improve curriculum.

V.H.2 Staff Development Needs Justification:

V.I Closing the Loop:

Last Updated: 02/17/2020

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