A. Progress Toward Five-Year Review Planning Goals

A new tenure-track faculty, Alex Sumarsono, joined the program in the Fall of 2019. He replaced Howard Lei who left in 2017.

B. Program Changes and Needs

Overview: The Computer Engineering program was established in 2007 as an option under engineering. The program is now a standalone accredited major. The enrollment in the program has been increasing consistently. As of the fall quarter of 2019, the enrollment is 161 students. Three tenure-track faculty, Roger Doering, James Tandon, and Alex Sumarsono support this program.

Curriculum: We have transformed the curriculum in transition to semester offerings. The

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. (ILO 3 & 4)
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. (ILO 1 & 2)
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies. (ILO 1, 2, & 4)

B. **Program Learning Outcome(S) Assessed**

PLO(s) (e.g., annually, first time, part of other assessments, etc.)

Year 1: 2019-2020	
1. Which PLO(s) to assess	2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. **(ILO 1 & 5)**
2. Assessment activity	Exam Problems
3. Assessment instrument	Program rubric
4. Sample (courses/# of students)	ENGR 230 Electric Circuits
5. SLO from the course	1) Understand the operation of basic circuit elements - resistors, capacitors, inductors, operational amplifiers 2) Analyze and compute electrical quantities of voltage, current, and power in a circuit with DC and sinusoidal inputs 3) Utilize circuit analysis software and hardware to compute electrical quantities 4) Develop greater general knowledge of household electronic devices
6. Time (which semester(s))	Fall 2019
7. Responsible person(s)	Prof. Sumarsono

8. Ways of reporting (how, to who)	The results (quantitative and qualitative) will be reported by faculty to the department chair via completion of the course Faculty Self-Assessment form.
9. Ways of closing the loop	Interaction between chair, faculty and industrial advisory board

The program learning outcomes assessed for 2019-2020 are ILOs 1 and 5. The PLOs were assessed by using results from homework assignments. Since the BS in Computer Engineering is a new program that officially began in 2013, this year is part of the second 5-year cycle of assessment.

C. **Summary of Assessment Process**

Summarize your assessment process briefly using the following sub-headings.

Instrument(s): *(Include if new or old instrument, how developed, description of content)*

The instruments used to assess PLO's were homework assignment problems. Since professors used different grading scales, each question normalized to a rating scale 1-4 with 1 being the lowest score and 4 being the highest score. Questions focused on engineering data analysis and circuit design and synthesis.

Sampling Procedure:

Students in different classes were assessed based on specific course materials in the computer engineering discipline. Problems were chosen by the proctoring professor to be exemplary of the material ENGR 230.

Sample Characteristics:

ENGR 230
Item: Calculate optimized power consumption of a circuit.
Average score (out of 4): 3.81 (16 submissions)
Score of 1: 0 Score of 2: 1 Score of 3: 1 Score of 4: 14
Score of 3 or higher: 93.8%

ENGR 230
Item: Calculate power transferred to a circuit load.
Average score (out of 4): 3.5 (16 submissions)
Score of 1: 2 Score of 2: 0 Score of 3: 0 Score of 4: 14
Score of 3 or higher: 87.5%

Rubric for ILO1:
(1) Less than 25% of circuit specified correctly.
(2) Correctly specified 25% to 50% of circuit.
(3) Correctly specified 50%-75% of circuit.
(4) Correctly specified greater than 75% of circuit.

Rubric for ILO5:
(1) Correctly analyzed material and power consumption for up to 25% of circuit.
(2) Correctly analyzed material and power consumption for 25% to 50% of circuit.
(3) Correctly analyzed material and power consumption for 50% to 75% of circuit.
(4) Correctly analyzed material and power consumption for more than 75% of circuit.

D. **Summary of Assessment Results**
Summarize your assessment results briefly using the following sub-headings.

Main Findings:

With respect to PLO2: Students in ENGR 230 performed exceptionally well on the homework assignments. Pedagogy did not change.

Recommendations for Program Improvement: *(Changes in course content, course sequence, student advising)*

This course is taught to CMPE students and INDE students. The high level content and the prerequisites as described in the catalog can remain the same. However, since students taking this course have different backgrounds, separate sections should be offered with different sets of assignments appropriate for each major.

CMPE students need this course as a foundation for higher level courses. While the lab is quite important, students should focus on acquiring in-depth understanding on the theoretical and mathematical aspects of the course.

INDE students should do a lot of hands-on work where the focus is more on applying the concepts from this course. In order that they can do it correctly, they need to properly understand the equations and the formulas although they may not necessarily need to know the derivations.

Next Step(s) for Closing the Loop: *(Recommendations to address findings, how & when)*

Professors in computer engineering should convene to prepare the assessment questions for each class. Additionally, creating questions that test introductory, practice, and mastery levels, should be considered. However, the assessment questions should be balanced in that they can be solved at the end of a final exam.

Other Reflections:

The syllabi and assessment questions used for CAPR assessment and ABET assessment should be co-created to minimize the impact of program assessment to the student learning experience.

E. **Assessment Plans for Next Year**

Summarize your assessment plans for the next year, including the PLO(s) you plan to assess, any revisions to the program assessment plan presented in your last five-year plan self-study, and any other relevant information.

Year 2: 2020-2021

1. **Request for Tenure-Track Hires**, Accreditation report from last time required more faculty in the program. However, we still have only 3 faculty members at this time.

2. Request for Other Resources