CALIFORNIA STATE UNIVERSITY EAST BAY

ACADEMIC SENATE

Committee on Academic Planning and Review

ANNUAL PROGRAM REPORT

College	College of Science
Department	Engineering
Program	Computer Engineering
Reporting for Academic Year	2016-17
Last 5-Year Review	2015-16
Next 5-Year Review	
Department Chair	Saeid Motavalli
Date Submitted	10-3-2017

I. SELF-STUDY *(suggested length of 1-3 pages)*

A. Five-Year Review Planning Goals

Present your planning goals from your last 5-year plan.

The concern raised by the accreditation agency (ABET) was that the program needed additional faculty to be able to serve the growing student population.

B. Progress Toward Five-Year Review Planning Goals

Report on your progress toward achievement of the 5-Year Plan. Include discussion of problems reaching each goal, revised goals, and any new initiatives taken with respect to each goal.

We intend to request a tenure-track position this academic year.

C. Program Changes and Needs

Report on changes and emerging needs not already discussed above. Include any changes related to SB1440, significant events which have occurred or are imminent, program demand projections, notable changes in resources, retirements/new hires, curricular changes, honors received, etc., and their implications for attaining program goals. Organize your discussion using the following subheadings.

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. Three tenure-track faculty, Roger Doering, Howard Lei and James Tandon, support this program. Howard lei and James Tandon are on leave of absence this quarter. Howard lei is on a yearlong leave.

Curriculum: we have transformed the curriculum in transition to semester offering. The transformed curriculum satisfies accreditation requirements and in line with the needs of the constituents.

Students: The number of students has increase from 19 in 2012 to 126 in 2016.

Faculty: Three tenure-track faculty serve the computer engineering program. In the current quarter, two of them are on leave of absence.
Staff:
Resources: As part of the College of Science renovation plan a large lab space (SSC 125) has been dedicated as research facility for electronics and computer engineering.

Assessment: Computer engineering is an accredited program. As part of the accreditation process, a systematic assessment and evaluation plan has been in place for four years. The details of assessment activities are given below.
Other: *(e.g., major program modifications)*

II. SUMMARY OF ASSESSMENT *(suggested length of 1-2 pages)*

A. Program Learning Outcomes (PLO)

List all your PLO in this box. Indicate for each PLO its alignment with one or more institutional learning outcomes (ILO). For example: "PLO 1. Apply advanced computer science theory to computation problems (ILO 2 & 6)."

PLOs	Program Objectives			
	Successfully apply learned skills	Pursue continuous learning	Work well as an individual and on teams	Recognized as qualified engineering with high ethics
a) Ability to apply knowledge of mathematics, science, and engineering.	✓			
b) Ability to design and conduct experiments, as well as to analyze and interpret data.	✓			✓
c) Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	✓			✓
d) Ability to function on multidisciplinary teams.			✓	
e) Ability to identify, formulate, and solve engineering problems.	✓			
f) Understanding of professional and ethical responsibility.				✓

g) Ability to communicate effectively.			✓	
h) Broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.	✓			✓
i) Recognition of the need for, and an ability to engage in, life-long learning.		✓		
j) Knowledge of contemporary issues.		✓		
k) Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	✓			✓

Program Learning Objectives → University Mission Statement ↓	Graduates who successfully applying learned skills in their professional pursuits	Graduates who have an enthusiasm and aptitude to continuously pursue learning and professional development	Graduates who can communicate effectively and work well as individual and on teams	Graduates who are recognized as qualified engineers with high ethical standards
Cal State East Bay welcomes and supports a diverse student body with academically rich, culturally relevant learning experiences which prepare students to apply their education to meaningful lifework, and to be socially responsible contributors to society. Through its educational programs and activities the University strives to meet the educational needs and to contribute to the vitality of the East Bay, the state, the nation, and global communities.	✓	✓	✓	✓

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

List the PLO(s) assessed. Provide a brief background on your program's history of assessing the PLO(s) (e.g., annually, first time, part of other assessments, etc.)

PLO (e): An ability to identify, formulate, and solve engineering problems

PLO (j): A knowledge of contemporary issues

C. **Summary of Assessment Process**

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

Instrument(s): Evaluation of student-submitted responses to assignments, projects, and/or quizzes/exams using objectively-defined rubrics.

Sampling Procedure: All submissions assessed
Sample Characteristics: Wide ranges in the number of submissions due to varying classes sizes and student group sizes. Sample sizes range from 6 (when there are only 6 student groups in a course), to over 30.
Data Collection: Collected by course instructor *(include when, who, and how collected)*
Data Analysis: Analyzed by course instructor

D. **Summary of Assessment Results**

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

Main Findings:

Please see the D.1 Assessment Data section below for detailed assessment results and rubrics for PLO (e) and (j), for previous quarters as well as for quarter in the 2016-17 academic year. Results from previous quarters are provided to display trends in student performance in these PLOs. Each PLOs maps to several different Performance Indicators. Data for the assessed Performance Indicators are shown.

For PLO (e), students were asked to identify correct assembly language instruction sequences to implement a mini software algorithm. Performance has fluctuated across quarters due to differences in instructor and student make up of each course. In Fall 2016, students showed improved performance on a new set of problems that were not used in previous quarters. These new problems were a better fit to the course content.

For PLO (j), students have demonstrated consistently high performance across the previous quarters, and that level of performance is maintained during the Winter, 2017 quarter. For Winter 2017, students worked in groups, with 6 groups in the class. Work from all 6 student groups were assessed.

D.1 ASSESSMET DATA

PLO (e): An ability to identify, formulate, and solve engineering problems

Performance Indicator: Identify assembly language instructions needed to implement software algorithms.

Rubric:
(1) Identified correct assembly instructions for less than 20% of algorithms
(2) Identified correct instructions for greater or equal to 20% but less than 50% of algorithms
(3) Identified correct instructions for greater than or equal to 50% but less than 80% of algorithms
(4) Identified correct instructions for 80% or more of the algorithms

Assessment 1:

Quarter: Winter, 2014
Course: CS 2430
Item: Multiple-choice assessment problems
Average score (out of 4): 2.29 (35 submissions)
Score of 1: 3 Score of 2: 20 Score of 3: 9 Score of 4: 2
Score of 3 or higher: 31.4%

Assessment 2:
Quarter: Spring, 2014
Course: CS 2430
Item: Multiple-choice assessment problems
Average score (out of 4): 2.79 (19 submissions)
Score of 1: 1 Score of 2: 5 Score of 3: 10 Score of 4: 3
Score of 3 or higher: 68.4%

Assessment 3:
Quarter: Spring, 2015
Course: CS 2430
Item: Multiple-choice assessment problems
Average score (out of 4): 2.39 (23 submissions)
Score of 1: 0 Score of 2: 14 Score of 3: 9 Score of 4: 0
Score of 3 or higher: 39.1%

Assessment 4:
Quarter: Winter, 2016
Course: CS 2430
Item: Final Exam, Problem 1
Average score (out of 4): 2.85 (39 submissions)
Score of 1: 4 Score of 2: 11 Score of 3: 11 Score of 4: 13
Score of 3 or higher: 61.5%

Assessment 5:
Quarter: Fall, 2016
Course: CS 2430
Item: Multiple-choice assessment problems
Average score (out of 4): 2.63 (24 submissions)
Score of 1: 0 Score of 2: 12 Score of 3: 9 Score of 4: 3
Score of 3 or higher: 50.0%
**Note: assessment problems administered online immediately after final exam; students given a period of 12 hours to complete the assessment.*

Rubric for Assessment 6 (more difficult rubric):
(1) Identified correct assembly instructions for less than 20% of algorithms
(2) Identified correct instructions for greater or equal to 20% and less than or equal to 50% of algorithms
(3) Identified correct instructions for greater than 50% but less than 80% of algorithms
(4) Identified correct instructions for 80% or more of the algorithms

Assessment 6:

Quarter: Fall, 2016
Course: CS 2430
Item: Final Exam, Problem 1
Average score (out of 4): (31 submissions)
Score of 1: 0 Score of 2: 11 Score of 3: 13 Score of 4: 7
Score of 3 or higher: 64.5%
**Note: problems more in-line with the material taught during the quarter*

PLO (j): A knowledge of contemporary issues

Performance Indicator: Research the components needed to implement a system design. Also explain how the system design addresses the clients' needs.

Rubric:
(1) Did not research any components nor explain how the system design addresses clients' needs
(2) Researched some components but did not explain how the system design addresses clients' needs
(3) Researched most or all components and somewhat explained how system design addresses clients' needs
(4) Researched most or all components and fully explained how system design addresses clients' needs

Assessment 1 (A1):
Quarter: Winter, 2015
Course: ENGR 1011
Item: Desktop computer assignment
Average score (out of 4): 3.15 (20 submissions)
Score of 1: 0 Score of 2: 4 Score of 3: 9 Score of 4: 7
Score of 3 or higher: 80%

Assessment 2:
Quarter: Winter, 2016
Course: ENGR 1011
Item: Final project report
Average score (out of 4): 3.38 (8 submissions)
Score of 1: 0 Score of 2: 1 Score of 3: 3 Score of 4: 4
Score of 3 or higher: 87.5%

Assessment 3:
Quarter: Winter, 2017
Course: ENGR 1011
Item: Final project report
Average score (out of 4): 3.5 (6 submissions)
Score of 1: 0 Score of 2: 1 Score of 3: 1 Score of 4: 4
Score of 3 or higher: 83.3%

Recommendations for Program Improvement: Students have maintained consistently high performance for the PLO (j) performance indicator. Hence, no immediate curricular changes are needed to address PLO (j). For the performance indicator for SLO (e), we seek to improve

assessment results through placing greater emphasis on teaching the assembly-level instructions in the CS 2430.

Next Step(s) for Closing the Loop: Since the assessment process for the Computer Engineering program has been implemented only in recent years, more assessment data is needed for the faculty to better discern trends in the data. For the time being, the plan is to have faculty continue to collect and assess student artifacts in accordance to the rubrics we developed.

Other Reflections: N/A

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.

Next, year, we plan to assess PLOs (c) and (h). No immediate revisions to the program assessment plan is expected.

III. DISCUSSION OF PROGRAM DATA & RESOURCE REQUESTS

Each program should provide a one-page discussion of the program data available through CAPR. This discussion should include an analysis of trends and areas of concern. Programs should also include in this discussion requests for additional resources including space and tenure-track hires. Resource requests must be supported by reference to CAPR data only. Requests for tenure-track hires should indicate the area and rank that the program is requesting to hire. If a program is not requesting resources in that year, indicate that no resources are requested.

A. **Discussion of Trends & Reflections**

Notable Trends:

Summarize and discuss any notable trends occurring in your program over the past 3-5 years based on program statistics (1-2 paragraphs). You may include 1-2 pages of supplemental information as appendices to this report (e.g., graphs and tables).

Reflections on Trends and Program Statistics:

Provide your reflections on the trends discussed above and statistics and supplemental information presented in this report.

B. **Request for Resources** *(suggested length of 1 page)*

1. Request for Tenure-Track Hires, We plan to request for one tenure track position in this academic year if Dr. Lei decides not to come back from his leave.

2. Request for Other Resources