CALIFORNIA STATE UNIVERSITY EAST BAY

ACADEMIC SENATE

Committee on Academic Planning and Review

ANNUAL PROGRAM REPORT

College	Science
Department	Engineering
Program	M.S. Engineering Management
Reporting for Academic Year	2018-2019
Last 5-Year Review	2018
Next 5-Year Review	2023-2024
Department Chair	Saeid Motavalli
Date Submitted	10/01/2019

I.
SELF-STUDY

A. Five-Year Review Planning Goals

1. The external reviewer suggested that we should develop a common course for all graduate students that embeds the three prerequisite course materials. He believed that we could attract more students by reducing the number of courses in the program. We will discuss this and decide on how to proceed.

2. One of the goals indicated in our previous report was to offer more elective courses. This goal has not been achieved as the number of faculty supporting this program has not changed since 2004. The semester curriculum is designed as such that the students are taking all the required courses in the School of Engineering. This change has alleviated the problems students previously faced in taking courses from the College of Business and Economics. Elective courses will be offered as the need arises.

3. Faculty: The faculty that support this program are also supporting the Industrial Engineering program. The faculty are; Helen Zong, Farnaz Ganjeizadeh and David Bowen.

4. Research: The faculty are publishing regularly. One of the faculty, Dr. Bowen spent 2018 - 2019 in Africa as a Fulbright scholar. He taught and conducted research with a University there.

5. Equipment: Through A2E2 annual funding and the normal refresh cycle of computers by IT, we are keeping the Engineering Management Laboratories current.
6. Enrollment: Student enrollment in Engineering Management program has been decreasing for the past couple of years. This could be the result in the difficulty of obtaining student visas to enter the U.S.

B. Progress towards Five-Year Review Planning Goals

1. Successfully transformed the curriculum to a semester-based program.

2. Acquired new CNC turning and milling center in VBT 231.

3. The program requires 30 semester hours of course work including a capstone project.

4. Purchased new robotic arm that is housed in VBT 231 for research in mechatronics and AI.

C. Program Changes and Needs

Overview: The Engineering Management program started in the year 2003 and was steadily growing until 2016. Since then the international student enrollment has been falling. From 2004 onwards, we have not hired any faculty for this program. The faculty of Industrial Engineering also serve the Engineering Management program.

Curriculum: The first year of semester curriculum concluded successfully. The students were properly advised during this transition period.

Students: Demand for Engineering Management graduates is relatively strong for domestic students.

Faculty: Since 2004, we have had three faculty dedicated to the Engineering Management and the Industrial Engineering programs. The faculty include Drs. Helen Zong, David Bowen and Farnaz Ganjeizadeh.

Staff: We have two full time staff for the School of Engineering, a Student Services Professional Advisor, Lisa Holmstrom and a support tech, Linh Nguyen. Also, a part time ASC supports the School of Engineering Office.

Resources: New equipment and software have been added to Engineering laboratories.

Assessment: An extensive assessment process is in place for the Engineering Management program. Sample results are provided in the following section.

I. SUMMARY of ASSESSMNT

A. PROGRAM LEARNING OUTCOMES (PLOS)

Students graduating with a M.S. Engineering Management degree from Cal State East Bay will be able to:		I.L.O Alignment
a	Develop advanced analytical skills in optimization, planning and control, and other quantitative management techniques.	1, 6
b	Effectively manage teams of multi-disciplinary and multi-cultural professionals.	3, 4
c	Understand the impact of engineering and management decisions in a global, economic, environmental, and societal context.	5
d	Have the ability to effectively and persuasively communicate	2
e	Recognize the need for; and have an ability to engage in, life-long learning.	2, 6

B. Program Learning Outcome(s) Assessed:

1. Which PLO(s) to assess	**PLO d- Recognize the need for, and have an ability to engage in life-long learning.**
2. Assessment indicators	Capstone projects
3. Sample (courses/# of students)	ENGR 693A
4. Time (which quarter(s))	Spring 2019
5. Responsible person(s)	Prof. Farnaz Ganjeizadeh
6. Ways of reporting (how, to who)	Peer evaluation of group team projects are used as a means to assess the quality of projects and reporting. In addition, faculty in charge of the course and other faculty attending project presentations are completing rubrics for evaluation of the project reports and presentations.
7. Ways of closing the loop	The results will be reported by faculty to the department chair via completion of the course Faculty Self-Assessment form. Decisions on program improvement are made at the annual advisory board meeting.

C. Summary of Assessment Results: Students work on research projects. Majority of the projects are based on real data from industry. As part of this research, they perform a comprehensive literature review and identify a research problem. Also a comprehensive report and presentation of research work are required. Alumni have evaluated the course material as valuable in their professional career. We evaluated the PLO using the quality of the research that the students conducted. Specifically the thoroughness of their literature search and identification of the problem. The average score for these activities was 80% with a low of 70% and a high grade of 95. Ten out of the twelve achieved this PLO. We have an ongoing discussion of how to improve the quality of research projects. Changes such as requiring more independent research will be implemented.

The communication ILO was evaluated using the presentations, written proposals, and final reports.

According to this rubric, For the 12 students who completed the course, the average communication score was 83% (6 on rubric) with the lowest grade of 70% (4 on rubric) and the highest of 95% (7 on rubric) . The majority of students achieved this outcome.

The rubric used for both MS in CM and MS in EM programs:

Have the ability to effectively and persuasively	Minimal ability to effectively and persuasively communicate	Some ability to effectively and persuasively communicate	Substantial ability to effectively and persuasively communicate		Strong ability to effectively and persuasively communicate
	1	2	3	4	5	6

D. Assessment Plans for Next Year

Year 2: 2019-2020	Year 2: 2019-2020
Which SLO(s) to assess	SLO b - Effectively manage teams of multi-disciplinary and multi-cultural professionals. ▪
▪ *Assessment indicators*	▪ Final exam performance on related question
▪ *Sample (courses/# of students)*	▪ ENGR 670 Design and Management of Human Work Systems
Time (which quarter(s))	▪ Spring 2020
▪ *Responsible person(s)*	▪ Prof. Bowen

III. DISCUSSION OF PROGRAM DATA & RESOURCE REQUESTS

Discussion of Trends & Reflections

The following table is enrollment data extracted from Pioneer Data Warehouse. As the data shows the Engineering Management enrollment has been in a downturn trend for the past three years. We can identify two trends that contributed to this down turn. A drop in international student enrollment, which could be the result of stricter visa requirements and also a drop in domestic student enrollment that could be the result of stronger job market. During economic booms, fewer students pursue graduate studies. We are hopeful that the drop in enrollment is temporary and it will start to rebound. However, it should be mentioned that the three faculty whom serve Engineering Management are also responsible for the Industrial Engineering program.

Term	College	School	Computer Engineering	Industrial Engineering	Engineering Management	Total	Minor
Fall Quarter 2012	Total	Engineering	24	18	36	78	0
Fall Quarter 2013	Total	Engineering	64	54	49	167	0
Fall Quarter 2014	Total	Engineering	103	78	98	279	0
Fall Quarter 2015	Total	Engineering	130	109	103	212	0
Fall Quarter 2016	Total	Engineering	140	119	89	342	0
Fall Quarter 2017	Total	Engineering	151	121	76	348	0
Fall Semester 2018	Total	Engineering	159	102	46	496	0

The combined enrollments in the two programs have fluctuated between 200 and 150. With three faculty members, we are at the minimum faculty requirement for an accredited undergraduate only program.

Notable Trends:

1. Lower enrollment
2. Industry demand for the graduates
3. Active Advisory Board Council

Reflections on Trends and Program Statistics:

We believe the enrollment in the program will increase to about 60 in a couple of years. The application trend is up.

Request for Resources

1. Request for Tenure-Track Hires:

We have not hired any faculty in Industrial Engineering or Engineering Management since 2004. All faculty are full time professors. These programs require the addition of a new tenure-track faculty to stay current.

2. Request for Other Resources

Upkeep of the laboratory software and hardware, access to large computer lab/classes for some of the courses.