COMMITTEE ON ACADEMIC PLANNING AND REVIEW
ANNUAL PROGRAM REPORT

College	CoS
Department	Engineering
Program Unit	Industrial Engineering
Reporting for Academic Year	2015-2016
Department Chair	Saeid Motavalli
Date Submitted	7/18/2016

1. SELF-STUDY (about 1 page)

A. Five-year Review Planning Goals

The Engineering Department offers two undergraduate engineering degree programs, Computer Engineering and Industrial Engineering. We also offer a graduate degree program in Engineering Management. The Industrial Engineering degree program is accredited by the Accreditation Board for Engineering and Technology (ABET). Computer Engineering is the newest engineering major which we started in 2007. We had our initial accreditation visit for Computer Engineering and reaccreditation of Industrial Engineering programs in October 2016. We expect to receive the final accreditation report by August 2016.

B. Five-year Review Planning Goals Progress

1. Continue the assessment and evaluation process for continuous improvement of the programs.
3. Enrollment in Industrial Engineering program has stayed steady.
4. Our graduate programs in Engineering Management and Construction Management are the fastest growing programs in Engineering and are considered as large graduate programs on campus.

C. Program Changes and Needs

We have hired a new faculty in Construction Management that will join the School in September 2016. The total number of faculty in Engineering is now 11.
Curriculum has been modifies to respond to assessment data collected and analyzed.

As a result of ABET preliminary findings, we initiated an evaluation of engineering programs educational objectives, which resulted in some changes to our PEO's. The following is the new set of PEO's.

The Engineering programs provide quality engineering education that produces graduates who:
• Successfully apply their learned skills, such as independent, critical and systematic thinking, and innovation throughout their professional pursuits
• Have enthusiasm and aptitude to continuously pursue learning and professional development to integrate global, economic, environmental, and societal concerns in their engineering solutions
• Have the ability to communicate and work well independently and collaboratively in cross-functional and diverse teams.
• Are recognized as qualified engineers with high technical and ethical integrity, by exhibiting leadership or expertise in a specialized area.

We proposed the addition of an undergraduate civil engineering program in 2015. Academic Affairs has requested that we modify the proposal to reflect the transfer to semester curriculum. We like to start offering the degree program in Fall 2018. The proposal for inclusion of civil engineering to the Academic Master Plan has been submitted to the Chancellor's Office.

2. **SUMMARY OF ASSESSMENT (about 1 page)**

A. Program Student Learning Outcomes

Following is the list of the current B.S.I.E. program outcomes selected as attributes that its graduates will attain at the time of graduation:

(a) An ability to apply knowledge of mathematics, science and engineering
(b) An ability to design and conduct experiments, as well as to analyze and interpret data
(c) An 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) An ability to function on multidisciplinary teams
(e) An ability to identify, formulate, and solve engineering problems
(f) An understanding of professional and ethical responsibility
(g) An ability to communicate effectively (3g1 orally, 3g2 written)
(h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
(i) A recognition of the need for, and an ability to engage in life-long learning
(j) A knowledge of contemporary issues
(k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

B. Program Student Learning Outcome(s) Assessed

SLO 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.
Assessed in ENGR 4620, senior design by Dr. Bowen (Spring 2016)

SLO e - An ability to identify, formulate, and solve engineering problems.
Assessed by Dr. Ganjeizadeh in INDE 4400 (Spring 2016).

C. Summary of Assessment Process

The 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 was assessed via student performance on a course project in Engr 4620 Senior Project II, offered in Spring 2016.

The ability to identify, formulate, and solve engineering problems was assessed via student performance on exams, team project and presentations in Industrial Engineering 4400 Systems Modeling, offered Spring 2016.

D. Summary of Assessment Results

Outcome (c): An 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.

Indicator : Capstone project that included discussion of constraints and engineering standards involved in designing a solution for their client's real-world problem was assessed by instructor according to a rubric. The rubric assesses 9 dimensions. Each dimension is evaluated according to an anchored outcome from one to eight. The relevant dimension for this assessment is: System Design/Redesign with anchored scoring from 1-'System was not designed/redesigned' to 8 -'Substantial system design/redesign with clearly positive impact'

On the system design/redesign rubric dimension, students scored an average of 85%, with a range of 87.5% to 75%. This means that most student teams achieved, "System design/redesign that was substantial with at least some positive impacts."

SLO e - An ability to identify, formulate, and solve engineering problems.
The course used for assessing this outcome is INDE 4400, Systems Modeling. Assessment was conducted by Dr. Ganjeizadeh. The assessment tools used are; Homework, Exams and Pre/post knowledge test. Sample problem to test student abilities to formulate and solve an engineering problem:

Radovilsky Manufacturing Company, in Hayward, California, makes flashing lights for toys. The company operates its production facility 300 days per year. It has orders for about 12,000 flashing lights per year and has the capability of producing 100 per day. Setting up the light production costs $50. The cost of each light is $1. The holding cost is 0.10 per light per year.

The rubric used was, how well the students could design the production run, minimizes costs

and minimize lead time. Students are scored from 1-10 with 1 being, could not formulate or solve the problem, and 10 that they formulated and obtained minimum cost and minimum lead time.

The results was Max: 100%, Mean 75% and Min 62%

3. STATISTICAL DATA (about 1 page)

Engineering					
	Fall Quarter				
	2011	**2012**	**2013**	**2014**	**2015**
A. Students Headcount					
1. Undergraduate	172	217	223	226	233
2. Postbaccalaureate	1	0	0	0	0
3. Graduate	97	70	86	150	161
4. Total Number of Majors	270	287	309	376	394
	College Years				
B. Degrees Awarded	**10-11**	**11-12**	**12-13**	**13-14**	**14-15**
1. Undergraduate	11	12	19	24	38
2. Graduate	18	30	32	32	34
3. Total	29	42	51	56	72
	Fall Quarter				
	2011	**2012**	**2013**	**2014**	**2015**
C. Faculty					
Tenured/Track Headcount					
1. Full-Time	5	6	7	8	10
2. Part-Time	0	0	0	0	0
3a. Total Tenure Track	5	6	7	8	10
3b. % Tenure Track	83.3%	85.7%	77.8%	88.9%	90.9%
Lecturer Headcount					
4. Full-Time	0	0	0	0	0
5. Part-Time	1	1	2	1	1
6a. Total Non-Tenure Track	1	1	2	1	1
6b. % Non-Tenure Track	16.7%	14.3%	22.2%	11.1%	9.1%
7. Grand Total All Faculty	6	7	9	9	11
Instructional FTE Faculty (FTEF)					
8. Tenured/Track FTEF	3.6	6.0	5.2	6.7	8.0
9. Lecturer FTEF	0.4	0.5	0.6	0.4	0.8
10. Total Instructional FTEF	4.1	6.5	5.8	7.1	8.8
Lecturer Teaching					
11a. FTES Taught by Tenure/Track	80.5	82.7	83.7	107.9	130.7
11b. % of FTES Taught by Tenure/Track	78.4%	87.8%	77.7%	81.6%	83.2%

12a. FTES Taught by Lecturer	22.1	11.5	24.0	24.3	26.4
12b. % of FTES Taught by Lecturer	21.6%	12.2%	22.3%	18.4%	16.8%
13. Total FTES taught	102.7	94.1	107.7	132.2	157.1
14. Total SCU taught	1540.0	1412.0	1615.0	1983.0	2357.0
D. Student Faculty Ratios					
1. Tenured/Track	22.1	13.7	16.2	16.1	16.4
2. Lecturer	50.4	23.8	39.3	60.5	33.0
3. SFR By Level (All Faculty)	25.2	14.5	18.6	18.6	17.9
4. Lower Division	25.8	15.9	16.5	14.0	17.1
5. Upper Division	23.4	14.2	17.4	15.2	14.5
6. Graduate	27.0	14.4	21.9	28.5	26.1
E. Section Size					
1. Number of Sections Offered	21.8	26.6	28.8	34.0	38.0
2. Average Section Size	25.1	20.6	21.6	17.8	25.2
3. Average Section Size for LD	33.3	27.0	23.8	26.0	27.3
4. Average Section Size for UD	15.5	18.5	19.1	14.3	19.7
5. Average Section Size for GD	42.3	19.4	24.5	21.8	41.4
6. LD Section taught by Tenured/Track	3	4	5	5	8
7. UD Section taught by Tenured/Track	12	12	16	20	17
8. GD Section taught by Tenured/Track	9	12	10	8	10
9. LD Section taught by Lecturer	0	0	0	0	0
10. UD Section taught by Lecturer	3	2	3	2	2
11. GD Section taught by Lecturer	1	2	1	2	2

Source and definitions available at: http://www.csueastbay.edu/ira/apr/summary/definitions.pdf

	Fall Quarter				
Headcount Enrollment	**2011**	**2012**	**2013**	**2014**	**2015**
Computer Engineering					
1. Undergraduate	0	19	58	102	129
2. Postbaccalaureate	0	0	0	0	0
3. Graduate	0	0	0	0	0
4. Total Number of Majors	0	19	58	102	129
Engineering					
1. Undergraduate	155	158	109	54	24
2. Postbaccalaureate	1	0	0	0	0
3. Graduate	0	0	0	0	0
4. Total Number of Majors	156	158	109	54	24
Engineering Management					
1. Undergraduate	0	0	0	0	0
2. Postbaccalaureate	0	0	0	0	0
3. Graduate	40	27	42	79	87
4. Total Number of Majors	40	27	42	79	87
Construction Management					
1. Undergraduate	17	40	56	70	80
2. Postbaccalaureate	0	0	0	0	0

3. Graduate	57	43	44	71	74
4. Total Number of Majors	74	83	100	141	154

	College Years				
Degrees Awarded	**10-11**	**11-12**	**12-13**	**13-14**	**14-15**
Engineering					
1. Undergraduate	11	12	16	18	18
2. Graduate	0	0	0	0	0
3. Total Number of Majors	11	12	16	18	18
Engineering Management					
1. Undergraduate	0	0	0	0	0
2. Graduate	17	13	17	12	19
3. Total Number of Majors	17	13	17	12	19
Computer Engineering					
1. Undergraduate	0	0	1	1	7
2. Graduate	0	0	0	0	0
3. Total Number of Majors	0	0	1	1	7
Construction Management					
1. Undergraduate	0	0	2	5	13
2. Graduate	1	17	15	20	15
3. Total Number of Majors	1	17	17	25	28

D. Student Faculty Ratios	Engineering ENGR				
1. Tenured/Track	23.7	14.1	17.3	18.5	22.8
2. Lecturer	48.1	24.9	83.1	11.9	30.7
3. SFR By Level (All Faculty)	25.2	14.6	18.9	18.3	23.3
4. Lower Division	25.8	15.9	16.5	14.0	17.1
5. Upper Division	27.4	16.9	17.7	.	.
6. Graduate	20.4	10.5	25.9	22.5	29.2
E. Section Size					
1. Number of Sections Offered	17.8	20.6	18.8	9.5	14.4
2. SCU taught	1060.0	932.0	911.0	519.0	692.0
3. Average Section Size	21.5	19.5	23.3	23.8	32.0
4. Average Section Size for LD	33.3	27.0	23.8	26.0	27.3
5. Average Section Size for UD	16.4	21.5	21.0	0.0	0.0
6. Average Section Size for GD	22.0	9.3	30.0	20.0	46.0
7. LD Section taught by Tenured/Track	3	4	5	5	8
8. UD Section taught by Tenured/Track	11	10	12	0	0
9. GD Section taught by Tenured/Track	7	9	5	4	6
10. LD Section taught by Lecturer	0	0	0	0	0
11. UD Section taught by Lecturer	3	1	1	0	0
12. GD Section taught by Lecturer	0	1	0	1	1
D. Student Faculty Ratios	Construction Management (CMGT)				
1. Tenured/Track	18.1	12.9	14.4	20.0	16.2
2. Lecturer	51.9	23.0	33.0	66.9	34.5
3. SFR By Level (All Faculty)	25.3	14.1	18.3	25.6	18.9
4. Lower Division	.	.	.	.	.
5. Upper Division	6.6	8.4	17.1	19.2	15.8

6. Graduate	32.7	18.6	19.7	34.5	23.9
E. Section Size					
1. Number of Sections Offered	4.0	6.0	10.0	10.0	11.0
2. SCU taught	480.0	480.0	704.0	860.0	1004.0
3. Average Section Size	38.0	23.5	17.3	19.3	30.1
4. Average Section Size for LD	0.0	0.0	0.0	0.0	0.0
5. Average Section Size for UD	9.0	12.5	16.7	16.7	25.2
6. Average Section Size for GD	52.5	34.5	19.0	27.0	38.3
7. LD Section taught by Tenured/Track	0	0	0	0	0
8. UD Section taught by Tenured/Track	1	2	4	6	5
9. GD Section taught by Tenured/Track	2	3	5	4	4
10. LD Section taught by Lecturer	0	0	0	0	0
11. UD Section taught by Lecturer	0	1	2	1	1
12. GD Section taught by Lecturer	1	1	1	1	1
D. Student Faculty Ratios	Compter Engineering (CMPE)				
1. Tenured/Track	.	.	.	3.81	4.04
2. Lecturer	.	.	.	.	.
3. SFR By Level (All Faculty)	.	.	.	3.81	4.04
4. Lower Division	.	.	.	.	.
5. Upper Division	.	.	.	3.81	4.04
6. Graduate	.	.	.	.	.
E. Section Size					
1. Number of Sections Offered	0	0	0	4	4
2. SCU taught	0	0	0	60	72
3. Average Section Size	0	0	0	7.5	9
4. Average Section Size for LD	0	0	0	0	0
5. Average Section Size for UD	0	0	0	7.5	9
6. Average Section Size for GD	0	0	0	0	0
7. LD Section taught by Tenured/Track	0	0	0	0	0
8. UD Section taught by Tenured/Track	0	0	0	4	4
9. GD Section taught by Tenured/Track	0	0	0	0	0
10. LD Section taught by Lecturer	0	0	0	0	0
11. UD Section taught by Lecturer	0	0	0	0	0
12. GD Section taught by Lecturer	0	0	0	0	0
D. Student Faculty Ratios	Idusterial Engineering INDE)				
1. Tenured/Track	.	.	.	16.42	18.21
2. Lecturer	.	.	.	83.58	29.63
3. SFR By Level (All Faculty)	.	.	.	18.74	19.06
4. Lower Division	.	.	.	.	.
5. Upper Division	.	.	.	18.74	19.06
6. Graduate	.	.	.	.	.
E. Section Size					
1. Number of Sections Offered	0	0	0	10.5	8.6
2. SCU taught	0	0	0	544	589
3. Average Section Size	0	0	0	16.6	21.6
4. Average Section Size for LD	0	0	0	0	0
5. Average Section Size for UD	0	0	0	16.6	21.6
6. Average Section Size for GD	0	0	0	0	0
7. LD Section taught by Tenured/Track	0	0	0	0	0

8. UD Section taught by Tenured/Track	0	0	0	10	8
9. GD Section taught by Tenured/Track	0	0	0	0	0
10. LD Section taught by Lecturer	0	0	0	0	0
11. UD Section taught by Lecturer	0	0	0	1	1
12. GD Section taught by Lecturer	0	0	0	0	0

Planning and Institutional Research produce program statistics annually in standard format. These statistics will be attached to the Annual Report of the Program Unit. This statistical document is expected to be approximately one page long and will contain the same data as required for the five-year review including student demographics of majors, student level of majors (e.g. Juniors, Seniors), faculty and academic allocation, and course data.

California State University, East Bay

APR Summary Data

Fall 2009 -

2013

Engineering					
	Fall Quarter				
	2009	**2010**	**2011**	**2012**	**2013**
A. Students Headcount					
1. Undergraduate	152	149	172	217	223
2. Postbaccalaureate	4	3	1	0	0
3. Graduate	85	92	97	70	86
4. Total Number of Majors	241	244	270	287	309
	College Years				
B. Degrees Awarded	**08-09**	**09-10**	**10-11**	**11-12**	**12-13**
1. Undergraduate	13	7	11	12	19
2. Graduate	5	23	18	30	32
3. Total	18	30	29	42	51
	Fall Quarter				
	2009	**2010**	**2011**	**2012**	**2013**
C. Faculty					
Tenured/Track Headcount					
1. Full-Time	4	5	5	6	7
2. Part-Time	0	0	0	0	0
3a. Total Tenure Track	4	5	5	6	7
3b. % Tenure Track	100.0%	100.0%	83.3%	85.7%	77.8%
Lecturer Headcount					
4. Full-Time	0	0	0	0	0
5. Part-Time	0	0	1	1	2
6a. Total Non-Tenure Track	0	0	1	1	2
6b. % Non-Tenure Track	0.0%	0.0%	16.7%	14.3%	22.2%
7. Grand Total All Faculty	4	5	6	7	9
Instructional FTE Faculty (FTEF)					
8. Tenured/Track FTEF	2.3	4.4	3.6	6.0	5.2
9. Lecturer FTEF	1.2	0.2	0.4	0.5	0.6
10. Total Instructional FTEF	3.6	4.6	4.1	6.5	5.8
Lecturer Teaching					
11a. FTES Taught by Tenure/Track	56.7	84.3	80.5	82.7	83.7
11b. % of FTES Taught by Tenure/Track	70.0%	91.3%	78.4%	87.8%	77.7%
12a. FTES Taught by Lecturer	24.3	8.0	22.1	11.5	24.0
12b. % of FTES Taught by Lecturer	30.0%	8.7%	21.6%	12.2%	22.3%
13. Total FTES taught	80.9	92.3	102.7	94.1	107.7
14. Total SCU taught	1214.0	1384.0	1540.0	1412.0	1615.0
D. Student Faculty Ratios					
1. Tenured/Track	24.3	19.2	22.1	13.7	16.2
2. Lecturer	19.8	38.1	50.4	23.8	39.3

3. SFR By Level (All Faculty)	22.7	20.0	25.2	14.5	18.6
4. Lower Division	17.5	11.9	25.8	15.9	16.5
5. Upper Division	29.3	21.8	23.4	14.2	17.4
6. Graduate	19.1	22.5	27.0	14.4	21.9
E. Section Size					
1. Number of Sections Offered	15.7	21.9	21.8	26.6	28.8
2. Average Section Size	22.9	20.0	25.1	20.6	21.6
3. Average Section Size for LD	21.0	21.5	33.3	27.0	23.8
4. Average Section Size for UD	23.5	13.8	15.5	18.5	19.1
5. Average Section Size for GD	22.8	26.2	42.3	19.4	24.5
6. LD Section taught by Tenured/Track	1	4	3	4	5
7. UD Section taught by Tenured/Track	7	12	12	12	16
8. GD Section taught by Tenured/Track	7	9	9	12	10