



College	Science
Department	Engineering
Program	B.S. Construction Management
Reporting for Academic Year	2016-2017
Last 5-Year Review	1 <sup>st</sup> 5-year report since inception is in progress
Next 5-Year Review	1 <sup>st</sup> 5-year report since inception is in progress
Department Chair	Saeid Motavalli
Date Submitted	10/20/2017

ANNUAL PROGRAM REPORT

SELF-STUDY (suggested length of 1-3 pages)

A. Five-Year Review Planning Goals

1. *Along with the rest of the university, we will be transitioning to a semester-based program in Fall of 2018. This will be a major change as the faculty in the program have been working during the past two years to transform the program. The new program would satisfy the university requirements as well as the ACCE (Accreditation Council for Construction Education) requirement. We have been approved for as a candidate for accreditation and have been working on our self study to submit. We have made changes to the curriculum, teaching methods and course requirements. In addition, we are proposing a new B.S. in Civil Engineering program. The Chancellor's Office has already approved the program to be added to the master plan and we have prepared the new program proposal to be submitted to the university.*
2. *Faculty: In the past 3 years we have added two new faculty members to the program and one promoted from a rank of Assistant Professor to Associate Professor during the 2016-17 academic year. We do not anticipate needing to hire new tenure-track faculty for this program for the next 3 years.*
3. *Research: The Construction Management faculty are active in research and are being successful in securing funds for their research. The faculty plan is to aggressively pursue funding opportunities, specifically in areas related to the advancement of construction/engineering education. Current activities include summer workshop on sustainability for cohorts of students from Chili to summer STEM camp for high school students from Contra Costa County (Funded by industry for the 4<sup>th</sup> consecutive year in summer 2018) and several industry projects.*

4. *Laboratory Development: Room SCS 247, Materials Testing Laboratory, has been remodeled to a lab-lecture room with a capacity of 36. Flexible furniture suitable for active learning practices have been installed. In addition, for the past three years, space for an advanced technology laboratory/center in construction has been secured, new faculty in the field of technology hired and equipment acquired to develop a state-of-the-art facility to serve students, faculty research and collaboration with the industry.*
5. *Equipment: Through A2E2 annual funding and the normal refresh cycle of computers by IT and the support from College of Science we are creating new laboratories and keeping the Construction Management/Engineering Management Laboratories current. The new CEAT (Construction and Engineering Automation Technology) Center/Laboratory was equipped with around \$145,000 in cutting edge technology this year. This space which has been in planning for 3 years was equipped with additional funding in the previous three years.*
6. *Enrollment: Student enrollment in Construction Management program has increased steadily since its inception in Winter of 2009 from 6 students at the graduate level to a combined 180 students at both undergraduate and graduate levels in Fall of 2016. Student enrollment in Construction Management program has increased steadily over the past 8 years since its inception and stabilizing in the past 2 years.*
7. *Excess credits: The program required 180 credit hours under the quarter system to complete. We have managed to transform the program from quarter to semester requiring 120 credit hours as well. We have kept the program requirements at the minimum level required for accreditation.*

## B. Progress Towards Five-Year Review Planning Goals

1. *Successfully transformed the curriculum to a semester-based program.*
2. *We have hired two new faculty in the past three years and don't anticipate needing additional faculty for this program for the next 3 years.*
3. *The remodeling of materials lab SSC 247 has been completed and it is used as lab/active learning classroom as well as the Surveying lab. In addition, for the past three years, space for an advanced technology laboratory/center in construction has been secured, new faculty in the field of technology hired and equipment acquired to develop a state-of-the-art facility to serve students, faculty research and collaboration with the industry. We intend to use this space to train our students in the field of construction management/technology as well as conduct research with graduate students and collaborate with the industry.*
4. *Enrollment in Construction Management has increased substantially over the past eight years since its inception and seems to be leveling in the past 2 year.*
5. *The program credit requirement is in line with the quarter system and is being-finalized during the catalog review.*

## C. Program Changes and Needs

*Report on changes and emerging needs not already discussed above. Include any changes related to SB1440, significant events that 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 Construction Management program started in the year 2009 and has been steadily growing with the enrollment stabilizing in the past two years. Since 2009 we have hired 4 faculty members for this program. We are a candidate for accreditation by Accreditation Council for Construction Education and have been preparing our self study in anticipation of a campus visit after transformation to Semester system.*

*Curriculum: The transformed curriculum is designed to include more active learning practices and includes courses and material that are in line with the employment trends for construction managers.*

*Students: Demand for construction management graduates are very strong. The majority of our graduates are employed in construction management positions mainly in the Bay Area.*

*Faculty: Since 2009 we have hired 4 faculty members. In 2009, Dr. Farzad Shahbodaghlou joined the School of Engineering in the capacity of Director of Construction Management Program. In 2012 Dr. Cristian Gaedicke joined the program followed by Drs. Akhavian in 2015 and Castronovo in 2016. All faculty in the program are dedicated to the construction management program at both undergraduate and graduate levels. Drs. Shahbodaghlou and Gaedicke are tenured and Drs. Akhavian and Castronovo are tenure-track faculty.*

*Staff: We have one full time staff for the School of Engineering, Mrs. Paula Trujillo and a laboratory technician, Mr. Brandon Xia. In addition, we have a part-time assistant for the office of the School of Engineering.*

*Resources: We are in the process of developing the CEAT Laboratory-Technology Center. We plan to develop a formal proposal to submit to the College of Science to designate this space as center. Room SCS 247, Materials Testing Laboratory, has been remodeled to a lab-lecture room with a capacity of 36. Flexible furniture suitable for active learning practices have been installed.*

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

## SUMMARY OF ASSESSMENT (suggested length of 1-2 pages)

### Program Learning Outcomes (PLO)

1. have knowledge in the core construction management areas (construction materials and methods, safety, codes, scheduling, commissioning, planning and control, project

- management, construction law, cost accounting, human resources management, environmental and safety issues in construction),
2. have knowledge in broad areas of construction management beyond the core areas,
  3. communicate effectively,
  4. function in teams,
  5. have the knowledge of sustainable building and construction techniques and relevant state regulations,
  6. have an awareness of the complex environment (involving professional and ethical responsibilities) in which they will practice their profession,
  7. educate themselves and be prepared for lifelong learning and professional development, and
  8. have experience in solving real life problems.

*practice. ILO to PLO mapping is shown below:*

ILO	THINK CRITICAL LY AND CREATIVE LY AND APPLY ANALYTI CAL AND QUANTIT ATIVE REASONI NG TO ADDRESS COMPLEX CHALLENGES AND EVERYDA Y PROBLEM S	COMMUNI CATE IDEAS, PERSPECT IVES, AND VALUES CLEARLY AND PERSUASI VELY WHILE LISTENIN G OPENLY TO OTHERS	APPLY KNOWLED GE OF DIVERSITY AND MULTICUL TURAL COMPETEN CIES TO PROMOTE EQUITY AND SOCIAL JUSTICE IN OUR COMMUNIT IES	WORK COLLABORA TIVELY AND RESPECTFUL LY AS MEMBERS AND LEADERS OF DIVERSE TEAMS AND COMMUNITI ES	ACT RESPONS IBLY AND SUSTAIN ABLY AT LOCAL, NATIONA L, AND GLOBAL LEVELS	DEMONST RATE EXPERTIS E AND INTEGRA TION OF IDEAS, METHODS , THEORY AND PRACTICE IN A SPECIALI ZED DISCIPLIN E OF STUDY
I.E. B.S. PLO	6,7	3	6	4	5	1,2,8

**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.)*

*We have assessed the following PLOs for the Industrial Engineering program during the 2016-17 Academic Year:*

**2016-2017**

The following SLOs for the **Construction Management Bachelor Program** were assessed during the 2016-17 Academic Year:

(1) Year 1: 2018- 2019	(2)
1. Which SLO(s) to assess	(h) Have experience in solving real life problems
2. Assessment indicators	a-Team Project
3. Sample (courses/# of students)	a-CMGT 4200
4. Time (which quarter(s))	a-Fall 2016
5. Responsible person(s)	a-Prof. Shahbodaghlou
6. Ways of reporting (how, to who)	The results will be reported by faculty to the department chair via completion of the course Faculty Self-Assessment form.
7. Ways of closing the loop	Interaction between chair, faculty and industry advisory board

### Assessment of SLO (7):

Outcome X was assessed in CMGT 4200 – Construction Scheduling, using the Team Project for the course. The purpose of this project is to use a simple construction project to break down the activities and plan and schedule the project using the Microsoft Project software. This is the students’ first experience with scheduling using a software package. This project will help the students breakdown the project into activities and sequence them using physical (logical) and management constraints. They then need to apply duration and resource requirements to each activity and input into the software program. The students submit the Scheduled project with the list of resources necessary to conduct the project.

As part of the project students did:

1. Identify a construction project.
2. Break down the project into single activities.

3. Estimate the duration for each activity.
4. Identify the resources required for the project.
5. Upload all information to Microsoft Project software, including project name, location start date, holidays, etc.
6. Perform calculations for the schedule using Microsoft Project Software.
7. Print and turn in the Activity and Bar Chart report, in addition to the list of at least 5 resources required for the project.

Groups of students that fulfilled the outcome had a total score of at least 80 out of 100 (80%). Based on this threshold, 20 out of 23 students (86.9%) achieved the outcome. We propose to change the deadlines for submission of the report, to give the students more time to improve their report based on the instructor's feedback.

#### 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.*

*We will assess the following PLO's in this academic year.*

<i>1. Which SLO(s) to assess</i>	SLO d - Ability to function in teams.
<i>2. Assessment indicators</i>	d-Capstone project rubric
<i>3. Sample (courses/# of students)</i>	d-CMGT 4620
<i>4. Time (which quarter(s))</i>	d-Spring 2017
<i>5. Responsible person(s)</i>	d-Prof. Shahbodaghlou
<i>6. Ways of reporting (how, to who)</i>	The results will be reported by faculty to the department chair via completion of the course Faculty Self-Assessment form.
<i>7. Ways of closing the loop</i>	Interaction between chair, faculty and industry

## 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.*

### 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.*

*Request for Resources: The equipment for the manufacturing automation and processes courses are extremely out of date such that none of the software that controls the machines works with the new Windows computers. We are planning to submit a proposal to the College of Science for acquisition of table-top machine tools and small robots. These are essential equipment for the viability of the program.*

#### Request for Tenure-Track Hires:

*No request is made for tenure-track position for the CMGT Program at this time.*

#### Request for Other Resources

## DISCUSSION OF PROGRAM DATA & RESOURCE REQUESTS

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## *Discussion of Trends & Reflections*

*Although we tried to use the provided data for enrollment in construction management program, it appears that the student enrollment data does not reflect the actual data. Therefore, we used the enrollment numbers from Pioneer Data Warehouse which is summarized in the table below,*

### *Student Headcount by Program*

<i>Program</i>	<i>Fall 2012</i>	<i>Fall 2013</i>	<i>Fall 2014</i>	<i>Fall 2015</i>	<i>Fall 2016</i>
<i>M.S. CMGT</i>	<i>59</i>	<i>56</i>	<i>87</i>	<i>99</i>	<i>90</i>
<i>B.S. CMGT</i>	<i>40</i>	<i>62</i>	<i>71</i>	<i>90</i>	<i>91</i>

*According to the data above, program enrollments are stabilizing around 180-200 student majors over the past couple of years. The four tenure-track faculty members supporting the B.S. and M.S. programs are expected to be the main faculty for a soon to be proposed B.S. in Civil Engineering Program. The CSUEB Construction Management Program is the only program of its kind in the Bay Area. The closest undergraduate program is at Sacramento State University and there are no similar Master's program in Northern California.*

### *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).*

- 1. We are preparing the self-study documentation for accreditation by Accreditation Council for Construction Education (ACCE). We are already approved to the candidate status for accreditation.*
- 2. We have offered an exclusive bi-annual Career Day/Job fair for CMGT students starting in 2012. The first event was attended by 1 construction company and 14 students and since it has grown to 15 companies and between 40 -50 students participating.*
- 3. We have developed the CEAT Center/Laboratory space to train our students, conduct research and collaborate with the construction industry in order to distinguish our program as a leader in the area of technology-integrated construction.*
- 4. We have prepared a proposal for a Civil Engineering Program to be submitted to the University for review and approval. We have already received approval for the program to be added to the University Masterplan.*

### *Reflections on Trends and Program Statistics:*

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



*We anticipate that by starting a Civil Engineering Program the statistics for the School of Engineering will improve.*

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

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

*Request for Tenure-Track Hires:*

*No request is made for any tenure-track position for the CMGT Program at this time.*

*Request for Other Resources*