A. Five-Year Review Planning Goals
   1. Along with the rest of the university, we transitioned to a semester-based program in Fall of 2018. This was a major change as the faculty in the program worked during the past two years to transform the program. The new program would satisfy the university as well as the accreditation requirements from the Council for Construction Education requirement. We have made changes to the curriculum, teaching methods and course requirements.

   2. Faculty: One faculty was promoted from a rank of Associate Professor to Professor during the 2018-19 academic year. One faculty is on Leave in 19-20, moving to San Diego State University. It is likely that he would not return. Therefore we anticipate hiring an additional faculty next year.

   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 Chile to summer STEM camp for high school students from Contra Costa County (Funded by industry for the 6th consecutive year in summer 2019) and several industry projects.

   4. Laboratory Development Through A2E2 funding we have received $30,000 to acquire surveying equipment. This equipment is housed in SCS 247.

   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 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 over 250 students at undergraduate and graduate levels in Fall of 2019.

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 out in the past 2 years.

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, retirement/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 of 2009 and has been steadily growing with the enrollment stabilizing in the past two years. Since 2009, we have hired four faculty members for this program.

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 is very strong. The majority of our graduates are employed in construction management positions mainly in the Bay Area.

Faculty: Since 2009, we have hired four faculty members. In 2009, Dr. Farzad Shahbodaghlo 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. Shahbodaghlo and Gaedicke are tenured and Drs. Akhavian and Castronovo are tenure-track faculty.

Staff: We have one full time staff advisor for the School of Engineering, Mrs. Lisa Holmstrom and a laboratory technician, Mr. Linh Nguyen. 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:

<table>
<thead>
<tr>
<th>ILO</th>
<th>THINK</th>
<th>CRITICAL</th>
<th>COMMUNI</th>
<th>CATE</th>
<th>APPLY</th>
<th>KNOWLED</th>
<th>WORK</th>
<th>COLLABORA</th>
<th>ACT</th>
<th>RESPONS</th>
<th>DEMONST</th>
<th>RATE</th>
</tr>
</thead>
</table>

Draft 05-04-2017
**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 Construction Management program during the 2018-19 Academic Year:

<table>
<thead>
<tr>
<th>B.S. PLO</th>
<th>6,7</th>
<th>3</th>
<th>6</th>
<th>4</th>
<th>5</th>
<th>1,2,8</th>
</tr>
</thead>
</table>

### 2018-2019

The following SLOs for the **Construction Management Bachelor Program** were assessed during the 2018-19 Academic Year:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>Year 1: 2018-2019</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Which SLO(s) to assess</td>
<td>SLO a - 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).</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Assessment indicators</td>
<td>Course project performance</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Sample (courses/# of students)</td>
<td>CMGT 207;</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Time (which quarter(s))</td>
<td>Spring 2019</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Responsible person(s)</td>
<td>a-Prof. Gaedicke</td>
<td></td>
</tr>
</tbody>
</table>
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:**

The Outcome was assessed in CMGT 207 – Construction Methods, using the final course project. The purpose of this project was to apply the concepts learned during class and develop an in-depth analysis of a construction assembly. Each group of students will be a “consulting company” that will analyze an assembly, evaluate its productivity and unit cost, and recommend improvements.

Each group had to:

- Identify a construction project; contact the project manager in order to visit the site.
- Briefly describe the project (include pictures or other multimedia material)
- Select a construction assembly that is currently under execution. (Example: building a reinforced concrete wall or slab).
- Describe the assembly in terms of quantity and characteristics of the items and materials used (specifications). Include a description of other activities that might interfere with the item you are analyzing.
- Visit the site and **describe in detail how the assembly is being built**, document it with pictures, register the resources needed for the item including materials, labor (describe the crew), and equipment.
- Measure the actual construction productivity of the assembly/item, in terms of man-hour per square feet, unit, etc…
- Estimate the actual unit cost including materials, labor and equipment of the item. (i.e. cost per square feet, etc…)
- Give at least three recommendations to **improve the construction process**, increase productivity or reduce the unit cost of that item.

Groups of students that fulfilled the outcome had a total score of at least 80 out of 100 (80%). Based on this threshold, 27 out 31 students (87%) achieved the outcome. We propose to discuss the APA format in more detail, to help students 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.

<table>
<thead>
<tr>
<th></th>
<th>Year 5: 2017-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Which SLO(s) to assess</td>
</tr>
<tr>
<td>2.</td>
<td>Assessment indicators</td>
</tr>
<tr>
<td>3.</td>
<td>Sample (courses/# of students)</td>
</tr>
<tr>
<td>4.</td>
<td>Time (which quarter(s))</td>
</tr>
<tr>
<td>5.</td>
<td>Responsible person(s)</td>
</tr>
<tr>
<td>6.</td>
<td>Ways of reporting (how, to who)</td>
</tr>
<tr>
<td>7.</td>
<td>Ways of closing the loop</td>
</tr>
</tbody>
</table>

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 positions for the CMGT Program at this time.

Request for Other Resources

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
According to data from CSUEB data warehouse the BS in construction management is growing steadily. Such that the number of first time freshmen for this year is at 40.

Student Headcount by Program

<table>
<thead>
<tr>
<th>Program</th>
<th>Fall 2014</th>
<th>Fall 2015</th>
<th>Fall 2016</th>
<th>Fall 2017</th>
<th>Fall 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.S. CMGT</td>
<td>71</td>
<td>90</td>
<td>91</td>
<td>102</td>
<td>127</td>
</tr>
</tbody>
</table>

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
1. We are planning to prepare a self-study report and assessment process for ABET program 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 20 companies and between 40-50 students participating.

3. We delayed the implementation of the civil engineering degree program based on resource limitations.

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 this program will be growing given the amount of interest and our outreach efforts to community colleges.

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