Major Assessment Report
Bachelor of Science in Civil Engineering (BSCE)
Ching Chiaw Choo, Coordinator, Civil Engineering
Lyles College of Engineering, CSU Fresno

1. **What learning outcome(s) did you assess this year?** List all program outcomes you assessed (if you assessed an outcome not listed on your department SOAP please indicate explain). Do not describe the measures or benchmarks in this section. Also please only describe major assessment activities in this report. The G.E. Committee will issue a separate call for G.E. assessment reports.

The CE Program carried out Course Evaluation Survey to access Learning Outcomes (a) through (k), per ABET, shown in the table below.

(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 with 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
(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

2. **What instruments (assignment) did you use to assess them?** If the assignment (activity, survey, etc.) does not correspond to the activities indicated in the timeline on the SOAP, please indicate why. Please clearly indicate how the instrument (assignment) is able to measure the outcome. If after evaluating the assessment you concluded that the measure was not clearly aligned or did not adequately measure the outcome please discuss this in your report. Please include the benchmark or standard for student performance in your assessment report (if it is stated in your SOAP then this information can just be copied into the report). An example of an expectation or standard would be "On outcome 2.3

The Learning Outcomes (see 1) were assessed using Course Evaluation Survey, which represents a major assessment instrument for the CE Program. This Survey is to be carried out on a bi-annual basis, since 2013, per CE Program Six-Year Assessment Plan coincides with six-year ABET evaluation cycle. This Survey is the second planned assessment activity per the Six-Year Plan performed in Spring 2016 semester; the first one was done in Spring 2014, and one more will be carried out in Spring 2018, just prior to ABET planned visit.

The Learning Outcomes prescribed in (1) were carried out and evaluated on Surveys returned of 13 core courses, 4 labs, and 6 technical area courses (e.g., electives), Spring 2016 semester. The relevancy of the Learning Outcomes, matching (or not matching) the individual course's outcomes is as presented in Table 1 (Page 5 of 5 in this report).

3. **What did you discover from the data?** Discuss the student performance in relation to your standards or expectations. Be sure to clearly indicate how many students did (or did not) meet the standard for each outcome measured. Where possible, indicate the relative strengths and weaknesses in student performance on the outcome(s).

The mean and standard deviation of targeted learning outcomes, from returned surveys (23 courses in all) were computed and analyzed.

It was found that 17 out of the 23 courses evaluated exceeded Program's expectation (i.e., the mean of selected learning outcomes of these courses was greater than the standard or expectation of the Program).

5 of the remaining 6 courses had a mean value of selected learning outcomes below the standard or expectation of the Program; however, they were all within the standard deviation ("normal, expected variation").

Only one (1) lab course, CE121L – Mechanics of Materials Lab, out of 23 courses evaluated performed below par (e.g., below and outside of expectation).

4. **What changes did you make as a result of the data?** Describe how the information from the assessment activity was reviewed and what action was taken based on the analysis of the assessment data.

The finding of CE121L (see 3) is consistent with observed IDEA Student Rating evaluation.

CE121L was taught in Spring 2016 semester by a graduate teaching associate, who had since graduated from the Program. The lab course is currently (Fall 2016 semester) being taught by a full-time faculty of the Program.

It is the intention of the Program to carry out the same Survey on CE121L near the end of the Fall 2016 semester to see if the perception improves (compared to Spring 2016's semester).

5. **What assessment activities will you be conducting in the 2016-2017 AY?** List the outcomes and measures or assessment activities you will use to evaluate them. These activities should be the same as those indicated on your current SOAP timeline; if they are not please explain.

The major assessment activity that will be carried in 2016-17 is the "Body of Knowledge" assessing the following Learning Outcomes:

LO (a) Apply knowledge of mathematics, science, and engineering in problem-solving (CE20 and CE128)
LO (c) Design of systems or components (CE132)
LO (e) Formulate and solve engineering problems (CE130)
LO (f) Professional and ethics (CE85 and CE185)

The selected courses represent a board cross-section of the BSCE curriculum (from Freshman to Senior).

6. **What progress have you made on items from your last program review action plan?** Please provide a brief description of progress made on each item listed in the action plan. If no progress has been made on an action item, simply state "no progress."

There was no action item from AY2014-15 program review.

Additional Guidelines: If you have not fully described the assignment then please attach a copy of the questions or assignment guidelines. If you are using a rubric and did not fully describe this rubric (or the criteria being used) than please attach a copy of the rubric. If you administered a survey please attach a copy of the survey so that the Learning Assessment Team (LAT) can review the questions.

Table 1. Mapping of learning outcomes (a through k) to courses, including their relevancy.

COURSES	LEARNING OUTCOMES, PER ABET										
	(a)	**(b)**	**(c)**	**(d)**	**(e)**	**(f)**	**(g)**	**(h)**	**(i)**	**(j)**	**(k)**
CE 20: *Engineering Mechanics: Statics*	H			M	M	L	L		L		
CE 121: *Mechanics of Materials*	H			M	M	L	L		M		M
CE 121L: *Mechanics of Materials Lab**	H	H		M	M		H		M		H
CE 123: *Soil Engineering*	H	M	M	M	M						
CE 123L: *Soils Lab**	M	H		M			M				
CE 124: *Concrete Lab**	H	H		M	M		H		M		H
CE 125: *Geotechnical Design***	H	H	H		H		H		H		H
CE 128: *Civil Engineering Hydraulics*	H		H	M	H						H
CE 130: *Theory of Structures*	H			M	M	L	L		M		
CE 132: *Reinforced Concrete Design*	H		H	L	H	M	M	L	H	H	L
CE 133: *Design of Steel Structures*	H			M	M	M	M	M	M	M	L
CE 134: *Foundation Design***	H	M	M		H				M		H
CE 137: *Seismic Analysis of Structures*	H		M	L	H	M	L	L	H	M	M
CE 140: *Hydrology*	M				M				L	M	
CE 141: *Water Resources Engineering*	H		H	H	H		M	M	M	M	H
CE 142: *Environmental Engineering*	H	M	H	M	H		M	M		H	H
CE 142L: *Environmental Quality Lab**	H	H	M	H	M		M		M		M
CE 144: *Design of Water Quality Control Process*	H		H	H	5.0		M	M	M	M	M
CE 150: *Transportation Planning and Design*	H		H	M	M	M	M	M			M
CE 153: *Traffic Operations and Control*	H	L	L		L		L	L	M	L	H
CE 180A: *Project Design*	H		H	M	M	M	H		M		M
CE 180B: *Senior Design*	H	H	H	M	M	M	H		M		M
CE 185: *Civil Engineering Practice*						M		M	M	M	

Relevancy (scale of 1 to 5, 5 being the most relevance): H (4.5 – 5.0), M (4.0), and L (3.0). Blanks (no relevancy)
* Laboratory course
** Technical area course