**Annual Assessment Report for 2018-2019 AY**

Reports completed on assessment activities carried out during the 2018-2019 AY will be due September 30th 2019 and must be e-mailed to the Director of Assessment, Dr. Melissa Jordine (mjordine@mail.fresnostate.edu).

Provide detailed responses for each of the following questions within this word document. Please do NOT insert an index or add formatting. Furthermore, only report on two or three student learning outcomes even if your external accreditor requires you to evaluate four or more outcomes each year. Also be sure to explain or omit specialized or discipline-specific terms.

Department/Program: Civil & Geomatics Engineering / Civil Engineering Degree BSCE

Assessment Coordinator: Ching Chiaw Choo

**Introduction**

The Bachelor of Science in Civil Engineering (BSCE) program is nationally accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. The program has been continuously accredited since 1968, and has recently completed another round ABET accreditation, AY2018-19, in which the Program does not received a single concern, weakness, or deficiency, in the Final / Summary statement delivered by ABET August 28, 2019.

For the accreditation cycle (i.e., a period from AY2012-13 to AY2018-19), the BSCE program adopts the following ABET’s Student Outcomes (SOs) as its Program or Student Learning Outcomes (PLO or SLOs):

(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.

1. Please list the learning outcomes you assessed this year.

For AY2018-19, the following five (out of eleven) student learning outcomes (SLOs) related to ***Technical Aptitude*** were measured:

(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.

(e) An ability to identify, formulate, and solve engineering problems.

(k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

It should be noted that these five PLOs are closely related to one of the four Program’s Educational Objectives (PEOs), ***Technical Aptitude*** – *Be employed as engineers with the ability to use their technical knowledge, design, and problem solving skills for effective professional practice throughout their careers*.

1. What assignment or survey did you use to assess the outcomes and what method (criteria or rubric) did you use to evaluate the assignment? **Please describe the assignment and the criteria or rubric used to evaluate the assignment in detail and, if possible, include copies of the assignment and criteria/rubric at the end of this report.**

To determine the degree of attainment of the five SLOs, graduating senior surveys (i.e., exit interview) were carried out the end of each semester for the last few years. Note that the graduating senior survey is one of the indirect assessment techniques used by the BSCE program. The survey results for AY2018-19, and years prior, are presented in Table 1.

Table 1 – Graduating senior surveys measuring the five SLOs of BSCE (AY2015-16 to AY2018-19)

|  |  |
| --- | --- |
| **SLOs**  | **Percent (%) of Seniors with Rating of 4 or higher\***(1 – 5 scale, with 1 being the “little gain” and 5 being “high gain”)  |
| Sp’ 2014N = 26 | Fa’ 2014N = 21 | Sp’ 2015N = 36 | Fa’ 2015N = 17 | Sp’ 2016N = 22 | Fa’ 2016N = 27 | Sp’ 2017N = 27 | Fa’ 2017N = 19 | Sp’ 2018N = 30 | **Fa’ 2018****N = 30** | **Sp’ 2019****N = 16** |
| (a) | 84.6 | 90.5 | 86.1 | 94.1 | 95.5 | 96.3 | 81.5 | 78.9 | 96.7 | **90.0** | **95.5** |
| (b) | 80.8 | 57.1 | 80.6 | 76.5 | 95.5 | 88.9 | 76.9 | 84.2 | 86.7 | **90.0** | **81.8** |
| (c) | 73.1 | 85.7 | 66.7 | 76.5 | 95.5 | 70.4 | 73.1 | 84.2 | 86.7 | **93.3** | **72.7** |
| (e) | 84.6 | 95.2 | 97.2 | 88.2 | 100.0 | 92.6 | 84.6 | 73.7 | 93.3 | **93.3** | **86.4** |
| (k) | 84.6 | 85.7 | 83.3 | 76.5 | 81.8 | 81.5 | 69.2 | 84.2 | 90.0 | **86.6** | **81.8** |
| \* Performance target = 65% of graduating seniors surveyed will rate each SO with a rating of 4 or above |

The scaling system is defined as such:

5-Point Scale: 5 – High degree of attainment or gain

Program’s expectation

 4

 3 – Moderate degree of attainment or gain

 2

 1 – Little or no degree of attainment or gain

1. What did you learn from your analysis of the data? Please include sample size (how many students were evaluated) and indicate how many students (number or percentage instead of a median or mean) were designated as proficient.

The total sample size, N = 46, for AY2018-19 represents about 66% of the graduating seniors. The range of measured SLOs deemed satisfactory by students is between 86.6% [SLO (k)] - 93.3% [SLOs (c) & (e)] for Fall 2018, and that range is between 72.7% [SLO (c)] - 95.5% [SLO (a)] for Spring 2019 – both exceed the performance target of 65% of these SLOs, which imply:

* Graduates having high confidence in the ability of applying Math, Science, and Engineering knowledge to engineering problem
* Graduates having high confidence in the ability of performing experiment, and collecting and analyzing collected data
* Graduates having high confidence in the ability of designing engineering systems meeting societal needs
* Graduate having high confidence in the ability of identifying and formulating problems and engineering solutions
* Graduate having high confidence in the ability to incorporate tools and earned skills for the practice
1. What changes, if any, do you recommend based on the assessment data?

There does not seem to be a concern in the measured SLOs that warrant a corrective measure. As such, no measure of improvement or correction is planned at this point.

1. If you recommended any changes in your response to Question 4 in last year’s assessment report, what progress have you made in implementing these changes? If you did not recommend making any changes in last year’s report please write N/A as your answer to this question.

Results are presented for AY2018-19 and prior years. There was no concern in AY2017-18 for measured SLOs, and as such the Program decided to focus elsewhere for program improvement than taking action in this particular arena.

1. What assessment activities will you be conducting during the next academic year?

Currently, the BSCE program is looking to make changes to its curriculum with the following goals in mind:

* Improve graduation rate (i.e., to adhere to graduation initiative of 2025)
* Improve student engagement, particularly incoming freshmen

With new and updated ABET’s SOs and criteria for curriculum, a new Student Outcomes Assessment Plan (SOAP) is currently in the works for Spring 2020 and beyond. With the new SLOs (or SOs), an update to the instruments used for assessment will be required, and that includes update to the graduating senior survey.

As such, the graduating senior survey with updated SLOs will be carried out for AY2019-20.

1. What progress have you made on items from your last program review action plan?

The BSCE received concerns in two areas, ***curriculum*** and ***faculty***, in its last national, ABET review (AY2012-13).

In ***curriculum***, the concern was related to not enforcing senior capstone requirement for high achieving students transitioning from the undergraduate program to the graduate program. The concern was resolved as ABET received assurance that senior capstone will be part of graduation requirement for all BSCE students, regardless whether ones enroll in the accelerated MSCE program.

In ***faculty***, the concern was related to having sufficient number of tenured/tenure-track faculty to adequately cover all curricular matters, as well as others, including mentorship of students, academic advising, etc. The concern was resolved as the Program managed to almost double the number of its faculty, from 7 to 15, over a span of 4.5 years period.

As noted earlier that the BSCE program just concluded its national, ABET review (AY2018-19), with no concern, weakness, or deficiency. For a nationally accredited program, the University allows for an abbreviated internal program review to be conducted in the ensuing year. As such, the Program is in preparation for such review, with the abbreviated self-study due in April 2020.