

2019 Annual Assessment Report and Action Plan

Construction Engineering Management Program

Follow-up from 2018 Annual Assessment Report and Action Plan:

1. One faculty member will evaluate the use of an interactive classroom technology (Top Hat) and share findings with the faculty. Expanded use of such technologies will be considered at that time. **Follow-up: Use of this technology was not determined to have a significant impact on student learning for the upper-division courses that used it, though it will be used in a lower-division course this year.**
2. Re-assess the entire CEM curriculum in terms of sequencing and flow of courses as well as inclusion, exclusion, or modification of courses, in light of the elimination of the Pro-School system. Focus areas for curriculum improvement will include innovation, project-based learning, leadership, and critical analysis and thinking. **Follow-up: The CEM course flow chart was developed and reviewed by CEM faculty. Discussions on curriculum are ongoing at the College, School, and CEM Program levels. Preliminary planning for project-based sequence of courses (in which a single project is used across multiple courses) is underway.**

Survey Data Results

Results of surveys from 102 graduating seniors, 28 alumni from the class of 2017, 14 alumni from the class of 2014, and 143 employers were reviewed by CEM faculty and the CCE Industry Advisory Board during Fall 2019. The surveys of graduating seniors were conducted by the OSU College of Engineering for Winter, Spring, and Summer 2019 graduates. The surveys of alumni and employers were conducted by the School of CCE in July and August of 2019 using the Qualtrics platform.

1. Overall customer satisfaction:

Survey Item	Alumni 2017	Alumni 2014
# reporting CEM Program “moderately” or “extremely” fulfilled their expectations / satisfied with educational preparation	24 of 28	12 of 14
# who would “probably” or “definitely” recommend CEM to others	27 of 28	14 of 14

Employer Survey:

- 122 of 143 employers indicated they were “moderately” satisfied or “very” satisfied with OSU CEM graduates educational preparation. Average score was 6.1 out of 7.0.
- 112 of 139 respondents rated the professionalism, in terms of attitude and work ethic, of OSU CEM graduates to be “moderately” or “extremely” professional, with an average score of 6.1 out of 7.0.
- 138 of 142 respondents indicated they would “probably” or “definitely” hire another OSU CEM graduate, with an average score of 6.7 out of 7.0.

2. Achievement of CEM Program Student Learning Outcomes (SLO’s):

- a. Graduating seniors 2019: Average scores for “preparation” for all 20 Student Learning Outcomes exceeded the target minimum of 4.9 out of 7.0.
- b. Alumni 2017: Average scores for “quality of preparation” for 12 out of 20 Student Learning Outcomes met or exceeded the target minimum of 4.9 out of 7.0, with all 20 scoring 4.3 or greater.

- c. Alumni 2014: Average scores for “quality of preparation” for 17 out of 20 Student Learning Outcomes met or exceeded the target minimum of 4.9 out of 7.0, with all 20 scoring 4.4 or greater.
- d. Employers: Only 6 out of 20 SLO’s achieved the target score of 4.9 or greater for “quality of preparation,” though all of the remaining 14 SLO’s scored no lower than 4.3.

3. High Priority SLO’s:

The following SLO’s were determined, based on scores for “Quality of Preparation” and “Importance” from the surveyed groups, to be high priority for potential improvements.

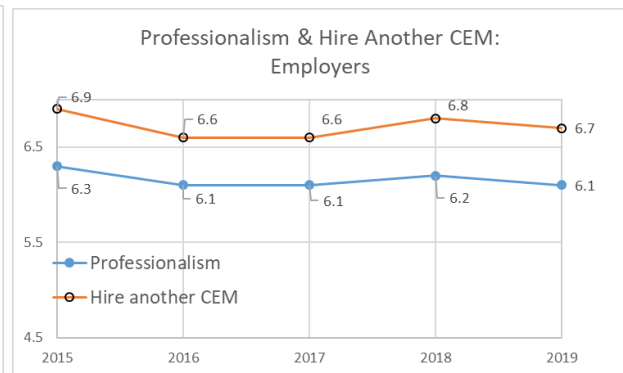
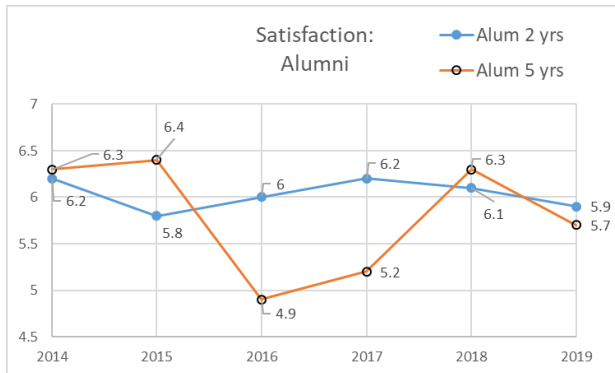
- SLO 3 “Create a construction project safety plan.”
- SLO 13 “Understand construction risk management.”
- SLO 14 “Understand construction accounting and cost control.”
- SLO 15 “Understand construction quality assurance and control.”
- SLO 16 “Understand construction project control processes.”
- SLO 17 “Understand the legal implications of contract, common, and regulatory law to manage a construction project.”

Direct Assessment of SLO’s by Faculty

None of the 20 SLO’s directly assessed by individual faculty members during the past year was identified as deficient (*i.e.*, less than 70% of students passing the assessment).

Trends

Historical data from survey questions regarding Satisfaction, Professionalism, Hiring of other CEM graduates, and Recommending the CEM major were analyzed to determine if any trends are present. Slight downward or flat trends from Alumni and Employers can be identified, though the number of years assessed and the year-to-year variations may be too small to draw meaningful conclusions. No Action Items were identified based on this data.



Summary and Action Plan: (After Discussion with CEM Faculty on September 24, 2019 and with IAB on October 11, 2019)

The CEM faculty analyzes survey data and trends, SLO direct assessment results, and input from faculty, staff, students, industry, and administration to identify an Action Plan for improvement for the upcoming year.

1. Faculty will re-focus on improving individual course delivery with a focus on content related to measurable SLO's and enhancing the learning experience for students.
2. Explore the possibility of a project-based sequence of courses, in which a single project is used across multiple courses.
3. Re-assess the entire CEM curriculum in terms of sequencing and flow of courses as well as inclusion, exclusion, or modification of courses, in light of the elimination of the Pro-School system. Focus areas for curriculum improvement will include innovation, project-based learning, leadership, and critical analysis and thinking.

Appendix A: Summary of 4 Surveys from 2019

Scale of 1 – 7 with a target minimum score of 4.9 for first four questions and for SLO “Preparation.”

	Graduates 2019	Alumni 2017		Alumni 2014		Employers			
Satisfaction	-	5.9		5.7		6.1			
Professionalism (attitude & work ethic)	-	-		-		6.1			
Hire another CEM?	-	-		-		6.7			
Recommend CEM?	-	6.6		6.9		-			
Number of respondents	n=102	n=28		n=14		n=143		Weighted Avg.	
20 Student Learning Outcomes (SLO's)	Preparation	Import ance	Prepar ation	Import ance	Prepar ation	Import ance	Prepara tion	Avg. Import	Avg. Prep.
1. Create written communications appropriate to the construction discipline.	6.3	5.9	5.1	5.8	5.1	5.9	5.2	5.9	5.6
2. Create oral presentations appropriate to the construction discipline.	6.1	4.6	4.6	5.1	5.4	5.1	4.9	5.0	5.3
3. Create a construction project safety plan.	6.3	4.9	4.1	4.9	4.9	5.1	4.5	5.1	5.1
4. Create construction project cost estimates.	6.4	5.3	5.2	5.8	4.9	5.7	4.6	5.6	5.3
5. Create construction project schedules.	6.2	5.8	5.0	6.0	5.1	5.6	4.6	5.6	5.2
6. Analyze professional decisions based on ethical principles.	6.2	5.4	5.3	5.9	5.4	6.1	5.6	6.0	5.8
7. Analyze construction documents for planning and management of construction processes.	6.4	6.1	5.1	6.4	5.1	6.2	5.1	6.2	5.5
8. Analyze methods, materials, and equipment used to construct projects.	6.1	5.5	4.7	6.0	4.9	5.6	4.8	5.6	5.3
9. Apply construction management skills as an effective member of a multi-disciplinary team.	6.4	5.8	5.3	6.3	5.5	6.0	5.2	6.0	5.7
10. Apply electronic-based technology to manage the construction process.	6.1	5.8	5.2	5.7	5.3	5.7	5.7	5.7	5.8
11. Apply basic surveying techniques for construction layout of control.	5.7	4.3	4.9	4.6	5.0	3.8	4.3	3.9	4.9
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.	6.3	5.0	5.1	5.2	5.1	5.1	4.4	5.1	5.2
13. Understand construction risk management.	6.2	5.5	4.8	5.6	4.9	5.7	4.5	5.6	5.1
14. Understand construction accounting and cost control.	6.0	5.3	4.3	5.5	4.9	5.7	4.6	5.6	5.1
15. Understand construction quality assurance and control.	5.9	5.5	4.4	5.4	5.1	5.5	4.7	5.5	5.1
16. Understand construction project control processes.	6.0	5.0	4.6	5.3	4.4	5.3	4.7	5.2	5.1
17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.	5.9	5.4	4.9	4.9	4.6	5.3	4.3	5.3	4.9
18. Understand the basic principles of sustainable construction.	5.8	3.8	4.4	3.7	5.0	4.1	4.4	4.0	5.0
19. Understand the basic principles of structural behavior.	6.0	4.6	5.5	5.1	4.8	4.3	4.6	4.4	5.2
20. Understand the basic principles of mechanical, electrical, and plumbing systems.	6.2	5.3	5.1	5.2	5.8	4.8	4.3	4.9	5.1

Appendix B: Highest to Lowest “Importance” Weighted Average of 4 Surveys from 2019

Scale of 1 – 7

20 Student Learning Outcomes (SLO's)	Weighted Avg. Importance	Weighted Avg. Preparation
7. Analyze construction documents for planning and management of construction processes.	6.2	5.5
6. Analyze professional decisions based on ethical principles.	6.0	5.8
9. Apply construction management skills as an effective member of a multi-disciplinary team.	6.0	5.7
1. Create written communications appropriate to the construction discipline.	5.9	5.6
10. Apply electronic-based technology to manage the construction process.	5.7	5.8
13. Understand construction risk management.	5.6	5.1
4. Create construction project cost estimates.	5.6	5.3
8. Analyze methods, materials, and equipment used to construct projects.	5.6	5.3
5. Create construction project schedules.	5.6	5.2
14. Understand construction accounting and cost control.	5.6	5.1
15. Understand construction quality assurance and control.	5.5	5.1
17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.	5.3	4.9
16. Understand construction project control processes.	5.2	5.1
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.	5.1	5.2
3. Create a construction project safety plan.	5.1	5.1
2. Create oral presentations appropriate to the construction discipline.	5.0	5.3
20. Understand the basic principles of mechanical, electrical, and plumbing systems.	4.9	5.1
19. Understand the basic principles of structural behavior.	4.4	5.2
18. Understand the basic principles of sustainable construction.	4.0	5.0
11. Apply basic surveying techniques for construction layout of control.	3.9	4.9