



PLO No. 13 Report

Assessment Measures and Results

At Cal Poly's Construction Management Department, PLO 13 (Understand construction risk management) is assessed using four different instruments, listed below.

Assessment Measure 1: Embedded Questions in Exams

Direct Measure

Questions are embedded in the final exam in the CM 413 – Jobsite Construction Management course. All students must complete this course to graduate, so all students are assessed. The embedded questions were initiated in Fall 2017, and results from the embedded assignment are collected each quarter.

Our goal is that at least 70% of all students answer each question correctly, and that at least 70% get at least 70% of the answers correct. Students have achieved this goal since Fall 2019, but have consistently performed poorly with two questions that looks for students to identify ways contractors either accept, transfer, mitigate or avoid risk.

Assessment Measure 2: AIC Exam Results

Direct Measure

Starting in academic year 2018-2019, as part of CM 461, all students must complete the AIC exam in order to graduate. Although a few students completed the AIC prior to Fall 2018, most of the results are from Fall 2018 onward.

Our goal is that our students perform either at or above the national average at each exam date. For the last three test dates, students have scored below the national average.

Assessment Measure 3: Survey – Industry Employer

Indirect Measure

At the end of each academic year, surveys are sent out to industry members who recruit and employ Cal Poly Construction Management graduates assessing graduates' abilities to understand construction risk management. Surveys have been sent out in the spring of 2016 and each spring from 2108 through 2020.

Our goal is that at least 50% of employers answer good or above. In all years, students scored greater than 50%.

Assessment Measure 4: Survey – Graduating Senior/Recent Alumni

Indirect Measure

At the end of each academic year, surveys are sent out to graduating seniors assessing personal abilities to understand construction risk management. Surveys have been sent out in the spring of 2016 and each spring from 2108 through 2020.

Our goal is that at least 65% of students answer good or above. In each year, we have met our target. For each year, 85% (2016), 83% (2018), 93% (2019), and 89% (2020) of students answered good and above.



PLO No. 13 Report

Evaluation of Assessment Data



This PLO is of medium concern to the department. Students are performing above expectations for two of the four assessments. However, the two direct assessments do not show good performance, and the direct measure embedded in the course has only reached its target in the last three quarters. This shows positive improvement, but this should continue to be reviewed.

The direct assessment instrument is considered valid for this evaluation. However, it is recommended that one additional question be added to the final exam.

Students have performed well on ways contractor handle risk, but struggle to understand the type of risk mitigation strategy employed when given a specific scenario. These questions remain the most challenging as they are not mere recall questions but are application questions with respect to industry practices, but are trending upwards over a two-year period. Additional lab assignments on Risk Management were introduced in the Winter 2020 and Spring 2020 quarters, to provide additional opportunities with application-based learning.

Quality Improvement Plan

Data for this PLO is collected quarterly by the PLO Champion and provided to the Outcomes Assessment Committee.

Industry and graduating senior surveys are collected each spring. Results from the AIC exam are collected after each exam is conducted (November and April). Results from surveys and the AIC exam are housed by the Outcomes Assessment Committee.

Every three years, the annually collected data will be analyzed by the faculty, with identification of strengths, weaknesses, and recommendations for curricular change, program change, or assessment instrument modifications. This analysis will happen in the following years:

2020/2021

2023/2024

2026/2027

2029/2030

Actions Taken

As a result of the assessment data collected, the department has taken the following actions:

- In Winter 2019, questions were evaluated and some were determined to be at the correct Bloom's taxonomy level.
- During the Fall 2019 retreat, the assessment instrument and preliminary results were reviewed. Questions were analyzed to make sure they were at the correct Bloom's taxonomy level.
- The curriculum was evaluated and this material is sufficiently introduced and reinforced throughout the curriculum to scaffold this knowledge prior to assessment.
- In Spring 2019, one question was removed from the assessment since the text was contradicting the material presented in class, leading to inconclusive results.

PLO No. 13 Report

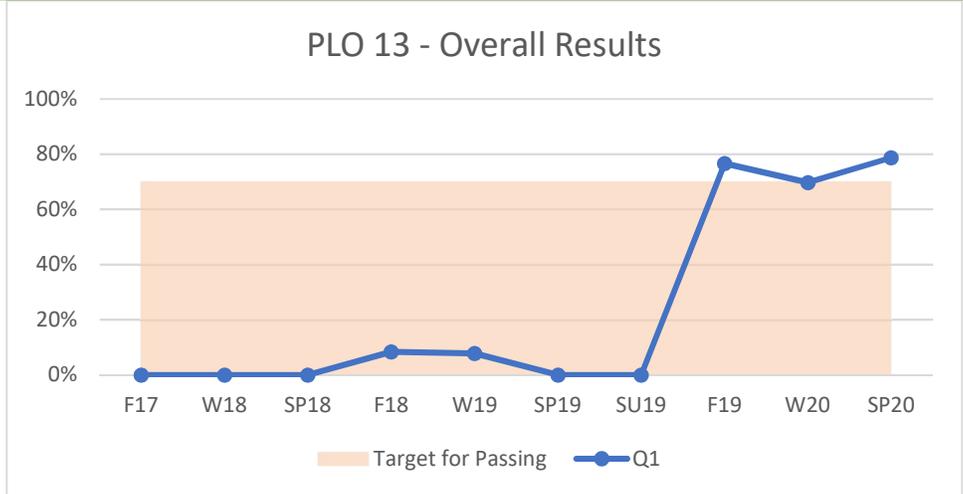
- During Fall 2019 retreat, it was determined that the assessment is embedded in the correct class, and no changes need to be made at this time.
- Starting Winter 2020, additional lab assignments on Risk Management were introduced in the in order to give the students application-based learning.
- Starting Fall 2020, add in one additional question to the final exam:
 - A total risk management program has three stages, they include each of these EXCEPT?
 - Identification
 - Measurement
 - **Assessment**
 - Control
- During the Fall 2020 retreat, the assessment results were reviewed by faculty representatives. Students have struggled with applying risk mitigation strategies to specific scenarios. With the recent implementation of additional lab material, results have started to trend upward and this PLO will continue to be scrutinized on an annual basis.

Assessment Summary

PLO No. 13 - Risk

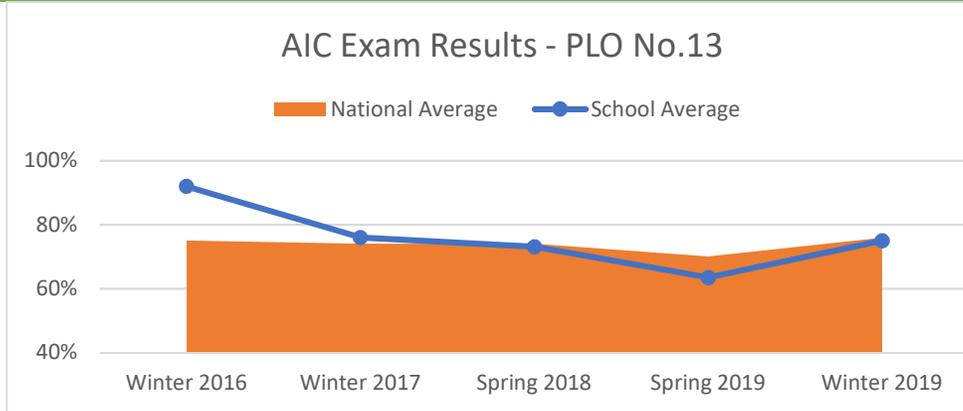
Assessment Measure 1

Assessment Method: Embedded questions in exam
Type of Measure: Direct
Goal: 70% of students answer each question correctly



Assessment Measure 2

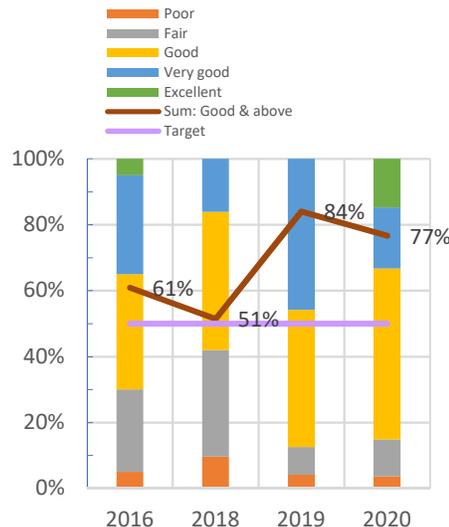
Assessment Method: AIC exam
Type of Measure: Direct
Goal: School average is higher than national average



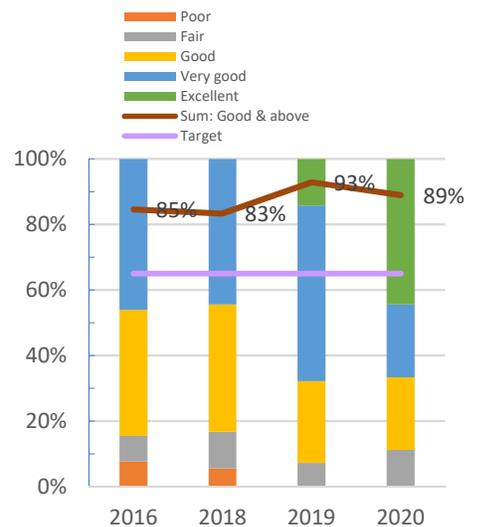
Assessment Measure 3

Assessment Method: Surveys
Type of Measure: Indirect
Goal: 50% of employers answer good or above
 65% of graduating students and recent alumni answer good and above

Employer Survey Summary - PLO No.13



Graduating Seniors & Recent Alumni Results - PLO No.13



Assessment Background

PLO No. 13 - Risk

PLO Number and Description

PLO 13 – Understand Risk Analysis: Understand construction risk management.

Method of Assessment

Questions will be embedded in either the mid-term or final exam each quarter. Answers will be collected and summarized at the end of each quarter and provided to the Outcomes Assessment Team.

Assessment Reasoning

For understanding risk analysis and risk management, the content was broken up into three separate categories listed below that are important for the understanding of the subject:

1. Specific ways risk is legally transferred from one entity to another (example: Spearin Doctrine)
2. Identify what kind of risks a contractor is exposed.
3. Identify the four basic ways contractors deal with risk.

Data Collection and Distribution

At the end of each quarter, results for each question will be extracted from each of the three exams. Results will be collected for every student in the course and every question answered. These results will be summarized in an excel document listing the number of right/wrong responses for each question, and the overall percentage of questions answered correctly for each student.

Result Expectations

The goal is that each question will be answered with an average score of 70% correct or better.

Assessment Measure 1 Timeline

PLO No. 13 - Risk

Original Assessment Measure

Fall 2017 First assessment measure implemented in CM 413 – Construction Jobsite Management. Original measure included questions 1, 2, and 3 listed on Assessment Measure 1: Questions and Results page.

Modifications to Original Assessment Measure

December 2018 December 2018: Assessment questions were analyzed; not all questions assessed Blooms Taxonomy Level of ‘understand’; new questions were developed.

Winter 2019 Updated questions representing correct Bloom’s taxonomy level of ‘understand’ were added to assessment measure.

Fall 2020 One additional question will be added to the assessment measure.

Assessment Measure 1: Questions and Results

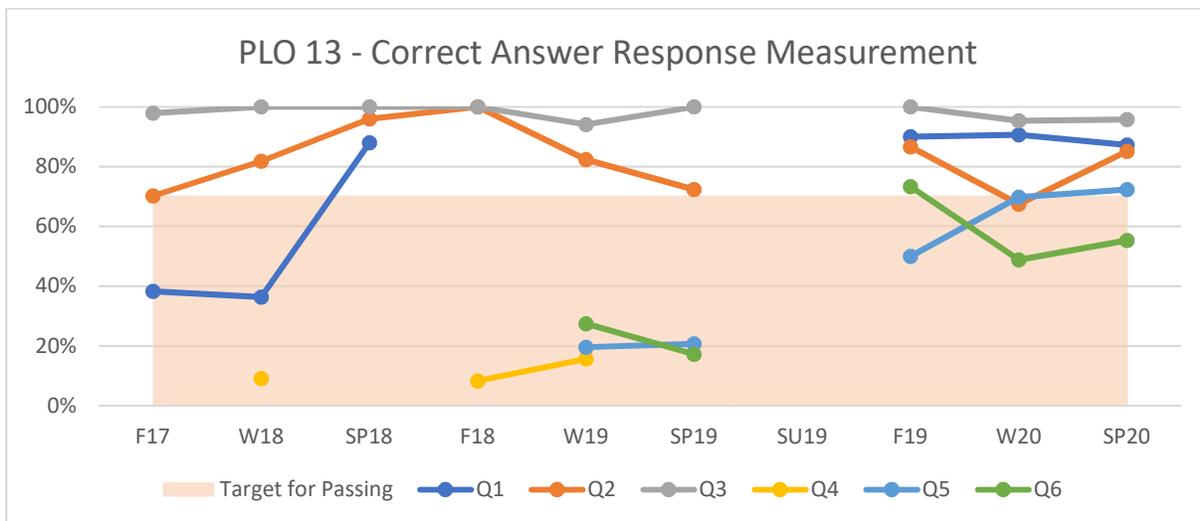
PLO No. 13 - Risk

Questions:

The exercise and example of student work will be provided in the assessment folder.

Assessment Results by Question and Quarter:

	F17	W18	SP18	F18	W19	SP19	SU19	F19	W20	SP20
Number of Students who scored 70% or higher				2	4	0		23	30	37
Number of Students in Class	47	22	25	24	51	29	0	30	43	47
Percent of students who scored 70% or higher	0%	0%	0%	8%	8%	0%	0%	77%	70%	79%
Target for Passing	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
Individual Question Results										
Question 1	38%	36%	88%					90%	91%	87%
Question 2	70%	82%	96%	100%	82%	72%		87%	67%	85%
Question 3	98%	100%	100%	100%	94%	100%		100%	95%	96%
Question 4		9%		8%	16%					
Question 5					20%	21%		50%	70%	72%
Question 6					27%	17%		73%	49%	55%
Number of Students who took the exam	47	22	25	24	51	29	0	30	43	47



Assessment Measure 2: Details

PLO No. 13 - Risk

Method of Assessment

Students will take the American Institute of Constructors (AIC) Level 1 Certification Exam during their junior or senior year.

Assessment Reasoning

The AIC exam has mapped ACCE student learning outcomes to questions in their exam; these results can be used to assess ACCE's 20 student learning outcomes.

Data Collection and Distribution

Upon completion of the exam (held twice a year), results are sent from the AIC to a designated faculty member. These results include individual student performance by each ACCE SLO as well as national averages. The faculty member distributes the results to the data team for recording and results are shared at departmental meetings.

Result Expectations

The goal is that the school average is higher than the national average for each test period.

AIC Exam Results by Date

AIC Exam Results - PLO No.13						
	Winter 2016	Winter 2017	Spring 2018	Spring 2019	Winter 2019	Spring 2020**
School Average	92%	76%	73%	64%	75%	#N/A
National Average	75%	74%	74%	70%	76%	#N/A
Number of students who took the exam	1	9	10	4	97	0
Number of Students who Passed Exam	1	6	6*	0	79	0

*one student left the exam early and this student's results are not included in the results

**Exams cancelled due to COVID-19

Assessment Measures 3 & 4: Details

PLO No. 13 - Risk

Method of Assessment

Surveys are sent out each year to industry employers, graduating seniors, and recent alumni. Surveys ask respondents to rank each of the 25 PLOs against student performance with the scale of (1) unable to assess; (2) poor; (3) fair; (4) good; (5) very good; (6) excellent.

Industry employers are asked to rate their perception of Cal Poly student performance for each of the 25 PLOs.

Graduating seniors and recent alumni are asked to rank their individual performance in each PLO area based on their individual perception.

Assessment Reasoning

The surveys are used to identify overall how the program is perceived by industry and how students perceive their attainment of each individual PLO.

Data Collection and Distribution

Annually, each spring, a member of the outcomes assessment committee sends out a survey to (1) industry employers; (2) graduating seniors; and (3) recent alumni using Survey Monkey. Results are collected from each group, shared with the outcomes assessment committee, and shared with the department at the fall retreat.

Result Expectations

The goal is that 50% of employers answer good or above and 65% of graduating students and recent alumni answer good and above.

Employer Survey Results by Year

	2016	2018	2019	2020
Number of Responses	23	35	25	30
Unable to assess	13%	11%	4%	10%
Poor	4%	9%	4%	3%
Fair	22%	29%	8%	10%
Good	30%	37%	40%	47%
Very good	26%	14%	44%	17%
Excellent	4%	0%	0%	13%
Sum: Very good & Excellent	30%	14%	44%	30%
Sum: Good & above	61%	51%	84%	77%
Target	50%	50%	50%	50%

Assessment Measures 3 & 4: Details

PLO No. 13 - Risk

Graduating Seniors and Recent Alumni Results by Year

	2016	2018	2019	2020
Number of Responses	13	18	28	19
Unable to assess	0%	0%	0%	0%
Poor	8%	6%	0%	0%
Fair	8%	11%	7%	11%
Good	38%	39%	25%	22%
Very good	46%	44%	54%	22%
Excellent	0%	0%	14%	44%
Sum: Very good & Excellent	46%	44%	68%	67%
Sum: Good & above	85%	83%	93%	89%
Target	65%	65%	65%	65%