



PLO No. 5 Report

Assessment Measures and Results

At Cal Poly's Construction Management Department, PLO 5 (create construction project schedules) is assessed using four different instruments, listed below.

Assessment Measure 1: Embedded Questions in Exams

Direct Measure

Questions are embedded in an exam in the CM 313 – Commercial 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 80% of all students score 80% or better on the assignment. In each of the assessment quarters, with the exception of Spring 2019, student performance achieved this goal.

Assessment Measure 2: 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 create construction project schedules. 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 assess students' ability as good or above. In all years, students scored greater than the goal, with a positive upward trend since 2018.

Assessment Measure 3: 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 create construction project schedules. 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 indicate their ability as good or above. Since 2019, we have met our target, with a positive trend year over year. For each year, 42% (2016), 47% (2018), 68% (2019), and 78% (2020) of students answered good and above.

Assessment Measure 4: AIC Exam Results

Indirect 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. With the exception of Winter 2017, student average scores are greater than or equal to the national average.

Evaluation of Assessment Data



This PLO is performing well. Students are performing above expectations each of the four assessments.

The direct assessment instrument is considered valid for this evaluation.



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Students are consistently performing better than the target. In looking at the assessment, especially since going virtual, limited access to consistent software may have a negative effect. Additional software should be evaluated to create greater accessibility and consistency with this measure.

Student results are further explained later in this report.

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:

2021/2022

2024/2025

2027/2028

2030/2031

Actions Taken

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

- In Fall 2018, the assignment was evaluated by two of the course instructors; adjustments were recommended to include consistency with the rubric, use the Level 3 schedule definition, and establish a more robust grading criteria. The grading rubric will be implemented in Winter 2019
- 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.
- 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.
- During the Fall 2020 retreat, the assessment results were reviewed by faculty representatives. Strengths realized from the assessment are student performance – they are consistently performing well. However, limited access to construction software on personal computers and laptops, especially now that we are teaching virtually, may have a negative impact on both student learning and resulting assessment. More accessible software should be researched as an alternative. Suggestions include keeping in contact with industry to continually improve and stay consistent with industry evolution and current trends.

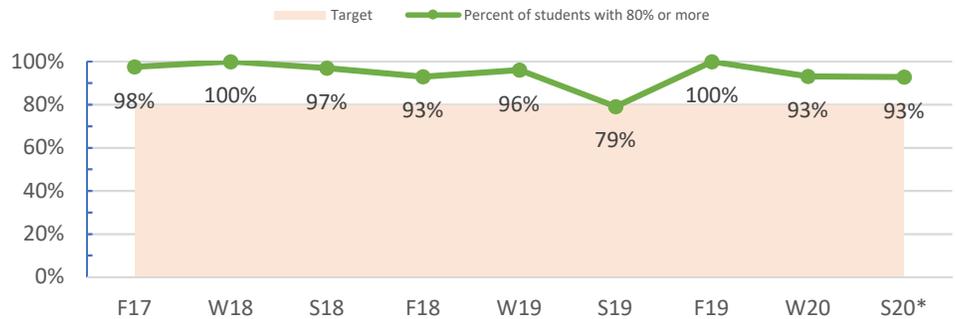
Assessment Summary

PLO No. 5 – Create Schedules

Assessment Measure 1

Assessment Method: Assignment with rubric
Type of Measure: Direct
Goal: 80% of students will achieve an overall score of 80% or better.

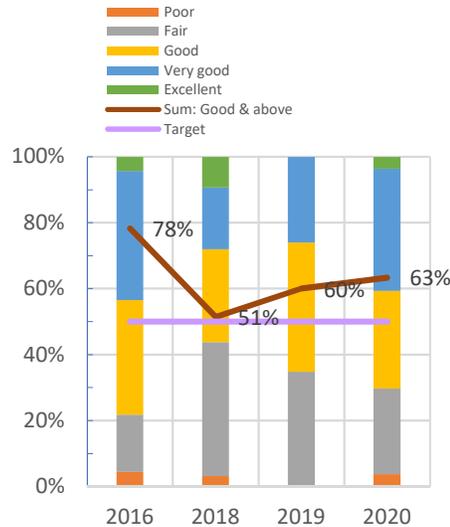
PLO 5 - Assessment Scores Measurement



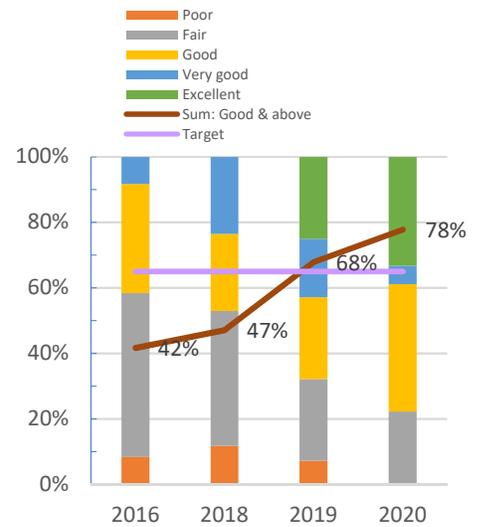
Assessment Measures 2 & 3

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.5



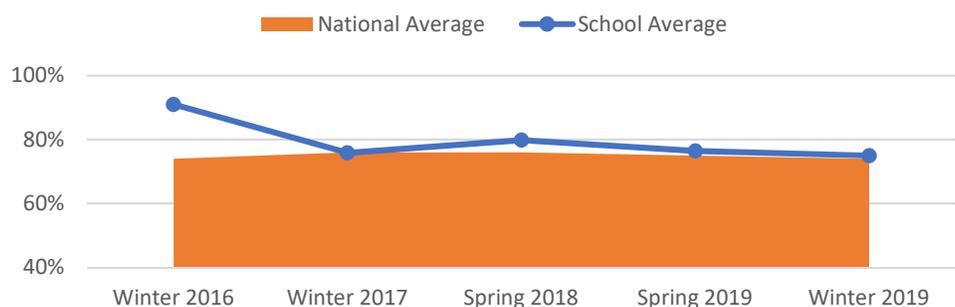
Graduating Seniors & Recent Alumni Results - PLO No.5



Assessment Measure 4

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

AIC Exam Results - PLO No.5



Resulting Actions and Follow-Up

PLO No. 5 – Create Schedules

Original Assessment Measure

Fall 2017 First assessment measure implemented

Modifications to Original Assessment Measure

None to date

Assessment Measure 1: Background

PLO No. 5 – Create Schedules

PLO Number and Description

PLO 5: Schedules - Create construction project schedules.

Method of Assessment

A set of plans will be distributed, which contain an overall site plan, architectural floorplans, elevations, and details. Each student will be asked to create an individual Level 3 schedule by hand or by using Primavera P6, Microsoft Project, or Excel. Each schedule will be graded using a general rubric (shown below) and the results will be summarized at the end of each quarter and provided to the Outcomes Assessment Team.

Assessment Reasoning

For the scheduling assignment each student will be required to create a detailed schedule. The goal of the assignment is to create a schedule that will demonstrate an understanding of the following:

1. Interpretation of the plans and a general understanding of the scope of work that needs to be complete
2. Identification of the activities, durations, and general sequence of work needing to be complete based on a set of plans
3. Apply mastery of fundamental scheduling by creating a schedule containing a Work Breakdown Structure (WBS), summary activities, accurate durations, precedencies, float, and logical flow

Data Collection and Distribution

At the end of each quarter, the results from the assignment will be summarized in an excel document listing the score (out of 100), and the overall percentage of each grading criteria to identify the areas needing improvement.

Result Expectations

The goal is that 80% of students will achieve an overall score of 80% or better..

Assessment Measure 1: Questions and Results

PLO No. 5 – Create Schedules

Questions

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

Assessment Results by Quarter:

	F17	W18	S18	F18	W19	S19	F19	W20	S20*
Total number of CM students	44	48	39	43	26	24	30	29	30
Total students assessed	41	38	33	43	26	24	29	29	28
Total number of students with 80% or more	40	38	32	40	25	19	29	27	26
Percent of students with 80% or more	98%	100%	97%	93%	96%	79%	100%	93%	93%
Target	80%	80%	80%	80%	80%	80%	80%	80%	80%

*only one course section assessed due to COVID-19

Assessment Measures 2 & 3: Details

PLO No. 5 – Create Schedules

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	0%	9%	8%	10%
Poor	4%	3%	0%	3%
Fair	17%	37%	32%	23%
Good	35%	26%	36%	27%
Very good	39%	17%	24%	33%
Excellent	4%	9%	0%	3%
Sum: Very good & Excellent	43%	26%	24%	37%
Sum: Good & above	78%	51%	60%	63%
Target	50%	50%	50%	50%

Assessment Measures 2 & 3: Details

PLO No. 5 – Create Schedules

Graduating Seniors and Recent Alumni Results by Year

	2016	2018	2019	2020
Number of Responses	12	17	28	19
Unable to assess	0%	0%	0%	0%
Poor	8%	12%	7%	0%
Fair	50%	41%	25%	22%
Good	33%	24%	25%	39%
Very good	8%	24%	18%	6%
Excellent	0%	0%	25%	33%
Sum: Very good & Excellent	8%	24%	43%	39%
Sum: Good & above	42%	47%	68%	78%
Target	65%	65%	65%	65%

Assessment Measure 4: Details

PLO No. 5 – Create Schedules

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.5						
	Winter 2016	Winter 2017	Spring 2018	Spring 2019	Winter 2019	Spring 2020**
School Average	91%	76%	80%	77%	75%	#N/A
National Average	74%	76%	76%	75%	74%	#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