



OUTCOMES & ASSESSMENT

General Education Learning Outcome (GELO) Assessment

Math Graduation Requirement

Course Completion and SLO Data Fall 2018 - Spring 2021

Assessment Report, Spring 2023

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Executive Summary

- The following [slideshow](#) summarizes the key findings in this report
- Overall, 11,821 assessments of SLOs mapped to the Requirement were completed over six semesters, with a proficiency of 72.3% “meets SLO”.

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these results with representatives from the departments offering courses to meet the math requirement during the Fall 2022 semester, and also with the SLO Committee of the Academic Senate, to supplement the numerical data with discussion, to round out the snapshot this report provides on the Area.

Meetings were held to gather responses to the SLO and course completion data with the following groupings:

- School of STEM meeting (Dean David Yee, department chairs)
- Meeting with representatives of departments offering courses that meet the Math Requirement (departments in attendance included Math, Behavioral Sciences, Social Sciences)
- SLO Committee
- A few ad hoc discussions with specific faculty

CCSF Courses that meet the CCSF, CSU and IGETC (UC) area requirements.

The list of CCSF courses that meet the CCSF Math Requirement can be viewed in the [2023-2024 CCSF General Education Worksheet](#).

The list of CCSF courses that meet CSU B4 can be viewed in the [2023-2024 CSU Transfer Worksheet](#).

The list of CCSF courses that meet IGETC Area 2 can be viewed in the [2023-2024 IGETC Transfer Worksheet](#).

Follow-up on Recommendations in the 2017 Math/Area C GELO Report

In the 2017 GELO report on Area C and the Math Requirement, recommendations were made, and the college has acted on several of them in recent years. The recommendations and subsequent actions taken are summarized below:

- The 2017 report recommended “to continue (or add), other support strategies/services, professional development, and the development of effective learning spaces in conjunction with the Office of Student Equity in order to address remaining achievement gaps” for what was then termed “underrepresented minority students.”
 - Tutoring, professional development, and other support strategies have been implemented, including embedded tutors in some Math Requirement courses.
 - Overall completion of transfer-level math has increased significantly, but the opportunity for equity remains a challenge. (ig)2.6 (n)2.29 (io)5 2.8 (t)-6 (u)-0.7 (n)-0.7 (10.6 (o)-9.1a2.6 (apg43 (ie 0 Tw

- The 2017 data did not show an equity gap based on sex/gender (nor did we identify one in this

The data below are stratified by various demographic factors, to better identify opportunity gaps that could be addressed. There may be additional confounding factors, demographic or otherwise, that are not analyzed in the data presented.

It may bear repeating that SLO data cannot be used to directly compare or evaluate faculty, as different methods are used for assessing SLOs in different courses and often in different sections. The purpose of SLO assessment is to improve teaching and learning broadly, not to evaluate individual students or faculty members.

For detailed mappings across all GELOs and courses, see [Appendix 3](#).

Overall Outcome Assessment Results

- In this section, we present the total counts of assessments in the Math Requirement, as well as the breakdown of SLO assessment results.
- A brief analysis and summary of the comments from area faculty follow each set of tables and graphs.

Count of Assessments

Table 1. SLO count of assessments and outcomes in the Math Requirement, Pre-pandemic Semesters Fall 2018-Fall 2019

Term	Count of Assessments	Percentage met outcome
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higher than average SLO attainment in the prior three semesters (Fall 2018, Fall 2019) in the Math Requirement. (Incidentally, this was also true in Area C1, in Area C overall, but not in Area C2). It is unlikely that the pandemic and its attendant turmoil is good for learning. It is possible that remote instruction or some aspects of remote instruction are good for student learning, and indeed, faculty have mentioned some improvements in instruction as a result of revising material for remote delivery recorded lectures that students can review more than once, reorganization of information presented to students, the use of visuals and simulations online, etc. Other possibilities include a different profile of students in the class (e.g., some of the students who struggle in math classes may have chosen not to attempt those classes remotely or during a pandemic); a difference in testing (e.g., change of methodology or challenges in maintaining the integrity of remote tests); a greater degree of flexibility with assignments or grades on the part of faculty during this crisis; and other factors we haven't considered. Most likely, a combination of factors influenced the increase in SLO attainment.

- In the prior GELO assessment report for Area C and the Math Requirement (2017), lower rates of proficiency ("meets SLO") for the Math Requirement (64%) were reported (and for Area C, as well). We do not have a clear explanation for this positive development, the increase of approximately 8% in the Math Requirement in 2022, compared to 2017.

Disaggregated By Course or Subject

Table4. Courses with SLO Assessments that map to the Math Requirement, by Semester Assessed, Fall 2018– Spring 2021 (primary terms)

Subject Course	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Numbers of semesters assessed	%Met Outcome
ECON 5			X	X	X	X	4	84.3%
ET 50		X					1	100.0%
FIN 136M					X	X	2	69.0%
LALS 5	X	X	X					

Subject Course	Fall 2018	Spring 2019	Fall 2019	Spring 2020
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- Higher SLO attainment in online courses has been attributed by faculty to the ability to review lectures (all recorded), less stress than the live classroom possibly more difficulty in maintaining the integrity of testing methods. (While the data in this report is not disaggregated online/in-person, most classes prior to the pandemic were face-to-face and nearly all during the

Disaggregated by Demographics

In this section, we present data on CS attainment by several demographic characteristics, including

- Age
- Ethnicity/race
- SexB0 Td [EMC /H3racata on Slta on S

students have lost family members and family friends to the pandemic itself, experienced job loss within their households, and/or have witnessed or experienced increased rates of violence of various types during this pandemic period (racialized violence and hate crimes, gun violence, intimate partner violence, etc.). The effects of trauma on learning are well known. Older students may have also experienced many of these forms of trauma; however, their high school educations were not affected by covid.

- As overall attainment of the SLOs is higher in the pandemic period compared to the pre pandemic period, the impact of these pandemic-related traumas on student learning is hard to gauge. It is possible that the populations of students most impacted by trauma failed to enroll in these classes during this period.
- Possibly new approaches to meet the needs of younger students discussed by faculty include a first-year experience course (part of the Equity Plan for 2025) to assist with the transition to college; continued development of support classes (such as Math 80S, Math 90S, and just recently developed, Math 75S).
- In the current Math placement process, students may choose to enroll in a Math class with a support class (e.g., Math 80S or Math 90S). There are students who enroll in a support class even if they don't really need it or aren't required to, for example, to bolster their confidence. It would be interesting to compare SLO outcomes for students who opt into the extra support versus those who are required (based on high school performance) to take the extra support.

Ethnicity/Race

Table 6. SLO assessments by ethnicity/race in Math Requirement, Fall 2018-Spring 2021

Ethnicity/Race	Count of Assessments	% Met Outcome
American Indian or Alaska Native	‡	‡
Asian	4,344	77.3%
Black or African American	654	58.9%
Filipino	785	69.4%
Latino/a/x	3,077	65.7%
Native Hawaiian or Other Pacific Islander	86	55.8%
Two or more races	625	71.7%
White	1,915	77.9%
Unknown/Not reported /Other	312	76.6%
All Students	11,821	72.3%

Comments and analysis on race/ethnicity

- Significant opportunity gaps persist across multiple groups of students, disaggregated by

quarter of all students in the data set). An effective approach toward closing the opportunity

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- Faculty also noted that women, and in particular women of color, do very well in the STEM pathway math courses, in their experience however, there are very few of them enrolled.

Equity Populations, collectively and disaggregated by type

Table 8. *SLO assessments by subpopulations for the Math Requirement, Fall 2018-Spring 2021*

Student Demographic Group	Count of Assessments	%Met Outcome
Foster youth and former foster youth	135	62.2%
Veterans	855	70.2%
Students with disabilities	1,046	69.4%
Low-income students		

Crosstabulation of age and equity status

The following table shows the intersection of age and equity status (member or not equity group). These data are displayed as a graphic that is regrettably not accessible; however, the data are also presented in an accessible appendix [Appendix 4](#).

Table 11.

- Use of first-year experience courses.
- Opportunity barriers for equity populations persist in the older age groups, even if not as severely as at the younger ages.

Course Completion Data Compared with SLO Attainment Data

Table 2. Course Success Rates by Equity/Not Equity Group for the Math Requirement, Fall 2018-Spring 2021

Term	Not in student equity group	In student equity group(s)	All students	Percentage point gap for equity group
Fall 2018	69.8%	54.2%	62.4%	0.08
Spring 2019	69.7%	51.9%	61.0%	0.09
Fall 2019	66.6%	49.0%	58.0%	0.09
Spring 2020	73.6%	57.0%	65.3%	0.08
Fall 2020	73.4%	56.3%	65.4%	0.09
Spring 2021	74.4%	58.8%	67.0%	0.08
Fall 2018 Spring 2021	71.2%	54.4%	63.1%	0.09

Table 3.

tutors has been reduced. Some faculty reported a “barbell” pattern of grades when less tutoring is available, with more As and Fs and fewer students in between (as students who would have, perhaps, been made it to a C or a B with tutoring help perhaps failed or dropped to avoid a bad grade). However, we don’t see this pattern clearly in the completion data. There is certainly an equity gap in completions—a 9% gap for the Math Requirement courses. However, course success rates improved over the six semesters of this report (higher in the pandemic period than the pre-pandemic period), for both equity and non-equity populations, and the opportunity gap in the Math Requirement courses remained roughly the same for all six semesters. If a much higher percentage of students were dropping in recent semesters, in the absence of tutoring support and given other stresses of the pandemic, we would expect to see a lower overall completion rate and/or a greater opportunity gap.

Synthesis of Discussion and Conclusions

- This report analyzes results from 11,821 SLO assessments, across 20 courses that meet the Math Requirement for graduation.
- The average SLO attainment in this period was 72.3% proficiency (“meets SLO”), with a higher attainment in the pandemic semesters compared to the pre-pandemic semesters. Average SLO attainment was notably higher than in the prior assessment of the math requirement in 2017 (66%). We do not have a satisfactory explanation for why SLO attainment grew both in this period overall compared to the prior assessment period, and during the three pandemic semesters compared to the three pre-pandemic semesters within this assessment period.
- As is consistent with most other GELO assessment reports, we see significant opportunity gaps affecting Black/African American, Latino/a/x, Pacific Islander, and Filipino students, as well as foster youth and former foster youth (r)3.29 (n)-0.8 (t)-5.9 (p)-0.7 (e)-6 (n)-0.8 5 (t)1r Td [(n)i5(m)-3ll as

30-34	590	83.2%	523	72.5%	-	-	
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