MATHEMATICS

In the table below are the retention rates collegewide. Although the differences in retention between traditional and distance education are overall slightly more dramatic for math classes than collegewide, it can be seen from the data that it is not a trend that is specific to just math courses. In fact, in the first two years of the cycle, math courses had a lower difference between modalities than the collegewide did. The average retention difference between modalities over the 5 year period was 9.6 percentage points for math and 8.1 percentage points collegewide. A small overall difference of 1.4 percentage points does not indicate a specific issue in retention for math classes only.

Retention/ collegewide

	2015-16	2016-17	2017-18	2018-19	2019-2020
Traditional	91.1%	93.7%	91.2%	93.6%	90.8%
Distance Education	81.9%	85.1%	85.4%	84.9%	82.6%
Average	86.5%	89.4%	88.3%	89.2%	86.7%
Difference	9.2%	8.6%	5.8%	8.7%	8.2%

Success

	2015-16	2016-17	2017-18	2018-19	2019-2020
Traditional	73.4%	76.9%	81.0%	81.3%	70.8%
Distance Education	66.5%	62.7%	65.1%	60.7%	57.6%
Average	69.6%	67.2%	71.6%	71.7%	65.8%
Difference	6.9%	14.2%	15.9%	20.6%	13.2%

Success rates for online classes in the program are lower than the rates for traditional classes and the differences for success are more dramatic than those for retention. The department has been aware of this trend and instructors are currently providing extra tutoring via Zoom in an attempt to narrow the gap in success between traditional and remote delivery. By providing more student/teacher interaction in online classes, the department seeks to narrow this gap by providing more student supprt as well as making students feel more connected in the online environment. The department will also seek out professional development opportunities involving strategies for best practices in teaching math in the online environment as one of its future goals.

4.2 - Program Completion

	2015-16	2016-17	2017-18	2018-19	2019-20
Declared Math Majors	41	49	75	103	104
Percent Change	--	20%	53%	37%	1%

	2015-16	2016-17	2017-18	2018-19	2019-20
Math Associate of Science Degree	6	9	8	11	15
Percent Change	--	50%	-11.%	37%	36.4%

The number of students completing the program has more than doubled since 2016. Still, this is a small number of completers if one considers the number of students who have declared math as their major in the top table. There could be several reasons for this. One example is that many students in the program are students who plan on transferring to obtain a 4-year engineering degree. The college does not offer engineering as a degree any longer and these students must declare a major while at Cerro Coso. Since engineering students require a lot of lower division math prerequisites, many of these students could be declaring math as a major but wind up transferring to engineering programs without formally completing the math degree requirements at our college. There could be other majors where this is happening as well such as Physics. Some students may declare the math major, then transfer without requesting the degree (even if they have completed all the degree—major and gen ed—requirements). Another possible explanation is that students are not required to have a degree to transfer to a four-year institution, and Cerro Coso does not automatically award degrees. Students must submit a petition to graduate. Counselors have in the past had to encourage some students to apply for our degree because they see the associate degree as pointless when they're going on to get a BS. Finally, some students complete university major prep (such as the math major requirements) without completing all of the gen ed. courses that are required for an associate degree. UCs and CSUs will accept students who complete the major prep and minimum admission requirements; completion of CSU Cert or IGETC is not required for admission.

All of the courses in the degree can be taken online, so it should not be a geographical problem. The department will investigate where students are stopping out of the program and attempt to better track student progress through the program to determine what measures can be implemented to increase the proportion of completers.

4.3 – Program Achievement of Program Learning Outcomes

PLO 1 Assessment Results

PLO 1	*Use the Cartesian, polar, cylindrical, and spherical coordinate systems effectively*
Target:	70%
Assessment Method:	Exams in MATH C151 and MATH C152,
Assessment Date:	FA 2018
Recent Results:	**78.4%**