

GROSSMONT COLLEGE MATHEMATICS DEPARTMENT



Program Review Fall 2011 – Spring 2019

TABLE OF CONTENTS

Signature Page

Mathematics Department Members Listing

Section 1: Overview

Section 2: Curriculum Development and Academic Standards

Section 3: Student learning Outcomes

Section 4: Facilities and Scheduling

Section 5: Student Equity and Success

Section 6: Student Support and Campus Resources

Section 7: On Campus / Off Campus Involvement

Section 8: Fiscal and Human Resources

Section 9: Summary and Recommendations

APPENDICES

Appendix 1: Grade Distribution Summary

Appendix 2: Enrollment Data

Appendix 3: Student Success Data

Appendix 4: Checklist Documentation (SLO, Instructional Operations, Articulation Officer, Library)

“This program review report for Fall 2011 – Spring 2019 is respectfully submitted by the members of the Grossmont College Mathematics Department.

Nemie Capacia, M.A.

Arturo Millan, M.A.

Stephen Davis, M.S.

Susana Munoz, M.A.

Raymond Funk, M.A.

Irene Palacios, M.S.

Sharon Giles, M.S.

Shirley Pereira, M.A.

Shawn Hicks, M.A.

Susan Working, M.S.

Cary Lee, Ph.D.

Elizabeth Smith, M.A.

Michael Lines, M.S.

Jennifer Vanden Eynden, M.A.

Corey Manchester, M.S.

John Waller, M.S.

Kristina Sundblad, M.A.

Daniel Greenheck, M.A.

Cierra Rawlings, M.A.

Mathematics Department Members

Full-Time Faculty

Nemie Capacia, M.A.	Arturo Millan, M.A.
Stephen Davis, M.S.	Susana Munoz, M.A.
Raymond Funk, M.A.	Irene Palacios, M.S.
Sharon Giles, M.S.	Shirley Pereira, M.A.
Shawn Hicks, M.A.	Susan Working, M.S.
Cary Lee, Ph.D.	Elizabeth Smith, M.A.
Michael Lines, M.S.	Jennifer Vanden Eynden, M.A.
Corey Manchester, M.S.	John Waller, M.S.
Daniel Greenheck, M.A.	Kristina Sundblad, M.A.
Cierra Rawlings, M.A.	

Adjunct Faculty

Sebastian Ahmed-Garay	Scott Lieberknecht
Bradley Bolton	Laura Louie
Danielle Brown	Jonathan Matthews
Patrick Burrus	Jose Nevarez
Jonathan Childers	Michael Orr
Curtis Connors	Elena Pages
Jennifer Denney	Olga Pilipets
Mohammad Emami	Rob Ridgway
Sara Ferreli	Shelly Ruderman
Mark Freeman	Mehdi Safaee
Lance Gordon	Claudio Salas
Richard Hardiman	Shahir Sikder
Chris Hilton	Andrea Steel
Nirmala Kashyap	Richard Stevens
Saenal Kim	Jason Thoma
Tod Kitchev	Donnie Tran
Tracey Kiser	Tam Tran
Ann Kmet	Mary Ellen Ward
Michael Lambe	Sara Willweber
Russell La Puma	Sarmad Youssef

DEPARTMENT/PROGRAM ACADEMIC PROGRAM REVIEW

SECTION 1 – OVERVIEW

DEPARTMENT HISTORY & PREVIOUS PROGRAM REVIEW RECOMMENDATIONS

1.1 Mathematics Department Overview.

As the largest department at Grossmont College, based on WSCH (Weekly Student Contact Hours) where the department generated a total of 44012.8 hours/year this last school year (2018/2019), the Mathematics Department continues to distinguish itself through its member's on-going contributions to the college and the community at large. The Mathematics Department services a wide range of constituents from the community including developmental, college transfer and re-entry students. These students have diverse ethnicities, including, recently, a large population of refugees. In order to meet the varied needs of the community, the mathematics program is comprised of courses in developmental math, math for elementary school teachers, and a wide range of other college transfer level courses such as statistics, trigonometry, calculus, linear algebra and differential equations. The Mathematics faculty is a distinctive, diverse, and talented department, all of which creates a culture of excellence. During this past Program Review cycle the mathematics department has seen a great number of changes, both within the program and the faculty.

One of the big changes the Mathematics' Department has seen over the last 8 years is the addition of 3 new faculty along with a fourth beginning Fall 2019. This has helped tremendously with not only more classes being taught by full-time faculty, but also allowing a stronger presence of math faculty in campus-wide activities and committees. In addition to the added faculty, the department gained a full-time clerical assistant. This has helped greatly with support of department initiatives.

Administrative leadership has been an issue over the last few years. We have had an interim dean for over 3 years and the college has had 2 vice presidents of academic affairs. These changes have had an effect on the ability of the department to function to its full capacity.

The Mathematics Department has worked diligently to minimize exit points for students in math. The department instigated multiple measures into our placement exam in 2013. This included switching from the MDTP to Accuplacer as well as instigating an articulation agreement with the local high schools. This created a shift in our course offerings – less developmental math classes and more first semester transfer-level classes. And moving into the future, we will see an even bigger shift in these course offerings due to AB705.

Curriculum is always on the forefront in the math department. While always working with the current

needs of our student body, the department has continued to expand online offerings (Math 103, 120, 160 and 178), we have added college courses being taught at our local high schools, and we have also began teaching courses at the women's penitentiary.

The department offers over 290 sections of math each year utilizing dozens of classrooms throughout the campus. Most math classes are housed in building 31, 36, and building 53. Currently building 31 is under construction and building 53 has classrooms that are too small to comfortably serve 45 students. Classrooms and offices from building 31 were moved to temporary facilities in parking lot #6. These are far from ideal facilities for such a large department. The department is still hopeful and looking forward to the construction and completion of building 36 which we will call home. This facility will house not only ALL math faculty (both full time and part time) but also will contain 13 math classrooms (designed by the department) and the Math Study Center (twice as large as our current center).

The department has seen the number of degrees rise over these eight years. Plus, the college added in the Associate in Science in Math for Transfer in Fall 2013. The number of Math degrees rose from 25 in 2013/14 to 28 in 2017/2018. The AS-T rose from 22 to 55 over this time period. This is a 150% increase in transfer degrees.

The Math Study Center (MSC) retains its key function in helping students achieve success. The MSC continues to offer tutoring and study space for students, and newly arranged workshops. Space for math tutoring continues to be a challenge as the number of students using the facility has continually increased.

Rarely will a college have a mathematics department that is as responsive, involved, willing to reflect on change, and dedicated to making decisions that are best for students like the department at Grossmont. The faculty members, both full and part time, are dedicated to improving instruction and learning opportunities for students at all levels.

1.2 Previous Program Review Recommendations.

In 2011 the Program Review Committee offered the following recommendations:

1. Work with the Staffing Committee to replace the positions for three retired instructors. Then re-evaluate the need for additional instructors based on current data.
2. Stay active in the planning and facility process in order to achieve the math department's vision for a centralized math facility.
3. Create more staff development time prior to and during the semester to have significant conversations about the courses taught and about the type of learning outcomes expected from students who earn passing grades in math courses.
4. Continue the excellent work started on improving student success by continuing to look for ways to minimize variability in success rates, improve success rates while keeping your expected academic standards, and working to improve the placement process.
5. Seek out, attend, and create professional development activities that focus on improving instructional methods for teaching math particularly as it pertains to bridging achievement gaps. Evaluate the success of strategies that come from these efforts.
6. Continue working with local high schools and four-year transfer institutions to identify shared expectations for incoming and outgoing students.
7. Develop a plan to communicate to students prior to registration when online synchronous lectures take place, so students can plan their course selections accordingly.
8. Using the Course History Information Report, continue to submit curriculum modification proposals for those courses that have not been reviewed by the Curriculum Committee in more than four years or curriculum deletion forms for those courses that have not been offered in the last three years.
9. Use student-learning outcome data for continued course and program improvement.

The following will address each recommendation along with the implementation from the department.

1. Work with the Staffing Committee to replace the positions for three retired instructors. Then re-evaluate the need for additional instructors based on current data.

The department has hired Kristina Sundblad (Fall 2014), Dan Greenheck (Spring 2016), and Susana Munoz (Fall 2016). The department had no retirements. Having 18 full-time faculty

brings us to approximately 45% of the total FTEF for math (Fall 2018). The department would like to hire 2 more full-time faculty members to bring the total FTEF for math to 50%.

2. Stay active in the planning and facility process in order to achieve the math department's vision for a centralized math facility.

The construction of building 36 will begin in Fall 2019 and this building will be housing the Mathematics Department and the Earth Science Department. All full-time and part-time Mathematics Faculty will have offices on the second floor surrounding the new Math Study Center. Unfortunately, the square footage of full-time faculty offices has gone down slightly. This is an issue since faculty will be unable to have the necessary furniture that they currently have (bookshelves and file cabinets) due to new ADA compliance laws. Also, the tighter space makes office hours less comfortable for meeting students. The Math Study Center will expand to 2,448 square feet (not including the lab which is 1413 square feet). The Math faculty have been on various committees to help with the design of classrooms, offices and our Math tutoring center. Currently we are working with GAFCON on the logistics of furniture in all these areas. There are still concerns that projects are moving forward without input from math faculty. There is no reception area for students to receive information on our math program, however, the Dean's office and her administrative assistant, along with the Math admin assistant will have offices on this floor and can address some of these students' needs.

3. Create more staff development time prior to and during the semester to have significant conversations about the courses taught and about the type of learning outcomes expected from students who earn passing grades in math courses.

During Flex week the whole department, both full time and adjunct, participate in a grading activity lead by Jenny VandenEynden to reflect on teaching methods, grading techniques, and student success. The activity consists of specific questions asked on an exam along with a students' solution. Instructors are asked to grade the problem and then the department collaborates on the results both from the student and instructor perspective.

The department collaborates on the writing of the Student Learning Outcomes (SLO's) during Flex with the whole department. All faculty can be part of a group to discuss the outcome and the best way to test the outcome. The group writes the SLO and can discuss ways to achieve success on the SLO in their teaching.

At the start of each semester, and throughout the semester, meetings are scheduled to discuss the Developmental Math courses. At the meetings, instructors discuss best practices or teaching the developmental courses such as Math 88 and 90.

4. Continue the excellent work started on improving student success by continuing to look for ways to minimize variability in success rates, improve success rates while keeping your expected academic standards, and working to improve the placement process.

Improve student success in two ways:

- (1) Decrease the variability of the success rates in each of our courses.

Looking at the data for Math 90, 110 and 160, the variability of success rates has decreased slightly. We see all the lower success rates rising, but unfortunately, the higher success rates have also dropped slightly. For Math 280, if we look at the last two years (Fall 2017, 2018), the success rates range from 26.3% to 73.7%. The gap has narrowed however, overall the students are doing worse.

Decreasing the variability of success rates requires awareness of the distribution and a shared approach to grading. After each semester instructors are given the success rates for the section they taught. Along with their own data point, instructors also see the highest, lowest, median and mean success rates for all sections of the course. Finally, an anonymous graph is displayed for the department with the distribution of all success rates for all sections in a course. Instructors are encouraged to watch for trends over time. We are looking to promote awareness among instructors for those with success rates consistently on the low or high end of the spectrum. The grading activity mentioned in recommendation 3 also helps to standardize the threshold for successful student performance. Through these two activities the department is attempting to decrease the variability of success rates across each course from the micro level of grading to the macro level in awareness of success rate distribution trends.

- (2) Increase the average success rate in each of our courses.

The Average success rate in each course, in general, did not increase. Looking at the data from Fall 2011 and then comparing it to Fall 2018, we have the following information: Math 90: 57.2% dropped to 55.2%; Math 103: 58.4% dropped to 51.4%; Math 110: 63.5% dropped to 49.7%; Math 160: 62.7% dropped to 52.9%; Math 170: 62.7% dropped to 47.6%; Math 175: 53.9% dropped to 48.1%; Math 176: 60.2% dropped to 44.4%; Math 180: 55.9% dropped to 52%; Math 280: 55.9% dropped to 39.2%. We saw an increase in a few courses, such as Math 120: 68.6% to 70.2%.

5. Seek out, attend, and create professional development activities that focus on improving instructional methods for teaching math particularly as it pertains to bridging achievement gaps. Evaluate the success of strategies that come from these efforts.

This is one area that we were not sure where to start. Within the last 2-3 years with the Outreach Program and the implementation of AB-705, we have become more aware and attended conferences addressing this issue. The department continually discusses ways in which the gap can be achieved. One implementation that is currently taking place in the classroom is addressing the use of affective domain whether it is through videos or class discussions.

6. Continue working with local high schools and four-year transfer institutions to identify shared expectations for incoming and outgoing students.

The Chair of the department meet with the East County Education Alliance (ECEA) and the GUHD several times each semester. In addition, they work with the San Diego Region Mathematics Articulation Group between University of California, San Diego and Grossmont College.

7. Develop a plan to communicate to students prior to registration when online synchronous lectures take place, so students can plan their course selections accordingly.

This is no longer an issue with the department. All online lectures are pre-recorded and students can watch them at their leisure.

8. Using the Course History Information Report, continue to submit curriculum modification proposals for those courses that have not been reviewed by the Curriculum Committee in more than four years or curriculum deletion forms for those courses that have not been offered in the last three years.

The department has done a good job updating many course outlines within the last 2 years. Some courses, Math 103 and 126 should be revised in addition to the higher-level courses, 280, 281, 284, 285.

9. Use student-learning outcome data for continued course and program improvement.

When an SLO is to be assessed, the department collaborates in the writing of the question. As the question is being written, discussions on teaching the concept is addressed. Often times, we find that the SLO question is more in-depth than examples done in class and on exams. This has led some instructors finding themselves changing the way they word classroom examples. We thrive to foster critical thinking on concepts and more in-depth questions leads to this. The department reflects on the students' responses and identify the students' strength and weaknesses.

SECTION 2 - CURRICULUM DEVELOPMENT AND ACADEMIC STANDARDS

To answer these questions, refer to your department's catalog descriptions from the most recent college catalog (see "Courses of Instruction" section. This is the blue section).

If your program has an Associate Degree or Certificate program, refer to the relevant pages from the catalog (see "Associate Degree" section. This is the yellow section).

2.1 Describe how your course offerings have changed since the last program review. Have you added or deleted courses since the last review? If so, why? Include new or deleted programs, degrees and certificate

Since the last program review, the math department has seen a few additions and deletions. In Fall 2011, the department deleted Math 88L, Math 90L, and Math 110L. These courses were designed for students who wished to review and master previously completed coursework. It was taken to help strengthen prerequisite skills prior to enrolling in the main course. The school was in the depths of a budget crisis during this period and these courses were not essential and low enrolled. The math department stopped offering Math 080 in Fall of 2012 and Math 88 in Fall 2018. At this point, working with the East County Educational Alliance, it was decided that if a student need basic math skills (4 levels below transfer), then it would be taken as an adult education course. The department also stopped offering Math 177 (Introduction to Teaching Secondary Mathematics) in Fall 2014 due to low enrollment. The average class size was approximately 8 students and we could not sustain the course. Finally, in Fall of 2018, the department stopped offering Math 097 (Geometry) since it has been a requirement to graduate from high school for some time. With common core, geometry is now incorporated into every math class.

Getting students to complete a transfer level math class is a goal that never leaves sight of our department. In Fall 2014 the department added in a modular math 90 course. This course was self-paced and computer driven. The course was offered through Fall of 2017. It is currently not offered any longer. The department has always been looking to help students complete their math goals in a timely manner. In Fall 2014, the department added an accelerated math academy (called freshman academy) which consisted of linked Math 103-160 and also Math 103-120. Both courses being taught in one semester in order to help students complete their transfer level math class. In Fall of 2016, the department added in Math 096 (piloted for 2 years as 298), "Foundations for Statistics and Quantitative Reasoning". This course has no prerequisite and upon successful completion allows students directly into Math 160 or 120 the next semester. In that same vein, the department added in Math 108 in Fall 2018, "Beginning and Intermediate Algebra for Business, Math, Science and Engineering Majors". This course also has no prerequisite but serves as a prerequisite for Math 120-178.

The department has had some success with online courses, so in Fall 2017, we added in two online Math 120 and in Fall 2016 two online Math 178 courses. The success rates for Math 178 have been high, especially compared to the overall success of the class. For example, in Fall 2016, the online success

rate was 75.3% whereas the face-to-face success rate was only 61%. All three years the success rate online were higher than the overall success rates. The online Math 120 success rates were outstanding in Fall 2017 (76.9%) compared to face-to-face success of 69.8%, whereas in Fall 2018, we did not see the same results. Online success was only 65.1% whereas the in class success rate was 74.1%.

We have also added some offsite courses. Raymond Funk has been teaching Math 120 at Helix High School with high success rates since Fall 2017 (FA2017: 81% success, FA2018: 98% success). Shirley Pereira piloted a Math 120 at Las Colinas Womens Detention Facility in Spring 2019 with 100% success and Corey Manchester taught Math 176 in Summer 2019 at El Cajon Valley High School.

2.2 Describe your department's practice for determining that all course outlines reflect currency in the field, relevance to student needs, and current teaching practices.

The course outlines related to the Department of Mathematics reflect current course descriptions, objectives, content, and text books. When we update course outlines, the department meets as a whole and discusses and implements changes by consensus. This currency ensures proper alignment and continuity between math courses at Grossmont College as well as with other programs and learning institutions. It also ensures consistency in instruction among equivalent courses. The outlines also include current Student Learning Outcomes, which are continually being tested and analyzed to help promote better instruction and higher levels of student success. The course outlines help prospective students prepare for their courses as well as inform them of expected exiting skills. As technology increases and becomes more prevalent in the educational setting, the course outlines will be updated to include other modes of instruction and evaluation, such as online instruction and collaboration, computer programs, graphics, and assignments. It should be noted that the mathematics department has recently updated many of our course outlines to match the California C-ID descriptions to ease the alignment between our college and transfer institutions throughout the state.

2.3 How does your department use student engagement strategies in the classroom? How are your faculty including current issues in course content? Consider environmental, societal, ethical, political, technological, and/or other issues when answering this question.

Faculty members generally rely on staff development workshops and conferences to keep their instruction current. The department thrives for the Socratic approach and collaborative groups. The internet also provides lots of information that may not be available at conferences. Our faculty also keeps updated by reading magazines, journals and books from organizations like the Mathematical Association of America or The American Mathematical Association of Two Year Colleges.

Another example of instructors keeping content, materials, activities, and delivery relevant to students' academic and career needs is evident in our Elementary Algebra Allied Health Link. This particular section of Math 90 is a career-based, contextualized learning community linked with English 98 and English 98R. While the core curriculum is no different from any other Math 90 section, the content is

enhanced with health career-specific examples, activities, and group work that are integrated with the English content.

In response to having instruction relevant to student career needs, we have several courses devoted to students who may wish to try the teaching profession. The sequence of courses Math 125, 126 and 128 are to prepare elementary school teachers for transfer to the CSU system. Also, the development of Math 177 was in response to the need for more secondary school mathematics teachers. This course is no longer being offered. It serves as a initial experience for students interested in teaching math at the middle school or high school level.

2.4 What orientation do you give to new faculty (both full- and part-time), and how do you maintain dialogue within your department about curriculum and assessment? What strategies do you have in-place that ensure consistency in grading in multiple sections and across semesters (e.g., mastery level assessment, writing rubrics, and departmental determination of core areas which must be taught)? Consider department practices, academic standards, and curricular expectations (i.e. SLOs and teaching to course outlines)?

In order to welcome new faculty to the department and the college, an initial meeting is scheduled with Julia Morales (math clerical assistant). She takes them on a tour of our campus (offices, duplicating, classrooms, library, ARC, Math Study Center, Transfer Center, Counseling, Assessment/Testing Center, Deanery, etc.). The new faculty is introduced to Cindy Hall, Dean's secretary, who sets them up with keys, mailbox, hire letter, etc. and schedules a meeting with the Dean. Julia gives them sample syllabi, course outlines, course schedules, textbooks and other supplementary course materials. She also gives them the course coordinator's contact information for each course they are scheduled to teach.

The course coordinator will reach out to all new adjunct faculty prior to the start of each semester. The coordinator provides a sample, syllabus, pacing guide, reviews and sample exams to the instructors teaching the course. These instructors will communicate via email and meetings throughout the semester to "check in" on how things are going and to address any questions, concerns, or issues in the classes. We like to think of it as a support system for each class.

We have regularly scheduled department meetings every semester. All faculty are welcome (both full-time and part-time). We discuss everything from curriculum and assessment to campus-wide and state-wide concerns. All faculty are encouraged to attend conferences and workshops and present any new ideas and pedagogical practices.

Every flex week, there is a grading activity at the math department meeting. Prior to the meeting, faculty are given a test question with sample student solutions and are asked to grade it and turn in their results. These results are consolidated by Jenny VandenEynden and presented to the department group discussion. Over the years, we have seen a decrease in the variability of grades on this activity.

Every course in the math department follows our 6-year assessment plan for SLOs each semester. At the SLO meeting during flex week, we discuss and analyze the results of the tested SLOs. These discussions are rich and educational to us as faculty. In addition to the discussion, we create new SLOs to be tested for the upcoming semester. The department uses the following rubric for the student learning outcomes:

Pass: Student shows a good solution with few or no errors. Work is of good enough quality to earn a passing grade on the problem.

No Pass: Although some work may be shown, the student has too many flaws in their solution to earn a passing grade on the problem.

To ensure academic freedom, the department felt this was reasonable.

The math department has updated many courses outlines over the last 6 years to align with the C-ID course outlines. This ensures the articulation between our courses and the CSU/UC system.

To help with consistency in teaching classes, we have a series of lecture notes that accompany classes, in particular the lower level courses. Susan Working created the Math 90 Lecture Notes, Sharon Giles created the Math 103, Susana Munoz created one for Math 96, Jenny Vanden Eynden for Math 108 and collaboration of full-time faculty members created on for Math 110.

2.5 Referring to the Grade Distribution Summary graphs (see Appendix 1), comment on how your department patterns relate to the college, division and statewide patterns. For course-by-course graphs, provide an explanation for any courses with different grade/success patterns than others. This may relate to major's courses vs GE, first-year vs second-year or basic skills vs transfer. Please describe how the department handles any unusual grading patterns. If you have any information that allows calibration of your grading data to external standards (performance of your students on standardized tests or licensing exams, transfer and/or employment success) please provide those to us and explain the connection.

1. Withdrawal rates for our department higher than all.
2. Success rates lower for us compared to state but comparable.
3. Math 97, Geometry, had the highest success out of the developmental courses. This might be because students mostly have had some exposure to geometry before coming to Grossmont. Also, students who don't do well with algebra normally do better with geometry.
4. For the education courses, there are never many sections required, so we are dealing with small sample sizes. Math 128 grades far outpaced 125 and 126. Math 128 is not a mathematically key course, it deals with analyzing how children see mathematics. The Spring Math 126 classes had the lowest success rates of all by a significant amount. Again, small sample sizes and differences in pedagogy amongst instructors make it difficult to assess if this is something substantial or the result of random fluctuations.

5. For the other courses below Math 180, the outliers in terms of success rates are 120, which had a slightly higher success rate, and the 170/175 duo, which both had significantly lower success rates. There has been much discussion about 175 in particular related to 176 and how well students do in those courses. One idea as to why the disparity in success exists is students might be self-selecting out of 176 due to their lower confidence and/or deficiencies in their math skills. As for Math 120, it has a relatively lower intensity since it is not on a STEM track.
6. For the STEM courses, 180 and above, 180, 280, and 284 all have similar success rates and that rate is lower than 281 and 285. Math 180 has issues that the department is trying to identify and then act on. For example, we have held meetings discussing what needs to be emphasized and how things need to be ordered in Precalculus to help students prepare. Cut off scores have changed twice for 180 in the last several years. Math 180 has several concepts that are very different from what students are used to seeing and working with. The higher success in 281 most likely has to do with the relatively easier concepts compared to 280 and the fact that those students making it to 281 almost necessarily must have developed good study skills and honed math skills. Math 285 is a less intense course than 284. Math 284 is a theorem and proof heavy course, much more abstract, whereas Math 285 utilizes procedures they've used throughout the calculus sequence and involves formalized procedures for identifying and dealing with different forms of equations. The course that experienced the largest difference by far in success rates between Fall and Spring semesters was Math 245. The small sample size and the difference in pedagogy between instructors teaching the course would factor into this difference.
7. In the past, the department has conducted grading exercises where a problem and solution were provided to instructors and each of them graded the solution. The distribution of grades given were then displayed and a robust discussion on what led to different grades being given was then held. This discussion often led to a better understanding of what is truly important to look for in a student's work and hopefully would lead to less variation amongst the grades given by different instructors.

2.6 If applicable, provide a comparison of the retention and success rates of distance education (online) sections (including hybrid) and face-to-face sections. What are your department policies on course delivery method? Is there anything in the data that would prompt your department to make changes.

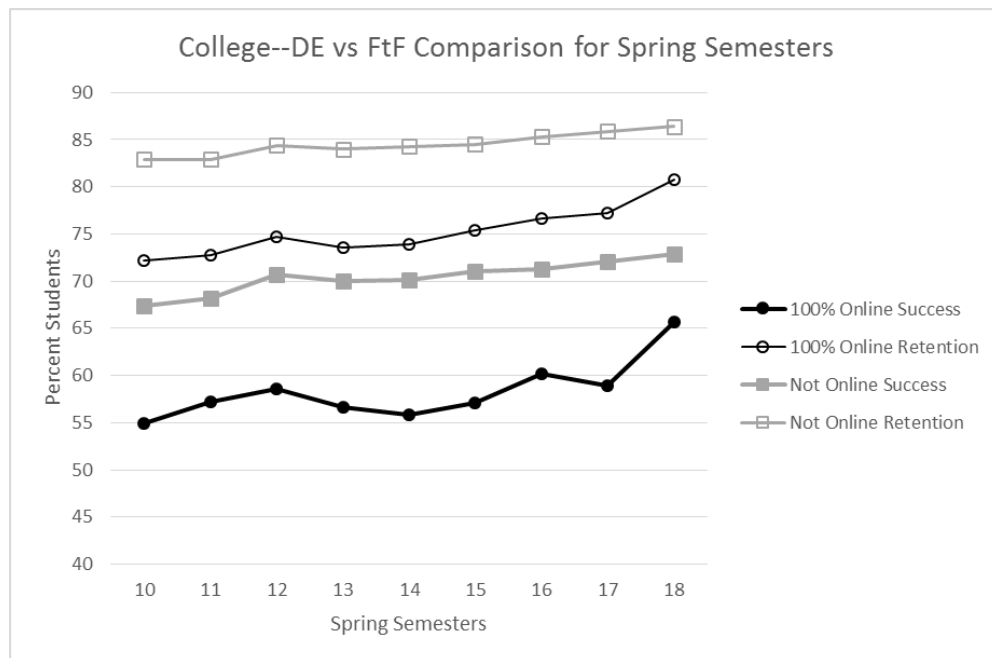
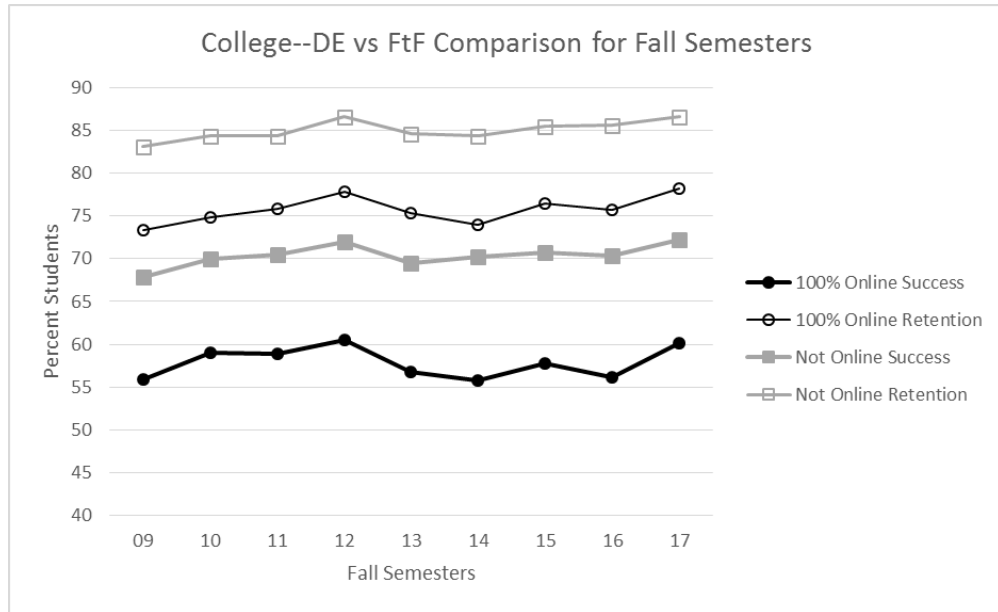
During the last six years, the online course offerings for the mathematics department have been, on average, 8 sections per semester. This represents a little over 5% of our total course offerings which is consistently around 156 sections. For comparison, the college's online course offerings keep increasing each semester with this last year hovering at 12.5% for fall 2018 and 14.4 % for spring 2019; 258 online out of 2075 sections in fall 2018 and 306 online out of 2125 sections in spring 2019. By implementing best practices for improving online success rates paired with a growing number of trained faculty, we anticipate that our online course offerings will increase in the next six years to keep up with student demand.

The math department recognizes that not all students have the flexibility to come to campus to attend face-to-face classes. Through online course offerings, we are ensuring that all students have access to a

transfer level math course needed to complete and transfer. The department offers online courses for Math 103 (Intermediate Algebra) and for terminal courses such as Math 120 (Quantitative Reasoning), Math 160 (Elementary Statistics) and Math 178 (Calculus for Business, Sociology and Behavioral Sciences). With these online course offerings, a student can complete their transfer level math course in one or two semesters.

Traditionally, online success and retention rates have been lower than face-to-face success and retention rates. From the graphs below, we continue to see this trend. The online success and retention rates for both fall and spring semesters have consistently fallen below face-to-face success and retention rates. While collegewide face-to-face students are out-performing online students, online students in all but one math class have nearly equal success as their face-to-face counterpart. This is due to the thoughtful and intentional strategies implemented by our math faculty. Increasing success and retention rates in ALL our online classes continues to be a top priority and we are working to better recognize the needs of our online students. By working together and attending professional development opportunities both on and off campus, we keep searching for best practices and new trends in online education to implement in our online course offerings.

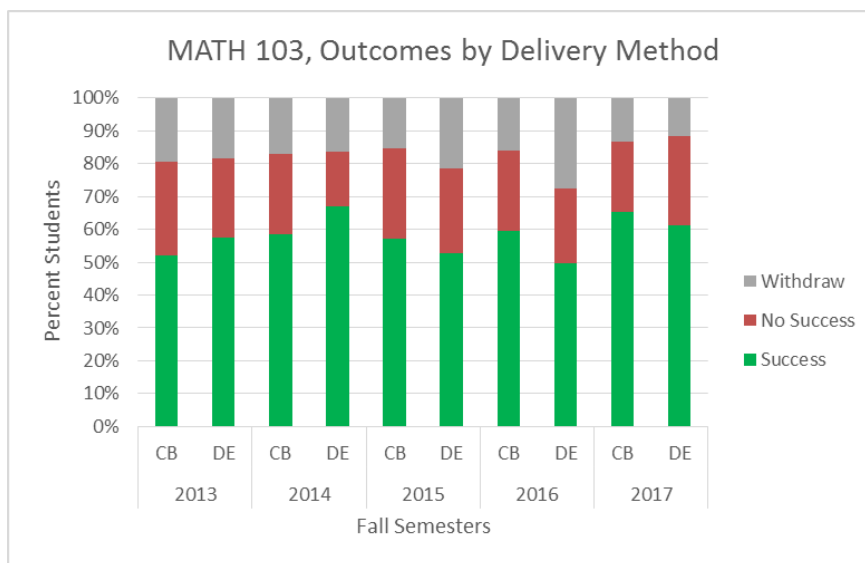
Distance Education course success and retention, 100% Online courses compared to Not Online courses (face-to-face or traditional delivery mode). Data from College Dashboard and may be found here: <https://www.gccd.edu/research-planning/KeyPerformanceIndicators/section4/Course%20Success%20Rates.html>



As previously stated, collegewide, online success and retention rates have been lower than face-to-face success and retention rates. In comparison, our Math 103 success rates for the fall semesters from 2013 through 2017 show two semesters where online students out-perform face-to-face students. In the other three semesters, success rates for online Math 103 students were not far below students taking a face-to-face Math 103. On average, we can say that during this time period, face-to-face and online students had nearly equal success.

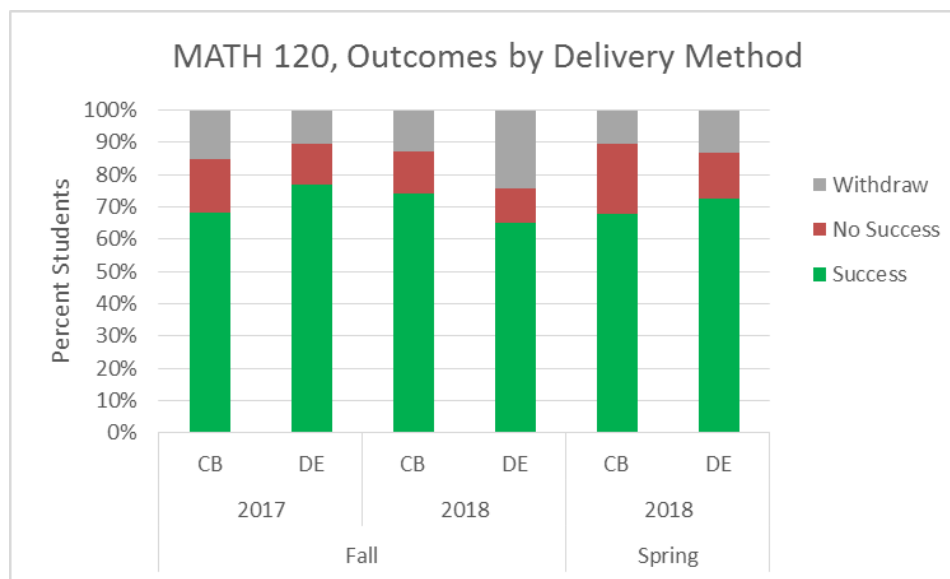
Many best practices are implemented in the Math 103 online class, among them is consistent communication between instructor and student. Weekly announcements with an overview of what students will learn that particular week is paired with real world applications serving to motivate students. Both practices help engage students with clear expectations communicated week by week. Personalized lectures help students make a connection with the course and the instructor. Students are provided with lecture notes that encourage note taking. Weekly discussions help build community by working collaboratively in researching topics that include how to be successful in an online class, real world applications and strategies for how to study for exams. Students are active in preparing examples and solutions for the class in preparation for exams. A watchful eye on student grades helps the instructor identify struggling students early on and work on a plan with the student for how to finish the semester strong.

These graphs show the sum of all sections of Campus-Based (face-to-face or traditional) delivery versus Distance Education (100% online) for the semesters where both formats were offered in the last five years.



Patterns for Spring semester are similar (nearly equal success between CB and DE delivery methods) and in the same range, so data are not shown.

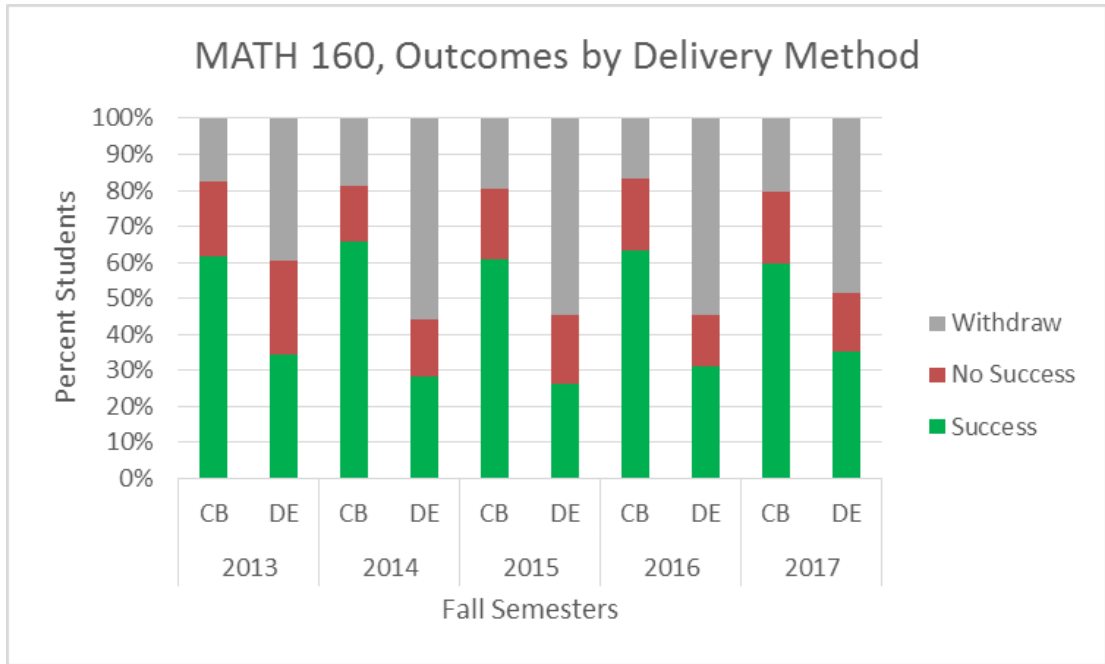
Math 120 is another class with reports of nearly equal success rates between online and face-to-face students. It is worth noting that during this time, faculty teaching Math 120 had extensive experience with the content and with student needs in this course. Best practices implemented in Math 120 are consistent communication with all students, personalized lectures created by the course instructor, and online office hours with tutoring sessions.



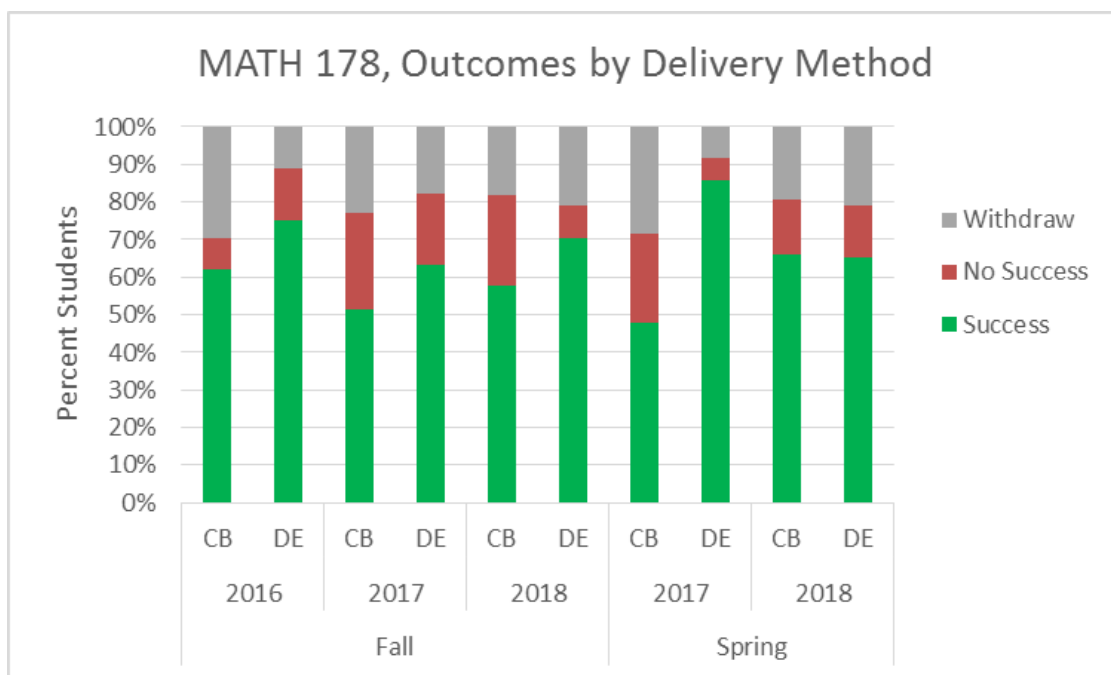
Instructor presence continues to be one of the predominant practices that help students thrive in the online environment. By humanizing the course, students not only get personalized attention but the opportunity to give feedback on how the delivery method and approach can be improved. Implementing working surveys into the online class structure has helped faculty identify problems students are having early on. Feedback from these surveys help tailor the course to the current student need. Response from the instructor include creating new videos and live conferencing that address any content or technology struggles students have identified. Setting virtual appointments or check-in times with each student has served to catch students before they become overwhelmed. It is a continuous mentoring model that keeps students on track and performing at the same level as students in face-to-face classes. With personalized lectures, faculty are able to use math related tools to help students visualize the content. Programs such as Desmos, Geogebra and Geometer’s Sketchpad have elevated the learning occurring in the online classroom

In par with the collegewide online success rates, our Math 160 online success rates fall below that of our face-to-face success rates. The Math 160 online course has been the longest running online offering on department record. Nevertheless, when comparing success rates with other math online courses, it is clear that this course needs to be redesigned. Most of the best practices in place for Math 103, 120 and 178 are also in place for this Math 160 class; yet students are not benefiting from the same level of success. The department will take a closer look at this course to revamp and redesign the delivery method to better meet the needs of our current students

We will be looking at several factors, among them are assessment practices, shorter videos and more flexibility with assignment deadlines. The content in statistics is unlike that of the other math courses. For this reason, we will research better methods for delivering this specific content. Before 2013, a successful practice was delivering synchronous lectures. On this platform, students were able to participate in real time as the instructor delivered the content. Student participation meant they were asking questions as well as answering each other's questions via the chat and VoIP options. In addition, a recorded video was made available for students that were unable to attend the synchronous lecture.



Finally, we saw the greatest success with the online Math 178 class. Online students were out performing our face-to-face students in both fall and spring semesters. The online sections of Math 178 implement instructor created videos which allow students to revisit concepts continuously which may help with the retention of the material.



Other best practices not mentioned before that are implemented in all online math courses is communication with online students before the first day of class. It is important that students have time to navigate the course website and be familiar with the set up before their counterpart face-to-face class begins. Math faculty recognize that there is a learning curve when it comes to navigating the course website. Having the course available in advance gives online students an opportunity to navigate before actually delving into the content. As part of the pre-semester introduction, students receive an introductory video where the instructor welcomes the class, goes over syllabus and demonstrates how to access the course.

As technology changes, math faculty are committed to learning and implementing new strategies to meet the needs of our changing student population. With the increasing number of faculty certified to teach online we are now able to work together with a student-centered approach assuring that our online success rates are keeping up with our face-to-face success rates.

2.7 If applicable, include the list of courses that have been formally articulated with high schools. Describe any articulation and/or curricular collaboration efforts with K-12 schools. (Contact the Dean of CTE if you have questions).

Articulation agreement with local high schools:

HS Course	Grade	Placement
<i>Integrated Math 1</i>	<i>C or better both semesters & cumulative GPA ≥ 3.0</i>	<i>096; 103; 108; 110;160+060</i>
<i>Algebra I</i>	<i>C or better both semesters & cumulative GPA ≥ 2.8</i>	<i>096; 103; 108; 110;160+060</i>
<i>Integrated Math 2</i>	<i>C or better both semesters & cumulative GPA < 3.0</i>	<i>096; 103; 108; 110; 160+060 176+076; 178+078</i>
	<i>C or better both semesters & cumulative GPA ≥ 3.0</i>	<i>120; 125; 160; 176+076; 178+078</i>
<i>Integrated Math 3</i>	<i>C or better both semesters & cumulative GPA < 3.0</i>	<i>096; 103; 108; 110; 160+060 176+076; 178+078</i>
	<i>C or better both semesters & cumulative $3.0 \leq \text{GPA} < 3.3$</i>	<i>120; 125; 160; 176+076; 178+078</i>
	<i>B or better both semesters & cumulative GPA < 3.0</i>	<i>120 – 178</i>
	<i>B or better both semesters & cumulative GPA ≥ 3.0</i>	
	<i>C or better both semesters & cumulative GPA ≥ 3.3</i>	
<i>Algebra II</i>	<i>C or better both semesters & cumulative GPA < 3.0</i>	<i>096; 103; 108; 110; 160+060 176+076; 178+078</i>
	<i>C or better both semesters & cumulative GPA ≥ 3.0</i>	<i>120; 125; 160; 176+076; 178+078</i>
	<i>B or better both semesters & cumulative GPA ≥ 3.0</i>	<i>120 – 178</i>
	<i>C or better both semesters & cumulative GPA ≥ 3.3</i>	
<i>PreCalculus</i>	<i>C or better both semesters & cumulative GPA < 3.3</i>	<i>120 – 178</i>
	<i>C or better both semesters & cumulative GPA ≥ 3.3</i>	<i>120 – 180</i>
<i>Calculus*</i>	<i>C or better both semesters</i>	<i>120 – 180</i>

**Calculus (for students who did not pass the AP exam or did not take the exam)*

You may also take the math Placement exam.

Students need to have their transcripts ready for verification.

Talk to your counselor or contact: Tammi.Marshall@gcccd.edu (Cuyamaca College)

Shirley.Pereira@gcccd.edu or Nemie.Capacia@gcccd.edu (Grossmont College)

2.8 Please describe how the program ensures that articulations are current. Identify any areas concern or additional needs that your department has about articulation with four-year institutions.

The Mathematics Department maintains a close and collaborative working relationship with the GC Articulation Officer thus assuring that articulations with transfer universities are current.

The Math Department does not have any areas of concern or additional needs about articulation with four-year institutions. The following information describing the Mathematics Department's articulations with key four-year universities is courtesy of our articulation officer Denise Aceves:

The process of articulation is two-fold. First, transferability must be established. A transferable course is one that is taken at a community college and can be used for unit credit at a university. The next step, is the articulation of courses deemed transferrable. Articulation is the formal, written agreement that identifies courses on a "sending" campus that are comparable or acceptable in lieu of specific course requirements at a "receiving" campus. Thus, articulation identifies courses that a student should take at community college to meet university degree requirements.

In response to your request for articulation information, Math courses at Grossmont College are well-articulated. All formal articulation with our 4-year public education partners can be found at ASSIST.org, which is the public articulation repository available to current and potential college students. Please note that ASSIST.org currently only reflects articulation information through 2016-2017 and partially updated information.

The majority of Math courses transfer to both the CSU and UC Systems, with the exception of Math 128, 160L and 170, which are only transferrable to the CSU. Furthermore, courses in this discipline have been evaluated by the CSU and UC systems to meet requirements for general education. As a result, approved Math courses assist students in meeting CSU General Education Breadth requirements in the area of Scientific Inquiry and Quantitative Reasoning. Similarly, there are approved Math courses in the Mathematical Concepts and Quantitative Reasoning area of IGETC. All courses that have received transferability and general education designations are notated as such at the end of each course description in the Grossmont College Catalog. The courses with course to course articulation by department with specific CSUs and UCs can be found on ASSIST.org.

Locally, our public 4-year educational partners include: San Diego State University (SDSU), California State University San Marcos (CSUSM) and the University of California, San Diego (UCSD). Articulation with the corresponding departments are robust and Grossmont College's Math courses have attained course to course articulations. **Once ASSIST is fully operational, the department is encouraged to review their course to course articulations on ASSIST.org and work with me, the Articulation Officer, to correct any inconsistencies.**

The Math Department has also successfully offered the [Mathematics Associate of Science for Transfer \(AS-T\)](#) in compliance with Senate Bill 1440. To this end, the Math Department has worked collaboratively with the Curriculum Committee, Instructional Operations and the Articulation Officer to

establish the Mathematics AS-T. Similarly, the department has been responsive to Course Identification (C-ID) required for courses in the degree.

Articulation is facilitated with current, concise and thorough course outlines. It is imperative that the outlines and text books listed be current. The requirement that course outlines be updated every 5 years through the Grossmont College Curriculum process is vital. Students benefit from the many colleges and universities who have articulated our courses in Math. Below I have listed the link to *The Course Outline of Record: A Curriculum Reference Guide Revisited*, a document adopted by the Academic Senate for California Community Colleges in Spring 2017, as well as the latest standards for CSU GE Breadth and IGETC.

Curriculum Resources

- [**The Course Outline of Record: A Curriculum Reference Guide Revisited**](#)
- [**Guiding Notes for General Education Course Reviewers**](#)
- [**Standards, Policies & Procedures for Intersegmental General Education Transfer Curriculum, Version 1.9**](#)

You are welcome to contact me directly at mariadenise.aceves@gccd.edu with any questions regarding this report.

SECTION 3 – STUDENT LEARNING OUTCOMES (SLOs)

The SLO Cycle is summarized in figure 1 below.

**Figure 1
SLO CYCLE**



*Five-Step Assessment Process for Continuous Improvement
of Student Learning at Berea College*

3.1 Describe any changes (e.g., addition/deletion of SLOs, postponement of assessments) your department has made to your SLO assessment cycle. Include a brief description of why these changes were necessary. NOTE: Changes should include reassessment of SLOs requiring further attention.

The mathematics department has made the SLO process fairly efficient over the last six years since the previous program review report. At the beginning of each semester the department chairs distribute the schedule of SLO's to be tested. Generally, we test one SLO for most courses each academic year with lower level courses typically during the fall semester and higher level courses in the spring. The course coordinators have the responsibility to create a question (usually a group effort) and distribute it to each instructor for a particular course. The instructors give the question on their course final exam and report their results back to the course coordinator. The coordinator organizes the data (most of us use a standard format) and shares at a department meeting usually during flex week.

Below is an example of a typical question to be assessed on the instructor's final exam from a math 110 class:

Dear Instructor,

We will be assessing our Math 110 students this semester on the SLO listed below. Please incorporate the following question into your final exam. There will be no official grading rubric. Each of your students will either receive a "pass" or "no pass" grade according to the following standard:

Pass: Student shows a good solution with few or no errors. Work is of good enough quality to earn a passing grade on the problem.

No Pass: Although some work may be shown, the student has too many flaws in their solution to earn a passing grade on the problem.

After you have graded your final exams, please fill out the attached Data Collection Sheet and turn it in to your course coordinator's mailbox. Be sure to turn them in by December 20.

Student Learning Outcome:

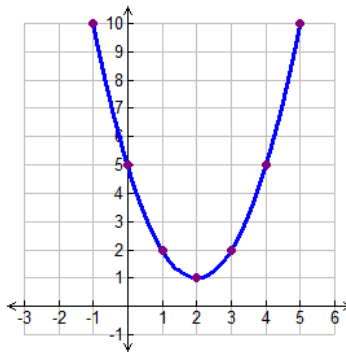
A student will be able to formulate, analyze, and differentiate mathematical functions numerically, graphically, and symbolically at the intermediate algebra level and have the ability to transition between these representations.

Question to be put on the final exam for the purpose of assessing the SLO:

1. Given the following functions $f(x)$, $g(x)$, and $h(x)$ [given as a formula, a graph, and a table, respectively]

$$f(x) = \sqrt{3x+10}$$

$g(x)$



x	$h(x)$
-1	0
0	-2
1	3
2	9
3	5
4	-3

Find the following:

- a. Domain of $f(x)$
- b. Range of $g(x)$
- c. $g(4) - h(4)$
- d. $\frac{g(2)}{f(2)}$
- e. $f(h(0))$

Below is an example of the data collection sheet that instructors return to the course coordinator from a math 110 class:

Math 110
Course Coordinator:

Instructor: _____
Section: _____

Data Collection Sheet:

Pass: Student shows a good solution with few or no errors. Work is of good enough quality to earn a passing grade on the problem.

No Pass: Although some work may be shown, the student has too many flaws in their solution to earn a passing grade on the problem.

Question:	# Students Who Took the Final and Received a “No Pass” Score	# Students Who Took the Final and received a “Pass” Score	# Students who Passed your class AND received a “Pass” Score
Given the following functions $f(x)$, $g(x)$ and $h(x)$ [given as a formula, a graph, and a table, respectively] Find the following: a. Domain of $f(x)$ b. Range of $g(x)$ c. $g(4) - h(4)$ d. $\frac{g(2)}{f(2)}$ e. $f(h(0))$			

Number of Students Enrolled in your Course Who Took the Final Exam: _____

Number of Students Who Passed your Math 110 course: _____

Any common student errors or other observations/comments about your SLO results? _____

Please return the completed sheet to Course Coordinator’s mailbox or e-mail.

The main strength of the SLO process is the discussions among colleagues about math teaching and learning. We discuss issues like the quality of the problems, level of difficulty, and the conceptual nature of the mathematics we want to emphasize. We often are put in situations where we must work with new people and come to agreements on the main intent of the questions and the process. When we do the process well, the whole team has a better understanding of the goals of the specific course in question. We also discuss the results and success or short comings of the questions. All of this leads to even more discussion and reflection. Furthermore, over the years we have created some very good assessment questions that many of us continue to use on our final exams year after year. As a department belief, a good SLO question is one that we keep on our finals even after the SLO process is complete.

Even with our success, we feel the process has weaknesses. While we have made the process more efficient, lately it is not as much a major of focus of the department’s energy (placement issues, planning for our new building, AB 705, etc.) While data is being gathered by coordinators, we need to be more thorough or organized at keeping the data housed in one central location where it can easily be reviewed. The overall success data is being up-loaded to trackdat but the department should be more consistent in reviewing the data. We may need to think more about the effectiveness of the data we are keeping and what kind of information would be most helpful. Another issue seems to be that the department is spending less time on the entire process from writing the questions to sharing the results.

3.2 Give examples of how your department/unit has used SLO assessment results to improve a course, course sequence, and/or program over this program review cycle. In your narrative, please pay particular attention to assessment of courses that directly lead to a certificate/ degree/transfer (e.g., English 120, Psychology 120) and/or constitute a high enrollment course. For help with this prompt, please see the chart on the following page:

Examples of Changes that *May* be Implemented as a Result of Assessment

Changes to the Assessment Plan	<ul style="list-style-type: none"> • revision of intended learning outcomes • revision of measurement approaches • changes in data collection methods • changes in targets/standards
Changes to the Curriculum	<ul style="list-style-type: none"> • changes in teaching techniques • revision of prerequisites • revision of course sequence • revision of course content • addition of courses • deletion of courses
Changes to the Academic Process	<ul style="list-style-type: none"> • revision of advising standards or processes • improvements in technology • changes in faculty staffing • changes in frequency or scheduling of course offerings

In many of our courses, there was a repeating theme. The SLO questions were often more in-depth than what we typically ask our students on exams and show through examples in class. This has led to a change in teaching techniques and a revision of the course content. Having more in-depth questions in the class and on exams will enhance students' critical thinking and allow them to see the larger picture and how the contents ties together and can be used in the real world.

3.3 *What resources (time, professional development, curriculum approval process, etc.) did you need to carry out these improvements? Please explain.*

The main resource for the mathematics department to make these kinds of changes is just the time to meet and discuss student work. We usually do this during Flex week and/or department meetings. This is work that we all find useful and we see a direct correlation to our work in class. This is all relevant work to the department and it does take the time to meet as a department. The department meetings are so full with many other issues, we do not seem to have the adequate time to spend on the pertinent issues of teaching and learning.

3.4 *What evidence did you collect to demonstrate that the planned improvements were successful? If you have yet to assess the improvements, what evidence do you plan to collect?*

One example of the how some improvements took place would be in regards to the math 175 course. After an SLO question quickly revealed the large range of expectations regarding the use of a calculator in different sections of the course, we knew we had to make some changes. Based on the departments' recommendations, a committee created a set of guidelines for calculator use in the course. These changes were accompanied by more SLO questions that would require calculator use.

3.5 *How will you use this evidence to ensure ongoing course/course sequence/program improvements are sustained?*

The best way to ensure that improvements are sustained is just to keep the cycle going. The process of writing good questions, grading the responses and looking for more effective instructional strategies is one of the best uses of our time. The process helps us standardize our courses and outcomes, helps us grade more similarly, and helps us focus on the key goals of each course. We really want students to be able to enroll any section of a course and have a very similar experience and grading standard. Our discussions and long term goals seem to improve with each round of the process. We would argue that the process helps our staff develop into better teachers and colleagues.

SECTION 4 - FACILITIES AND SCHEDULING

4.1 *List the type of facility spaces your department/program utilizes for instruction. This can include on-campus, off-campus, and virtual.*

As the department with the most students at Grossmont College, on any given day math students, math faculty, and math staff can be found occupying almost all of the buildings and spaces across the Grossmont College campus. A typical student has multiple stops around campus to full-fill their mathematics requirement: The assessment office to determine math placement, academic counseling to determine their appropriate math pathway, various classrooms to complete the required math coursework from their major, office hours with their math professor, and the math study center or one-on-one tutoring in math for help.

That said, the facility spaces officially designated to the mathematics department can be divided into three main categories: classroom space, the math study center, and faculty/staff office space.

Classroom Space

In Fall 2011 and Spring 2012, the mathematics department ran 135 and 128 sections respectively. That increased to 149 and 155 sections in Fall 2017 and Spring 2018. As you can see in the table below, course offerings increased significantly as budgets allowed the mathematics department to add sections back into the schedule. With these increased offerings came increased facility use. The number of different classrooms that housed mathematics classes rose from 32 rooms in Fall 2011 to 45 rooms in Fall 2017. Those 45 classrooms spanned 9 different buildings across campus.

	Fall 2011	Fall 2017	% Change	Spring 2012	Spring 2018	% Change
Number of Sections	135	149	10.4%	128	155	21.1%
FTEF = LED	35.2	40.6	15.3%	33.4	41.6	24.6%
Number of Classrooms	32	45	40.6%	30	44	46.7%
Number of Online Classes	4	7	75.0%	4	7	75.0%
Number of Off-Campus Classes	0	3		0	3	

Our online and off-campus offerings increased as well. In Fa11/Sp12 we offered 4 online classes, while 6 years later we offered 7 classes online; an increase of 75%. All of our online classes require classroom space for midterm and final exams on campus.

The mathematics department has also added several off-campus offerings within our community. We offer transfer level Math 120 at Helix Charter High School (Fall 17-Spring 19), Precalculus Math 176 classes in the summer at El Cajon Valley High School (Summer 18-19), and transfer level Math 120/020 at Las Colinas Detention and Reentry Facility (Sp19).

Math Study Center Space

The Math Study Center consists of one main tutoring room, 70-112, and an adjacent computer lab, 70-113 that can be used as an overflow room in the afternoon when classes are not scheduled. Room 70-112 has a posted room max of 48, but with furniture and computer equipment serves 30 math students at a time.

Faculty/Staff Office Space

With the increase in course offerings, we have increased in the number of full-time and part-time faculty members. See the table below.

	Fall 2011	Fall 2017	% Change	Spring 2012	Spring 2018	% Change
Full-time Faculty	15	18	12.5%	15	18	12.5%
Part-time Faculty	42	44	4.8%	43	45	4.7%

The current 19 (18 + Cierra Rawlings in Fa19) full-time faculty members are housed in two main clusters, with 2 outliers. Eight math faculty have offices in Building 100 (Funk, Greenheck, Lines, Manchester, Millan, Pereira, Smith, Waller). Nine more have offices in Building 70 (Capacia, Giles, Lee, Munoz, Palacios, Rawlings, Sundblad, Vanden Eynden, Working). Davis and Hick share an office in Building 30.

While the current 19 full-time mathematics faculty members have consistent, designated office space, our 45 Part-time faculty have less permanent and more varied office space across the campus. Currently a handful of part-time faculty informally share space in full-timers offices while others use part-time space in building 36. This is a campus-wide concern, all part-time faculty should have a reasonable office space for course preparation and office hours.

The math department's full-time Clerical Assistant currently has an office in Building 70. The math study center Learning Specialist has an office next to the MSC in 70-111.

4.2 Are the spaces listed in 4.1 adequate to meet the program's educational objectives?

Yes___ No **X**___

- If you checked 'no', please explain how your department/program is not meeting its facility space needs to adequately meet its educational objectives. Please provide an explanation of specific facility requirements of your program, and how those requirements are not being met.***

Many of the same issues with facilities we outlined in our last Program Review are still prevalent today. In most general terms, the mathematics department is still spread out across the campus and has no centralized home base. The result of a de-centralized, fragmented department is less cohesion, less collaboration and more frustration for students.

Broken down by facility type:

Classroom Space

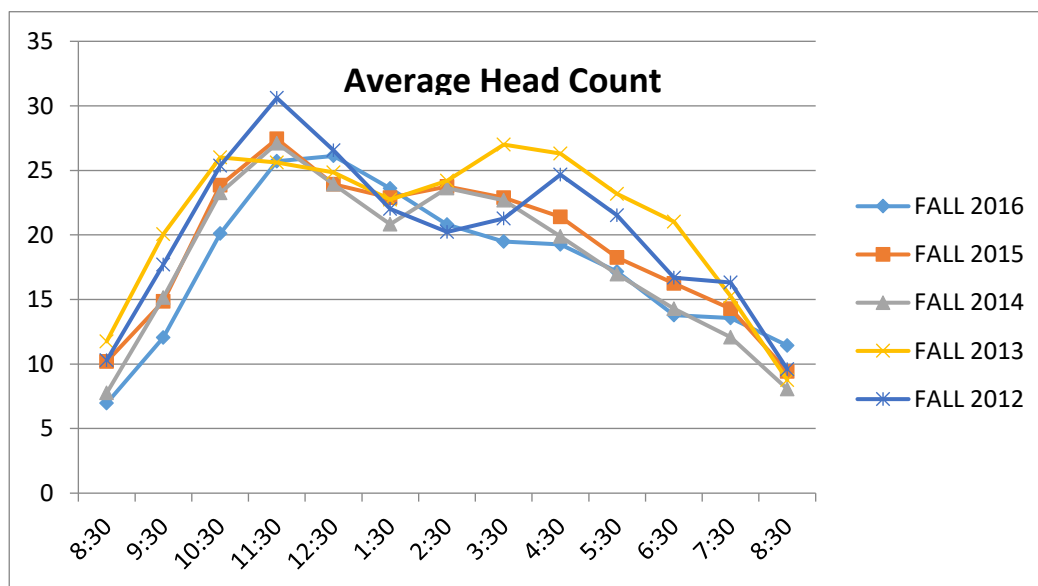
Since we schedule math sections in over 40 classrooms in approximately 9 different buildings across campus, many of these classrooms do not have the ideal set-up best suited for teaching mathematics. Many classrooms do not have adequate white board space to work lengthy math problems. Several classrooms have awkward, oversized desks that roll and twist in too many different directions. These desks are so large that they prevent instructors from walking amongst the students (552, 553, 554). Most, if not all of the classrooms in the “temporary” building 100 are either too hot or too cold, and most have very loud fans that make it hard to hear teachers and students. Most math classrooms have old, dirty and/or broken furniture. All math classrooms are dirty as the semester rolls along; all have dirty and blackened white board “rags” or erasers. Many math classrooms have tripping hazards near the smart cart and white board. With 40+ classrooms used for math, it is a challenge to guarantee that the desired computer software is installed before the semester starts. Several software requests have to be submitted each semester.

The mathematics department also continues to be limited by the lack of availability of classrooms during peak periods of high demand on campus, roughly 9:00am – 2:00pm, Monday through Thursday.

Math Study Center Space

The Math Study Center accommodations need to be improved. Student placement in Grossmont College mathematics courses has altered dramatically due to AB705 legislation mandated changes. Many students will be taking higher units of math courses; the transfer level course with the co-requisite support course. The need for supplemental resources will increase, resulting in a higher demand for the Math Study Center services.

The Math Study Center is currently located in room 70-112, which is 752.5 square feet. The room capacity in this room is 48 people. With the furniture and equipment in the room it is crowded when it reaches a capacity of 30 students, and no longer provides a quiet study environment when it reaches a capacity of 20 students. See the graph below.



Thus, at peak times, the Math Study Center's current set up is not conducive for effective studying and is not sufficient to meet the needs of the 6000 mathematics students enrolled each semester. Furthermore, as students are placed into higher unit math courses the need for the Math Study Center services will increase.

Faculty/Staff Office Space

Ideally, the mathematics faculty, both full-time and part-time, would have office space in close proximity to each other, the math study center and the several math classrooms. Currently, many part-time faculty have limited options for office space which makes meeting with students a challenge.

Future Mathematics Space in the Rebuilt Building 36

The math department has high hopes that many of these facility inadequacies will be addressed and rectified by the completion of the rebuilt Building 36. Many members of the department have been involved in the design and planning of the building rebuild, at least to the extent that we are asked and allowed. This rebuild is planned to begin Fall 2020. The current plans include adequate full-time and part-time faculty and staff office space, an enlarged math study center, two computer labs, the MNSESW dean's office, 11 math classrooms and 1 shared classroom.

4.3 What proactive steps have you taken with regards to facility and scheduling to improve the ability of your department to meet the educational objectives of your program and ensure that students can complete their program in a timely manner?

It is always a challenge for our department to find enough classrooms to teach during the popular time period, roughly from 9am to 2pm, Monday through Thursday. It is even more difficult to find classrooms for classes with more than 45 students. Our campus was designed and constructed more than 50 years ago when the class maximum was 35. Now in the 21st century, our class maximum has increased to 45, and there are only a few classrooms in our campus that can comfortably accommodate this number of students.

Our department chairs have always been very proactive and creative in scheduling to meet our students' educational needs. We look at success rates from the previous semester for every class along with placement data to determine the number of sections to offer for the following semester; as well as the number of students who failed/withdrew from the class to predict the number of students who might have to repeat the class and the number of people who pass and will move on to the next math class. We then add these numbers to the number of new students placing into those respective classes.

We also look at the enrollment trend from the previous year to see where students are enrolling (early morning, midday/primetime between 9am -2pm, late afternoon, or evening hours). For example, we have canceled some early morning classes (7 am classes) that don't fill. Our goal is to make sure that we

offer our classes all throughout the day and evenly distribute them between MW and TTH. For large unit classes such as MA175 and MA176, they are now offered as MTWTH sections.

Certain upper division courses (MA245 for example) will be offered during the day in one semester and late afternoon the next semester to accommodate working students.

Our department is also very proactive in finding alternative ways to deliver instructions. We now have MA103 (intermediate algebra), MA120 (quantitative reasoning), MA160 (statistics), MA 178 (calculus for business) delivered online for students who cannot come to campus. Some sections of MA178 and MA128 are offered as hybrid courses. A few MA120 courses are offered at Helix High school as well as at Las Colinas. Two new courses MA096 and MA108 were created in an effort to accelerate students through the developmental math content to transfer level courses.

Our math department continues the Math Academy program and short-term courses during intersession (MA103, 120, 160, 178). Our summer program is now very robust; it almost includes at least one section of each of our math classes.

We used to offer Saturday courses that were mainly catered to working students. However, these classes have been canceled due to low enrollment (perhaps due to lack of marketing/advertisement and student services support for Saturday classes).

Our Math Study Center (MSC) is another facility important for student success. In order to maximize the effectiveness of our resources, we are using WOnline to track student usage and see various trends. From the collected data, the MSC specialist can determine what the busiest time of the day will be and schedule more tutors accordingly. Thus, every student using the center can receive adequate assistance during even the busy hours and no manpower will be wasted during the slow hours.

The MSC also recently received new furniture, the tables and chairs are all on wheels. This will allow the staff to relocate furniture easily and frequently to suit the needs for either group studies or individual tutoring.

4.4 *Identify and explain additional needed technological and equipment resources that could further enhance student learning in these spaces.*

The mathematics department in Grossmont College is always trying to provide the best educational experience to its students by designing the best classrooms equipped with the latest and best technology. Fortunately, the math department is scheduled to move into the newly built building 36 around 2023. Members of the department have been working hard with administration and architects in classroom designs and furniture selection in the hope that the new building will perfectly fit our program's need.

In particular, the department members would like to have the following items installed or stored in each new or existing classroom.

1. Two projection screens with projectors. Lighting should also be redesigned and reinstalled to avoid light spilling onto the screens.
2. Reliable WIFI
3. Set of Surface Pros or electronic tablets for teacher and students to display their work. The teacher can upload lecture notes to Canvas.
4. More storage space, or even a storage room to store class set of tablets, rulers, scissors, and measuring tapes etc.
5. Some classrooms should have desktops stored inside desks, so that they can be brought out in lectures if needed. Most of our learning materials are now hands-on and/or online, so we need technology to support that.
6. More whiteboard space, vertical sliding whiteboards will be an ideal solution.
7. The existing document cameras should also be replaced by models that can display textbooks easily.
8. TI-Grapher and other relevant software must be installed in the instructor's computer.
9. Multiple charging stations for students in the Math Study Center.

Other than in the classrooms, the department should also have some 3D printers for instructors to build models, and some for student usage in the future; an Instructor Canvas Shell that houses materials for each class (such as sample syllabus, sample pacing, lecture notes, quizzes, exams, activities etc.); a general Canvas shell for students that contains resources such as sample syllabus, sample exams, study guides, worksheets, videos etc.

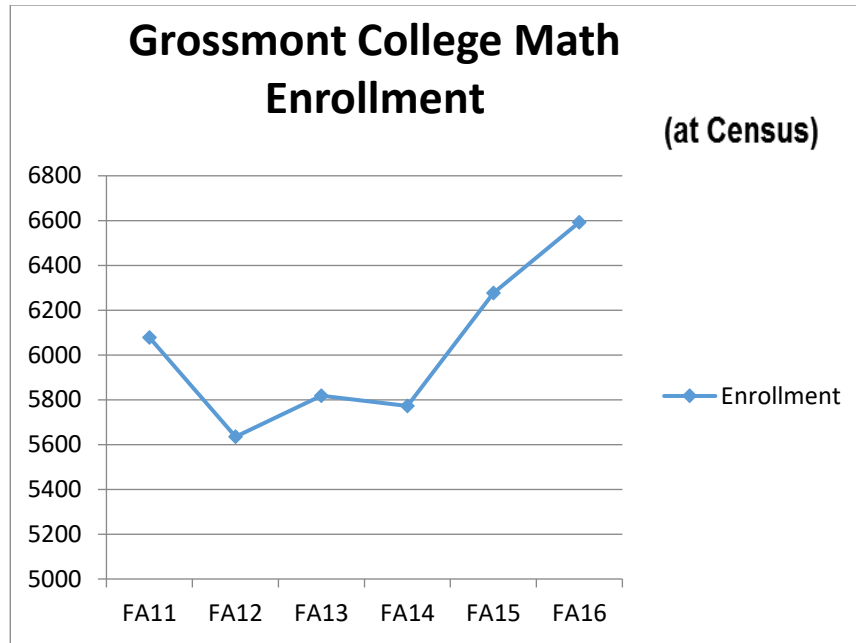
4.5 Are students trying to access your program impacted by the facility spaces listed in 4.1?

Yes X No

If you checked 'yes', please explain how students are being negatively impacted by unmet facility needs experienced in your department/program. Please provide some specific examples.

The two main facility spaces where students trying to access our program are negatively impacted are in the classroom spaces and in the Math Study Center.

The Mathematics Department is one of the largest departments on campus. As such, it services many of the students who attend the college. Grossmont College serves between 16,000 and 18,000 students each semester. The average enrollment in math classes each semester is about 6000 students. Our classes are often very full resulting in large waiting lists for many of the courses.



Without sufficient room availability, the college will not be able to offer mathematics courses to all interested students. This may result in a delay in their education. Sufficient room availability during periods of high demand will promote more opportunities for individuals to obtain a college education in a timely manner.

Finding rooms that are adequate for teaching mathematics during peak time periods, roughly 9:00 a.m. – 2:00 p.m. Monday through Thursday is difficult. The rooms we currently use affect both the access and success of our program. Many students have poor viewing angles of projection screens and white boards. Most of the rooms used by the math department are so filled with desks and tables it is challenging to maneuver in the room to create small learning groups or for the instructor to roam the room answering student questions. Thus, the options for creative and interactive learning environments are restricted. The current rooms do not allow for and do not promote flexibility, student comfort, student engagement, options for multiple pedagogies and teaching approaches, collaboration or interaction.

Furthermore, as the math program changes to include support courses (a consequence of the AB 705 legislation) the need for rooms during a longer time block will be necessary.

4.6 If applicable, please include any additional information you feel is important regarding facilities and scheduling that was not included above including non-classroom spaces such as offices, storage, preparation areas, open workspaces for students/tutoring, etc.

The Mathematics program at Grossmont College is undergoing drastic mandated changes due to recent legislation (AB 705). The same population of students will be enrolling in our program; however students will now have increased access to transfer level courses while concurrently completing

prerequisite material. The overall impact of these changes is difficult to predict. Regardless, there are concerns that need to be addressed, in addition to the spaces previously discussed.

Centralized Math Department:

The Mathematics program would benefit from the creation of a centralized math department, a location for all students' mathematical needs. This would include adequate full- and part-time faculty office space, be in close proximity to the Math Study Center, would be located near several core math classrooms and would provide adequate space for collaboration. This space would also include an ambiance of mathematical learning including subtle mathematical art and functional mathematical structures to be used as teaching tools and experiences.

Currently the math department classrooms, faculty offices and staff office are spread across several areas on campus and the majority of adjunct math instructors have no dedicated office space. The office facilities are not conducive for collaborating with faculty peers. There is no centralized location for students in need of math guidance or assistance. The Math Study Center is small and in need of better accommodations.

Instructional Spaces:

The Mathematics program would benefit from the improvement of instructional spaces which include classrooms, the Math Study Center, faculty offices and open workspaces. The ideal instructional spaces would allow for flexibility, student and faculty comfort and student engagement. It would promote multiple pedagogies, teaching and learning approaches. The instructional spaces should encourage collaboration and interaction. There should be a marrying of technology and orientation to furniture with different varying spaces.

Faculty and Staff Support Spaces:

The Math Department would benefit from faculty and staff support spaces throughout the campus. These spaces would include collaboration space, storage space for instructional items, support areas for adjunct faculty, and technology-rich space for Professional Development. Currently the faculty and staff support spaces are limited or nonexistent. The math department faculty includes 19 full-time members and an average of 45 part-time members. There are no spaces on campus designed for the math faculty to consistently meet and collaborate. Storage for instructional items to support this large number of faculty is split between the math clerical assistant's office, some space in the Math Study Center, and a storage cabinet in one of the classrooms. Improvement in support spaces would benefit the faculty and improve the learning experience for students.

SECTION 5 – STUDENT EQUITY AND SUCCESS

NOTE: See Appendix 2 for enrollment data; Appendix 3 for student success data.

5.1 *What are the identifiable patterns with regards to overall trends in enrollments in your department? Explain what is causing these trends (e.g. campus conditions, department practices). Once you have identified and explained your enrollment patterns, then address what your department has done/is doing to address identified issues. Examples of any changes you made to manage enrollment are encouraged.*

In addition, you should examine your enrollment data, disaggregated by gender, age and ethnicity. For any of these student groups in your department with enrollment data at lower or higher proportions than college-wide numbers, describe what factors you think is causing these patterns.

Enrollment in math classes has remained fairly consistent across the last 6 years. Enrollment trends for the college are mirrored in the department with no exceptions for identified demographic groups.

5.2 *Discuss trends in student success and retention overall in your department and explain these trends (e.g. campus conditions, department practices). Also examine the success and retention data disaggregated by gender, age and ethnicity. For any groups that have success rates in your department at lower or higher than college-wide describe what factors you think cause those patterns. Provide examples of any changes you made to improve student success/retention, especially for groups that have equity gaps.*

Success and Retention (2011 to 2018)

In Math success has dropped from 61.2% in 2011 to 53.7% in 2018. It was on the rise from 53.2% in 2008 to a high of 61.8% in 2012 and it has been on the decline since that high was reached in 2012. This is a 7.5% decrease in success over the time period from 2011 to 2018.

The College on the other hand, showed virtually no change in its Success rate over that same period (2011 – 2018). The Success rate in 2011 was 69.2% and 69.9% in 2018 with an average of 69.2% success over those eight years. Math's Success rate was 8% lower than the College in 2011 and fell to 16.2% lower in 2018. It is understandable that success in Math would run lower than the College as a whole since Math courses are often very challenging for students, but this precipitous drop in Math's Success of about 8% from the high of 61.8% in 2012 is concerning.

Retention has also dropped in Math from 81.7% in 2011 to 77.7% in 2018, a decrease in the retention rate of 4%. At the same time, the College Retention rate rose slightly from 83.4% to 84.9%, a 1.5% increase. As of 2018 the Math department's Retention rate is about 7% lower than that of the College. The Retention rate is clearly linked to the rate of Success in that a student who is succeeding will generally not drop a class, so as our Success rate drops so must our rate of Retention.

The Success rates for genders, ethnicities, and age categories mirror what has happened for all students taking Math. From 2011 to 2018 most ethnicities dropped 5 to 6 percentage points in success with the exception of Filipino students who gained 1.6% over that time period. American Indian and Pacific

Islander students dropped a bit less than the others but their sample sizes are really too small to be considered reliable. The breakdown of these success percentages by ethnic groups is shown in the table below:

Ethnic group	2011 Success rate	2018 Success rate	Average Success rate (2011 – 2018)
African American	49%	43.2%	46.1%
American Indian	36.4%	33.3%	41.3%
Asian	70.1%	65.0%	68.4%
Filipino	59.4%	61.0%	60.9%
Hispanic/Latino	55.3%	47.6%	52.3%
Pacific Islander	49.1%	48.1%	45.7%
White	66.9%	60.2%	64.7%

Inspection of the Average Success rates above show a large gap between our top average success rate for Asian students of 68.4% and African American students at an average of 46.1%. American Indian and Pacific Islander students sample sizes were again too small to consider. This was true prior to 2011 and so this trend has not changed despite our efforts.

Over this time period our department made great efforts to improve student success despite this downward trend. The following is a listing of those efforts:

- Changed the placement process in hopes of better placing our math students to be successful.
- Created a Math Academy program to gain better success from our Math 90/103 classes.
- Ran Math Boot camps in the summer to prepare students for the placement exam in hopes they would be better placed in the Fall semester.
- Ran Math workshops throughout the semester to help our students be better prepared for upcoming material.
- Created two acceleration courses (Math 096 and Math 108) to help students move through their Math sequence more quickly.
- Instituted an Embedded tutor program for Math 096 and Math 108 courses.
- Developed a Calculator policy for our instructors so that STEM students could be better prepared for their coming classes.
- Offered a weekly math Power Hour for students in Math 90/103/110 to help struggling students stay in these courses.
- Conducted norming exercises for grading during Flex week.
- Distributed grade distributions for comparison by instructors and individual review/reflection.
- Ran a highly used Math Study Center.
- Currently, we are embracing many of the ideas put forth by AB-705 such as affective domain, multiple measures placing, creating a welcoming classroom environment, and co-requisite remediation.

During this same time there were some changes that may have had an adverse effect on our student success rate:

- We changed our Math 90 to Math 103/Math 110 curriculum eliminating overlap of topics which can help students in their transition from Elementary to Intermediate algebra.
- There has been a proliferation of online math tools (Wolframalpha, Photomath, etc.) which allow students to obtain answers without engaging in productive struggle.
- An increase in STEM majors – many of whom are underprepared for the algebraic rigor they face in the higher level math classes.
- The addition of three new full time instructors between Fall 2014 and Fall 2016 may have reduced possible grade inflation that can occur with Adjunct instructors. More consistency is prevalent in the number of full time instructors.
- The prolific use of cell phones has perhaps diminished our students success. Math requires a depth of thought and cell phone use breaks that needed focus.

5.3 Describe specific examples of departmental or individual efforts, including instructional innovations and/or special projects, aimed at encouraging students to become actively engaged in the learning process in their classes.

Many of our instructors use various types of special math projects to increase our student's interests in what they are learning. In the online courses, instructors continue to improve in video production, communication with students, and in the creation of supplemental material and projects to help students actively learn online. In Math 88, 90, 103, 110, 108 and 178, a textbook\workbook was created for instructors to use in class to enhance classroom efficiency, minimize note taking, and increase student participation and problem solving. Use of the workbook creates consistency between classes and helps minimize preparation time for instructors. In some of our quantitative reasoning courses, students are allowed to vote on the topics that they want to learn. After the topics that meet the predetermined student learning outcomes are chosen and included in the course, the remaining course topics are voted on by the students according to their interest. In differential equations, students do projects on population growth or harmonic oscillators creating connections to concepts they study in their science courses. In Calculus, students learn to optimize the volume of a box created from folding a piece of paper. In Statistics linear regression is demonstrated through various activities such as Barbie Bungee or the correlation between shoe size and height.

5.4 Explain how the program incorporates opportunities for student engagement outside of class time and/or in collaboration with other departments (e.g. interdisciplinary course offerings, learning communities, internships, research projects, service learning, or participation in community events, tournaments, competitions, and fairs) to enhance student learning.

The Mathematics Department explored linked courses with the English Department. Recently, a linked math 160 statistics course was taught under the Community of Learning Model. The class was linked with an English 120 class by using a data driven approach to writing. The department collaborates with science faculty and counselors too. Science faculty are often interested in how the department approaches a topic or how or when it is taught. The Math faculty speak with Umoja students about success in math classes at the beginning of each semester.

Occasionally, students are given the opportunity to participate in the honors program or help in a research project. Currently, one student is working with a faculty member on developing formulas and/or procedures for finding the best fit elliptical curve to a set of data. Results could possibly be used in the study of binary stars. In the honors program, students research topics and solve problems beyond the scope of the traditional class. The Mathematics Department always encourages instructors to find ways to actively engage students in learning. Many instructors encourage individual students to walk with them to their office after class for additional resources and help. All instructors encourage students to visit them during office hours. Some instructors allow students to repeat assignments outside of class in order to increase their understanding of the material and improve their grade.

At different times over the last 6 six years, the department has sponsored a Math Club and invited students to participate in a math competition. The department also selectively recruits math tutors for the MSC from our student body. While working in the MSC, tutors help other students with mathematics and study skills while simultaneously improving their own understanding math and their ability to communicate math in a correct, efficient, and concise manner. The department is currently using embedded tutors to enhance student engagement and mentorship.

5.5 If state or federal licensing/registration examinations govern the program, please provide data and comment on student success trends.

Not applicable.

5.6 If your program offers a degree or certificate in the college catalog, explain the trends regarding number of students who earn these degrees and/or certificates, including any changes that you have made to increase awards. Insert the “Degrees and Certificates” data table in this section.

The math department has offered an AS in mathematics for many years. During the past 6 years the department added an associate degree for transfer (ADT) in mathematics, and currently both degrees are available to students. We have seen an increase in the number of students earning degrees which is good news because the department has made an effort to increase the number and diversity of students interested in STEM majors. These efforts have included brochures, announcements in class, and a grant with SDSU.

In the 2012-13 and 2016-2017 years, the number of degrees awarded to women nearly equaled those awarded to men, but in all other years, the number of degrees awarded to men more than double those awarded to women.

	2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		2017-2018		2018-2019		Six Term Average
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	%
Declined to State	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	2.4%	0	0.0%	0	0.0%	0.4%
Female	9	40.9%	9	29.0%	12	27.9%	9	25.7%	17	41.5%	14	24.6%	1	20.0%	30.3%
Male	13	59.1%	22	71.0%	31	72.1%	26	74.3%	23	56.1%	43	75.4%	4	80.0%	69.2%
Total	22	100.0%	31	100.0%	43	100.0%	35	100.0%	41	100.0%	57	100.0%	5	100.0%	100.0%

The average number of years to earn a math degree is about 5. The 2016-17 year not only produced more women earning degrees but also the year with the shortest time to degree of 4.68 years. Since many students begin their math course sequence below Calculus 1, the time frame seems reasonable. Also, math courses for the degree are offered in a sequence with prerequisite courses which can make the time to degree seem longer.

Also of interest to the department, are the ethnicities of students earning math degrees. We continue to encourage not only women to earn degrees, but students of all diverse backgrounds. White students comprise about half of the students who earn math degrees with Hispanic students steadily increasing from a low of 13.6% in 2012-13 to more than doubling to 28% in 2017-18.

Unfortunately, the math department does not monitor nor advise students planning to earn degrees in University Studies - Math, Natural and Computer Science, or General Studies - Science and Quantitative Reasoning. There are significant numbers of students earning both of these degrees (although some

students may earn more than one of these degrees) so it may be in the interest of the department to take a more active role in advising students who earn these degrees.

Award	13/14	14/15	15/16	16/17	17/18	Total
Biological Sciences AS	3	5	5	5	5	23
Chemistry COA	2	2	0	5	5	14
Chemistry AS	0	2	1	6	8	17
Exercise Science--Athletic Training AS	0	0	0	0	0	0
Exercise Science & Wellness AS	7	10	3	7	15	42
Exercise Science & Wellness COA	6	11	3	6	11	37
Geography AS	3	1	0	1	2	7
Geography AA-T	1	1	6	5	8	21
Geology-AS	1	0	1	1	0	3
Geology AS-T	1	1	1	2	1	6
Mathematics AS	25	36	22	26	28	137
Mathematics AS-T	22	35	29	36	55	177
Oceanography AS	0	1	0	0	0	1
Physics AS	0	9	5	5	8	27
Physics AS-T	3	10	15	10	24	62
University Studies--Science & Math	5	4	2	0	0	11
University Studies--Math, Nat. & Comp. Sci	111	119	122	100	145	597
General Studies--ESW	3	1	2	2	6	14
General Studies--Science & Quant. Reas.	58	55	36	45	62	256
MNSES Total (Degrees & Certificates)	251	303	253	262	383	1452
College Total (Degrees & Certificates)	2870	3134	3170	3576	4101	16851

5.7 *If you have any information on what students who major in your department go on to achieve after they leave Grossmont, please share that with us. For example, where do they transfer and do they graduate on time? What careers do they pursue? What are starting salaries in the field? Do you know if they go on to employment in their field and professional success? What impact did Grossmont have on their lives?*

An Associate Degree in Mathematics is valuable however not a ticket to any specific jobs or careers. The primary transfer institutions for students in the math program are our local universities, but they also transfer to many institutions across California. Students are likely to attend CSU and UC campuses along with private universities. They also transfer out of state. In all cases, the math program confidently prepares students to be successful no matter where they plan to go to finish a bachelor's degree.

Students in the math program typically become engineers, computer science majors, or other majors in the sciences. Some remain in mathematics and become focused on statistics as a career or shift to teaching junior or high school, or community college. Starting salaries for engineers can be close to \$100,000 or more, while high school teachers may start at \$50,000 or more. Some past graduates of the Grossmont math program now work as teachers here as both full and part time faculty.

SECTION 6 - STUDENT SUPPORT AND CAMPUS RESOURCES

6.1 *Are the college's student support services (Tutoring, Counseling, Health Center, Library, Financial Aid) adequate to meet your student's needs? Please elaborate on your answer.*

TUTORING. Currently the Math Study Center (MSC) houses too many students with not enough space. The math department anticipated this problem and made it a priority to make sure that there was adequate space in the new building. As a department we have envisioned the MSC as a place where students could interact with one another and be surrounded by faculty and technology that may better serve students and aid to their success. Currently our center has the highest utility rate among other learning centers and is not funded adequately. Our learning specialist who manages the spending and budget for the MSC is most recently concerned with rising minimum wages of up to \$2 over the next year while the budget is mostly remaining the same. Because the budget is often a concern of ours, we utilize any means possible including donating our own TA hours to the center instead of utilizing them ourselves. The faculty in the Math department is often granted TA hours because of large class sizes, which gives the MSC a few extra weeks of tutor pay but this of course is not a viable solution.

Does the MSC meet student's needs? Yes, it meets the needs of students who walk through the doors because we make it happen. We have the most enthusiastic tutors that want to be better tutors and who want to help. We have faculty who have dedicated time every semester to reinvent the center to be a more inviting place for all students. We have adopted methods of tracking student utility that help emphasize our need for more funding, more tutors, and more space. Even with all this in practice we still feel that there is more to be gained from having a fuller and better prepared staff and a larger work space. We have made our case to the new LTRC specialist who oversees general tutoring to attain more funding and have pleasantly been met with support.

COUNSELING. We have a close working relationship with counseling (Debbie Lim and Dee Aceves) because of our changing curriculum and adoption of new course offerings. Having multiple paths for students to choose from often leaves them misplaced or confused thus, having constant communication with counselors who work on ED plans is an important step in keeping students on the correct paths. Although miscommunications still occur, we do our best to clearly lay out our concerns with counseling and have had many opportunities to work well together in our common goal of student success. We do think that this service adequately supports our student's needs.

LIBRARY. The Math department uses the library to reserve copies of text books and graphing calculators for student use. This has been a combined effort to give students access to resources that may be out of their financial reach. This has been a positive working relationship that does indeed adequately fit student's needs.

6.2 *What services do students in your department/program use most often or that make the most difference? Can you provide any examples where services have clearly improved student retention and success?*

TUTORING. The student services mostly used are mentioned in the previous section. Although we are not sure of how many students achieved transfers or finished certificate programs due to tutoring, we are aware that those attending made a difference in their study skills and time management. We have hired tutors who often say that they want to tutor because they used the MSC and its resources to its fullest and they feel like it is their turn to give back. Although we do hear of many students who say they “survived” because of tutoring we don’t have a certain method of determining this. We do take into consideration that having a high utility rate implies that students do see the center as a way of improving their success in our classes. Because the center does more than provide tutors, we also see that students who are struggling together make plans and goals to stick with each other in turn increase their retention. There is a strong sense of community among the students who frequent the center which we have seen to improve their outcomes in our classes.

LIBRARY. Most of our curriculum utilizes text books and calculators that are often a central role to success in our classes. Keeping these items on reserve for students to borrow for days at a time is one major piece to student retention. We often hear that students have not received their financial aid and need to decide between life and school. We know that students make use of text books since we sometimes must replace them due to high use and other times, we are notified by the Library that they are out of graphing calculators. The high use of these items leads us to think that we may not have been able to retain our students. We are confident that by supplying the resources at the library we are also increasing the opportunity for success in the classroom. Because students are required to bring calculators to some classes, being able to borrow graphing calculators for multiple days, allows for them to follow along with demonstrations.

COUNSELING. Counseling has also played an important role in student success and retention by being in constant communication with the math department chairs. Aiding students in ED plans and keeping up to date on changes made to course offerings, students are guided to their appropriate paths. This of course is a big job for the math department to manage on their own so we often follow up with counselors after students share their ED plan with us or are contacted by counseling after having reoccurring questions from students. We believe that this is a team effort that when effectively operating reduces unnecessary units and a clarity of options from students to choose from.

GRAD COACHES. More recently our faculty has also been in communication with grad coaches and have referred many students in their direction. Since grad coaches first appeared on our campus a few years ago, there has been a push for them to be another resource for student success and retention. Although we don’t have any specific examples of this directly impacting our student’s success we can say that in certain cases students who were directed to grad coaches felt like they played an active role in their educational journey and were able to stay enrolled in their math course.

ARC. In a collaborative effort to increase opportunities for success, our department encourages students who meet the requirements of the ARC to utilize that resource. Although the major service provided by

ARC are testing accommodations, our students also benefit from interpreters, note takers, and recording devices among other resources. Because we teach a subject that most students seem to have a phobia of, we most often have students who use this student service for testing. Students make appointments in advance and play an active role in maintaining communication between the ARC office and their instructor. The ARC team has made this partnership in student success mostly painless by reminding the faculty of student appointments and delivering exams to mailboxes.

Due to various factors some students will struggle to finish exams on time or will be abnormally distracted with others moving around them. These students, who are appropriately identified by the ARC team, are granted testing accommodations that we as a department adhere to. We have seen these students become more engaged in class and often have a better outcome at the end of the course. Because we cannot identify these students as utilizing this resource we do not have specific examples of how this student resource improves student success. Anecdotally, only a few of the full time faculty can recall of an ARC student who has misused this service or who has not benefited from it.

6.3 *Are college support services adequately supporting your faculty and staff? Consider the following support services: IT, Instructional Operations, Business Services, Printing, Bookstore, Maintenance, CAPS, and any other support services important to your faculty and staff.*

Currently the math department holds classes throughout every building on campus, this leaves us to utilize many resources that the campus has to offer. We often communicate with the business office for keys, with CAPS to help unlock rooms, with IT to help with our technical issues, and with Instructional Operations to help us find bigger space for our large classes. Some of the complaints we have are minor and are met within reasonable time. Our pressing issue has been the unbearable heat in the 100 building during the beginning of Fall and end of Spring. The thermostats in those class room are inconveniently located behind projector screens and make it difficult to read that the room is uncomfortably warm. We have notified Maintenance to resolve the issue but are mostly granted fans to help with the heat.

Another issue that has risen lately is the lack of Math Type in our office desktops to create easy to read documents which have mathematical equations. Similarly, most of the computers in our classrooms have the TI-SmartView available to give class demonstrations on Calculator functions but others are still missing it. We are working with IT to get this software installed in our computers which of course, comes with a waiting period and costs that need to be calculated but we are optimistic that these technical issues will resolve quickly.

SECTION 7 – ON-CAMPUS/OFF-CAMPUS INVOLVEMENT

Faculty	Activity/Committee	Year(s)	Value to Student Success
Irene Palacios	PD Activity Math and English Corequisite Summit, Huntington Beach	March 2019	AB705 Curriculum Discussion for Support Courses
	PD Activity AB705 Training, Glendale & Citrus Community College	April 2019	AB705 Faculty Training and Best Practices for Support Courses
	PD Activity Association of American Colleges and Universities (AACU)	March 2018	Equity Discussions and Implementations
	PD Activity Speaker at The Mentoring Institute at the University of New Mexico	October 2018	Presented over Grossmont College's Peer Mentoring Program. From development to implementation and growth.
	PD Activity California Acceleration Project, College of the Canyons	February 2017	CAP principles brought back to teach accelerated Math courses.
	PD Activity AB540 Ally Training, Grossmont College	August 2017	Learned how to support undocumented students and how to be an Ally.
	PD Activity Hispanic Association of Colleges and Universities (HACU)	October 2017	Supporting LatinX students from education to job readiness
	PD Activity Mentoring Institute UNM	October 2017	Learned how to improve peer mentoring
	PD Activity International Conference on Technology in Collegiate Mathematics Las Vegas	March 2015	Learned how to incorporate the latest technology and practices in mathematics classes
	PD Activity California Learning Communities Consortium @ Cal Poly Pomona	April 2015	Learned best practices in creating and teaching linked classes

	PD Activity American Mathematical Association of Two-Year Colleges (AMATYC) Nashville	2014	Learned how to incorporate the latest technology and practices in mathematics classes
	PD Activity International Conference on Technology in Collegiate Mathematics Orlando	March 2012	Learned how to incorporate the latest technology and practices in mathematics classes
	PD Activity Presenter for GCCCD Technology Showcase facilitated by Dean Kerry Kilber Rebman	March 2012 (and Nov 2011)	Shared best practices in online courses
	Interdisciplinary Collaboration with English Faculty Brendan Praniewicz taught linked courses	Spring 2016	Linked Statistics and English under the Learning Community Model for Math 160 and Eng 120
	Interdisciplinary Collaboration with Heriberto Vasquez & Outreach created training for Student Leaders	Spring 2018	Created a comprehensive training for outreach ambassadors and peer mentors
	Interdisciplinary Collaboration With ALL student services & Departments to develop and run Peer Mentoring with .80 release time	Fall 2016 to Spring 2019	Worked with Counseling, Dream Center, A&R, Transfer Center, Veterans, SSSP, Financial Aid, Engagement Coordinator, ASGC, Career Center, Health Services, EOPS, Care, Nextup, ARC, ALL Academic Departments and Administration to create, implement and scaling up peer mentoring on campus
	Interdisciplinary Collaboration Club Advisor for the Network and Leadership Club	Fall 2017 - Present	Support and advise students with events and networking to attain contacts leading to leadership and employment opportunities
Corey Manchester	Taught Calculus III at Cathedral Catholic High School	Fall 2017	Created a K-12 link to a high school outside of our district/normal service area
	Taught Grossmont's Math 176 (Precalculus) at El Cajon Valley High School	Summer 2018 and 2019	Maintained our partnership with East County Education Alliance. Contributed to students' introduction to, and potential future association

			with Grossmont.
	Provide Mathematics tutoring at local men's prison (RJ Donovan) every Friday afternoon	2018-present	Created and maintained off-campus connection to support non-traditional college students
	Presented at NADE (National Association on Developmental Education) re: Grossmont's Allied Health Learning Community	2016	Shared best practices from Grossmont's Interdisciplinary Curriculum with educators and administrators from around the country
	Presented at AMATYC (American Mathematical Association of Two Year Colleges) re: Grossmont's Allied Health Learning Community	2017	Shared best practices from Grossmont's Interdisciplinary Curriculum with educators and administrators from around the country
	Through collaboration with English and Counseling, created Grossmont's Allied Health Learning Community, which ran successfully for 8 years	2010-2017	A cross-disciplinary learning community with linked assignments and intrusive interventions in a cohort model lead to student success in developmental coursework
	Served as member, and eventually co-chair of Grossmont's Basic Skills Committee	2009-2017	This committee was instrumental in developing and maintaining programs and interventions specifically dedicated to the success of developmental students
	Served as Accreditation Co-chair, Standard I	2012	Serving as co-chair of an accreditation standard allows for reflection and implementation of change to foster success for future students
	Served on Institutional Excellence Committee	2012-2016	This committee focused on using data collection and analysis specifically for the purpose of making our institution a place of student success
	Taught 3-4 courses per semester at SDSU	2002-present	It is beneficial to our students to have a faculty member with connections to a local institution to which many of

			our students aspire to transfer. Sharing information with Grossmont students from that perspective is valuable
	Taught in the EOPS Summer Bridge Program	2015, 2016	Having a departmental partnership with a program specifically focused on student success for incoming freshman led to successful completion of math coursework prior to beginning fall semester
Corey Manchester, Shirley Pereira	Served as Mathematics representatives for the Kingsborough Community College grant/partnership	2012	Working as part of a team responsible for creating Grossmont's first (and ever-evolving) First Year Experience Program designed to enhance student success
Beth Smith	Collaborated with faculty from SDSU on the Integrated Teacher Preparatory Program	Ongoing	With a significant need for Mathematics teachers, having a coordinated preparatory program linking Grossmont to SDSU is invaluable to students
	Obtained a grant for created OER (open education resources) materials for Elementary Algebra	Ongoing	Saving students money is a priority for our department. Creating high-quality materials to use with our students will maintain the quality of our course while saving the students money.
	Currently working with Cuyamaca College on the creation of an Engineering program	Ongoing	Allowing Grossmont students to take engineering courses here (at their "home" campus) will likely increase success and retention
Ray Funk	Created and ran Grossmont's Math Club	2014-2018	Encouraged students interested in Mathematics to become more interested and facilitate deeper understanding of the material. Provided an opportunity for student engagement and a deeper campus connection as well as connection to peers (both proven to improve student success)

	Served on Academic Senate	ongoing	Having faculty serve on Grossmont's governing body allows for input and feedback, as well as a voice in improving conditions for student success
	Serves as AFT liaison	Ongoing	Faculty working conditions are tied to student success, and thus it's important that we always ensure working conditions are fair and conducive to providing an excellent learning environment
	Taught classes off-campus through Grossmont's Dual Enrollment offerings as part of the East County Education Alliance	3 years, ongoing	Maintained our partnership with East County Education Alliance. Contributed to students' introduction to, and potential future association with Grossmont
Susan Working	Outreach at Kearny High School	Ongoing	Shared projects with students such as building Icosahedron with the understanding of platonic solids, string Designs, and Barbie Bungie to outreach to local high schools
	California Acceleration Project Riverside CA	Summer 2018	Curriculum redesign to create corequisite remediation for introductory transfer level math courses.
Kristina Sundblad	Faculty Professional Development Committee	Fall 2016	Ensure workshops offered will help instructors address the needs of students
	Accuplacer Content Validity Adjustment		Test and review placement of students to make sure they are correctly placed.
	MSC Advisory Committee		Directly impacts students in making decisions about the MSC.
	Acceleration Task Force		Direct implementation in courses Math 96 and 108 to students
	Building 36 Task Force	Ongoing	Relay needs from the department to make sure needs are being met that will accommodate students' needs

Jeff Waller	Curriculum Committee Chair	Ongoing	Review and approve new courses being taught
Sharon Giles	AFT Liason	2011-2014	Faculty working conditions are tied to student success, and thus it's important that we always ensure working conditions are fair and conducive to providing an excellent learning environment
	Program Review	2019	Reflection of current program and future math program to address the needs of students
	Online Conference	2017-2018	As the online program grows, keeps current with best practices for the online program
Steve Davis	Program Review Chair	Previous Cycle	Support peer-based review on all Academic Programs with focus on student success and engagement
	Math Study Center Coordinator	Fall 2016-Spring 2019	Ensure effective peer-based tutoring for our Math students both in the MSC and General Tutoring
	Academic Senate Vice-President	Fall 2017-Current	Help lead the campus on student centered initiatives such as Equity, Engagement, Guided Pathways, Gateway Courses etc
	T ³ – Teaching with Technology	Spring 2017	Phenomenal conference with special emphasis on Calculus 1 and Calculus 2. Many concepts brought back to the classroom.
	Acceleration Conference-Minnesota	Spring 2018	Several Math faculty and VPAA began the process of developing an accelerated math program for Grossmont College. (It was perhaps Katrina's finest leadership moment!)
	Equity Conference-Bay Area	Spring 2019	Several Grossmont faculty, staff and administration begin looking at "Inviting Syllabus", "Transparent Assignment

			Design” and “Student Engagement” for all students.
Shawn Hicks	California Acceleration Project Riverside CA	Summer 2018	Curriculum redesign to create corequisite remediation for introductory transfer level math courses.
	Math Study Center Coordinator	Fall 2012- Spring 2014	Ensure effective peer-based tutoring for our Math students both in the MSC and General Tutoring
	Basic Skills Committee Developmental Math Coordinator	Fall 2014- Spring2016	Ensure consistent breadth and depth for all sections of developmental math. Provide support and guidance for adjunct faculty engaging with students
	Guided Pathways Committee Faculty tri-chair	Spring 2018 - present	Ensuring the student experience across the campus facilitates successful entry and completion of educational goals.
	Acceleration Conference- Minnesota	Spring 2018	Several Math faculty and VPAA began the process of developing an accelerated math program for Grossmont College.
Jenny Vanden Eynden	Acceleration Task Force	2017	Direct implementation in courses Math 96 and 108 to students
	Common Assessment Initiative Committee	2017	Direct impact on the correct placement of students
	MSC Advisory Committee	Ongoing	Directly impacts students in making decisions about the MSC.
	STEM Core	Ongoing	Focuses on getting more students in the STEM field
	NSF NOYCE Grant	Ongoing	Partnered with SDSU to increase the number of women and under-representative students to study math

7.1 Referring to the above table, what activities contributed most to student success?

The development, implementation and scaling up of peer mentoring had a direct and measurable impact on student success. This was possible due to the release time awarded to Math Faculty Irene Palacios to work under Title V. All of the AB705 training will certainly play a large part in student success as the department rolls out support courses in Fall 2019 mandated by AB705.

While the other activities were needed to work towards improving student success their impact was not measurable. Anecdotally however, all of our department members' continued engagement on and off campus would certainly lead to positive outcomes with regard to student success.

7.2 Please provide an overall reflection on your department's activity displayed in your table.

While the table mentions several department members specifically, every member of our department is engaged in processes that facilitate student success. Our department members are continually participating in professional development opportunities on campus, off-campus, and around the country at various conferences. Multiple department members develop and maintain on-campus connections with various departments, including but not limited to English, Counseling, EOPS, Umoja, and various student led interest groups. In addition to on-campus connections, multiple department members work to develop, maintain, and strengthen partnerships with K-12 institutions, SDSU, and local incarceration facilities including Las Colinas and RJ Donovan. Additionally, nearly every department member has served, or currently serves on at least one on-campus committee.

7.3 Are your overall faculty professional development needs sufficient to ensure students are successful in your program?

Yes___ No X

If no, please describe what faculty professional development needs are not being met.

We would like to see more opportunities to learn about Equity minded instruction and how to teach students with varying abilities under the Comingle Model implemented to address AB705. Additionally, we'd like to have professional development as to how to incorporate embedded tutoring for supporting students in the classroom. Also, more presentations and discussions on addressing the affective needs of our students would be beneficial to our department as well as departments across campus.

SECTION 8 – FISCAL & HUMAN RESOURCES

Fiscal Resources

- 8.1 *Describe any patterns in enrollment; maximum enrolment and % fill in the program since the last program review. What are typical section maximum sizes (capacity) for your courses and what dictates those caps? Have you changed the number of sections offered and/or section sizes in response to changes in demand? If so, what effect has it had?*

The math department continued to put up robust enrollment figures from Fall 2013 to Spring 2018. From Fall 2013 to Fall 2017, our **Earned Enrollment** went from 5762 to 5972, an increase of 3.6%. We did however hit a maximum Earned Enrollment for this timeframe in Fall 2016 with 6488. The campus **Earned Enrollment** declined by 9.1% during this timeframe. However, while the Math department sees an overall trend of increase of 3.6% in **Earned Enrollment**, we also see a 15.7% increase in **Max Enrollment**. Hopefully, it won't shock anyone when we put those two ideas together, we see our **% Fill** decreases accordingly from 96.7% to 86.6% for the Fall semesters. This is a drop of 10.4% over the time frame. Meanwhile, the campus saw its **% Fill** similarly drop 9.3% during this time frame. We aren't far off in from the campus norm during this time frame. Typical Math classes have a max of 50 students. This is dictated by the contract. However, at one point we opted to cap our "Basic Skills" courses at 40. However, we have since reverted to 45 since our success rates in these courses weren't significantly affected with a cap of 40 compared to 45. The department opted to serve more and increase access.

While it is not in this time frame, it is significant to note that we have had a massive shift in course offerings since the inception of AB 705. Students are no longer required to take elementary or intermediate algebra before taking a transfer level math course. This means we have massively **reduced** our offerings of elementary algebra from 20 sections or so down to five. The same is roughly true for intermediate algebra. As a result of AB 705, we have significantly **increased** the number of transfer level courses accordingly, as well as the support courses that go along with them. These support courses are put in place for students based on their last algebra class they passed in high school and their overall GPA and they are designed to give students the necessary support to be successful in the parent course even if they likely have significant gaps in their algebra knowledge. Historically, less than 10% of these students would ever pass a transfer level math course. The effects of these massive switches are still unknown since at the time of writing, we haven't completed the first semester of implementation. However, we have reasons to be optimistic given data from other schools with earlier implementation.

	FA13	FA14	FA15	FA16	FA17
Earned Enroll	5762	5674	6221	6488	5972
Max Enroll	5961	5987	6551	7069	6896
% Fill	96.7	94.8	95.0	91.8	86.6
Earned WSCH	24851.1	24522.4	27141.8	28362.9	26134.1
Total FTEF	36.25	35.91	39.32	41.93	41.78
Earned WSCH/FTEF	685.6	683.0	690.3	676.4	625.5
	SP14	SP15	SP16	SP17	SP18
Earned Enroll	5390	5423	6061	5760	5291
Max Enroll	5845	6103	6886	7381	6670
% Fill	92.2	88.9	88.0	78.0	79.3
Earned WSCH	22629.2	22826.4	25907.0	24649.9	22617.6
Total FTEF	34.80	35.94	40.07	45.80	41.82
Earned WSCH/FTEF	650.2	635.2	646.6	538.2	540.9
	SU13	SU14	SU15	SU16	SU17
Earned Enroll	456	722	874	956	951
Max Enroll	515	852	1078	1212	1304
% Fill	88.5	84.7	81.1	78.9	72.9
Earned WSCH	1734.8	2877.6	3446.2	3763.4	3752.3
Total FTEF	2.40	4.73	5.73	6.60	7.13
Earned WSCH/FTEF	722.8	608.0	601.0	570.2	526.0

8.2 Describe and explain any patterns in Earned WSCH, FTEF and Earned WSCH/FTEF since the last program review. Please explain changes in FTEF due to changes in faculty staffing levels. For courses/sections with low Earned WSCH/FTEF explain their importance in the program and measures the department/program has taken/plans to take to improve efficiency and/or balance low and high efficiency offerings and/or maximize course % fill.

In the time frame, we have seen our **Earned WSCH** increase by 5.1% from 24851.1 in Fall 2013 to 26134.1 in Fall 2017. However, in the corresponding Spring semesters **Earned WSCH** remained relatively flat starting at 22629.2 and finishing at 22617.6, a less than .1% drop. We see a striking increase in Summer session during this time frame as **Earned WSCH** more than doubles from 1734.8 to 3752.3. The Summer sessions will likely continue to grow as we create more connections with the GUHSD, such as our current Summer Precalculus course taught at El Cajon Valley High School, by one

of our instructors. We have done this the past 2 summers and expect that we will broaden our shared offerings shortly.

We have seen our **FT Faculty Count** grow from 15 to 18 in this time frame and now up to 19. We are grateful to have these new hires onboard as they have jumped into department and campus leadership roles (MSC coordinator, Faculty Professional Development Committee and Program Review Committee) while also giving our students excellent learning opportunities whether it be through office hours, Power Hour participation, or running Review Workshops to name a few. However, we believe we will be better able to face the challenges presented to us AB 705 by having an additional FT member. We are still hovering around 50% (48.9% in Fall 2017) when it comes to **FT %**.

As a result of this growth in FT Faculty Count, we have seen **Full-Time FTEF** grow accordingly from 13.67 in Fall 2013 to 16.67 in Fall 2017. By no coincidence, our **FT percent** has increased from 41.9% to 48.9%. Meanwhile our **Part Time FTEF** has remained relatively stable ranging from 21.07 to start and ending at 21.33 with not much fluctuation in between.

Our **Earned WSCH/FTEF** stayed strong (well above the target of 525) during this time frame as we started at 685.6 in Fall 2013 and dropped by 5.1% to 625.5 in Fall 2017. The campus as a whole saw a slight increase in this same time frame but in Fall 2017 it was still below 450. While we continue to earn massive WSCH, we still remain highly efficient. However, during this time frame we have seen our **% Fill** drop from 96.7% down to 86.6% in the Fall semesters. Spring, as is often the case, starts lower and ends lower. We started at 92.2% and dropped to 79.3%.

A quick glance at “Reports” can partially explain these drops. Prior to the implementation of AB 705, the Math Department tried a few ideas to accelerate students along the way to transfer level Math courses. We offered a Math 96 class that is a mash-up of Math 90 and 103 and prepares students for our transfer level Quantitative Reasoning course (Math 120) or Statistics (Math 160). Similarly we offered a Math 108 class that is a Math 90 and Math 110 mash-up that prepares students for B-STEM courses such as Business Calculus (Math 178) or our Precalculus courses.(Math 175 or Math 176) This was our first shot at acceleration. These 6-unit courses were not a popular choice for students but had enough to continue to run. We also gained some valuable experience on preparing students in an accelerated format as we are now fully immersed in AB 705.

Other sections that have lower than normal **WSCH/FTEF** rates include our math education for elementary school teacher courses, Math 125, 126 and 128. These courses have caps of 30 and 35, so while their **% Fill** is high enough, the amount of **Earned WSCH** will necessarily be lower than classes with a max of 50. Our second-year courses such as Math 284 (Linear Algebra), Math 285 (Differential Equations) and Math 245 (Discrete Math) sometimes have low **% Fill** relative to the rest of our sections. Students need these courses to finish degree and transfer requirements. Also, we are still running them at over 50% Fill so not exactly a disaster. What we do to maximize the efficiency numbers for these courses, while balancing access, is to flip-flop them in the Fall and Spring schedule between day and evening offerings as well as M/W versus T/Th offerings.

Looking forward, we expect to see our Earned WSCH/FTEF take a dive. We are currently running 16 Support courses for students (placed by high school GPA and last algebra course they passed in High School) who are enrolled in a transfer level math course. These courses have a max of 20 and are designed this way so that we can focus intently on student success and learn how to implement massive changes to our teaching strategies (growth mindset, affective domain etc.)

A new FT faculty member, dedicated to creating the best possible outcomes for the AB 705 era, will greatly enhance our probability for success in the AB 705 era. Our Basic Skills Coordinator position was recently eliminated and our current Administration rejected our request for a Support Course coordinator with .2 reassign time. This in spite of the fact that our Basic Skills Coordinator position similarly earned .2. While it is technically true that we no longer offer nearly as many Basic Skills courses, it is also true that in the AB 705 era, our most vulnerable student populations are being thrust into courses well above where they would have been placed historically. Every piece of literature on this topic describes the institution's absolute need to provide support for these students. So currently, we have a bit of a rudderless ship within the department in terms of leadership of our AB 705 offerings. If the Grossmont College Administration was seriously committed to optimizing student success in our math classrooms in the AB 705 era, we believe they would recognize our need for continuous and ongoing support as we tackle this challenge. So far, nothing. As we recognize that Math and English are the focal points for student success in the AB 705 era, we suggest that one more FT faculty member is not out of line. Currently, we have one less FT faculty member than English while our Earned WSCH is 19500 and theirs is 14071. We have 38% more WSCH! One more FT faculty member would go a long way to best serve our student population who need our support the most.

8.3. *For money that you get from the college and/or from Perkins funds as part of your budget, is this amount adequate? What is this money used for to operate your department? If it is not adequate, please explain how additional funds would be used to improve student learning and success.*

N/A

8.4 *If your program has received any financial support or subsidy outside of the college budget process (grants, awards, donations), explain where these funds are from, how they are used, and any other relevant information such as whether they are on-going or one-time.*

Title V grant: The math department is in the forefront of this college-wide initiative to increase the percentage of Hispanic and low-income students who complete English and math requirements within their first year and to increase the retention and success of these groups in their math courses.

NSF NOYCE GRANT: GC math department, partnered with the SDSU mathematics department, received a NSF grant to increase the number of women and underrepresented students to study mathematics as a major. We have role models doing presentations in our Calculus 1 classes, and working with our tutors to better prepare them as mathematics tutors. The hope is to award a NOYCE scholarship to one of our students every year. We will also be recruiting students to be tutors and aides at our local middle and high schools.

Human Resources

8.5 *Describe the roles and responsibilities of full-time versus part-time faculty in your department. If any trends or changes are apparent in the past six years, please explain the reasons for them.*

The Mathematics Department currently has 18 full time faculty instructors with one new hire to start in Fall 2019. Full time faculty have many obligations for the department and college to keep the department running smoothly, clear communication between the department and the college, and service to our students they find valuable.

For the Department, full-time faculty, teach a minimum of 30 units per academic year. Many full-time instructors teach overload each semester including intersession and summer. Most full-time faculty instructor is a course coordinator for at least one course. As course coordinator, the faculty member is in charge of ordering textbooks for the part-time faculty, provide instructors with sample syllabi's, course schedules, sample exams, and homework assignments (book problems and/or online assignments) that can be used in their course. The course coordinator also takes an active part in textbook adoptions. Full-time tenured faculty may serve on tenure-track faculty committees, and perform peer evaluations for both full-time and part-time faculty. Full-time faculty sustain the 6-year plan with the writing and assessing appropriate Student Learning Outcomes (SLO's) each semester. Full-time faculty are required to attend regularly scheduled department meetings. Communication between the department and the college is imperative. Full-time faculty members are encouraged to serve on departmental and campus-wide committees. Five faculty members must serve as Academic Senators. In addition, we have faculty serving on the Curriculum committee, Basic Skills committee, Peer Mentor and Tutor program for Title V, Professional Development, Program Review, Academic Senate, Tutoring Task Force, Technology Committee, and Facilities Committee. To service students, full-time faculty are required to attend 20

hours per academic year of professional development. Full-time faculty are required to hold a minimum of 5 office hours per week. Faculty are to respond to students in a timely manner, address student questions, and work with student support departments.

In conjunction with full-time faculty, the department currently has 49 part-time faculty members. Each part-time faculty member is required to teach all course content as stated in the course outlines. The part-time faculty are required to attend professional development during flex-week each semester including the division and department meeting. The hours required match the number of units they teach. Part-time faculty must turn in a course syllabus for each course they teach to the Deanery and department. They must abide by all appropriate deadlines for census and course grades. Part-time faculty are to respond to department and students in a timely manner and work with student support departments such as the A.R.C.

The Department has had some changes in the last 6 years. The Department added 3 new full-time faculty members: Kristina Sundblad (August 2014), Dan Greenheck (January 2015) and Susan Munoz (August 2016). The adjunct pool has remained steady between 44 and 49 faculty From Fall 2013 to Fall 2018. The reassign time for faculty has gone up from approximately 1.75 (Chair, Developmental Math, MSC Coordinator) to 2.95 FTEF since Fall 2016. In Fall 2018, the math clerical assistant went from .475 to 1.0 LED which has been needed for many years.

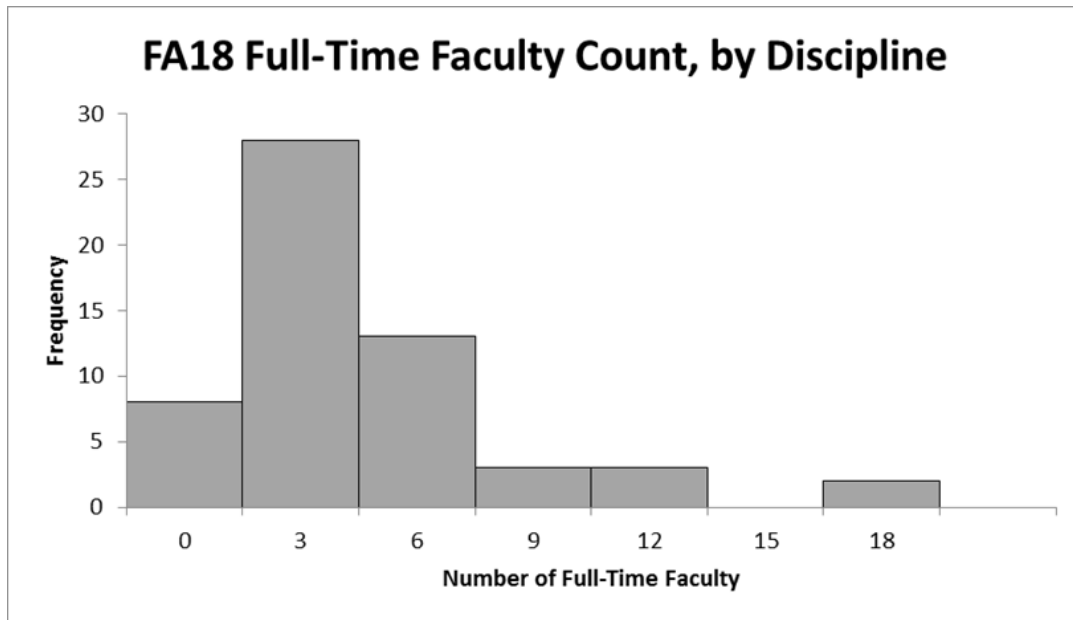
8.6 *Are the current levels of staffing of faculty adequate? Discuss part-time vs. full-time ratios and issues surrounding the availability of part-time instructors as well as duties and responsibilities of full-time faculty members that influence their loads (such as reassigned time and use of overload).*

Staffing levels are not adequate. In the department we have 58 faculty members comprised of full time and part time. We have 18 full time instructors which comprise of 31% of all faculty. Many of the full time instructors serve on committees on campus. We have 2 Department Chairs and a MSC coordinator that requires a lot of time out of the classroom.

There are 40 part time instructors that comprise of 69% of all faculty. This is a large portion of the faculty that are on campus part time. The part time instructors teach at multiple locations across the county which restricts their availability to students.

To better serve our students with consistency, availability in office hours, and the opportunity to serve on committees for the college, the math department needs to increase their ratio to closer to 50%.

8.7 If staffing levels are not adequate, give a justification of your request for increased Full Time faculty based on how this position would contribute to basic department function and/or the success, retention and engagement of students in the program.



The Math Department needs to add more full-time faculty which will be more beneficial to students. It is important to note that full time faculty have more contact with students than part time faculty through office hours. In Fall 2018, full time faculty served 2470 students of the 5601 total students. This means that only 44% of all of our students are afforded the additional office hours. This represents an injustice for those students who are taught by part-time faculty. Some part-time faculty hold regular office hours but they are not able to offer the number of office hours that is in parity with full-time faculty.

In Fall 2018 the PT faculty FTEF per faculty was .44, which means most of the adjuncts are teaching at least two classes. However, many adjuncts still need to work at multiple colleges and are still “freeway fliers”. Every semester the chairs hire anywhere from 5 – 12 new adjuncts to teach our math classes. Adjuncts, in general, will not teach one section since the district started to provide adjuncts with health insurance (they are required to maintain an average of 50% LED or greater for two consecutive academic semesters). Some part time instructors have never taught before and need mentoring. In the past, we have given only one class to new adjuncts, however, that is becoming rarer. Every semester the chairs reach out to other colleges for recommendations for new adjuncts, but unfortunately there is an enormous gap with finding good and experienced PT math faculty. Every new adjunct that is hired requires hours of training, mentoring and evaluating. The less experienced the adjunct pool, the more work and time it takes for full-time faculty and department chairs to train and mentor them. Hiring more full-time faculty will alleviate some of the workload.

Table 2. Department Faculty Information					
INSTRUCTIONAL FACULTY POSITIONS					
	2016FA	2017SP	2017FA	2018SP	2018FA
FT Faculty Count	18	18	18	18	18
PT Faculty Count	48	55	44	47	48
Total FTEF	41.93	45.80	41.78	41.82	39.37
FT FTEF	17.40	16.58	16.67	16.70	16.32
FT X-pay FTEF	2.47	2.20	3.78	2.00	1.87
PT FTEF	22.07	27.02	21.33	23.12	21.18
FT Percent	47.4%	41.0%	48.9%	44.7%	46.2%
Permanent RT	1.7458	1.7458	1.7458	1.7458	1.7458
Temporary RT	1	0.8	1.2	1.2	1.75

Viewing the chart, we see we are still below 75/25 ratio of load taught by full-time/part-time faculty. In Fall of 2018, it shows full-time faculty teaching 46.2% of load, however that included extra pay. If our faculty taught the normal load, it would be 41.5%. Even with the new hire, this number would be 44% (excluding extra pay). Currently our load ratio is remains consistent as previous years.

The release time in Fall 2018 for full time faculty was at 3.50. The permanent release time is at 1.75 which includes chair, developmental math coordinator and MSC Faculty Coordinator. The math chair release time will go up from 1.1958 to 1.4469 in Fall 2019. Faculty have also been receiving temporary release time: Shawn Hicks has been receiving 0.3 release time as Chair of Basic Skills committee, Irene has been receiving 0.8 release time as the Peer Mentor and Tutor program advisor for Title V, Jeff Waller has received 0.4 release time as co-chair of curriculum, Steve Davis has received 0.1 as VP of Senate, Shirley Pereira has received .15 release time for chairing a hiring committee. As seen, the mathematics full time faculty do a lot of extra work for the college as a whole.

The following are more duties, without release time, that our full-time faculty must work on. AB705: This bill requires all California community colleges to redesign the mathematics curriculum and sequence so that a student will enter and complete transfer-level coursework in English and mathematics within their first year. Our department is currently changing the placement rules, creating new curriculum which involves support courses for Math 120, 160, 175, 176, and 178, and training all faculty to teach the new courses. This begins Fall 2019. We know this process will evolve over the next many years. We are going to have to do massive professional developmental every semester for our part time faculty. In Fall 2018, we offered 59 sections that were below transfer level. These students (some of whom were placed two levels below transfer) will be placed in a transfer level class beginning Fall 2019. Many of our adjunct instructors will need to teach these courses. This will only add to our lack of an adjunct pool since most of these courses will now be 6 – 8 units.

STEM Core: In Fall 2018, the GC math department was awarded an NSF grant that will focus on getting more students in the STEM field. This program will require us to recruit, do outreach, create

contextualized math curricula, create special support, and reach out to the community for internship opportunities for our underrepresented students. A large portion will be done by our full-time faculty in the upcoming years.

East County Education Alliance (ECEA): The primary goal for the math alliance team is for high school students to graduate and enter GCCCD ready to engage in college-level math. Some of the activities planned to achieve this goal include course to course alignment between the high schools and the colleges, designing a more extensive outreach program for the high schools so that both high school faculty and students are aware of our college math sequence of classes, the placement exam, and the newly updated Math Articulation agreement, and offering dual enrollment courses. These efforts alone will be exhaustive, and will take a lot of full-timers' involvement.

Title V grant: The math department is in the forefront of this college-wide initiative to increase the percentage of Hispanic and low-income students who complete English and math requirements within their first year and to increase the retention and success of these groups in their math courses.

Guided Pathways: Several goals of the Guided Pathways effort (e.g., intersegmental alignment with K-12 and 4-yr. colleges, guided major and career exploration, and improving basic skills) will require major involvement and work from our department and coordination of effort with other initiatives that we are currently working on (AB705, ECEA, Title V, and Student Success).

ITEP: The math department is currently working with SDSU education department to increase the number of students to go into the teaching profession. The ITEP program is a 4-year credential program, and Grossmont College is now offering the courses specifically for the first two years of the program. This is for elementary education, high school mathematics, and middle school mathematics.

NSF NOYCE GRANT: GC math department, partnered with the SDSU mathematics department, received an NSF grant to increase the number of women and underrepresented students to study mathematics as a major. We have role models doing presentations in our Calculus 1 classes, and working with our tutors to better prepare them as mathematics tutors. The hope is to award a NOYCE scholarship to one of our students every year. We will also be recruiting students to be tutors and aides at our local middle and high schools.

Other initiatives and programs we are currently involved in are:

- Offering off site classes; Helix, Las Colinas, etc.
- Participating in all the PD activities as part of the 12 Gateway course initiative.
- Creating more accelerated links within the dept. to get more students through their math goals.
- Re-designing, implementing, and validating our new placement instrument.
- And lastly continue to provide valuable leaders and leadership on our campus.

The reality is that California Community College’s focus is now on success, which means that many of the initiatives on our campus involve the Math Department. We are constantly asked to sit at the table to discuss and create initiatives to help our students meet their educational goals. We should be at 20-21 FT faculty to meet these extra demands.

8.8 In the table below, list non-faculty positions that are responsible to your program (by title rather than by individual name). This list should include classified staff as well as work study and student workers.

Indicate the FTE/hours and where funding comes from for these positions. Add or delete rows to the table as needed. If you have questions on how to complete this table, please contact the Program Review Committee Chair.

Position	Funding	FTE/Hours					
		2013	2014	2015	2016	2017	2018
Math Clerical Assistant	MNSES&W Division	.475	.475	.475	.475	.475	1.0
Learning Assistant Center Specialist	LTRC	1.0	1.0	1.0	1.0	1.0	1.0
TAs	MNSES&W Division	Varies	Varies	Varies	Varies	Varies	Varies
Tutors	LTRC	Varies	Varies	Varies	Varies	Varies	Varies

8.8 Briefly describe the duties for each position. Include a discussion of any changes in terms of non-faculty staffing and describe the impact on basic department function and/or the success of students in the program. Are current staffing levels adequate in non-faculty positions? If not, give a justification of your request for increased resources.

Learning Assistance Center Specialist

- Coordinate and maintain the activities of the Math Study Center
- Create and update brochures and training manual for the center
- Prepare and maintain tutor schedules, records, files, payroll, and budget
- Interview, hire, and provide direction and training to about 20-25 tutors
- Monitor tutor's hours and schedule
- Advertise the Math Study Center (by scheduling or a tutor to give a brief presentation about the center and hand out brochures to every math class each semester)
- Monitor student log-ins (Red Canyon database) for Math 198
- Operate office equipment and perform general clerical duties and data entry
- Coordinate regular computer maintenance and notify the appropriate personnel (Information Systems) for computer repairs and complex problems
- Create and update the Math Study Center and Math Department's web pages
- TI mini-course (staff development) workshop coordinator (registration, venue, caterer, brochures, invitations, correspondence, hotel arrangements, equipment loan, etc.)
- In charge of registration for various "Pathways through Algebra" workshops/conferences, speak about the Math Study Center at the Pathways conferences (using a power point presentation), mentor for several CA community colleges by putting together and distributing requested information about the study center's creation, set up, budget, and tutor training

Math Department Clerical Assistant

- Schedule/assist with Adjunct Faculty schedules including sending out tentative offer letters. Maintain re-hire preference records under the current contract.
- Assist with faculty requests for room and time changes.
- Assist Chairs with new hires. Including but not limited to HR paperwork, parking permits, and keys and guided campus tours (deanery, duplicating, classrooms, etc.)
- Assist with organizing Faculty evaluations every semester.
- Track SLO's for the department.
- Order and maintain adequate stocks of office supplies as assigned; prepare and type requisitions according to established procedures.
- Prepare and maintain a variety of records, logs and files related to assigned departmental functions; compile information and data from records and files for reports as required including but not limited to distribution lists, syllabi, sub-availability, etc.
- Create flyers and posters for the department.
- Work with publishers to order desk copies for faculty and distribute.

- Help organize and schedule Flex Week workshops and meetings.
- Receive, sort and distribute incoming packages; mail informational materials, correspondence and other materials as required.
- Answer telephones and greet the public when necessary; provide routine information and assistance to callers, take messages or refer calls or visitors to appropriate personnel.
- Prepare correspondence, emails, reports, requisitions, forms, and other materials as needed.
- Duplicate informational materials; package, distribute or file completed copies as required.
- Work on special projects assigned by the Chairs.
- Perform a variety of responsible clerical duties such as posting records, performing mathematical computations and compiling, recording and tracking information from a variety of sources.
- Support Co-Chairs and Department (Faculty and Adjuncts)

Work Study & Student Workers (Tutors and TAs):

- Tutor math students in all subjects of math (peer one on one and small groups)
- Assist students with computers and math questions
- Go through tutor training and earn A or B's in all Math classes taken in order to tutor
- Grade papers for instructors when assigned
- Assist the clerical assistant and the Math Lab Supervisor with light office work.
- Assist students and other tutors with learning and programming calculators
- Assist students with registrations and log ins for Math 198
- Help instill in the students, good study habits
- Open and close the Math Lab. Opening procedures include: Calling security to unlock the doors, make sure the 59 computers are up and running, and straighten up the workstations. Closing procedures include: Properly shutting down the computers, straighten up, and calling security to lock up.

Over this program cycle we lost one clerical assistant, Melissa Mitcham, and she has since been replaced by Julia Morales. The math department does see a future where the Math Study Center will increase in size and responsibilities to better meet the needs of all our students, especially our students being put into support classes which begins Fall 2019. The MSC, as stated in the introduction will grow double its size once the department moves into our new building (hopefully in Fall 2022). To meet these needs, the staffing roles in the math study center may need to evolve. The vision of the department is to have the Math Study Center an integral part of the Math department. The design of the new building has the MSC as the focal point of all full-time and part-time faculty. The intention is to have more faculty presence in the center. The center will be a welcoming and inviting environment. We hope that students will see the benefits of working with tutors and faculty toward success in their academic goals. This goal will be to reorganize the leadership of the Math Study Center to be under the Math Department only and not shared with the LTRC. The department is thrilled to have a full-time clerical assistant. It is helping students, part-time, and full-time faculty. Everything is running as smooth as it could considering all of the changes occurring in the department at this time.

SECTION 9 – SUMMARY AND RECOMMENDATIONS

9.1 *Summarize program strengths in terms of:*

- *Outreach*
- *Engagement*
- *Retention*

The mathematics department continues to be staffed with experienced and gifted mathematics teachers who place great emphasis on student success and community Outreach. Beyond mentoring students on campus, our instructors take their extensive mathematical knowledge into the community. Our Mathematics outreach includes programs at Las Colinas Women’s Detention Facility (Math 120), R.J. Donovan Correction Center (math tutoring), Helix High School (Math 120 Dual enrollment) and El Cajon Valley High School (Math 176). In addition, we work with the East County Education Alliance in assisting students who require basic mathematics skills. Further, we work alongside the California Mathematics Council to connect high school students transitioning into Community College ensuring they are placed into the appropriate math course using multiple measures (section 2.7). In addition, the department offers math workshops for transferring Liberal Arts students at SDSU into the teaching program and is showing high success rate.

With regard to the issue of Retention, even though our general success rate has dropped across the board, we view the decrease in Retention as a positive reflection on our overall Mathematics program (5.2). One way we have improved is we have changed the placement process to more accurately place students in order to allow for a higher success rate. We have created specific classes in our Math Academy Program, workshops run throughout the semester, summer boot camps, accelerated courses, established an embedded tutor program, weekly power hour sessions for struggling students, encouraged collaborative learning, and instructor grading activities.

Finally, in order to retain our students, it’s important to challenge and engage them in the classroom. This is accomplished through student classroom participation and activities such as watching instructional videos, completing assigned projects, conveying problem solving techniques and attempting to improve test taking skills. For extra support, students can seek the help they need in the Math Study center. The MSC is generally staffed with students from Grossmont College. The students are provided a work/study opportunity here on campus.

9.2 Summarize program weaknesses in terms of:

- **Outreach**
- **Engagement**
- **Retention**

One of the weaknesses of our Outreach Program is that we need more of it. For instance, we have not spent a lot of time enhancing the dual enrollment program. We need to increase the promotion of the Dual Enrollment Program to local high schools to make students and their parents more aware of this great opportunity!

A second weakness of our Math program is our low success rates. As of 2018, the Math department's retention rate is approximately 7% lower than that of the college. Retention rate leads to student success so, clearly, this is an area that needs improvement! Faculty continues to attend conferences, workshops and explore alternative solutions to help increase the rate of student success. The Math Study Center is a great resource for students to receive the support they need. However, the current Math Study Center is often filled to capacity which discourages students from receiving the help they need. A larger Math Study Center and a larger pool of tutors will help solve this issue as the current facilities are obviously at maximum capacity. With the completion of the new Math Study Center, this situation should greatly improve.

The third weakness identified is the lack of full-time faculty members. We have hired new faculty since the beginning of this program review cycle; however, these were simply replacements for those who had already retired. As the student population continues to increase within the Math department, it is apparent we need to add faculty members. More full-time faculty means more math personnel on campus collaborating with colleagues and offering required office hours for students. It would also help our overall success rate if, once the new Math Center is completed, each faculty member volunteered in the Math Study Center.

9.3 Describe any concerns that may affect the program before the next review cycle such as retirements, decreases/increases in full or part time instructors, addition of new programs, external changes, funding issues etc.

With the implementation of A.B. 705, the Math department is required to offer support courses for Math 120, Math 160, Math 175, Math 176 and Math 178. For these support courses, new curriculum has to be developed. With the churn of instructors for these courses, a co-requisite coordinator is of the utmost importance. The department has requested for such a coordinator three times but all requests have been denied. Despite the lack of support from the Administration, the department will continue to request a coordinator to maintain materials, hold workshops and keep current with the A.B. 705 legislation. We no longer have a developmental coordinator and believe the co-requisite coordinator is a natural replacement.

Once the new Math Study Center is complete, the department will require a full-time faculty member as a Math Specialist at a 1.0 re-assign time to run the Math Study Center. This Math Specialist will

communicate directly with the department providing updates, necessities, allocate budget and to direct the math tutors. With the increase in size and staff, to run the Math Study effectively, a larger budget will be a necessity.

In addition, the new Math facility will require all technology be kept current. For instance, classrooms that can transform into computer labs and large flat screens in each office to assist multiple students during office hours. Another request is to have a centralized 3-D printer that will aid in the teaching of Calculus I, II and III. Each classroom should be equipped with a cart that will house a set of calculators, chargers, scissors, rulers and any other classroom materials. One instructor requested a class set of Chrome Books for students to use during classroom instruction.

Once again, the main concern that will affect the program is the lack of full-time faculty members. We have hired new faculty since the beginning of this program review cycle; however, these were simply replacements for those who had already retired. As the student population continues to increase within the Math department, it is apparent we need to add faculty members. More full-time faculty means more math personnel on campus collaborating with colleagues and offering required office hours for students. It would also help our overall success rate if, once the new Math Center is completed, each faculty member volunteered in the Math Study Center.

With the increase of on-line course offerings, the implementation of an on-line tutoring program is an immediate necessity. The on-line tutoring program would be run by full time faculty members to help all students taking Math courses not just on-line students.

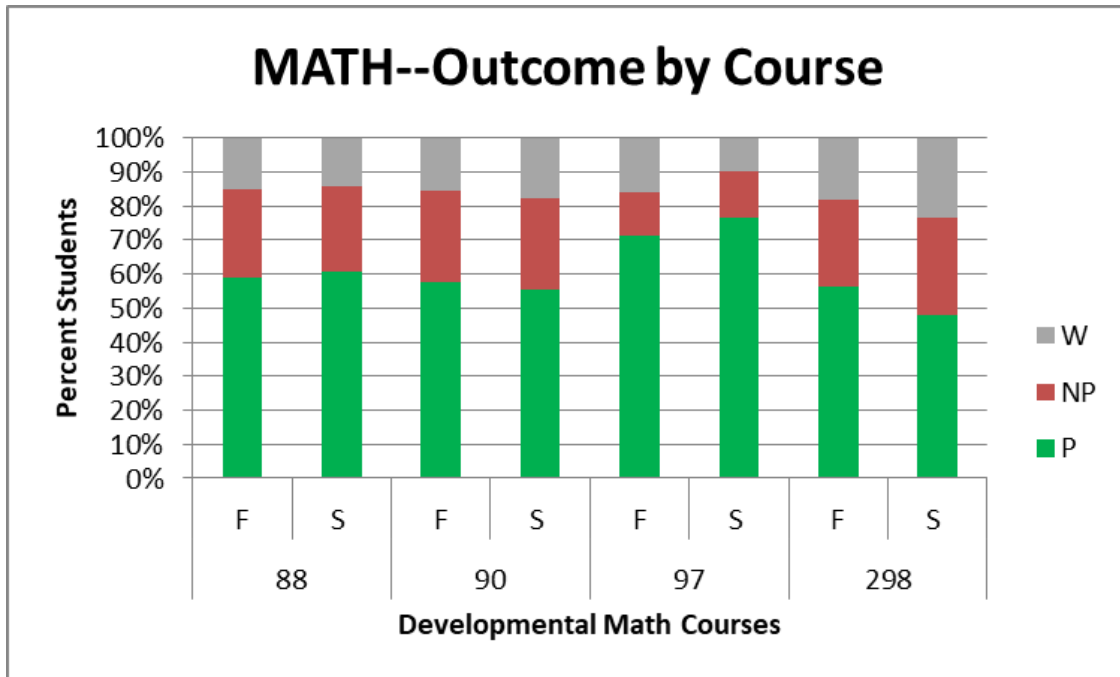
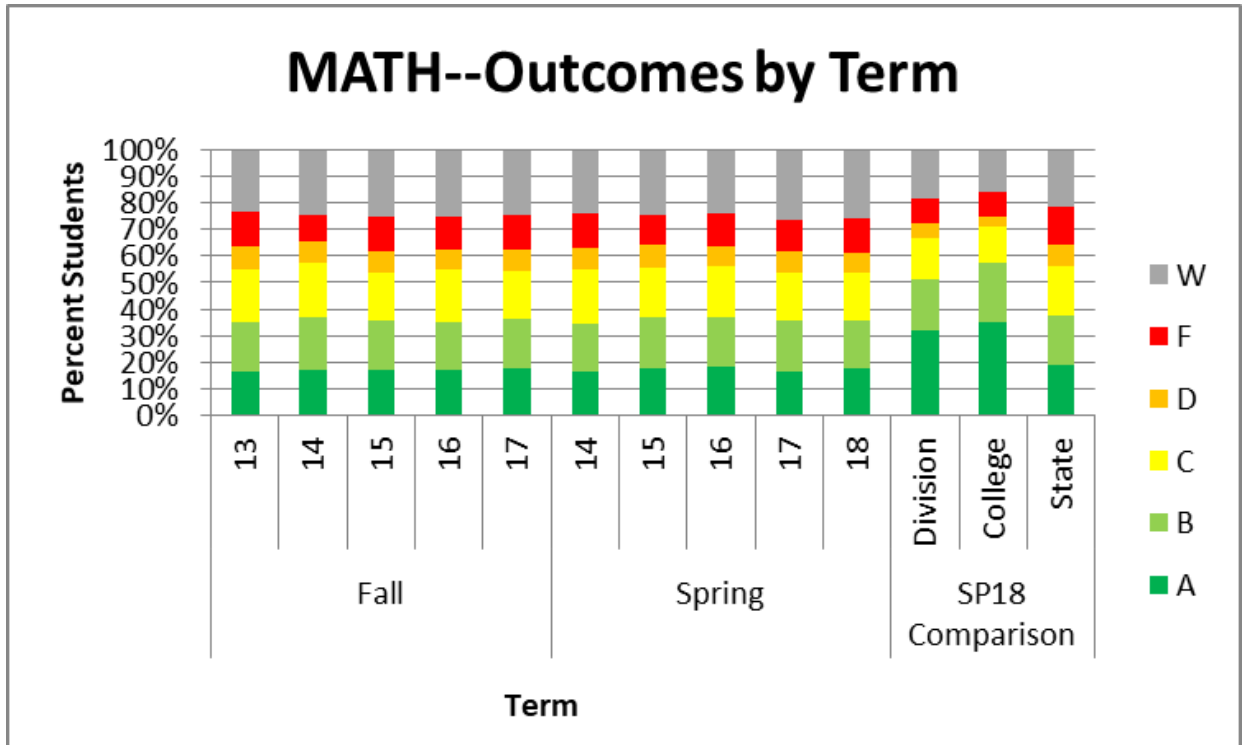
Another concern that has been expressed is the lack of classroom and landscape maintenance such as trash and litter on campus as well as sub-par janitorial services. It would be nice to offer students a clean environment as they engage in learning. This includes the cleaning of whiteboards, desktops, erasers, and floors.

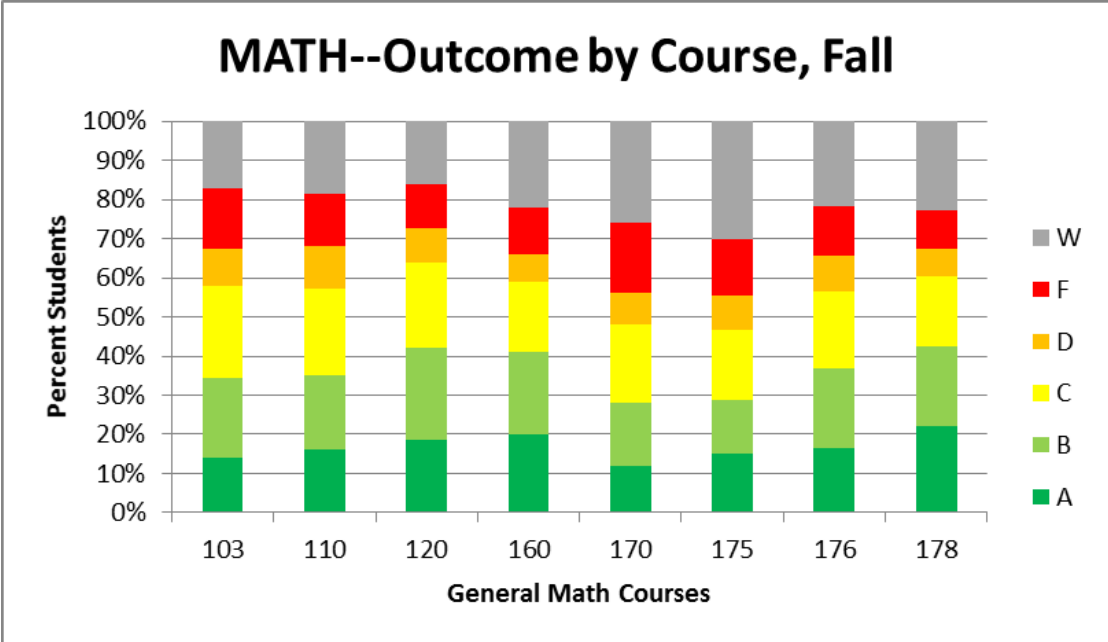
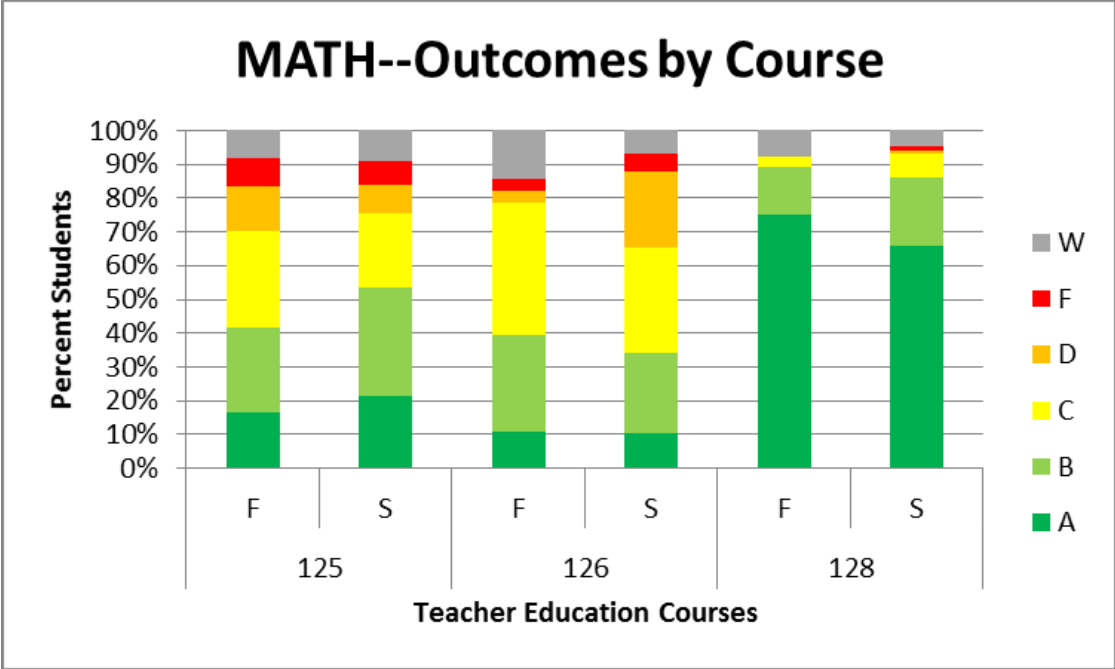
9.4 *Make a rank ordered list of program recommendations for the next six-year cycle based on the College's new Strategic Plan which includes outreach, engagement, and retention.*

1. Improve student placement, success, retention, and completion by increasing the average success in each course.
2. Decrease the achievement gap.
3. Increase enrollment in corequisite remediation for introductory transfer-level math courses.
4. Add a co-requisite coordinator at 0.2 reassign time for all support courses due to the implementation of AB-705.
5. Hire a sufficient number full-time faculty for 50% of the load to be taught by full-timers.
6. Reassign the Math Study Center Specialist to be under the supervision of the Math Department and the Math Division Dean.
7. Update technology in the classroom to facilitate instruction effectively.
8. Implement an online tutoring program to assist students.

APPENDICES

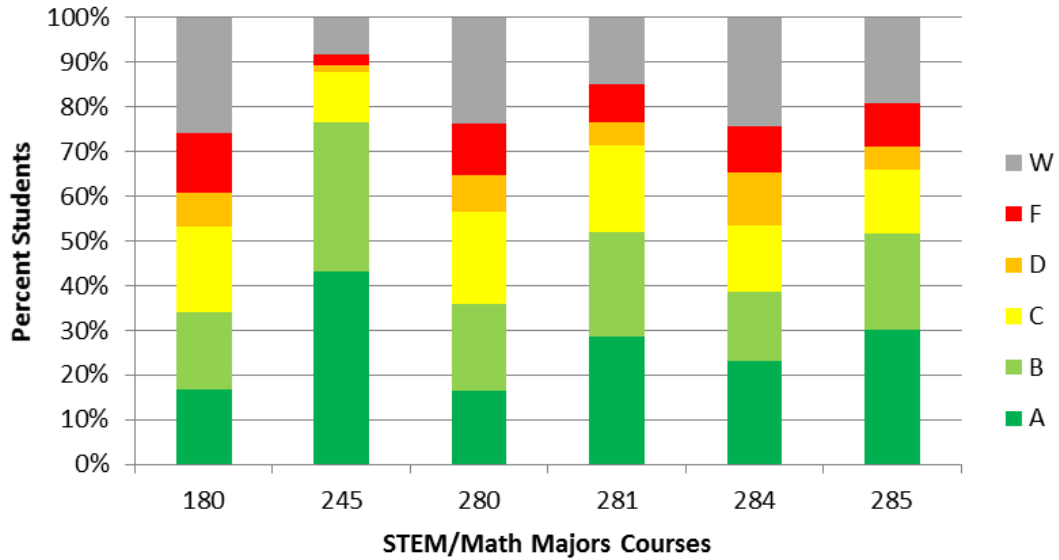
Appendix 1. Grade Distribution Summaries



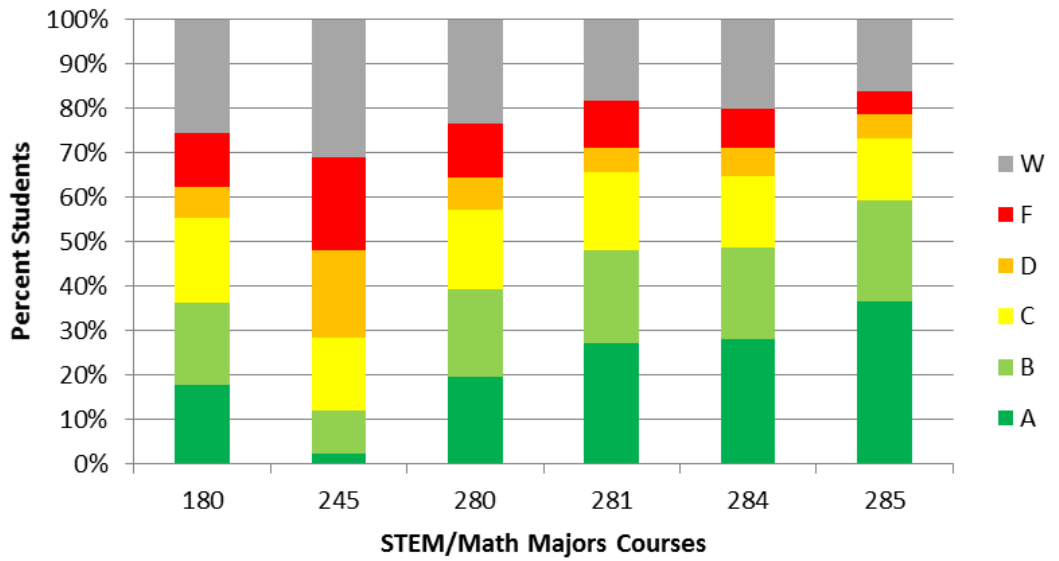


Data for spring semesters have the same pattern, so are not shown.

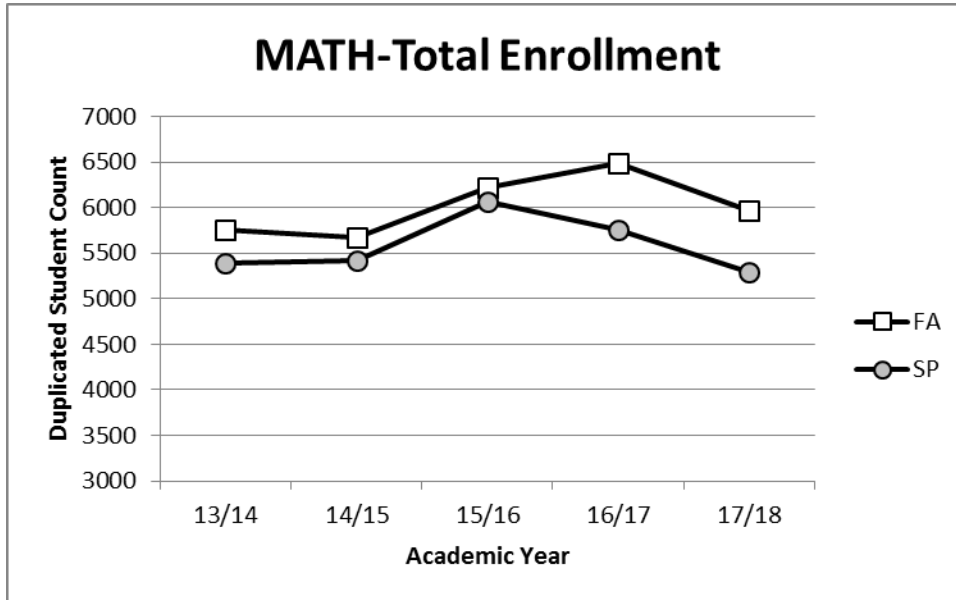
MATH--Outcomes by Course, Fall



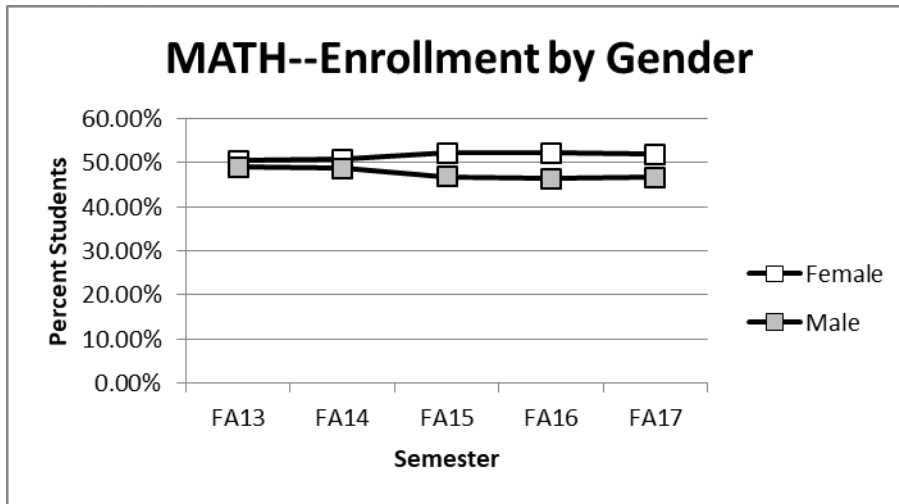
MATH--Outcomes by Course, Spring



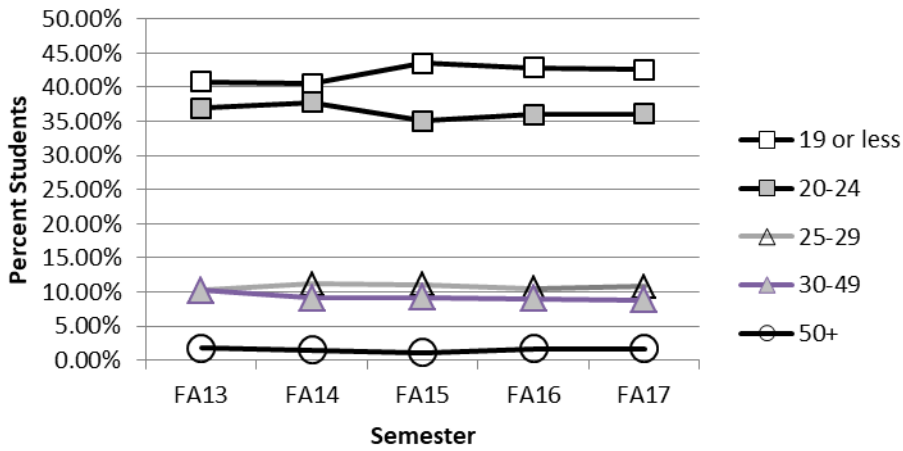
Appendix 2. Enrollment Data



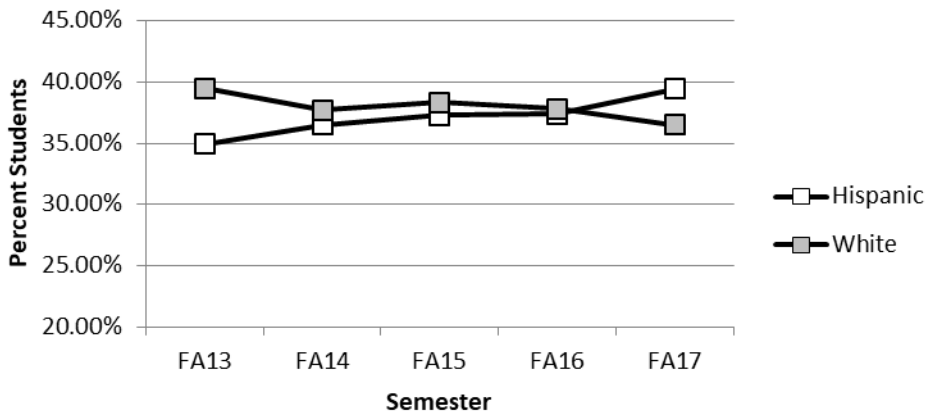
Disaggregated Enrollment Data



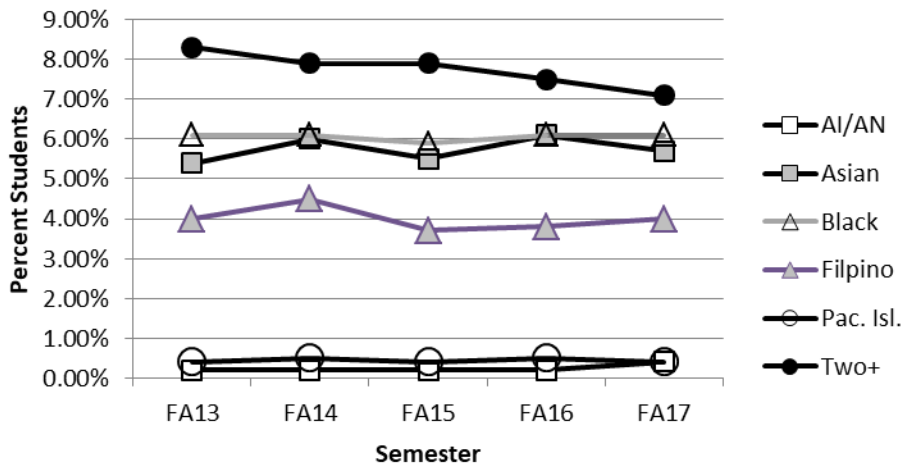
MATH--Enrollment by Age



MATH--Enrollment by Ethnicity, Hispanic & White



MATH--Enrollment by Ethnicity, Other

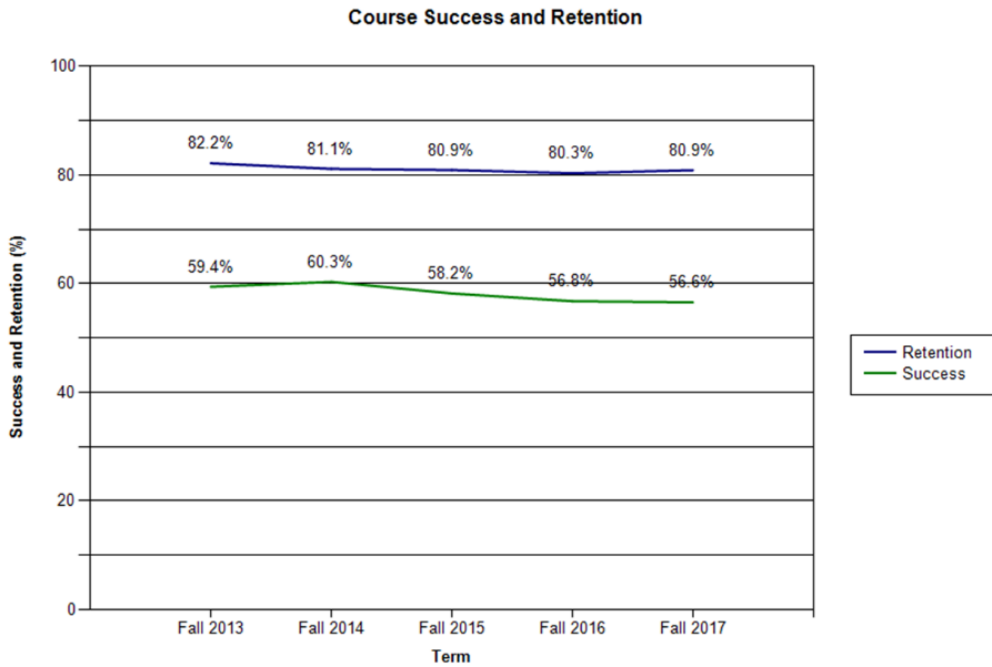


Appendix 3. Student Retention and Success Data

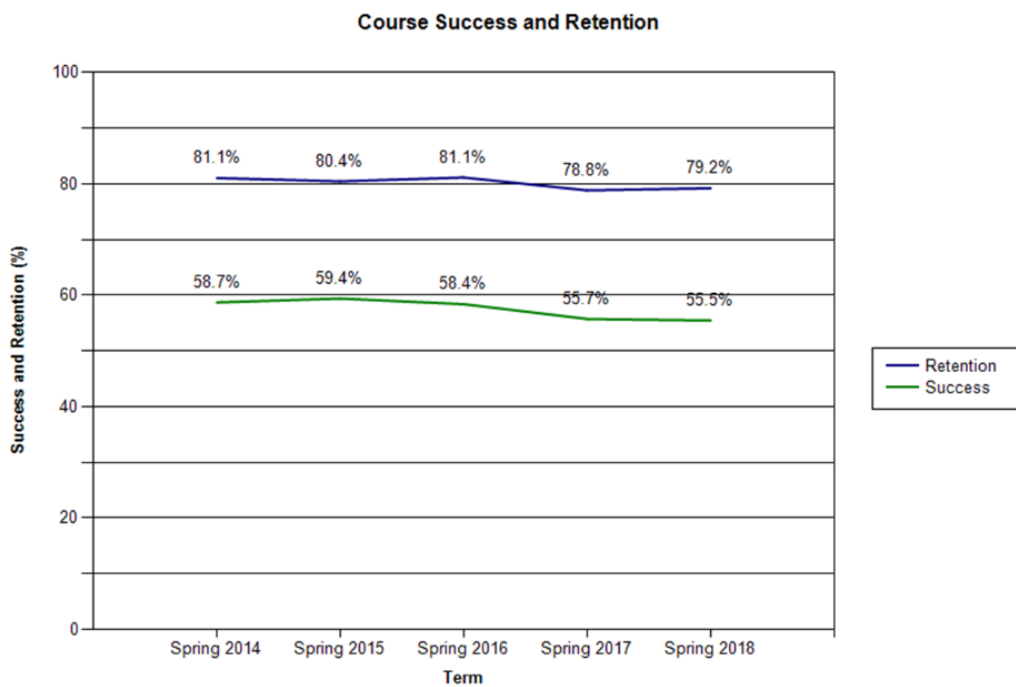
College 5-YR Averages: Success 69% and Retention 84%

College Targets: Success 75% and Retention 85%

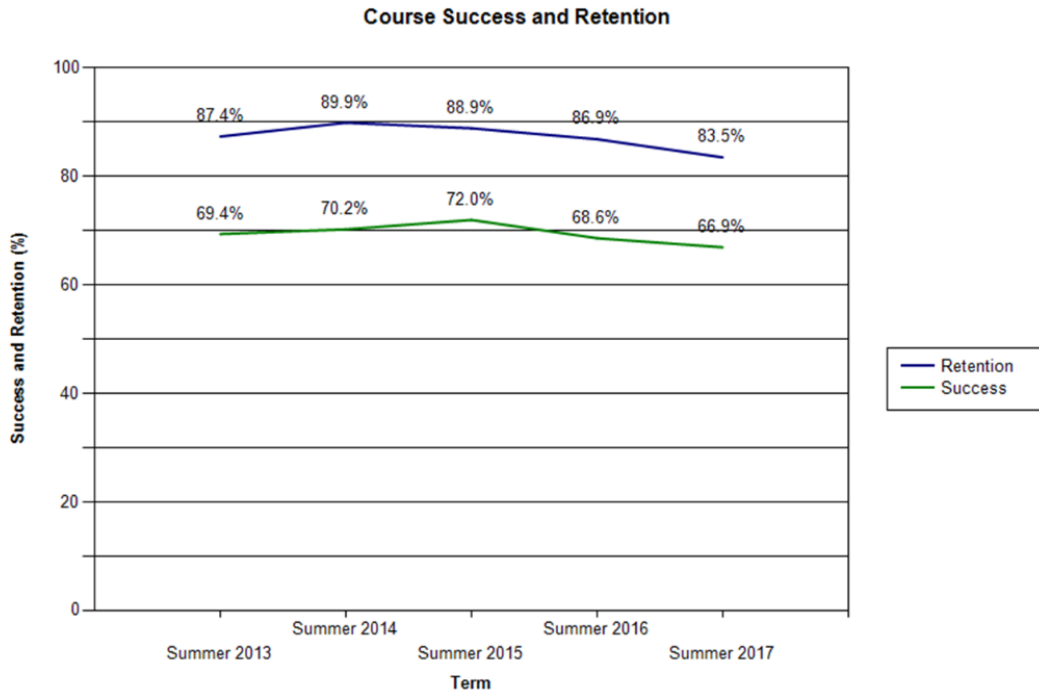
All Math Students: Fall



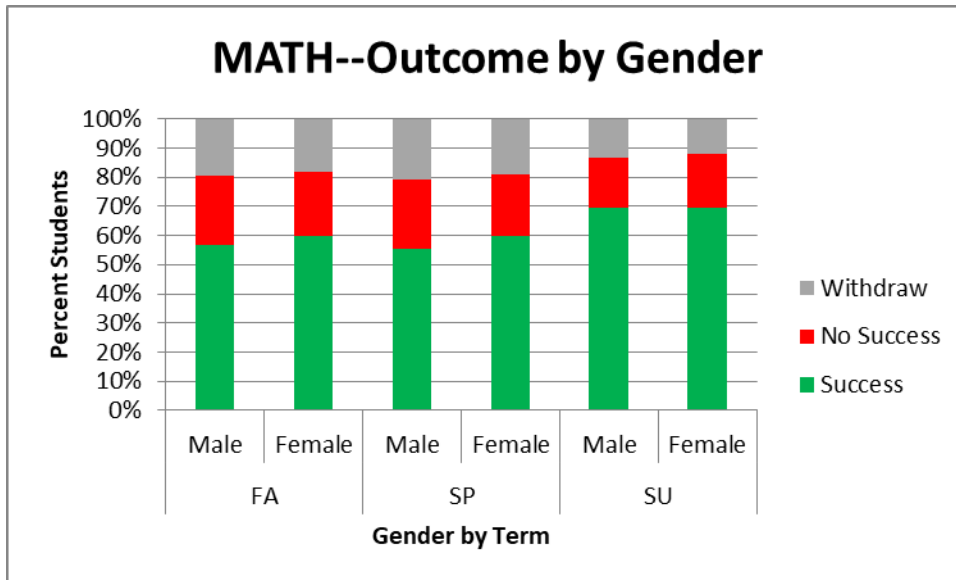
All Math Students: Spring

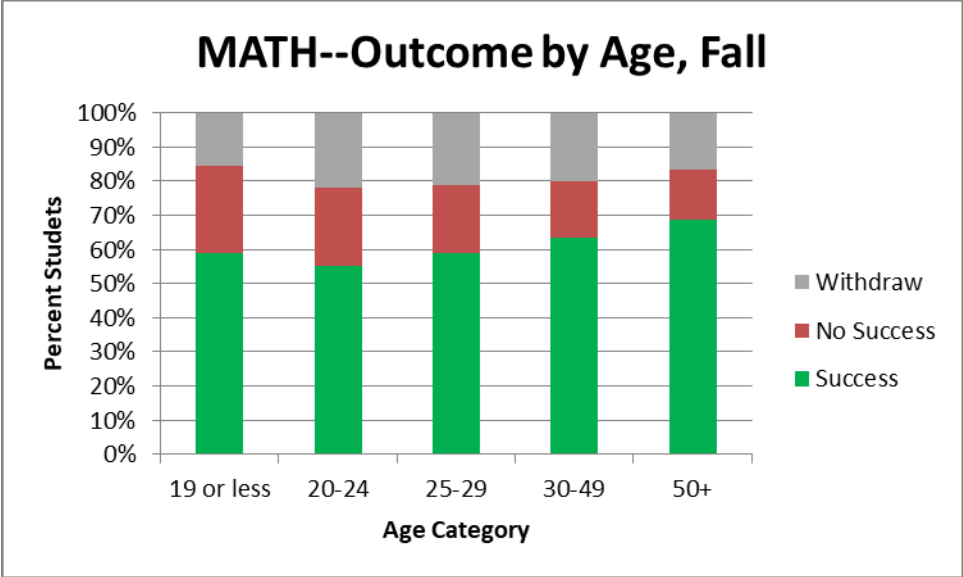


All Math Students: Summer

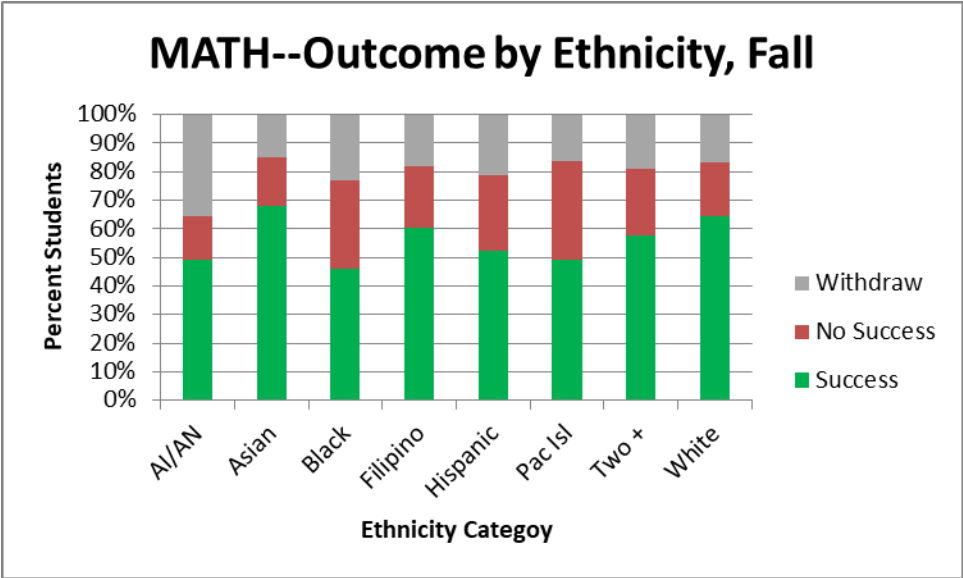


Student Success & Retention, Disaggregated





Data for spring show the same pattern, so are not included.



Data for spring show the same pattern, so are not included.

Appendix 4. Checklist Documentation (SLO, Instructional Operations, Articulation Officer, Library)

Date: October 12th, 2019

To: Sharon Giles, Department Faculty

From: M. Denise Aceves, Articulation Officer

Re: Mathematics • Program Review Checklist

The process of articulation is two-fold. First, transferability must be established. A transferable course is one that is taken at a community college and can be used for unit credit at a university. The next step, is the articulation of courses deemed transferrable. Articulation is the formal, written agreement that identifies courses on a “sending” campus that are comparable or acceptable in lieu of specific course requirements at a “receiving” campus. Thus, articulation identifies courses that a student should take at community college to meet university degree requirements.

In response to your request for articulation information, Math courses at Grossmont College are well-articulated. All formal articulation with our 4-year public education partners can be found at ASSIST.org, which is the public articulation repository available to current and potential college students. Please note that ASSIST.org currently only reflects articulation information through 2016-2017 and partially updated information.

The majority of Math courses transfer to both the CSU and UC Systems, with the exception of Math 128, 160L and 170, which are only transferrable to the CSU. Furthermore, courses in this discipline have been evaluated by the CSU and UC systems to meet requirements for general education. As a result, approved Math courses assist students in meeting CSU General Education Breadth requirements in the area of Scientific Inquiry and Quantitative Reasoning. Similarly, there are approved Math courses in the Mathematical Concepts and Quantitative Reasoning area of IGETC. All courses that have received transferability and general education designations are notated as such at the end of each course description in the Grossmont College Catalog. The courses with course to course articulation by department with specific CSUs and UCs can be found on ASSIST.org.

Locally, our public 4-year educational partners include: San Diego State University (SDSU), California State University San Marcos (CSUSM) and the University of California, San Diego (UCSD). Articulation with the corresponding departments are robust and Grossmont College’s Math courses have attained course to course articulations. **Once ASSIST is fully operational, the department is encouraged to**

review their course to course articulations on [ASSIST.org](https://assist.org) and work with me, the Articulation Officer, to correct any inconsistencies.

The Math Department has also successfully offered the [Mathematics Associate of Science for Transfer \(AS-T\)](#) in compliance with Senate Bill 1440. To this end, the Math Department has worked collaboratively with the Curriculum Committee, Instructional Operations and the Articulation Officer to establish the Mathematics AS-T. Similarly, the department has been responsive to Course Identification (C-ID) required for courses in the degree.

Articulation is facilitated with current, concise and thorough course outlines. It is imperative that the outlines and text books listed be current. The requirement that course outlines be updated every 5 years through the Grossmont College Curriculum process is vital. Students benefit from the many colleges and universities who have articulated our courses in Math. Below I have listed the link to *The Course Outline of Record: A Curriculum Reference Guide Revisited*, a document adopted by the Academic Senate for California Community Colleges in Spring 2017, as well as the latest standards for CSU GE Breadth and IGETC.

Curriculum Resources

- [The Course Outline of Record: A Curriculum Reference Guide Revisited](#)
- [Guiding Notes for General Education Course Reviewers](#)
- [Standards, Policies & Procedures for Intersegmental General Education Transfer Curriculum, Version 1.9](#)

You are welcome to contact me directly at mariadenise.aceves@gcccd.edu with any questions regarding this report.

From: Marsha Raybourn <Marsha.Raybourn@gcccd.edu>

Sent: Wednesday, January 15, 2020 11:15 AM

To: Steve Davis <steve.davis@gcccd.edu>

Subject: Math Outline History

Steve. below is the report of the last dates the math courses were reviewed by the Curriculum Committee and approved by the Governing Board.

Subject and Number	Governing Board Approval Date
MATH 020	April 2019
MATH 060	April 2019
MATH 075	April 2019
MATH 076	April 2019
MATH 078	April 2019
MATH 080	May 2008
MATH 087	April 2005
MATH 088	May 2008
MATH 088L	April 2002
MATH 089	April 2004
MATH 090	May 2013
MATH 090L	April 2002
MATH 096	May 2018
MATH 097	April 2002
MATH 103	May 2013
MATH 108	May 2018
MATH 110	May 2013
MATH 110L	April 2002
MATH 120	May 2018
MATH 125	May 2018
MATH 126	December 2012
MATH 128	May 2017
MATH 150	April 2009
MATH 160	May 2018
MATH 160L	April 2002
MATH 170	May 2018
MATH 175	May 2018
MATH 176	May 2018
MATH 177	April 2009

MATH 178	May 2018
MATH 180	December 2015
MATH 245	December 2012
MATH 280	December 2012
MATH 281	December 2012
MATH 284	December 2012
MATH 285	December 2012

Marsha

Pronouns: She/Her/Hers

Instructional Operations Supervisor

Grossmont College

1-619-644-7153

Math Department Program Review-Follow-up Questions

After reading each report the program review committee develops a list of follow-up questions. This allows us to get a deeper understanding of your department's operations and guides our commendations and recommendations for the next program review cycle (6 years). We have tried to make the questions clear and very specific to minimize the effort needed to answer them. Please have the answers to the questions below back to me by **email no later than Friday February 21, 2020.**

Section/Page	Question	Response
2.1	<p>You mention that it was determined that students that needed to take math courses 4 levels below transfer should take courses through Adult Ed. Do you refer students to Adult Ed and if so how? With the new assessment, how will a student know if they are 4 levels below?</p> <p>Why was there no mention of the new support courses in this section? Alignment in the district?</p> <p>Are there plans to delete 090L?</p>	<p>We do not refer students to the adult ed.</p> <p>For the new assessment and the implementation of AB 705, students will be able to register for any transfer level course.</p> <p>The reason there was no mention regarding the new support courses was because it was just started in Fall 2019 and this review ends Spring 2018.</p> <p>90L is no longer being offered and will be deleted from the courses.</p>
2.2	Do you provide students with the COR or simply include exit skills on syllabi?	We included student learning outcomes (exit skills) on each syllabus.
2.3	Can you provide an example of "enhanced health career specific" examples? Is this currently being offered?	The linked course 90 and Eng98 is no longer being offered. It ended in Spring 2016. One application that we do use is Stat Crunch in statistics courses to provide the use of real data in the courses.
2.4	When you create new SLOs do you add them to the CORs? How often do you create new SLOs?	We do not create new SLO's, just new questions to test for the original SLO's
2.5	You attribute varying success rates in 245 to teaching pedagogy, can you tell us more? What are the differences in the instructors?	In Math 245, we have many different instructors that teach the course which contributes to the varying success rates. There is no consistent course coordinator since we offer only one section so

		the class is not really consistent on the way it is taught.
2.6	Does every section of Math have a “pre-semester introduction”?	No, the only pre-semester introduction is for the online courses which typically reaches out to students the week prior. For the online course it is important to reach out to students right away and early since there is a higher withdrawal rate in these courses.
3.2	How are your findings utilized to change teaching strategies and improve outcomes? Please provide examples.	When assessing the SLO, the question that is created often is a more in-depth question referencing application style questions. We want the student to think more about the result. In math classes, it is easy to have students often perform the calculation but on the SLO question we ask more. This has led to a department discussion to perhaps adjust our examples in class and regular exams to address this more in-depth style of question. For example, rather than finding the vertex of a parabola, we apply it to finding the max height that an object reaches when it is thrown in the air.
4.2	Do instructors know the process for requesting custodial services (i.e. whiteboard cleaning, clean rags, etc.)?	Originally, the department did not know how to properly request custodial service. Facilities has recently given a presentation in the division meeting about request so the department is better aware of the process.
4.4	Does the dept currently have an Instructor Canvas Shell that houses materials for each class, and/or a general Canvas shell for students? Does the new math building address all the needs you have listed in section 4.4? If not, please provide an explanation of what needs are not being addressed.	Currently, the department has a web page that has housed course material but it has not been updated. The department would like to transfer the course material to a Canvas shell for each course, in particular the new support

		<p>courses. This is a large undertaking and the department needs to direct reassigned time to a full-time faculty member to do this and continue to keep it updated. Since the development math coordinator is no longer needed, we are requesting to add a support course coordinator to do this.</p> <p>All the needs that we are requesting for the new math building are not being met. In particular, we need the electronic tablets for teachers and students to enhance the teaching. Also, to greatly help the instructor, in particular, the Math 160 course where we offer a large amount of sections, having desk tops inside our desks to allow students to access Stat Crunch and real data for statistical work.</p> <p>Also, for Calculus courses, the department needs to get 3D printers and this is not in the new building currently.</p>
4.6	<p>Does the new math building address all the needs you have listed in section 4.6?</p> <p>If not, please provide an explanation of what needs are not being addressed.</p>	Yes
5.1	<p>Do you interpret enrollment consistency as a good or bad thing impacting enrollment trends, and how do you plan to address it?</p>	Good thing because we do not lose students and this gives us an increase in the throughput of students from our courses.
5.2	<p>Which approaches have been most effective that your department has identified in addressing the problems with success and retention?</p> <p>Please describe how you plan to decrease the achievement gaps identified in this section.</p>	<p>Course coordinators</p> <p>We're all in</p> <p>AB 705</p>

		The implementation of AB 705 should definitely decrease the achievement gap.
6.2	What kind of records do you keep to help track information such as how many students are impacted by services such as tutoring, grad coaches, and others?	WC Online for Fall 18 which tracks the number of student visits each semester
7.1	How did you measure the impact of scaling up peer mentoring? Please provide some examples of positive outcomes in student success that resulted from your activities on and off campus.	Many department members are going to many conferences addressing student success. We are hoping to have students associated with a peer mentor to help them with class.
9.2	What are your plans for enhancing the dual enrollment program and increasing promotion?	For the dual enrollment, we have not had much time to work on this program. We are hoping that in the future we can address this more. Our focus has been on AB 705 lately.

**PROGRAM REVIEW COMMITTEE
SUMMARY EVALUATION**

The committee recommends maintaining this program. Following are the committee's specific commendations and recommendations.

The Program Review Committee commends the department for:

1. Flex week grading activity to address norming of SLOs and creating SLOs that can be utilized across courses
2. Developing lecture notes to accompany courses to increase consistency
3. Consistently applying "best practices" in all course sections including "pre-semester introduction" in online courses
4. Welcoming increased enrollment while dealing with inadequate spaces and maximizing the effectiveness of resources (i.e. creative scheduling, providing more online & intersession courses, tracking student use of Math Study Center)
5. Creating accelerated courses (Math 96/108): Demonstrates a response to where students are having trouble
6. Innovation in online and F2F courses. Responding to popular vote, creating consistent workbook, activities that demonstrate concepts
7. Community of Learning Model: Collaboration w other departments to maximize student engagement, Honors program, Math Club

Committee recommends the following:

1. Develop best practices in Mathematics by course level and work on implementation with all departmental faculty
 2. Highlight participation in the Math Study center in all courses to increase student utilization
 3. Continue efforts to increase and support embedded tutors
 4. Develop a method to collect data about how the student services /support courses you provide (tutoring, etc.) are impacting student success
 5. Continue efforts to decrease achievement gaps
-

College President

Program or Department Chair

Academic Program Review Chair

MATH

Academic Year	Fall		Spring	
	% Fill	WSCH/FTEF	% Fill	WSCH/FTEF
2013-14	96.7	685.6	92.2	650.2
2014-15	94.8	683.0	88.9	635.2
2015-16	95.0	690.3	88.0	646.6
2016-17	91.8	676.4	78.0	538.2
2017-18	86.6	625.5	79.3	540.9