

INSTRUCTIONAL COMPREHENSIVE PROGRAM PLANNING AND REVIEW (CPPR) For 2017-2018

Only to be completed by those programs scheduled for the year according to the institutional comprehensive planning cycle for instructional programs (i.e., every four years for CTE programs and five years for all other instructional programs), which is produced by the Office of Academic Affairs. Faculty should meet with their dean prior to beginning this process. Training is available to support faculty completing this work.

Cluster: Sciences and Mathematics **Program:** Mathematics

Current Academic Year: 2016-17

Last Academic Year CPPR Completed: 2012

Current Date: January 19, 2017

NARRATIVE: Instructional CPPR

Please use the following narrative outline:

- **GENERAL PROGRAM INFORMATION**

- Program mission (optional)

The mission of the Mathematics Program is to offer a high quality program taught by expert faculty to address the needs of the students wishing to remediate foundational skills, earn an AA/AS, AD-T Degree, transfer to a four-year institution or obtain a CTE certificate.

- Brief History of the Program

Full-time Faculty, Classified:

During this five-year period, the college experienced decreasing enrollment. The Division still had a need to replace its full-time retirees. In fall 2013, Michael Mogull was hired as a full-time temporary. In fall 2014, Michael Mogull and Jeff Gervasi were hired as full-time tenure-track faculty. The Division was slated to hire a full-time tenure track faculty for fall 2016; however, Dr. Stork pulled all prioritized positions.

Susie Gillette, our Division assistant of 13 years, retired in fall 2015. Denise McDonough became the Math Division Assistant in April of 2016.

Facilities:

The College removed all portable buildings that were not up to code in spring 2015, including the 2900 Building. Instructors' offices were moved to a new portable (6600B/D) beginning fall 2015. In addition, classroom 2002 was removed and replaced with a new portable, close to the cafeteria. The College passed a Bond Measure in fall 2014. The Division, full-time and part-time faculty, will be moving to the new Instructional Building in spring 2018.

The North County Campus facilities for the Mathematics Division have not changed over the past five years. New modular buildings have been installed on the North County Campus and a new Student Services building is currently under construction. However, the Mathematics

Division has continued to have access to three first call Mathematics classrooms and have access to four faculty offices.

Curriculum/Schedule:

From fall 2011-Fall 2016, the Division experienced a reduction in the schedule of 1.1 FTEF due to the decrease in enrollments. In Spring 2014 the Division began offering Math 128, our accelerated, non-stem alternative to Math 123/127, as a pre-requisite for Math 230,232, 236 Math 247 (beginning Spring 2017) and to satisfy AA Degree requirements. Beginning in fall 2016 the Division no longer offered the support courses of Math 008 and Math 114, due to low enrollments. Effective Spring 2017, we are no longer offering Math 236 and all transfer-level Mathematics courses were C-ID approved. Beginning in spring 2017, the Math Division began offering Math 247 as the only statistics course due to the demands of the C-ID.

The number of sections offered on the North County Campus has been reduced slightly from twenty-three courses for 89 units in the Spring of 2013 to twenty courses for 85 units in the Spring of 2016 due to decreased student demand. The fill rates have remained comparable to or slightly above the fill rates of the North County Campus as a whole.

The courses offered on the North County Campus have changed since the Fall of 2012. Math 232, College Algebra, was reduced from two sections offered to one section per semester. Calculus I, Math 265A, and Calculus II, Math 265B were offered in the Fall of 2012 but are no longer offered on the North County Campus as of the 2015 – 2016 academic year. Math 128, Applied Beginning and Intermediate Algebra, replaced one section of Math 127, Intermediate Algebra, with enrollments in Math 128 increasing steadily over the past three semesters. Demand for statistics has been strong on the North County Campus with the number of statistics offerings growing from one class to two full sections. The Mathematics Division also participated in developing ADT's on the North County Campus, which has resulted in offering Math 255, Business Calculus.

The target population tends to be students who need pre-collegiate courses and general education math classes. The Math Division has attempted to increase STEM offerings, but with mixed results.

- Include significant changes/improvements since the last Program Review

Looking over the last five years, three themes emerged In General, Developmental (Basic Skills) and Acceleration.

In General:

2013-14 APPW

The Division has been focusing on consistency across courses. We have been improving our course Requirement/Policy sheets for instructors with much more detail to be sure all instructors are aware of course level expectations. Even though we may not see adjunct faculty on a regular basis, this information is communicated through the course coordinators and surfaces through the Peer Evaluation Process.

2014-15 APPW

The Division will continue to streamline the consistency within courses and increase communications among faculty at the course level, which includes discussions at SLOs retreats and brown bags. The Division will continue to look for innovative ways to serve the developmental mathematics students and their progression through the sequence of courses. The Mathematics Division is currently reviewing and updating all curricula. We are in the process of having our courses C-ID approved which will involve changes to our curricula. We have developed a calendar for accomplishing a review of our entire curriculum.

2015-16 APPW

As a division, we are encouraging instructors to regularly talk about the subsequent courses in their current course. That is, to help students envision themselves continuing in the sequence. More specifically, around the time the schedule is publicized for the following semester, the division sends out a reminder e-mail to our faculty with a course flowchart. We will then ask all math faculty to take a few minutes of class to discuss the options for the subsequent courses and what that might achieve such as transferability, progress toward AA or earn a certificate.

2016-17 APPW

With the advent of Student Equity funds, we have implemented several new strategies for Spring 2016, such as: Increasing the use of embedded tutors, Supplemental Instruction sections for math 236, 242 and 265A, free ALEKS software for struggling students or students wanting to prepare for their upcoming math classes.

- *We changed the name of Math 287 from Linear Analysis to Ordinary Differential Equations and Linear Algebra; also, we changed the content to be in line with the C-ID. We adjusted the ordering and emphasis of content within the Calculus sequence to align with the C-ID, and improve the flow of the courses.*

The Division has a goal of getting the remainder of our transfer level courses C-ID approved. This has been challenging because our course outlines do not have the exact wording as the C-ID and the C-ID reviewers are not making the connection that the content is the same. We will continue to submit our courses for approval.

The Division is currently looking at the statistics curriculum. The C-ID currently lists only one statistics course so we are looking at the possibility of a one-size-fits-all statistics course rather than having two. The Division is in favor of converting our Math 003 (arithmetic) from credit to enhanced non-credit. We still have several questions to be answered before this can come to fruition and will continue to research this possibility.

Currently:

All appropriate transfer Level courses are C-ID approved as of fall 2016!

Due to the statistics, C-ID being one size fits all; the Division examined its offerings of two statistics courses. It was decided that there was no longer a need for two courses. Due to the

addition of the topics demanded by the C-ID, our 3-unit statistics course (Math 236) was forced to morph into our 4-unit statistics course (Math 247). Beginning Spring 2017 we are no longer offering math 236. The Division realized that there needs to be more support for statistics students and have employed the use of embedded tutors and have asked for and received a separate statistics-tutoring lab if possible. We are in the process of developing Math 247 in DE modality to start in fall 2017.

We updated our Math Flowchart this semester to reflect the STEM and non-STEM pathways. This should prove to be much more user-friendly.

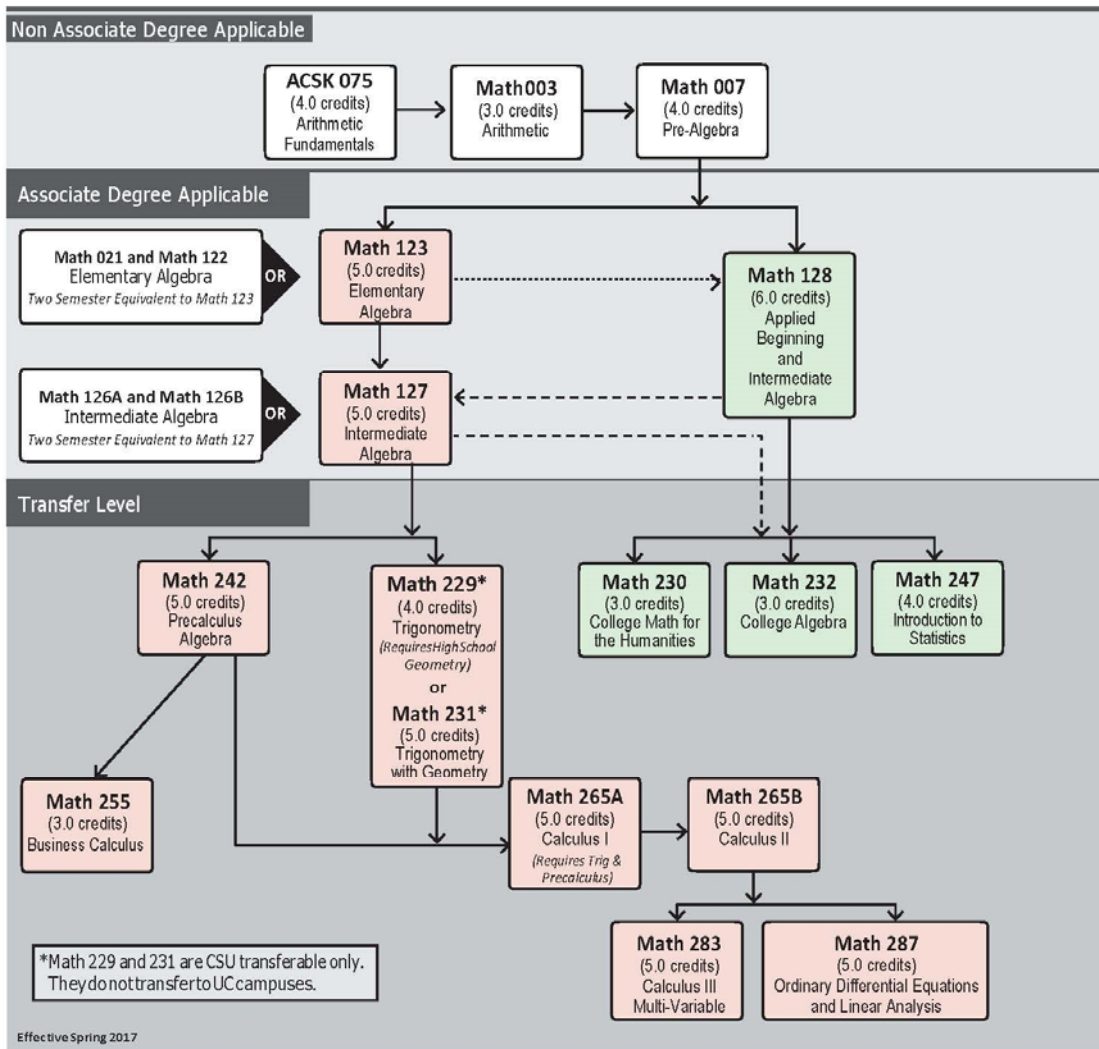
Math Placement and Flowchart

Students can do one of the following to place into a Mathematics course:

- Take the **Cuesta College Math placement test**
- Earn college ready “**Standard Exceeded**” status on the **CAASPP** score report
- Pass the **AP Calculus AB exam** or **AP Statistics exam** with a score of **3 or above**
- Submit results from **completed math assessment** taken at **another California Community College***
- Earn a “**C**” or better grade in a **mathematics course** taken at **another college or university** **AND submit a copy of college/university transcript with a Prerequisite Form A**

* Within past 18 months.

* Bring/send/fax transcripts to the Assessment/Prerequisite Office along with Prerequisite Form A. (805) 546-3951; Fax (805) 546-3113. Official transcripts must also be submitted to Cuesta’s Records Office (P.O. Box 8106, SLO, CA 93403-8106).



Developmental (Basic Skills) Courses:

2013-14 APPW

A work group was established through the Mathematics Division and meetings were held during the Fall Semester. Best practices were reviewed and the Division decided upon course surveys, common assessments and counseling outreach as the initiatives for improving students' successful completion of basic skills courses. An implementation plan was developed for the spring 2013 semester.

There was considerable dialogue and focus at the Math 007 level. The Division has researched the Basic Skills Cohort Tracker data and best practices. We have developed a plan based on the research that includes the following:

- common mid-semester assessment for Math 007*
- common final for math 007*
- Math 003 first day of class survey for determining correct class placement, etc.*
- Math 007 third week of class survey for determining students' math and career goals*
- Counselor outreach to Math 003 and Math 007 classes early in the spring semester*
- Working with the Student Support and Success Committee to pilot an early intervention based on Attendance in 2013-2014.*

2014-15 APPW

There continues to be considerable dialogue surrounding our basic skills students and increasing their success and persistence. A Math 007 common final with scoring rubric was piloted in fall 2013 and the results are being analyzed in spring 2014 for modifications and improvements. There also continued curriculum discussion surrounding Math 007. It is the consensus of the Math 007 instructors that the curriculum needs to be more rigorous to garner student's success rates in the subsequent course. Curriculum modifications including a possible unit increase will be brought to the division in spring 2014 for discussion and approval.

2015-16 APPW

We are continuing the practice of a Math 007 common assessment for most Math 007 classes to facilitate the consistency across our Math 007 courses and garner student success at the next level. We also have members of the counseling department visit our Math 003 and Math 007 courses every spring semester. We are also modifying the Math 007 curriculum to change from 3-unit to a 4-unit class which would better accommodate the topics taught in that course. The math division has worked collaboratively with the student success center to improve basic skills tutoring. There is ongoing imbedded tutoring and supplemental instruction for some of our Math 003 and Math 007 sections.

2016-17 APPW

Math 007 became a 4-unit class effective spring 2016. The Mathematics Division continued with the strategies of office hours, Lab Facilitators for Math 003 and Math 007 courses and Math Instructors volunteering in the tutoring lab. There has been an increase in math tutors/tutoring in the student success centers, and some sections of Math 128 and mediated math used embedded tutors.

Both Math 003 and Math 007 serve a very diverse student population, which includes re-entry students, single parents, recent high school graduates, high school enrichment students, veterans, foster youth, court-referrals, students with diagnosed and undiagnosed learning disabilities, English language learners, developmentally delayed students, and students with mental and physical health issues. Some of the students do not attain success at the basic skills level because of personal issues that keep them from dedicating the requisite time and energy necessary to be successful in the course.

Currently:

Beginning in fall 2016 Math 003 and 007 instructors encouraged students who were improperly placed to use the ALEKS software to improve their placement scores. Several instructors have Academic Success Coaches give the students an orientation about Student Success Services during the first few weeks of classes.

Acceleration: Math 128

2013-14 APPW

In the spring of 2013, the Mathematics division applied for and was accepted into the CAP “Community of Practice” of the California Community Colleges’ Success Network (3CSN), which is the current professional development grant of the Basic Skills Initiative (BSI) of the Chancellor’s Office of the California Community Colleges (CCCCO).

Three faculty members participated in three CAP conferences in June and September of 2013, and February of 2014 to learn how to develop an accelerated math course using the following proven design principles:

- Backwards design from College Level Courses*
- Relevant, thinking oriented curriculum*
- Just in time remediation*
- Low stakes collaborative practice*
- Intentional support for students’ affective needs*

During the summer of 2013, the faculty team developed the course outline for Math 128 and was able obtain approval from the Curriculum Committee in time to offer two sections in the spring of 2014. The fall 2013 semester was spent educating the college community about the new course and developing lesson plans that would present the course content using the CAP design principles. An additional section of Math 128 will be taught on the North County Campus in the fall of 2014.

2014-15 APPW

The Mathematics Division developed (fall 2013) and is piloting (spring 2014) a new accelerated course, Math 128, Beginning and Intermediate Applied Algebra, for students in non-stem/non-business majors who need to remediate their elementary and intermediate algebra skills. This is a six-unit course completed in one semester that replaces the traditional two-semester, ten-unit

algebra course sequence. It satisfies the pre-requisites for Math 230, Math 232, and Math 236. We are piloting two sections this spring and will be adding a North County sections in fall 2104.

2015-16 APPW

We are offering more sections of our Math 128, Applied Algebra, a course intended to accelerate the pre-requisites of Math 123 and Math 127 for our non-stem students.

2016-17 APPW

The fall in the success rate for Math 128 from about 69% in 2013-2014 to 59% in 2014-2015 can be primarily attributed to significantly more students enrolled in the later year; (from 74 to 240). Therefore, the 2014-2015 year better reflects a true success rate. Math 128 replaces the Math 123/127 course sequence for non-stem majors. The combined success rate for Math 123/127 in 2014-2015 was 56.5%, so Math 128 had a success rate of about 3.5% higher. We anticipate the success rate of Math 128 to increase steadily for two reasons: we have limited the instructors who teach the course so there is less variability and we are working collaboratively to be consistent with the depth and breadth of the course. We requested data last September (2015) on subsequent success rates of Math 128 students going into Math 230, 232, and 236, but as yet have not received this information from Institutional Research. We anticipate that our success for students going into Math 236 will improve without any decrease in success for students going into Math 230 or 232 when we implement changes to the curriculum that include more "pre-statistics" topics and drop topics that don't directly prepare students for the transfer-level courses.

Currently:

The curriculum for Math 128 was redesigned to incorporate a more robust statistics component, to fine-tune the required algebra concepts, and to streamline the learning strategies taught in the course. In addition, we adopted a new custom text, combining portions of two textbooks written by the same author at an appropriate reading level, which has enhanced the flow of the course as well as ensured the regular thread of authentic applications through the entire course curriculum.

Math 128 instructors have met regularly to establish uniform coverage of topics, develop a sample course homework sheet, and to share creative lessons. The increased course uniformity and pedagogical enhancements will make it easier to expand the number of offerings of Math 128 next year since we will have vetted course materials to share with instructors new to the course.

There has been extensive work to ensure a smooth transition for students to subsequent transferable courses, particularly to Math 247 and Math 232. We have improved the individualization of Math 128 by suggesting extra problems or topics for specific transferable courses. The updated Math 128 course content has been shared with all of our Math 232 instructors to provide a smoother transition for students.

The recent embellishment of the statistical reasoning component of Math 128 coincided well with the changes in the statistics program and the adoption of the new statistics textbook. During spring 2017, we are working to further coordinate notation, vocabulary, and expectations in Math 247 with the statistics content in Math 128.

Due to the evolution of this unique course to Cuesta College, counseling and the general college community were unclear about the objectives and content of the course. Extensive outreach, including a meeting with all academic counselors, occurred during fall 2016. As a result, this alternative pathway is servicing more students. We have also revamped the math flow chart to clearly delineate the alternative non-STEM pathway.

Embedded tutoring is the ideal model for this course. However, since not every section can be accommodated we have educated the general math tutors about the course. We have met with classified tutors, shared the textbook, and shared sample course notes to better educate them about the content and appropriate level of the course.

Based on the new pathway the Division has also reworked the Math Flowchart document to make it more user-friendly and delineated between the STEM and non-STEM pathway.

- List current and/or new faculty, including part-time faculty

Full-time faculty: Denise Chellsen, Bill Demarest, Jeff Gervasi, Julie Hoffman-Rose, Michael Kinter, Matt Knudsen, Marie Larsen (Division Chair), Greg Lewis, Jodi Meyer, Barbara Miller (Reduced Load), Michael Mogull, Jen Sanders-Moreno, Robert Schwennicke, Richard Taylor (North County Cluster Coordinator, retiring Spring 2017), Mark Turner, Joseph Vasta, Peggy Wright, Kyi Zin

Part-time faculty: Shelby Burnett, William Cross (Fall only), John Fetcho, Bryce Jenkin, Michelle Kaul, Clark Kerr, Selina Klippenstein (on leave), Anna Kopcrak, Amanda Lombard, Suzanne MacArthur, Jacqueline Masucci, Rebecca Michaud, Mir Mortazavi Izadi, Suzanne Ng, Kristen Riggerbach, Robert Satterwhite, Don Volle, Anne Woods

- Describe how the Program Review was conducted and who was involved

The Division Chair organized the process of Program Review. Information was sent out, via email, to the entire Division one or two times a week, soliciting feedback and input. The Division met every Thursday from January 26 through March 2 to discuss and finalize the various sections of the report. Course coordinators were responsible to analyze their course data and to check and update their curriculum.

- **PROGRAM SUPPORT OF DISTRICT'S [MISSION STATEMENT](#), [INSTITUTIONAL GOALS](#), [OBJECTIVES](#), AND/OR [INSTITUTIONAL LEARNING OUTCOMES](#)**
 - Identify how your program addresses or helps to achieve the District's Mission Statement.

The Mathematics Program offers mathematics courses from Arithmetic to Ordinary Differential Equations and Linear Algebra. We have a variety of courses available for students who need to develop foundational mathematics skills, earn certificates or degrees, or transfer to another institution. We offer approximately 140 sections of mathematics among all three-campus locations per academic semester. Many of these classes support other disciplines at Cuesta, which allow students to succeed in their academic goals. The Mathematics Division offers courses in a variety of modalities with the primary being lecture. We offer mediated classes taught in a computer lab, which accommodates and offers slower paced versions of our elementary and intermediate algebra courses. There are Distance Education courses available as well. We have developed an accelerated one semester course for non-stem majors that incorporates statistical thinking, elementary and intermediate algebra concepts, and learning strategies that satisfies the general education requirement for an associate's degree as well as prepares students for transfer-level Statistics, College Algebra and/or Math for Humanities.

The Division has developed curriculum for the ALEKS software and made it available, free of charge through Student Equity funds, to students wishing to improve their mathematics placement, remediate a prerequisite for a course they are repeating or refresh a prerequisite for a new course they are about to take. Both the Cuesta Quick Start Program and individual students who have been referred by an instructor or counselor use this software. Several Division faculty have used embedded tutors in their classrooms as a way of increasing student success, and a byproduct of this is that our student-embedded tutors become experts in tutoring those courses.

Beginning in spring 2015 semester, several instructors have offered "Pre-semester" workshops during FLEX week to help students get up to speed for courses in the upcoming semester. Workshops offered included factoring Review, Vectors, Review if Calculus I, Trig for Calculus and Pre-calculus Review.

Our division continues to be supportive of the DSPS program and we offer a variety of teaching modalities to assist with various student backgrounds and learning styles. Several Mathematics faculty hold office hours in the Math Drop-in Tutoring Lab, as well, to promote student success.

We have an outstanding faculty who are diverse in their expertise, interests, experiences, and contributions to the community. We have specialists in statistics, basic skills and multivariate calculus, as well as generalists and some who have excelled in integrating technology in the classroom. All of these specialists share with the rest of the faculty new and interesting aspects of their expertise.

The Mathematics Division has been very involved in college-wide endeavors such as College Council, Equivalency Committee, Professional Development Committee, Student Support and

Success Committee, Faculty Mentoring Committee, Campus Safety and Environmental Committee, Institutional Effectiveness Committee, Accreditation Steering Committee, the Basic Skills Initiative, Academic Senate, CCFT, development of the Technology Plan, development of the Educational Master Plan, development of the Strategic Plan, development of the Participatory Governance Handbook, development of the Integrated Planning Manual, the “Zoom” program, and “Quick Start” to Cuesta, the Student Incident Response Team, and outreach efforts such as the Student Welcome Boot and Promise Day .

The Mathematics division faculty works collegially and collaboratively on a regular basis to improve our mathematics instruction in support of student success. The Division holds “brown bag” informal meetings, to discuss our ideas, challenges, and solutions.

- Identify how your program addresses or helps to achieve the District’s Institutional Goals and Objectives, and/or operational planning initiatives.

The Mathematics Division has completed extensive work around Institutional Goal 1 from the 2012-2016 Educational Master Plan Addendum and the 2016-2026 Educational Master Plan.

2012-2016-Institutional Goal 1: San Luis Obispo County Community College District will enhance its programs and services to promote students’ successful completion of transfer requirements, degrees, certificates, and courses.

2016-2026 Institutional Goal 1: San Luis Obispo County Community College District will increase the rates of completion for degrees, certificates, transfer-readiness overall for all students.

Specifically, Institutional Objective 1.5 from the 2012-2014 and 2014-2017 Strategic Plans:

Institutional Objective 1.5: Increase basic skills course success and improvement rates by 2% annually

From the fall 2012 Strategic Plan Progress Report:

2012 Fall Assessment

Implementation plan for an initiative that has led to documented improvement in students’ successful completion of basic skills courses

Mathematics: Complete. A work group was established through the Mathematics Division and meetings were held during the Fall Semester. Best practices were reviewed and the Division decided upon course surveys, common assessments and counseling outreach as the initiatives for improving students’ successful completion of basic skills courses. An implementation plan was developed for the spring 2013 semester.

From the spring 2013 Strategic Plan Progress Report:

In fall 2012, the Mathematics Division Chair and faculty identified two strategies to improve student success and improvement rates in basic skills mathematics courses:

- *The addition of counseling outreach to pre---collegiate classes: Counselors conducted classroom visits in spring 2012 to all MATH 003 and MATH 007 classes during the 3rd and 4th week of the semester, delivering content on strategies for becoming a successful student and referrals to academic support services including counseling and tutoring.*
- *A common final examination in mathematics basic skills courses, which will be implemented in fall 2013.*

The Action Steps led to dialogue among mathematics faculty on the importance of direct counseling to basic skills students as well as the best practice of common assessment in determining outcomes. Analysis of student successful course completion of basic skills mathematics courses will be conducted in August 2013 to determine term---over---term improvement.

From the spring 2014 Strategic Plan Progress report:

In fall 2012, the Mathematics Division Chair and faculty identified two strategies to improve student success and improvement rates in

Basic skills mathematics courses:

- (1) The addition of counseling outreach to pre-collegiate classes: Counselors conducted classroom visits in spring 2012 to all MATH 003 and MATH 007 classes during the 3rd and 4th week of the semester, delivering content on strategies for becoming a successful student and referrals to academic support services including counseling and tutoring.*
- (2) In fall 2013 the Mathematics Division approved piloting a Math 007 common final and it was administered in all Math 007 classes.*

The institutional data from spring 2012 to Spring 2013 showed success rates in Math 003 dropped from 67.8% to 66.7%. For Math 007 they dropped from 65.3% to 61.0%.

The Action Steps led to dialogue among mathematics faculty on the importance of direct counseling to basic skills students as well as the best practice of common assessment in determining outcomes. After further analysis and observation of the diversity of preparedness of the current Math 003 student, the Math department recommends that students should take the assessment exam to enroll in Math 003 to ensure proper course placement. With respect to Math 007, analysis of the common results pointed to the need for an increase of one unit of credit to allow more time to be spent on several topics that are critical for success in later math and science classes. The Math department believes these key changes will improve the success and improvement rates for the basic skills students.

Following the spring 2014, College Success studies took over responsibility for reporting on Institutional objective 1.5. As seen in section I c. of this report, the Mathematics Division has continued to work on our basic skills courses.

Continuing with Institutional Goal 1:

Institutional Objective 1.1: Increase the percentage of transfer-directed students who are transfer prepared by 2% annually (retained from SLOCCCD Strategic Plan 2012-2014)

With the development of our accelerated Math 128 course, the Division has streamlined the process for students taking a transfer level course by one semester.

Institutional Objective 1.2: Increase the percentage of degree- or certificate- directed students who complete degrees or certificates by 2% annually (retained)

Our Math 128 course also satisfies the requirement for an Associate's Degree. This is an alternate pathway for non-STEM majors to complete their degree requirements.

Institutional Objective 1.6: Increase the percentage of first-time students who complete the fall semester and continue to the immediate spring semester at Cuesta College by 2% annually (new)

The Division instructors will continue the practice of counseling their students about the subsequent courses in their current course. That is, to help students envision themselves continuing in the sequence. More specifically, around the time the schedule is publicized for the following semester, send out a reminder e-mail to our faculty with a course flowchart.

Institutional Goal 3. San Luis Obispo County Community College District will develop and sustain collaborative projects and partnerships with the community's educational institutions, civic organizations, businesses, and industries.

In Spring 2017 the Mathematics Division, in conjunction with statistics professors from Cal Poly as presenters, hosted a one-day workshop on "Teaching Introductory Statistics with Simulation-Based Inference", drawing attendees from all over the state.

One of our mathematics instructors is a coach and mentor to the mathematics instructors at Coast Union High School beginning in fall 2015.

The Mathematics Division is currently in discussions with Atascadero High School regarding dual enrollment.

- Identify how your program helps students achieve [Institutional Learning Outcomes](#).

ILO 1: Personal, Academic and Professional Development

The Mathematics program helps students develop essential skills necessary for academic success and successful employment including the ability to work with fellow students in a group setting, the ability to manage time, and the ability to solve complex and challenging problems. Nearly all math instructors have students work in groups, which is an essential skill for both academic success and successful employment. All of our students have unique challenges when it comes to time management and our mathematics instructors work hard to help students manage these challenges. We consistently talk to students about setting a schedule and completing homework efficiently the day of lecture. Finally, throughout our curriculum, the

Math Division requires students to solve complex and challenging problems. The ability to identify the nature of a problem, determine what is known and unknown, determine how to solve the problem, and then successfully solve it, is one of the most important skills for students to have in order to achieve academic and employment success, and mathematics instructors constantly work to help students obtain these skills.

ILO 2. Critical Thinking and Communication

Students learn to interpret complex information when they translate word problems into mathematical models. They also have to interpret their solutions in terms of the original problem and communicate their results to answer the questions asked in the problem.

The mathematics program helps students evaluate their own thinking processes and those of others by having students consistently discuss their thought processes with their fellow students, and then listen to how their fellow students approached a problem. As instructors, we realize that it is not sufficient to simply ask, “What did you get for the answer?”, but to always ask, “How did you get that answer?”, and “is there another way to approach the problem?” This also helps our students learn how to communicate complex information in a clear and logical manner.

ILO 3. Scientific and Environmental Understanding

Students solve equations in mathematical models and have to interpret and draw conclusions based on those solutions to answer questions regarding an application. In statistics, students perform computations for various statistical tests and must draw conclusions regarding the population in question.

Students construct proofs in geometry, and they analyze proofs and derivations in that and other trigonometry and calculus classes. Students in geometry and math for humanities also cover basic logic and consider the true/false values of logical statements.

ILO 6: Technical and Informational Fluency.

Students learn to analyze real world information in our statistics courses. They learn effective methods for collecting data, and analyzing that data with graphs and numerical summaries. They are then able to make inferences about a larger group based on the sample data. When making inferences, they learn to discern between statistical significance and practical significance – that is, does this difference really mean something. They also learn to become critical observers of data analysis so that they can pick up any news article or journal and be able to determine for themselves what the results were, how significant they were, and whether they should be trusted (based on the way the information was gathered). There is a continual discussion of what is ethical in statistics: is it right to say that brand A is better than brand B based on only miniscule difference? Can we say that supplement A caused people to do better, or can we merely say that there is a correlation? Do these graphs really represent as large a difference as they appear, or were the bottoms of the graphs truncated? Students become critical of studies and learn to ‘follow the money’ when they wonder if someone had something to gain by making such an inference.

Students also become familiar with a common statistical computer package: Minitab. They learn to produce graphs and numerical summaries, and how to make these graphs viewable for presentation. They learn to embed these graphics and summaries into common document

formats – like Microsoft Word. By the end of the course, each student should be able to create a professional looking document to relay information about data.

Due to the complexity of the environment we are in, we are faced with diverse and abundant information choices—in academic studies, in workplace, and in our personal lives.

Unfortunately, many times the information comes “unfiltered” without any guarantee of its authenticity, validity, and reliability. In addition, it is available through multiple media, including graphical, aural, and textual, and these pose new challenges in evaluating and understanding it. For these reasons our class discussions in statistics usually starts with types of data and methods for collecting it.

We make use of statistical software such as Minitab or computer simulators to create artificial conditions in which to observe and analyze the interaction of phenomena.

In Math 283, students are required to use technology and their understanding of three dimensional surfaces and curves to produce images of surfaces and curves in three space. They are now allowed to use multiple software platforms to produce these images.

- **PROGRAM DATA ANALYSIS AND PROGRAM-SPECIFIC MEASUREMENTS**

Program data is available on the [SLOCCCD Institutional Research and Assessment Program Review Data Dashboard site](#). The Dashboard components are hyperlinked below; just click on “enrollment” or other category below.

[General Enrollment \(Insert Aggregated Data Chart\)](#)

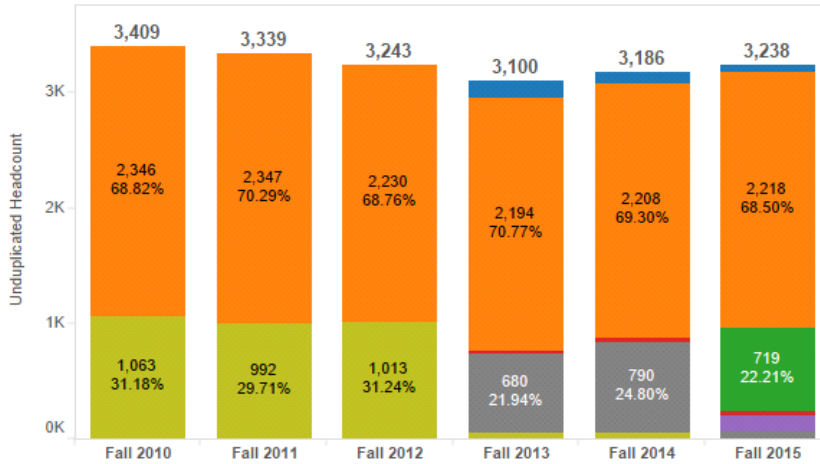
[Disaggregated Enrollment Data](#) (review analytically to determine if different populations are impacted)

Student Characteristics and Enrollment Trends

Select Term:
Fall

Select Region:
All

Unduplicated Headcount



Department:
Mathematics

Select Variable:
Academic Standing

Choose

- Academic Dismissal / Disqualification
- Academic Good Standing
- Academic Probation (low grade point average)
- Both Progress and Academic Probation
- Not Applicable
- Progress Probation (percent of withdrawals / incompletes)
- Status unknown / uncollected

Student Major

Major	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014	Fall 2015
CSU General Ed. Breadth (CA)	561	735	761	748	700	741
Engineering (AS)	214	185	172	193	197	189
Intersegmental GE Trnsfr (CA)	126	162	175	179	148	155
Nursing, Registered (AS)	171	164	134	106	63	30
LA: Mathematics & Science (AA)	57	76	111	121	156	194
Biological Science (AS)	116	84	101	105	107	127
Bus Admin - Transferable (AA)		78	172	205	107	43
Criminal Justice (AA)	95	93	87	91	82	78
Psychology (AS)	97	110	99	96	35	
Business Administration (AST)				2	119	238
Business Administration (AA)	183	116	53	21	10	2

- List the previous year's projection and current year's projection for enrollment (*i.e. increase, decrease, remain the same*).

Our previous projection was that the math enrollments would continue to increase slightly.

Our current projection is to increase slightly.

- List the trend (*i.e. increasing, decreasing, same*).

Increasing slightly

- List contributing factors to the trend.

Despite the fact that College enrollments continue to decrease, the Mathematics Division Chair continues to make appropriate changes to the schedule to reflect student demand. More universities (majors) are demanding that students take statistics. Students are taking more units to satisfy the Promise and financial aid requirements. The Student Education Plan (SEP) requirement may be influencing students to take math classes earlier.

- Are different demographic groups underrepresented in your enrollment figures? What might be causing this? How can it be addressed?

No, after analysis they are consistent with that of the College.

- What strategies will be employed to meet the current year's projection?

As the college continues to define enrollment levels, the Division will look closely at the classes offered and base decisions regarding course offerings/deletions on fill-rate data trends and student needs. Also offering courses for AD-Ts on the north county campus should continue to increase mathematics enrollments at that site.

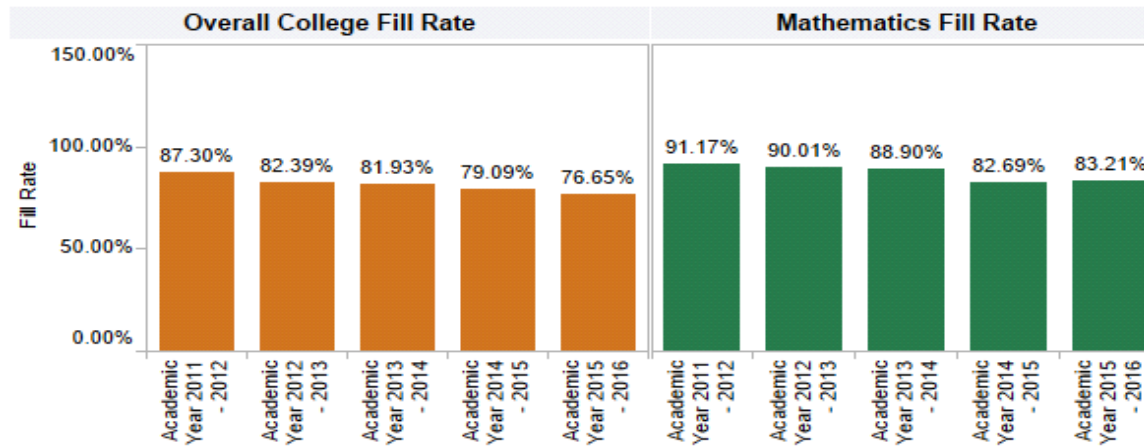
[General Student Demand \(Fill Rate\) \(Insert Aggregated Data Chart\)](#)

[Disaggregated Student Demand Data](#) (review analytically to determine if different types of courses are impacted)

SLOCCCD Program Review Data - Student Demand (Fill Rate)

Department:
Mathematics

Course:
All



Fill Rate: The ratio of enrollments to class limits. Cross listed class limits are adjusted appropriately. Also, courses with zero class limits are excluded from this measure.

- List the trend (i.e. increasing, decreasing, same)

Slightly Increasing

- List contributing factors to the trend.

The Division Chair, in communication with the North County Cluster Coordinator, has monitored the schedule closely eliminating and adding sections to fit student’s needs. That is why while, the College fill rates have been decreasing, the math fill rates have slightly increased and are 6.5% above that of the College.

- List which courses have the highest student demand and which courses have the lowest student demand.

Math-003: 83.2%

Math 007: 87.5%

Mediated Math: 85.62% (Math 021, 122, 123, 126A, 126B)

Math 123 Lecture: 80.18%

Math 127 Lecture: 82.3%

Math 128: 89.8%

Math 229: 70.29%

Math 230: 74.43%
Math 231: 102.63%
Math 232: 56.63%
Math 236: 94.57% (no longer offered starting spring 2017)
Math 242: 80.07%
Math 247: 88.04%
Math 255: 84.1%
Math 265A: 92.38%
Math 265B: 98.33%
Math 283: 104.38%
Math 287: 93.43%

All Math courses have a fill rate of 80.07% or higher except Math 229, Math 230, and Math 232. Sections of Math 232 have continued to be deleted from the schedule, including the north county. There are only two sections of Math 230 and there is more student demand than just one section. The same argument can be made for math 229. We added an evening section to accommodate our working students. As for the courses that are over 100%, Math 231 is a singleton section, we have added a third section of Math 283 beginning spring 2017.

- Based upon the trend, what strategies do you plan on implementing.
The Division Chair, in communication with the North County Cluster Coordinator, will continue to closely monitor the schedule and continue to make necessary adjustments.

[General Efficiency \(FTES/FTEF\) \(Insert Aggregated Data Chart\)](#)

[Disaggregated Efficiency Data](#) (review analytically to determine if different types of courses are impacted)

SLOCCCD Program Review Data - Efficiency (FTES/FTEF) Disaggregated

Department: Mathematics Course: All Region: All Disaggregate by: None Legend: ■



FTES/FTEF: The ratio of total FTES to Full-Time Equivalent Faculty (SXD4 Total-Hours/17.5)/XE03 FACULTY-ASSIGNMENT-FTE)

- List the previous year’s projection and current year’s projection for enrollment (*i.e. increase, decrease, remain the same*).

Our previous projection was that the Math efficiencies would continue to increase slightly.

- List the trend (*i.e. increasing, decreasing, same*).

Pretty much stayed the same

- List contributing factors to the trend.

Difficult to say this represents a trend. One trend, observed over the last four years is that mathematics efficiency rates surpass the efficiency rates of the College. There are times when we are forced to offer classes with low enrollments such as: only evening class offered, capstone course, and needed for and AD-T pattern, etc. In addition, when the College pursues stability funding, headcount is prioritized over efficiency.

- What strategies will be employed to meet the current year’s projection?

The Division Chair, in communication with the North County Cluster Coordinator, will continue to closely monitor the schedule and continue to make necessary adjustments.

[General Student Success – Course Completion \(Insert Aggregated Data Chart\)](#)

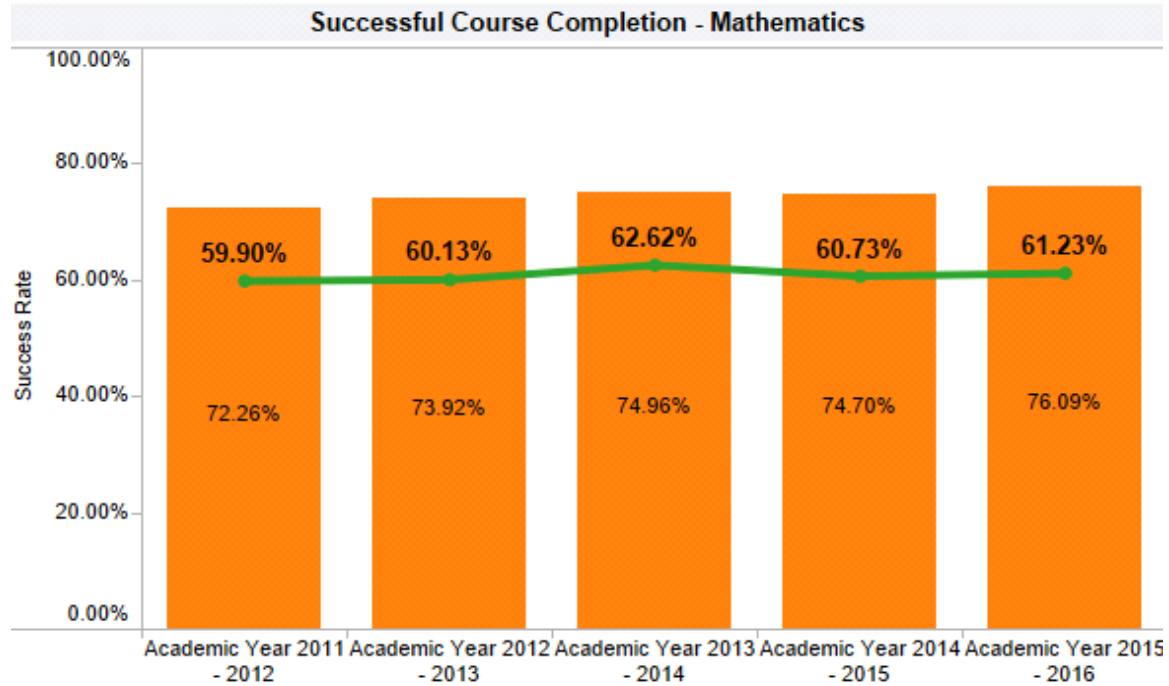
[Disaggregated Success and Completion Data](#) (review analytically to determine if different populations are impacted)

SLOCCCD Program Review Data: Successful Course Completion

Select Department:
Mathematics

COURSE
All

Legend:
■ Department Success Rate
■ Overall College Success Rate



Mathematics Success Rate Table

	Academic Year 2011 - 2012	Academic Year 2012 - 2013	Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016
Department Success..	59.90%	60.13%	62.62%	60.73%	61.23%
Total Enrollments	7,084	6,739	6,592	6,657	6,567

Success: The Percentage of student enrollments resulting in a final grade of "C" or better

- Are different demographic groups underrepresented in your success figures? What might be causing this? How can it be addressed?

One demographic group not performing as well are the Promise students, which have an 8% lower success rate in Mathematics. College-wide their success rates are 9% lower.

- List strategies used during the last year in which data was reported to increase student success. *Over the last five years, there has been a significant effort to place students in the appropriate mathematics courses. Increased use of embedded tutors, Supplemental Instruction sections, and free*

ALEKS software for struggling students or students wanting to prepare for their upcoming course, instructors volunteering in the Math labs and instructors going beyond their office hours.

- Did your strategies effect change?

The overall success rate increased 0.5%, which is statistically significant.

- List the trend (i.e. increasing, decreasing, same).

Slight increase

- Based upon the trend, what strategies do you plan on implementing?

Continue increased use of embedded tutors, Supplemental Instruction sections, and free ALEKS software for struggling students or students wanting to prepare for their upcoming course, separate statistics tutoring lab, instructors volunteering in the Math labs and instructors going above and beyond their office hours. As for the Promise students, representatives from the college could use outreach efforts to continue to explain the demands and expectations of being in a college class.

Successful completion rates by course:

Math-003: The successful completion rate rose slightly from 60.18% to 61.50%. The success rate has been in the low 60% range for the past four academic years.

Math 007: The Success rates have dipped from 62.92% to 57.81%. This might be attributed to "beefing" up this course with more algebra topics and the fact that students are more accurately placed, meaning there are less students that are under placed.

Math 021: Success rate stayed pretty even, increasing slightly from 50% to 50.6%. These are common rates for this course, but it varies a lot each semester.

Math 122: Success rate leapt from 70% to 74.29%. There are small numbers of students in this course so it is highly variable. These rates are on the higher end of the range.

Math 123: Success rates for students in Math 123 have remained about the same abysmal level over the 5-year period, ranging between 50.2% to 53.6%. We thought perhaps we would see an increase in success rates with the advent of Math 128 as an alternative path for non-STEM students, thus theoretically having a higher population of STEM students taking Math 123, but this has not been the case. We have reached out recently (fall, 2016) to Counseling to encourage them to direct non-STEM students towards Math 128 instead of Math 123. Perhaps with this increased awareness of which populations of students should take which class, we will see an increased success rate in Math 123 in the next program review cycle.

Math 126A: Success dropped ever so slightly from 53.47% to 53.04%. These are common numbers for this course, although it varies quite a bit.

Math 126B: Success rate skyrocketed from 63.89% to 78.21%, but we should curb our excitement. Due to low enrollment in this course, the success rates vary greatly and will probably drop back to levels that are more typical in the future.

Math 127: The successful completion rate rose from 63.21% to 65.76%, 3.88% less than a high of 69.64 in 2013/14.

Math 128: Success rate is back to the 2013-2014 level (about 68%) after dipping down in 2014-2015 to about 59%. This is due to a better alignment among instructors about the rigor of topics. The instructors are working much more closely together. The course is now "mainstreamed" and we are handling the variety of student preparedness by employing embedded tutors whenever possible. For the 2016-2017 year, we have changed the actual curriculum significantly to better align with pre-statistics topics. It remains to be seen if this changes the over-all success rate of the course.

Math 229: The successful completion rates have been on a gradual decline since the 2012-2013 academic year, but there was a more significant drop of 7.63% last year from 62.28% to 54.65%. This could be due to a particularly weak cohort of students taking the course in the 2015-2016 academic year.

Math 230: The successful completion rates rose from 81.54 % to 87.02 %.

Math 231: Success rate dropped from 64.63% to 61.54%, continuing the historic trend of sometimes being lower, sometimes higher. With only one section offered it can vary greatly with each group of students, but rates in the low to mid 60's seem to be the most common.

Math 232: Success rates significantly improved from 2011-2011& 2012-2013 (55.74% ,56.49%) to 2013 -2014 through 2015-2016 (64.91%, 68.7%, 66.46%) when we better defined the course expectations of greater conceptual emphasis with less detailed algebra and created a required shared homework sheet that clearly focused the expectations of the focus of coverage. We also incorporated the changes with the C-id revisions successfully in fall 2015 following the model we had previously set up with specific coordination of content coverage and focus among all sections of Math 232. The success rates continue to hold relatively steady with the declining enrollment in this course.

Math 236: The successful completion rates rose from 66.01% to 73.46 %. This course will no longer be offered starting spring 2017.

Math 242: The average success rate over the past 5 years was 56.2%, with a high of 60.3% and a low of 51.9%. Success rates fluctuate from year to year with a general downward trend of 1.3 percentage points on average.

Math 247: The successful completion rates rose from 63.31 % to 65.76 %.

Math 255: The successful completion rate rose from 60.51% to 73.17%. This is a low enrollment class (150-170 students/academic year) and there has tended to be wide swings up and down in the success rates.

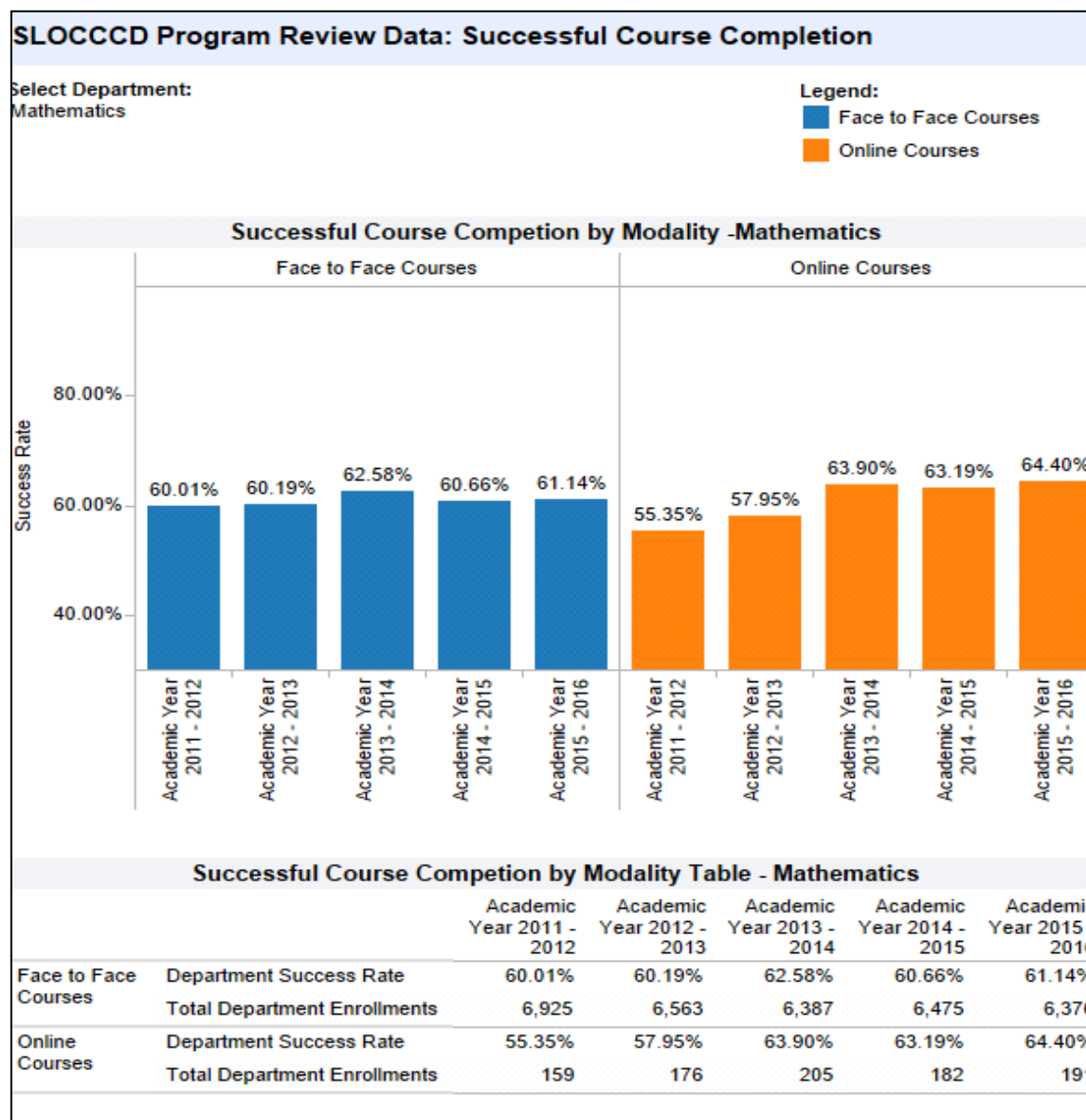
Math 265A: The average success rate over the past 5 years was 59.89%., with a high of 64.66% in 12 – 13 (lowest enrollment over the five-year period at 283 students) and a low of 52.16% in 11 – 12 (highest enrollment of 324 students).

Math 265B: The average success rate over the past 5 years was 63.052%, with a high of 67.54% in 11 – 12 and a low of 56.36% in 14-15. Enrollment in the course has been steady (between 210-235 students) and the lowest success rate was followed by the second highest rate at a 65.14% in 15 – 16.

Math 283: The successful completion rates continued to rise from 58.39% to 63.64%. This is likely due to a continuous effort by all calculus instructors to focus on topics that hinder student success, and to help students comprehend these topics, such as parameterization, prior to reaching Math 283.

Math 287: successful completion rate has been variable over the last several years and for the year 2015-2016 it was 72.66%. The completion rates in this course have typically been above the department norm, which could be attributed to many things, but is likely due in part to the study skills of the students in the course and the nature of the subject matter.

Student Success—Course Modality (Insert Data Chart)



- List strategies used during the last year in which data was reported to increase student success. *Increased use of embedded tutors, Supplemental Instruction sections, and free ALEKS software for struggling students or students wanting to prepare for their upcoming course, instructors volunteering in the Math labs and instructors going above and beyond their office hours. We also started a Stat Lab for students in the Student Success Center.*

- Did your strategies effect change?
Face to face: 0.5% increase, online: 1.2 % increase

- List the trend (i.e. increasing, decreasing, same).
Increasing slightly

- Based upon the trend, what strategies do you plan on implementing?
Continue increased use of embedded tutors, Supplemental Instruction sections, and free ALEKS software for struggling students or students wanting to prepare for their upcoming course, separate statistics tutoring lab, instructors volunteering in the Math labs and instructors going above and

beyond their office hours.

The math division currently teaches Math 123, Math 127, and Math 232 on-line. The mean success rate of the face-to-face counterparts to these courses is about 58.4%. This is about 6 percentage points lower than the aggregate success rate for the on-line modality. DE students tend to drop earlier and more frequently than face-to-face students, the effect of which is to have a higher success rate because those who stay with the course tend to be more focused than their face-to-face counterparts. Students in face-to-face courses will often stay enrolled in a course and subsequently there are more D's and F's assigned than in the on-line version of the course.

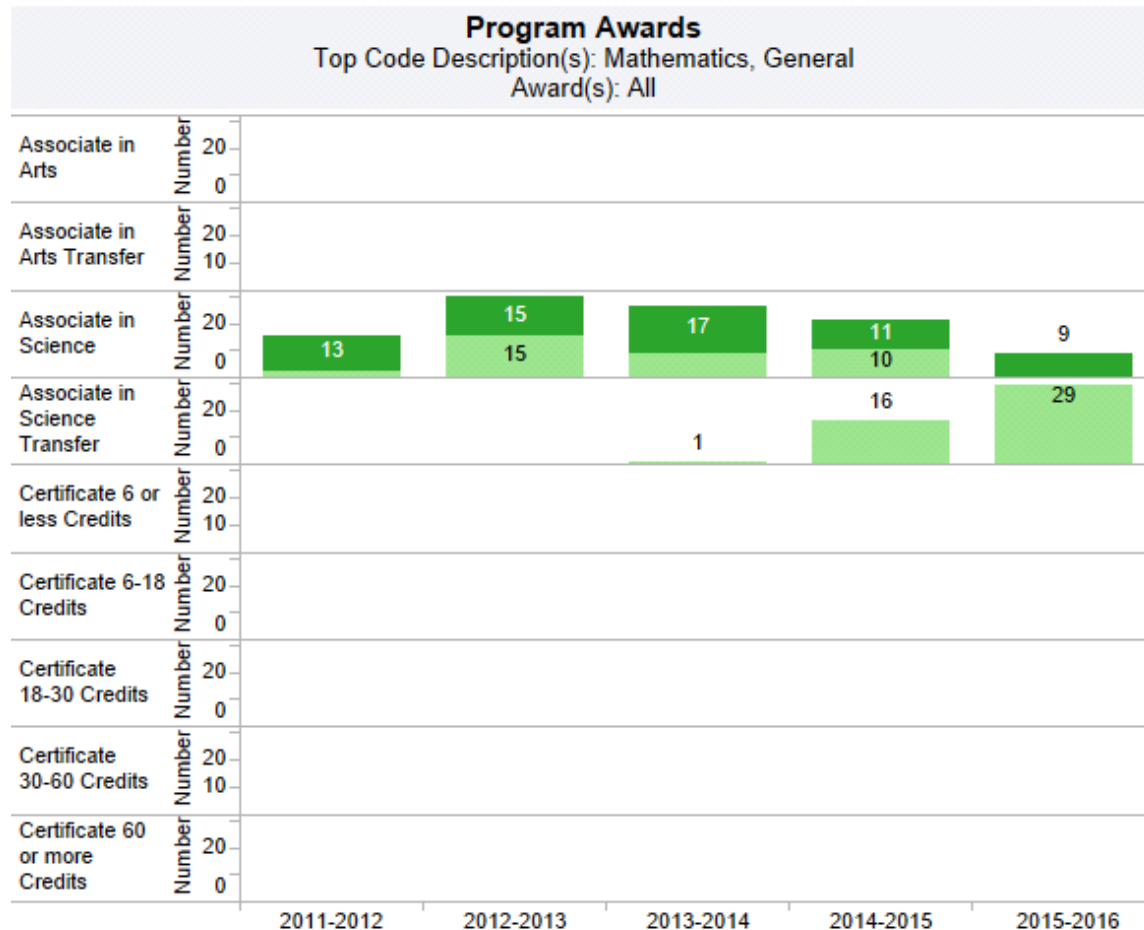
Strategies for improving student success in on-line courses have been left up to each individual instructor who teaches online. These strategies are weighed against best practices for on-line teaching when the individual instructor and course are evaluated. Recently one DE instructor has migrated a course into Canvas to make the experience for those students more consistent with other Cuesta courses, both DE and face to face.

Degrees and Certificates Awarded (Insert Data Chart)

SLOCCCD Program Review Data: Degrees and Certificates Awarded

Program:
Mathematics, General

Award Type:
All



Award T..	Award	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Associate in Science	Mathematics (AS)	13	15	17	11	9
	Mathematics (AST)	2	15	9	10	
	Total	15	30	26	21	9
Associate in Science Transfer	Mathematics (AST)			1	16	29
	Total			1	16	29

Program Awards: The number of degree and certificates awarded by program type

- List the previous year's projection and current year's projection for degrees and certificates awarded (i.e. increase, decrease, remain the same).
Previously projected a slight increase. Current projection is to stay the same.
- List the trend (i.e. increasing, decreasing, same).
Stayed the same: AS degrees went down by 12 while AST degrees went up by 13, an increase of 1.

- List contributing factors to the trend.
We may have reached saturation level
- What strategies will be employed to meet the current year's projection?
Increase the offerings of upper division courses based on the need presented. Instructors will continue to counsel their students about earning degrees.
- Other Relevant Program Data (optional)

Please provide any other data you think is relevant to your program such as State or National certification exam results, or other data unique to your program.

NONE

CURRICULUM REVIEW

- List all courses that have been created, updated, modified, or eliminated (and approved by the Curriculum Committee) since the last CPPR. See the [Curriculum Review Template](#) for guidance.

CURRICULUM REVIEW GUIDE and WORKSHEET

Courses and Programs

Current Review Date Spring 2017

Reviewer Marie Larsen and Jen Sanders-Moreno

1. Courses

- List all courses, which were active in your program at the time of the last CPPR.
- Review the current CurricUNET Course Outline of Record (COR) for each course and indicate yes/no for each column below.
- For each new, modified, and deactivated course provide the effective term posted on CurricUNET.

Course (Prefix / Number)	Currently active	New course since last CPPR	Major modification since last CPPR	Minor modification since last CPPR	Deactivated since last CPPR Notified impacted program(s)*
Math 003	yes	no /	no /	no / yes: date	no / yes: date
Math 007	yes	no /	yes: Fall 2015	no /	no /
Math 008	no	no /	no /	no /	Yes Fall 2016
Math 021	yes	no /	no /	no /	no /
Math 114	no	no /	no /	no /	yes: Fall 2016
Math 122	yes	no /	no /	no /	no /

Math 123	yes	no /	no /	no /	no /
Math 126A	yes	no /	no /	no /	no /
Math 126B	yes	no /	no /	no /	no /
Math 127	yes	no /	no /	no /	no /
Math 128	yes	yes: Fall 2015	yes: Fall 2016	no /	no /
Math 229	yes	no /	yes: Spring 2016	no /	no /
Math 230	yes	no /	no /	no /	no /
Math 231	yes	no /	yes: Summer 2016	no /	no /
Math 232	yes	no /	yes: Spring 2016, Spring 2017	no /	no /
Math 236	no	no /	yes: Spring 2016	no / yes: date	yes: Waiting for VPAA
Math 242	yes	no /	yes: Fall 2015	no /	no /
Math 247	yes	no /	yes: Spring 2016, Spring 2017	no /	no /
Math 255	yes	no /	yes: Fall 2013	no /	no /
Math 265A		no /	yes: Spring 2015	no /	no /
Math 265B	yes	no /	yes: Fall 2015	no /	no /
Math 283	yes	no /	yes: Fall 2015	no /	no /
Math 287	yes	no /	yes: Fall 2015	no /	no /

*Note: Please state if the deactivated course impacted any other program(s) and if and when the affected program(s) was/were notified:

Deactivated Course	Impacted Program (s)	Date affected program was notified
Math 008	None- Math support course	
Math 114	None-Math support course	

2. Programs

- List all programs/certificates that were active at the time of the last CPPR.
- Review the CurricUNET “Program of Study” outline and indicate yes/no for each program/certificate.
- For each deactivated program provide the effective term posted on CurricUNET.

Program / Certificate Title	Currently active	New program since last CPPR	Program modification since last CPPR	Deactivated since last CPPR
Mathematics A.S.	yes	no /	no /	no /
Mathematics AS-T	yes	no /	no /	no /

3. Program Review

- Review the CurricUNET “Program of Study” outline for each active program/certificate and indicate yes/no for each column below.

Currently active Program / Certificate: Title	Required courses and electives, incl. course numbers, course titles, and course credits, are accurate	Program description is current	Program Learning Outcomes are accurate and include method of assessment
Mathematics A.S.	no* one of our course titles changed	no	yes
Mathematics AS-T	no* one of our course titles changed	no	yes

* If not, program modification is needed.

** If not, Program Learning Outcomes modification is needed.

4. Five-Year Cycle Calendar

COURSES to be updated Spring 2017

Course Number	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Math 003		2017								
Math 021		2017								
Math 122		2017								
Math 123		2017								
Math 126A		2017								
Math 126B		2017								
Math 127		2017								
Math 230		2017								

Include a calendar of a five-year cycle during which all aspects of the course outline of record and program curriculum, including the list above, will be reviewed for currency, quality, and appropriate CurricUNET format.

<i>Group A</i>		<i>Group B</i>	<i>Group C</i>	<i>Group D</i>
<i>Math 021, Math 122, Math 123, Math 126A, Math 126B, Math 127, Math 128</i>		<i>Math 229, Math 231, Math 230, Math 232, Math 242</i>	<i>Math 255, Math 265A, Math 265B, Math 283, Math 287</i>	<i>Math 003, Math 007, Math 247</i>
<i>Semester</i>	<i>Curriculum Check</i>			
<i>Spring 2019</i>	<i>Group A</i>			
<i>Fall 2019</i>	<i>Group B</i>			
<i>Spring 2020</i>	<i>Group C</i>			
<i>Fall 2020</i>	<i>Group D</i>			

- **PROGRAM OUTCOMES, ASSESSMENT AND IMPROVEMENTS**
 - Attach or insert the assessment cycle calendar for your program.

Math Course and Program SLOs Calendar

Group A	Group B	Group C	Group D	
Program Outcome: <i>Build competencies in basic mathematical skills to help students achieve their academic goals.</i> Math 021, Math 122, Math 123, Program Outcome: <i>Prepare students to earn an AA/AS Degree.</i> Math 126A, Math 126B, Math 127, Math 128	Program Outcome: <i>Prepare students to transfer to a four-year institution.</i> Math 229, Math 231, Math 230, Math 232, Math 242	Program Outcome: <i>Prepare students to transfer to a four-year institution.</i> Math 255, Math 265A, Math 265B, Program Outcome: <i>Prepare Students for Math A. S. and/or A.S.-T. Degree.</i> Math 283, Math 287	Program Outcome: <i>Build competencies in basic mathematical skills to help students achieve their academic goals.</i> Math 003, Math 007, Program Outcome: <i>Prepare students to transfer to a four-year institution.</i> Math 247	
Semester		Assess	Analyze	Revise/Implement
Spring 2012		D	C	A, B
Fall 2012, 2014, 2016, 2018, 2020, 2022, 2024...		A	D	B, C
Spring 2013, 2015, 2017, 2019, 2021, 2023...		B	A	C, D
Fall 2013, 2015, 2017, 2019, 2021, 2023...		C	B	D, A
Spring 2014, 2016, 2018, 2020, 2022, 2024...		D	C	A, B

Math Program Outcomes:

- Prepare Students for Mathematics A. S. and/or Mathematics A.S.-T. Degree.
(Assessed using Course SLOs for Math 283 and Math 287)
- Build competencies in basic mathematical skills to help students achieve their academic goals
(Assessed using Course SLOs for Math 003, 007,008, 114,021,122, 123)
- Prepare students to earn an AA/AS Degree
(Assessed using Course SLOs for Math 126A, 126B, 127,128)
- Prepare students to transfer to a four-year institution
(Assessed using Course SLOs for Math 229, 231,230, 232, 236, 242, 247, 255, 265A, 265B)

- Have you completed your course assessments in eLumen or CPAS?

Yes

If no, what are your plans for completing this important work? Indicate the date of completion.

N/A

- Have you mapped course level SLOs to Program –Level SLOs in eLumen?

Yes

If no, what are your plans for completing this important work? Indicate the date of completion.

N/A

- Highlight improvement efforts that have resulted from SLO assessment.

All of our improvement efforts previously stated throughout the document (Sections II and II) are directly or indirectly results of SLO assessment analysis since they were developed around teaching, learning and student success.

- Recommend changes and updates to program funding based on assessment of SLOs.
 - For funding requests, complete the applicable [Resource Plan Funding Request Worksheet](#)
 - For faculty hiring needs, attach Section H – Faculty Prioritization Process
- Identify and describe any budget requests that are related to student learning outcomes assessment results or institutional/programmatic objectives.

All of our budget requests are directly or indirectly related to our SLOs assessment analysis since they center on teaching and learning and student success.

- **PROGRAM DEVELOPMENT/FORECASTING**

Create a short narrative describing the forecasting elements, indicating how they support efforts to achieve any of the following, where applicable: Program Outcomes, Institutional Goals, Institutional Objectives, and/or Institutional Learning Outcomes.

- New or modified action steps for achieving Institutional Goals and Objectives
- New or modified action steps for achieving Institutional Learning Outcomes
- New or modified action steps for achieving program outcomes

The Division will continue to support all of the bullets above and will tackle new challenges as they present themselves.

- Anticipated changes in curriculum and scheduling

The Division is in favor of converting our Math 003 (arithmetic) from credit to enhanced non-credit. We still have several questions to be answered before this can come to fruition and we will continue to research this possibility.

The Division will reexamine its assessment /placement practices when the Chancellor's Office signs off on the Common Statewide Assessment.

The Division is in talks with Atascadero high school to offer dual enrollment in mathematics.

The Division will support possible classes at the Men's Colony provided we have the faculty willing and available to teach there, without impinging upon the schedules on the SLO or NC sites.

The North County Campus will continue offering Math 255, Business Calculus, to support ADT's that students can achieve by taking classes exclusively on the NCC. With the demand for statistics strong, the Math Division will consider adding a third section of Math 247, Introduction to Statistics.

As the college continues to define enrollment levels the Division will look closely at the classes offered and base decisions on course offerings/deletions on fill-rate data trends, student needs and the Mathematics program mission and program level outcomes.

- Levels or delivery of support services

With continuing funding from SSSP and Student Equity, the Division will continue to use and explore innovative ways to support our students' success and retention in our courses.

The Division will continue to refer students to ALEKS (software) to improve their course placement, remediate pre-requisite skills to repeat a course or prepare for their next course.

- Facilities changes

The Mathematics Division is still in need of a building to house faculty in a central location for collaboration and have classrooms conducive to mathematics instruction. This should come to fruition by spring 2018!

- Staffing projections

The Mathematics Division is currently down three full-time faculty and has one faculty on reduced retirement load, with a second one starting fall 2017. There is an immediate need to hire full-time faculty. Our course offerings are limited due to lack of faculty. We foresee more retirements in the very-near future. The Division will continue to hire part-time faculty using the continuous part-time faculty hiring process. There has been a request for math faculty to teach at CMC, however, there is not currently staff to spare for that endeavor.

The North County Campus will have two part-time instructors and one full-time instructor retire at the end of the 2016 – 2017 academic year. To maintain the current number of sections offered on the NCC, more part-time instructors or an additional full-time instructor will be needed.

- Strategies for responding to the predicted budget and FTES target for the next academic year

The Division chair will continue to monitor the schedule closely and make necessary changes to improve efficiency.

SUPPLEMENTAL DOCUMENTS

FACULTY HIRING PRIORITIZATION INFORMATION (If Applicable)

If your program requested a faculty position for consideration, please attach or embed the following worksheets that were presented to the College Council. The guidelines for faculty prioritization can be found here:

https://sharepoint.cuesta.edu/Committees/faculty_prioritization/Committee%20Documents/Prioritization%20Process%20Handbook.pdf

POSITION: _____ Mathematics 1 & 2 _____ Fall 2013 _____

Please write one or two sentences to address each prompt.

Use 10-point, Arial font

1. Are you requesting a new position or a replacement position?
Replacement:
The Mathematics Division has a need for five full-time, replacement instructors. Judy Barclay retired in Spring 2008, Patrick Hughes retired in Fall 2010 and Barbara McGee, Larry Johnston and Steve Herbekian retired in Spring 2012 and these positions have not been replaced.
2. Are there any safety concerns if this position is not filled?
N/A
3. Does this position provide leadership for classified staff within the discipline? If so, how?
N/A
4. What service to the campus community does this position provide?
N/A
5. Does this position maintain any equipment and/or materials? Explain.
N/A
6. How would this new position assist in the fulfillment of divisional responsibilities for full-time faculty?
The mathematics division offers 22 different math courses which translate to approximately 500 semester units and 136 sections of mathematics every semester, and having a sufficient core of full-time math instructors is extremely important to maintain consistency in the content being taught due to the sequential nature of the mathematics curriculum. The Division responsibilities of full-time faculty have seen a large increase over the last few years with the advent of Student Learning Outcomes(SLOs) for every course and program, and fewer full-time faculty means less instructors to share the load of not only SLOs but textbook adoption, evaluations and course coordinators.
7. Have you had any difficulty in hiring part-time instructors in your discipline? Please include data from Human Resources indicating the number of recent part-time hiring cycles and the number of part-time instructors added to the pool.
We have had a part-time recruitment every semester over the last two years and have interviewed every semester, have hired only 3 part-time faculty and we have lost 3 part-time faculty, 2 to full-time positions, 1 to maternity. We were authorized to get two emergency full-time temps for Fall 2103 and were only able to hire one (an existing part-time faculty) due to lack of a qualified candidates.

8. How does this position support the Mission, Vision, and Values of Cuesta College (please attach planning documentation [e.g., from program review, and/or APPW, and/or Unit Plan, and/or College Plan], new program documentation, Strategic Plan, and growth potential information)
Math is needed by almost every student at Cuesta College either to complete his/her degree or to transfer to a four-year college, improve their foundational skills, or to fulfill prerequisites for business, science, nursing, or CTE classes. There is a direct correlation to the District's mission: "...We effectively support students in their efforts to improve foundational skills, transfer to four-year institutions, earn certificates or associate degrees, and advance in the workforce." and Institutional Goal #1: "...promote student's successful completion of transfer requirements, degrees, certificates, and courses."
9. Has your division included the need for this position in Program Plan and Review documentation?
Yes; see attached evidence.
10. What are the critical effects on the overall program if the position is not filled?
Mathematics is a difficult subject and students need the availability of full-time faculty with office hours to get much-needed help. Due to the sequential nature of the Mathematics program a strong full-time presence is necessary to ensure continuity within the program.
11. What will be the impact on other College programs if this position is not filled?
Math is needed by almost every student at Cuesta College either to complete his/her degree, transfer to a four-year college, earn a certificate, or refresh foundational skills. Other students have to fulfill prerequisites for business, science, nursing, allied health, engineering and technology classes and without sufficient full-time faculty mathematics sections are not offered as has been done in the past.
12. What will the district-wide impact be if this position is not filled?
The Mathematics Division is one of the work horses of the district, we are one of the largest FTES generators and service most students that enter Cuesta College. Without sufficient full-time faculty we will not be able to offer the sections needed (as much as 80 FTES lost in an academic year) to accommodate demand at all three District sites.
13. What, if any, regulatory requirements or best practice recommendations are involved with this position?
N/A

WORKSHEET C.1

SUBJECTIVE NARRATIVE INFORMATION SHEET

(Filled prior to Institutional Prioritization Subcommittee meeting)

POSITION: Mathematics Fall 2014

Please write one or two sentences to address each prompt. Please see the rules page in the Prioritization Process Handbook.

Use 10-point, Arial font

14. Are you requesting a new position or a replacement position?

The Mathematics Division has a need for three full-time, replacement instructors. Barbara McGee, Larry Johnston and Steve Herbekian retired in Spring 2012 and these positions have not been replaced. The division also has one person on reduced-retirement load (40% release) and Academic Senate President (60% release).

15. Are there any safety concerns if this position is not filled?

N/A

16. Does this position provide leadership for classified staff within the discipline? If so, how?

N/A

17. What service to the campus community does this position provide?

N/A

18. Does this position maintain any equipment and/or materials? Explain.

N/A

19. How would this new position assist in the fulfillment of divisional responsibilities for full-time faculty?

The mathematics division offers 22 different math courses which translate to approximately 500 semester units and 136 sections of mathematics every semester, and having a sufficient core of full-time math instructors is extremely important to maintain consistency in the content being taught due to the sequential nature of the mathematics curriculum. At one point in time there were three full-time faculty dedicated to the north county campus, currently there are only two.

20. Have you had any difficulty in hiring part-time instructors in your discipline? Please include data from Human Resources indicating the number of recent part-time hiring cycles and the number of part-time instructors added to the pool.

We have had a continuous part-time pool for the last two years and have interviewed each semester. Two new part-time instructors were added last spring. However, we lost part of a load for one long-time part-time faculty that took a lecturer position at Cal Poly.

21. How does this position support the Mission, Vision, and Values of Cuesta College (please attach planning documentation [e.g., from program review, and/or APPW, and/or Unit Plan, and/or College Plan], new program documentation, Strategic Plan, and growth potential information)

Math is needed by almost every student at Cuesta College either to complete his/her degree or to transfer to a four-year college, improve their foundational skills, or to fulfill prerequisites for business, science, nursing, or CTE classes. There is a direct correlation to the District's mission: "...We effectively support students in their efforts to improve foundational skills, transfer to four-year institutions, earn certificates or associate degrees, and advance in the workforce." and Institutional Goal #1: "...promote student's successful completion of transfer requirements, degrees, certificates, and courses."

22. Has your division included the need for this position in Program Plan and Review documentation?

Yes; see attached evidence.

23. What are the critical effects on the overall program if the position is not filled?

Mathematics is a difficult subject and students need the availability of full-time faculty with office hours to get much-needed help. Due to the sequential nature of the mathematics program a strong full-time presence is necessary to ensure continuity within the program.

24. What will be the impact on other College programs if this position is not filled?

Math is needed by almost every student at Cuesta College either to complete his/her degree, transfer to a four-year college, earn a certificate, or refresh foundational skills. Other students have to fulfill

prerequisites for business, science, nursing, allied health, engineering and technology classes and without sufficient full-time faculty mathematics sections are not offered as has been done in the past.

25. What will the district-wide impact be if this position is not filled?

Math is needed by almost every student at Cuesta College either to complete his/her degree, transfer to a four-year college, earn a certificate, or refresh foundational skills. Other students have to fulfill prerequisites for business, science, nursing, allied health, engineering and technology classes and without sufficient full-time faculty mathematics sections are not offered as has been done in the past.

26. What, if any, regulatory requirements or best practice recommendations are involved with this position?

N/A

WORKSHEET C.1
SUBJECTIVE NARRATIVE INFORMATION SHEET
(Filled prior to Institutional Prioritization Subcommittee meeting)

POSITION: Mathematics 1, 2 Fall 2015

Please write one or two sentences to address each prompt. Please see the rules page in the Prioritization Process Handbook.

Use 10-point, Arial font

27. Are you requesting a new position or a replacement position?

Replacement: The Mathematics Division has a need for three full-time, replacement instructors. Barbara McGee, Larry Johnston and Steve Herbekian retired in spring 2012 and these positions have not been replaced. The division also has one person on reduced-retirement load with 40% release time.

28. Are there any safety concerns if this position is not filled?
N/A

29. Does this position provide leadership for classified staff within the discipline? If so, how?
N/A

30. What service to the campus community does this position provide?
N/A

31. Does this position maintain any equipment and/or materials? Explain.
N/A

32. How would this new position assist in the fulfillment of divisional responsibilities for full-time faculty?

The mathematics division offers 22 different math courses which translate to approximately 500 semester units and 144 sections of mathematics every semester, and having a sufficient core of full-time math instructors is extremely important to maintain consistency in the content being taught due to the sequential nature of the mathematics curriculum. At one point in time there were three full-time faculty dedicated to the north county campus, currently there are only two.

33. Have you had any difficulty in hiring part-time instructors in your discipline?

We have had a continuous part-time pool for the last two years and have interviewed each semester. Part-time faculty have left for full-time positions and some have retired.

34. How does this position support the Mission, Vision, and Values of Cuesta College

Math is needed by almost every student at Cuesta College either to complete degrees, most if not all A.D.T.s have a mathematics component, or to transfer to a four-year college, improve their foundational skills, or to fulfill prerequisites for business, science, nursing, or CTE classes. There is a direct correlation to the District's mission: "...We effectively support students in their efforts to improve foundational skills, transfer to four-year institutions, earn certificates or associate degrees, and advance in the workforce." and Institutional Goal #1: "...promote student's successful completion of transfer requirements, degrees, certificates, and courses.

35. Has your division included the need for this position in Program Plan and Review documentation?

Yes

36. What are the critical effects on the overall program if the position is not filled?

Mathematics is a difficult subject and students need the availability of full-time faculty with office hours to get much-needed help. Due to the sequential nature of the mathematics program a strong full-time presence is necessary to ensure continuity within the program.

37. What will be the impact on other College programs if this position is not filled?

Math is needed by almost every student at Cuesta College either to complete a degree, most if not all, A.D.T.s have a mathematics component, transfer to a four-year college, earn a certificate, or refresh foundational skills. Other students need math to fulfill prerequisites for business, science, nursing, allied health, engineering and technology classes, and without sufficient full-time faculty fewer mathematics sections can be offered.

38. What will the district-wide impact be if this position is not filled?

Math is needed by almost every student at Cuesta College either to complete a degree, most if not all, A.D.T.s have a mathematics component, transfer to a four-year college, earn a certificate, or refresh foundational skills. Other students need math to fulfill prerequisites for business, science, nursing, allied health, engineering and technology classes, and without sufficient full-time faculty fewer mathematics sections can be offered.

39. What, if any, regulatory requirements or best practice recommendations are involved with this position?

N/A

WORKSHEET C.1

SUBJECTIVE NARRATIVE INFORMATION SHEET

(Filled **prior** to Institutional Prioritization Subcommittee meeting)

POSITION: Mathematics 1, 2 Fall 2016

Please write one or two sentences to address each prompt. Please see the rules page in the Prioritization Process Handbook.

Use 10-point, Arial font

40. Are you requesting a new position or a replacement position?

Replacement: The Mathematics Division has a need for three full-time, replacement instructors. Barbara McGee, Larry Johnston and Steve Herbekian retired in spring 2012 and these positions have not been replaced. The division also has one person on reduced-retirement load with 40% release time. We have another full-time faculty signing up for reduced-retirement load for Fall 2017 and Rich Taylor, one of our two full-time faculty in North County, is retiring Spring 2017.

41. Are there any safety concerns if this position is not filled?

N/A

42. Does this position provide leadership for classified staff within the discipline? If so, how?

N/A

43. What service to the campus community does this position provide?

N/A

44. Does this position maintain any equipment and/or materials? Explain.

N/A

45. How would this new position assist in the fulfillment of divisional responsibilities for full-time faculty?

The mathematics division offers 22 different math courses which translate to approximately 500 semester units and 144 sections of mathematics every semester, and having a sufficient core of full-time math instructors is extremely important to maintain consistency in the content being taught due to the sequential nature of the mathematics curriculum. We are now at the point where just staffing our classes is impossible without several full-time faculty taking sizable overloads and have cancelled sections on both campuses due to lack of faculty. At one point in time there were three full-time faculty dedicated to the north county campus, currently there are only two. With Rich Taylor retiring we will be pulling a full-time faculty from the SLO campus.

46. Have you had any difficulty in hiring part-time instructors in your discipline?

We have had a continuous part-time pool for the last three years and have interviewed each semester. Part-time faculty have left for various reasons; full-time positions, retiring, moving away.

47. How does this position support the Mission, Vision, and Values of Cuesta College?

Math is needed by almost every student at Cuesta College either to complete degrees, most if not all A.D.T.s have a mathematics component, or to transfer to a four-year college, improve their foundational skills, or to fulfill prerequisites for business, science, nursing, or CTE classes. There is a direct correlation to the District's mission: "...We effectively support students in their efforts to improve foundational skills, transfer to four-year institutions, earn certificates or associate degrees, and advance in the workforce." and Institutional Goal #1: "...promote student's successful completion of transfer requirements, degrees, certificates, and courses.

48. Has your division included the need for this position in Program Plan and Review documentation?

Yes

49. What are the critical effects on the overall program if the position is not filled?

Mathematics is a difficult subject and students need the availability of full-time faculty with office hours to get much-needed help. Due to the sequential nature of the mathematics program a strong full-time presence is necessary to ensure continuity within the program.

50. What will be the impact on other College programs if this position is not filled?

Math is needed by almost every student at Cuesta College either to complete a degree, most if not all, A.D.T.s have a mathematics component, transfer to a four-year college, earn a certificate, or refresh foundational skills. Other students need math to fulfill prerequisites for business, science, nursing, allied health, engineering and technology classes, and without sufficient full-time faculty fewer mathematics sections can be offered.

51. What will the district-wide impact be if this position is not filled?

Math is needed by almost every student at Cuesta College either to complete a degree, most if not all, A.D.T.s have a mathematics component, transfer to a four-year college, earn a certificate, or refresh foundational skills. Other students need math to fulfill prerequisites for business, science, nursing, allied health, engineering and technology classes, and without sufficient full-time faculty fewer mathematics sections can be offered.

52. What, if any, regulatory requirements or best practice recommendations are involved with this position?

N/A

• **Applicable Signatures:**

Vice President/Dean

Date

Division Chair/Director/Designee

Date

Other (when applicable)

Date

The above-signed individuals have read and discussed this review. The Director/Coordinator, Faculty, and staff in the program involved in the preparation of the CPPR acknowledge the receipt of a copy of the Vice President/Dean’s narrative analysis. The signatures do not necessarily signify agreement.