



Annual Program Review 2012-2013 - INSTRUCTIONAL REPORT

MATHEMATICS

Authorization

After the document is complete, it must be reviewed and submitted to the Program Review Committee by the Division Chair.

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1.0. Trend Analysis

For each program within the division, use the data provided to indicate trends (e.g., steady, increasing, decreasing, etc.) for each of the following measures.

Program	Academic Year	FTES Trend	FTEF Trend	WSCH / FTEF Trend	Full-Time % Trend	Fill Rate Trend	Success Rate Trend	Awards Trend
MATH	2008-2009	1,654	76	689	41.3%	100.3%	50.1%	0
	2009-2010	1,715	78	698	40.4%	103.0%	53.1%	3
	2010-2011	1,581	77	649	39.5%	128.8%	54.5%	0
	2011-2012	1,557	77.3	643	40.0%	127.0%	57.7%	0
	% Change	-5.9%	+1.2%	-6.7%	-1.3%	+26.7%	+7.7%	--
	Four-Year Trend	stable	stable	stable	stable	increasing	increasing	stable

FTES Trend					
2008-2009	2009-2010	2010-2011	2011-2012	% Change from	4-Yr. Trend
1,654	1,715	1,581	1,557	-5.9%	STABLE

Due to the change to block scheduling in Fall 2010, the college experienced an overall loss of approximately 7% on the FTES calculation due to a drop in the "multiplier". (There was a loss of 7.1% for 3 hr/wk classes, 5.74% for 4 hr/wk classes, and 8.2% for 5 hr/wk classes.) When the 2011-2012 FTES for mathematics is adjusted for this 7%, instead of 1557 the number which would represent a fair comparison for the trend analysis is approximately 1666. ***This represents an approximate increase of 1% over the last four years rather than the 5.9% decrease shown above.***

Although the college has been experiencing cuts in the number of sections offered, the FTES trend has remained stable. This has mainly been the result of larger class sizes. It is noteworthy that the Division of Mathematics generates more FTES (WSCH) than any other single department on campus. In fact, it produces more than all other divisions except Social Science which includes 11 different departments.

FTEF Trend					
2008-2009	2009-2010	2010-2011	2011-2012	% Change from	4-Yr. Trend
76.4	78.1	77.5	77.3	+1.2%	STABLE
The 2009-2010 and 2010-2011 years are higher because of a “reduced class size project” which paid for an extra 1.0 FTEF through the basic skills grant. The 2011-2012 year is higher because of 0.53 FTEF in math classes offered through contract education at the Los Angeles County Assessor’s Office. Essentially, mathematics has stayed at an FTEF of 76-77. Since divisions were told to stay with the 2006 FTEF allotment, any radical increases in this trend had to be from one of three reasons: shifting FTEF from one department in a division to another department, or the division did not abide by their allotment, or they were allowed to increase by the administration.					

WSCH / FTEF Trend					
2008-2009	2009-2010	2010-2011	2011-2012	% Change from	4-Yr. Trend
689	698	649	643	-6.7%	STABLE
Once again, the change to block scheduling in Fall 2010 requires an approximate 7% adjustment to the FTES (and WSCH) in order to make comparisons with prior years. With this adjustment, the number which would represent a fair comparison for the trend analysis is approximately 688. <i>This represents an approximate decrease of 0.1% over the last four years rather than the 6.7% shown above.</i> The WSCH/FTEF is significant. It equates to an average class size at census of 38. Keeping in mind that the maximum capacity of several mathematics rooms is 35, this is an extremely high average. It should be noted that the WSCH/FTEF for areas with large lectures, such as the sciences and social sciences, are inflated because of undercounting the FTEF. It also appears that programs with TBA hours may also have inflated WSCH/FTEF trends.					

Full-Time Faculty Percent Trend					
2008-2009	2009-2010	2010-2011	2011-2012	% Change from	4-Yr. Trend
41.3%	40.4%	39.5%	40.0%	-1.3%	STABLE
The full time faculty percent (often referred to as the ft/pt ratio) is going to remain low, unless some major action is taken, because of retirements. The Division of Mathematics has recently lost three faculty award-winning instructors to retirement – Lynn Pomeroy in December 2008, Sid Kolpas in June 2010, and Pete Witt in June 2011. Only Pomeroy has been replaced. It appears that there will be 5 or 6 more retirements in the next five years. No significant improvement will be made in the ft/pt ratio unless all these retirees are replaced AND new positions are added. The last four years showed a slight decrease which is unexpected since the college cut hundreds of sections in those years, all of which were taught by adjunct. Thus, the FT ratio should have increased across campus, although it was not done in a positive manner. When					

AB1725 was passed with a goal of 75% full-time, the expectation was that full-timers would be hired to meet the goal, not that it would be reached by cutting classes taught by adjunct.

The full-time percent is significantly lower in the basic skills courses. During the Fall 2011 and Spring 2012 semesters, full time instructors only taught 26.1% of these courses. It is even worse in our three lowest courses (Math 155, 145 and 146). In these courses, full timers only taught 18.3% of all sections. In other words, of the 60 sections scheduled, only 11 were taught by full timers. (For Fall 2011, this dipped to 3 sections out of 30, which is 10%)

Fill Rate Trend					
2008-2009	2009-2010	2010-2011	2011-2012	% Change from	4-Yr. Trend
100.3%	103.0%	128.8%	127.0%	+26.7%	INCREASING
With most mathematics classes having a seat load of 40, a fill rate of over 100% is extremely significant. It is much harder to reach 100% filled with a seat load of 40, than a seat load of 27 or less. For areas that were inefficient (with a below average fill rate) prior to the FTEF rollback, it is easier to increase their fill rate than areas that started with high fill rates with large class sizes. Areas with low fill rates may have seen their numbers increase artificially. This can happen when the high-demand classes students want are filled, and for students trying to remain as full time, the only classes left to take are classes that had low fill rates, i.e., had room. In 2008-2009, the college credit average fill rate was 91.4%, for 2009-2010 it was 97.2%, for 2010-2011 it was 102.8%, and for 2011-2012 it was 103.3%. In all cases, we exceeded the college credit average by 6-26%, which is significant considering the large class size and number of sections for mathematics. There is obviously an unmet demand, when the entire division averaged more than 100% fill rate and there were still students turned away. The fill rate does not take into account waitlisted students. Beginning in 2008, the Division of Mathematics began keeping records of students wanting to add classes, but who were turned away. (These lists are available in the office of the Division of Mathematics, as well as the offices of the Dean of Instructional Services and the Vice President of Instructional Services.)					

Success Rate Trend					
2008-2009	2009-2010	2010-2011	2011-2012	% Change from	4-Yr. Trend
50.1%	53.1%	54.5%	57.7%	+7.7%	INCREASING
Although there is a problem statewide with success rates in basic skills mathematics, with the statewide success rate being below 50%, GCC has experienced an increase in success. <i>The numbers above appear to be miscalculated and understate the improvement. The actual change is an increase of 15.2% in the success rate. By way of comparison, the credit</i>					

overall success rate improved by 2.6% during the same time frame. Since more than half our offerings are in developmental mathematics, it makes the weighted average harder to improve. The improvement has occurred while the WSCH/FTEF has remained high, meaning that all instructors had many students per class, making it more difficult to give students extra time they may have required to succeed.

Some headway has been made through our retention/intervention project efforts funded by the Basic Skills Initiative. Because of limited funding, the number of students served has been small, but statistics show that it has been effective in increasing the success rate.

Another project funded by the Basic Skills Initiative was our reduced class size project. Several of our basic skills classes had class sizes decreased to that of many other colleges. The initial data was promising, showing a trend toward increased success in the smaller classes. **The success rate in classes of size 20 was 61.3% compared to 37.4% in classes of size 40.** Data from the common final exam indicate that students in smaller classes scored higher than students from larger classes. **The mean exam score for students in classes of size 20 was 43% higher than the mean exam score for students in classes of size 40.**

The class size project was prompted by a discussion with faculty from Pasadena City College and Santa Monica College. In both cases, their basic skills classes had smaller class sizes than our class sizes. Even at GCC, the basic skills classes in English and ESL are considerably smaller than those in mathematics. In mathematics, the class size for the vast majority of courses is 40, with an exception for Math 145 and Math 119. Both of these classes have a seat load of 38, with the expectation that instructors will take two “drop downs” from either Math 141 or Math 101. The seat load for the basic skills classes in ESL is 27-30, and for English it is 20-30. Thus, the mathematics basic skills classes are anywhere from one-third larger to twice as large, as the other GCC basic skills classes.

There is a large quantity of literature showing that success rates rise with smaller classes. There should be no surprise that the success rates in mathematics are lower than other areas. In the competition between larger seat loads (finances) and smaller seat loads (student learning), Glendale College has chosen money over students.

<i>Total Awards Trend</i>					
2008-2009	2009-2010	2010-2011	2011-2012	% Change from	4-Yr. Trend
0	3	0	0	--	STABLE
Historically, few degrees are given in mathematics nationwide. The number of mathematics majors has always been low. Since many mathematics, engineering, and science majors transfer without getting a degree, the number of actual mathematics majors is probably higher than these numbers indicate. To address this problem and respond to AS Transfer Degree requirements, the division developed and the college approved a new Associate in Sciences Transfer Degree in Mathematics. We anticipate an increase in the number of degrees awarded due to this new degree option.					

1.1 Describe how these trends have affected student achievement and student learning:

While there are detailed comments on each trend above, several deserve being repeated. Certainly the most relevant statistic is the full time/part time ratio (full time trend). The other statistic has to do with enrollment or FTES.

The slight increase in FTES with little change in FTEF affects students adversely. While a high WSCH/FTEF is good for the District financially, it is detrimental to student learning. It means that the number of students per section is increasing, thus decreasing the amount of time an instructor can spend per student.

With a full time percent running around 40%, it is difficult to make changes to the curriculum with the intent of helping students. In the Fall 2011 and Spring 2012 semesters about 26.1% of our basic skills classes were taught by full-timers. In other words, full timers taught only 36 of the 138 sections offered in those two semesters. It gets even worse, if our three lowest level courses (Math 155, 145, and 146) are examined. Full timers taught only 11 of the 60 sections offered, which is only 18.3%

Full time instructors are expected to spend extra time in curriculum groups, attend workshops, work with a number of initiatives and grants, do SLO analyses, plan, do book searches, mentor students, use alternative technologies, write course outlines, and pursue innovative strategies to improve student learning. All of these activities require time beyond the classroom. It would be unfair to expect this from our adjunct faculty.

1.2 Please explain any other relevant quantitative/qualitative information that affects the evaluation of your program?

An important part of the culture of the Division of Mathematics has been contributing to the college beyond the division. Many of our full time instructors have been active members of the governance system, from Guild and Senate positions, to committees, taskforces, Study Abroad, Program Review, Planning, Accreditation, Staff Development, etc. With a CPF (Committees per Faculty) of 6.5, the involvement of the full time mathematics faculty should be obvious. The amount of time from release time for some of these commitments has had an impact on our program. At the same time, they were all necessary parts of our governance system.

A comparison with our nearest "competitor" college seems worthwhile. In 2000, PCC had 19 full time mathematics faculty. In 2012, they have 40. They have more than doubled in size in the last decade. (a 105% increase) While PCC is about 50% larger than GCC, the percentages are still relevant. In 2000, GCC had 17 full time mathematics faculty, and in 2012 we have 20 which is only a 17% increase over the decade.

In fact, even in a time of cutting, the superintendent of PCC for the third year in a row has added new sections of mathematics in response to student need. In Fall 2010, he added 17 additional sections. Fall 2011, he added 32 sections more than what was offered in Fall 2010; total growth of 15%. Even in this year's fiscal climate, he added 4 math classes to the Fall 2012 schedule. For Spring and Winter 2012, an additional 20 sections of mathematics were offered above the number offered in 2011. PCC is at an all-time high in the number of sections in mathematics, offering 52 additional sections in the 2011-2012 academic year. In 2008-2009, we were cut back to the number of sections offered in the 2006-2007. In 2009-2010 and 2010-2011, the number of sections was further reduced by the elimination of one summer session and the reduction of winter session offerings. For the 2011-2012 academic year, with the elimination of winter, we offered the equivalent of 58 less sections than we offered in 2007-2008; a reduction of over 17%. (The self-paced reformatting into 1-unit classes was taken into account in this computation. In Fall 2007 and

Spring 2008, we had 10 sections meeting 5 hours/week. In Fall 2011 and Spring 2012, we had 15 sections meeting 3 hours/week. This was counted as a loss of 1 section per semester.) For the current 2012-2013 academic year, summer was reduced by an additional 10 sections and fall was reduced by 7 sections. The increased allocation of classes for Spring 2013 will almost make up for our losses in Summer 2012 and Fall 2012. Thus, we will still be offering 17% less sections during the current academic year as we did in 2007-2007.

A replacement for a retiree cannot be expected to do all the things the retiree did, at least in the first four years of the tenure process. For example, there should be no expectation that the replacement for Lynn Pomeroy will do all the things Lynn has done outside the classroom. The same goes for Sid Kolpas's and Pete Witt's eventual replacements. It will take these replacements at least four years to approach these three retirees' contributions, IF they ever can reach that standard.

The division has been active in grants, also. Virtually all of the major grants the college has received have had a mathematics component. Last year the college received two 5-year Title V STEM grants totaling over \$10.3 million. Both have major components that will require mathematics faculty participation. In fact, the Title V GAUSS Grant has a mathematics faculty member, Tom Voden, as its Co-Principal Investigator. This important work will take more full-time faculty out of the classroom.

The Division of Mathematics has had three DFA's and five Parker Award winners. These honors show that the division has been strong in both its instructional mission, as well as its mission to the college as a whole.

2.0. Student Learning and Curriculum - Course Level

Year	SLOAC Course Count	% of SLOs defined	% of Courses Assessed
2010-2011	26	100.0%	100%
2011-2012	26	100.0%	85%
% Change		0%	-15%
Four-Year Trend		stable	Stable

Provide the following information on each department and program within the division.

List each Department within the Division as well each degree, certificate, or other program* within the Department	Active Courses with Identified SLOs		Active Courses Assessed		Course Sections Assessed		If this area has program outcomes have they been assessed? Yes or No
	n/n	%	n/n	%	n/n	%	
MATHEMATICS	26/26	100%	26/26	100%	106/171	62%	
Mathematics AA	5/5	100%	5/5	100%	9/14	64%	Yes
Developmental Program	13/13	100%	13/13	100%	88/117	75%	
Mathematics AS-T (Transfer)	5/5	100%	5/5	100%	9/14	64%	Yes

2.1 Please comment on the percentages above.

All figures from Fall 2011. Assessment reports can be found at <http://www.glendale.edu/index.aspx?page=5338>.

For the last decade the mathematics department has made a significant effort to produce SLOACs in both quality and quantity with our elementary algebra and intermediate algebra common finals. These common finals assess 100% of SLOs for all students taking Math 101, Math 120, Math 146 and Math 141. The total number of sections of these courses assessed in the last year was 70 sections with approximately 2000 students comprehensively assessed. Conducting assessments of this magnitude and depth have earned us national recognition as a leader in basic skills. (The prestigious Carnegie Foundation's journal Carnegie Perspectives, had an article about our work in 2005.)

Over the past year the curriculum groups assessed almost every course offered in our division. Any course not assessed in Fall 2011 was assessed in Fall 2010 and is on a three year cycle. The results of the assessment and future plans were discussed at the curriculum group meetings as well as at our division retreat.

2.2 Using the results from your division/departments recent assessment reports, please summarize any pedagogical or curricular changes that have been made as a result of your course assessments.

In our first year of giving the common final, we found a significant difference in data from adjunct and full timers. The GPA of the students of the adjunct was almost one full point above that of the full timers, yet the performance of the adjuncts' students on the exam was significantly lower than that of the full timers. The data was used to show the discrepancy, as well as the topics that needed to be emphasized. Since the first year, there has been swing in the data with the adjuncts' scores more closely aligning with the full timers' scores. Workshops are held each semester to

improve the assessments. As mentioned earlier in the document, the effectiveness of full time instructors is due not only to their teaching styles, but also their familiarity with campus resources that help students succeed – from the Basic Skills Math Retention program for students in our developmental classes, to the Scholars program, to tutoring in the MDC for all of our students. Mathematics students are entered in the annual AMAYTC (American Mathematical Association of Two Year Colleges) competition. This is a national exam of mathematical ability for precalculus and calculus students.

The practice in the mathematics division is to test the same SLOs repeatedly – throughout the semester, as well as year after year. By comparing the results from short and long time scales we can more easily zero in on areas that provide the most difficulty for students. It also forces instructors to determine what aspects of the curriculum they find the most critical. In response to the data, we have held workshops to target the major problems that students seem to face in a variety of our courses. One of the workshops dealt with application problems for students in the developmental classes and the resulting increase in student scores on that SLO has been significant. Our goal is for students to understand not only the mechanics and calculations but also the language and utility of mathematics. This is true for all of our courses, ranging from simple word problems in Elementary Algebra to statistics and probability in our Statistics and Liberal Arts classes, to mathematical proofs and logic in Calculus.

Every year for the last ten years, the results of the common finals assessment of SLOs in Elementary and Intermediate Algebra (Math 101, Math 120, Math 145, Math 141) have been carefully analyzed and discussed, during the Division retreat. The scope and detail of the data has

allowed identification of specific content areas of strength and weakness of students (See Appendix A). The Division of Mathematics has adopted a two pronged approach to improving student learning with regard to SLOs: working with the instructors, especially the adjunct, on areas of concentration and offering students opportunities to work on these identified areas.

To work effectively with the 57 adjunct instructors, we have a workshop each semester to share the common finals data (more than 80% of these classes are taught by adjunct). Not only does this allow the instructors to realize overall student weaknesses in meeting SLOs, it also allows each instructor to self-evaluate how his/her students perform on each topic. This motivates instructors to adjust individual teaching practices in order to better help students. We have provided workshops presenting effective teaching practices for the identified content areas. We provide adjunct instructor mentoring, as well as course-specific planning packets for instructors.

We have also worked directly with students in response to the SLO assessments. We have offered a variety of workshops to students, some addressing the “problematic” topics that were identified on the common final. Unfortunately, due to the unenthusiastic response of students, we had to discontinue these student workshops. Through Blackboard and now Moodle we have made available to every student in every Basic Skills class (Math 155, Math 145, Math 146, Math 141, Math 119, Math 120, Math 101, Math 200’s) online lectures for each section of each course. These lectures are automatically available to the students, requiring no setup by instructors, and supplement the instruction students receive in class. These online lectures have been overwhelmingly popular with students and continue to generate positive feedback.

More recently, we have made a number of changes to our courses to better serve the needs of students and the college. There has been a complete redesign of our self-paced courses to 1-unit classes in order to make them compatible with PeopleSoft. We have incorporated technology into our most basic courses (Math 155 and Math 255) as well as many of our transfer level courses such as Statistics and Linear Algebra. We have developed a new Intermediate Algebra class (Math 131) for students on a non-STEM path. We have implemented Fast Track Algebra, an immersion elementary and intermediate Algebra package. Details of both new Algebra options are discussed below. In several of our courses, from Algebra to Statistics, we have customized and/or changed texts to address deficiencies in their treatments of the SLOs for the courses. However, based on our Statistics SLO assessment, students have already shown a strong understanding of Confidence Intervals, Hypothesis Tests and their realistic applications. We had previously chosen to gear the course more firmly towards realistic problems when we changed from 3 to 4 units, and were pleased to note that we had been successful.

We have continued existing programs (Math Discovery Center, Self-Paced Lab) and developed new ones funded through various grants (Carnegie Grant, Basic Skills Grants, MASTERS, Gateway, GAUSS) to support students outside of the classroom.

In the last few years, the developmental curriculum group determined that student learning outcomes together with student achievement data suggested the need to change the placement cut-off scores for Math 145 and Math 141 and Math 119 and Math 101. Those changes were put in place Fall 2008. In May 2012 we made changes in the cut-off scores for the placement exams into calculus, based on data obtained through our research department.

Many of the assessments seemed to point to a problem with prerequisites for our courses. This led to the development of the High School Collaborative, which is geared towards encouraging high school students to take a mathematics class in their senior year. The goal is to improve their placement scores when they enter GCC, as well as making sure they have not forgotten the information that they need to succeed in the college level courses. Students who place into a higher level mathematics course have a much better chance of finishing out their desired education at GCC and transferring to a four year institution.

Some data we obtained from Ed Karpp is illuminating. (See Appendix B). He provided us information on the percentage of students starting at a particular basic skills level in mathematics who passed an AA-level mathematics course in four years. It showed that only 19% of students starting in Math 155 completed an AA-level course in four years. To be above the 50% mark, a student had to have started in Math 119.

He also gave us the information relating starting level and passing their transfer level mathematics class within four years. For Math 155, only 6% made it in their four years. To be above 50%, a student needed to start in Math 101. In order to facilitate movement through the sequence and improve success rates in non-STEM transfer level courses, we have developed Math 131, an alternative course to Math 101. Math 131 still contains important algebraic concepts, but also includes statistical problem solving that will ease the transition into Math 111, Math 135, Math 136 and Math 138. For students who want to remain in the regular Algebra sequence but get through it more quickly, we developed and implemented Fast Track Algebra which combines Math 141, Math 101 and study skills courses Math 301 and Math 341 into a single semester devoted to Math. This can save them 2 years or more, and puts them into position to take transfer level math in the very next term. Initial results have been encouraging.

A similar problem was observed even for those students taking our highest level mathematics courses, possibly resulting in a Mathematics AA. Based on the previous information, for students to pass our highest level courses in four years, they basically had to start in Math 103. Students have a better chance of success in our highest level courses if they are taking them in a suggested sequence (Math 105, Math 107, Math 108). We have a dialogue with Counseling staff and students in our Scholars and Mentoring programs to encourage them to take their classes in this order.

All of our curriculum groups [Developmental, PreCalculus, Calculus, Statistics/Liberal Arts] regularly examine success rates, investigate influencing factors and develop strategies for improving student performance. One such example is the redesign of Math 111, Finite Math, in which the content was refined and the units were reduced from four to three in order to make the course more appealing and manageable to students. A new open-source textbook has been adopted for the course with the result that every student in the course this semester has a textbook. In previous semesters, due to the expense and weight of the text, this has not been the case. Math 135 was also redesigned to make it more attractive for non-science transfer students and to get it on IGETC.

Historically, few degrees are given in mathematics nationwide due to many of these students transferring successfully without getting a degree. To address this problem, we have developed and obtained approval for a new Associate in Science in Mathematics for Transfer degree. We anticipate a rise in the number of degrees awarded due to this new option. In addition, the changes made to the transfer courses Math 111 and Math 135 may increase the number of new transfer degrees awarded in areas other than Mathematics. One new degree was given in Mathematics in the 2011/2012 school year.

2.3 Please list all courses which have been reviewed in the last academic year.

Note: Curriculum Review is required by the Chancellors Office every 6 years.

All courses in the Mathematics Division have been reviewed as we completed the assessments and/or reviewed textbooks. New textbooks were used in Math 101, Math 119, Math 120, Math 138, Math 141, Math 145, Math 146, Math 155, Math 190, Math 219A, Math 219B, Math 219C, Math 220A, Math 220B, Math 245A, Math 245B, Math 246A, Math 246B, Math 255A, Math 255B, Math 255C, Math 255D, Math 100, M110, Math 102, Math 112 and Math 136. Most of these

courses had gone through C&I the previous year and the resulting changes were implemented in 2011/2012. New textbooks were approved for Math 103, Math 105 and Math111. Many of our texts are custom additions to address deficiencies in the original material.

Degree, Certificate, Program Level

List each degree and certificate, or other program* within the division	AA/AS Degree PLO Identified		AA/AS Degree Assessment Cycles Completed		Certificate PLO Identified		Certificate Assessment Cycles Completed	
	YES	NO	YES	NO	YES	NO	YES	NO
Mathematics AA	X		X					
Mathematics AS-T	X		X					

2.4 Please comment on the percentages above.

We have assessed at least two PLOs for both of the degrees given by this division by using SLO assessments in Math 103 and Math 108. The reports can be found at <http://www.glendale.edu/index.aspx?page=5338>.

2.5 Using the results from your division/departments recent assessment reports, please summarize any changes that have been made as a result of your program level assessments. Your summary should include a summation of the results of all degrees, certificates, and other programs which were recently assessed.

Mathematics AA was reviewed as we developed the new Associate in Science in Mathematics for Transfer degree. We implemented new textbooks in two of our upper level courses. In Linear Algebra (Math 107) we began using our first open source text. We hope that the level, adaptability and cost of this text will be better for our students. In Differential Equations (Math 108), we began using a technology driven text which raised the applicability and realism of this course. We hope to continue improving technology in these courses through the Title V and GAUSS grants and our new computer classrooms.

The Developmental Program was reviewed in conjunction with a complete revamping of our self-paced program. Major changes included redesign of the Self-Paced courses to be 1-unit classes, incorporating computerized testing into Math 255, infusing technology into Arithmetic/PreAlgebra courses, developing Math 131, an alternative Intermediate Algebra course and implementing Fast Track Algebra, and accelerated Algebra path.

Many of our courses ranging from Pre-Algebra to Statistics to Differential Equations have slowly shifted to better incorporate technology in order to support ILO 7.

2.6 Please list all degree/certificate programs within the division that were reviewed in the last academic year.

Mathematics AA, Mathematics AS-T, Developmental Program, Self-Paced Program, implementing Fast Track Algebra, an accelerated Algebra path.

Provide the following information on each department and program within the division.

2.7 What recent activities, dialogues, discussions, etc. have occurred to promote student learning or improved program/division processes in the last year?

x	Curricular development/revisions of courses
x	Curricular development/revision of programs
	Increased improved SLO/PLOs in a number of courses and programs
x	Other dialog focused on improvements in student learning
x	Documented improvements in student learning
x	New degree or certificate development
x	Best Practices Workshops
x	Conference Attendance geared towards maintaining or improving student success
x	Division Retreat in 2011-2012
x	Division or department attendance at Staff Development activity geared towards maintaining or improving student learning
x	Division Meeting Minutes
	Reorganization

Please comment on activities, dialogues, and discussions above

The math division has long benefited from using SLOs to assess our students and standardize course content across multiple sections. In 2000, we started giving common finals for our intermediate algebra courses and, several years later, added common finals for elementary algebra. Currently, we gather a tremendous amount of data by testing 1100-1200 students per semester. These data are discussed during the division's annual retreat.

To date, we have assessed all courses, reviewed the results of those assessments, and plans have been forged by discussions in Curriculum Groups meetings, Division meetings, the Annual Division Retreat, and the first mini-retreat in Spring 2012.

The past year has seen implementation of:

1. A Math 141/101 "Fast-Track" immersion learning community was piloted in Spring 2012 with encouraging results. Two new math classes, Math 301 and 341 serve to support these students with study skills specific to math students. Success rate was 77% in Math 141 and 60% in Math 101, which is significantly higher than the traditional track. The advantage for students is that this is a one-semester track to transfer level math as opposed to the traditional minimum 2 to 4 semesters otherwise needed.

2. The Developmental Math self-paced program has made dramatic changes to incorporate technology more fully into the program. The self-paced facility underwent a substantial physical remodel; Phase I was completed summer 2012. Improvements to the program include an updated facility that provides students more access to technology, accommodates computerized quizzing and testing, together with a more secure testing area. Over 65 new computers have been installed and students are benefitting from this influx of technology.
3. In Fall 2011, two section of Math 155 infused with technology were piloted. The math software MyMathLab was used for homework and in-class testing with much acceptance from the students. In Spring 2012 this approach was implemented in four sections, and now (Fall 2012) all Math 155 sections are being offered using the same MyMathLab format.
4. Two Math 145 classes are currently (Fall 2012) being piloted using the computer software Web-assign for homework, quizzing, and testing. The student response so far to the software has been overwhelmingly positive.
5. Curriculum groups continue to examine current textbooks with pedagogical soundness, ancillary materials, and price as priorities. For example, custom edition textbooks are used for all developmental, precalculus, college algebra, trigonometry, and statistics courses. In addition, open-source textbooks are used in our linear algebra and finite math courses.
6. The new AS-T in Math degree was offered in 2012 with one student being awarded the degree in summer 2012. We will continue to inform students majoring in Math, Physics, Engineering, and Computer Science of the benefits of such a degree. These include: guaranteed acceptance to CSUs and upper division status upon transfer.
7. A total of four traditional classrooms have been converted to computer classrooms. This allows students to utilize technology seamlessly and routinely during class, greatly enhancing the learning experience across the entire Math curriculum.

Plans made as a result of SLO assessments designed to improve student learning include:

1. In an effort to increase transfer rates, it is important to get students into the math class that best suits their major and transfer institution. We continue discussion of a college algebra course for students who are not calculus bound.
2. Continued development of a new course, Math 131, Intermediate Algebra for Statistics. This course would serve as an alternate prerequisite for Math 111, Math 135, Math 136, and Math 138. We anticipate this would result in higher transfer rates by providing these students with a more suitable prerequisite for their transfer level math class.
3. The development of a one unit pre-business calculus course is being discussed in an effort to give students whose algebra skills are weak more exposure to those algebra skills needed to learn calculus.

In addition, our faculty have attended many conferences and workshops geared toward improving student learning. Among these are: CMC³ (California Mathematics Council of Community Colleges), 4th annual Success in Math Workshop, Speaking About Math and Stats (webinar), AMATYC (American Mathematics Association of Two Year Colleges), Pearson Developmental Math Forum, Science Seminars at Caltech, IEEE/ASEE Frontiers in Education Conference, California STEM Summit, and FIER (Foothill Inland Empire Regional Network) Basic Skills meeting.

3.0 Reflection and Action Plans

- 3.1** Based on your data and analysis presented above, as well as on issues or items that you were unable to discuss above, comment on the Strengths and Weaknesses of the Program

Strengths

List the current strengths of your program

1. Overwhelming Student Demand
2. Faculty Involvement within the Division, grants, and Campus Wide: CPF (Committees per Faculty) of 6.6
3. We embrace innovation: Involvement with Gauss and Gateway grants, infusion of Technology into Basic skills courses – Self-Paced, Math 145, and Math 155 redesigns, Math 107 and Math 111 Open Source Texts, development of alternate course paths for different student populations (e.g. STEM and non-STEM).
4. History and culture of regular and routine annual self-evaluation of our programs, including our annual retreat for the past 26 years

3.2 Weaknesses

List the current weaknesses of your program

1. Unable to meet Student Demand and facilitate transfer
2. FT/PT Ratio
3. Full-timers are stretched too thin, lack of support from college to participate in state-wide initiatives
4. Access to technology for use throughout the entire curriculum

- 3.3** Using the weaknesses, trends and assessment outcomes as a basis for your comments, please briefly describe any future plans and/or modifications for program/division improvements. Any plans for reorganization should also be included, along with a resource request if applicable.

		Plans or Modifications	Anticipated Improvements	Link to EMP, Plans, SLOs, PLOs, ILOs
	1.	Hire four full-time instructors	Hiring a full time mathematics instructor will have the following outcomes: • an increase in the current abysmal ft/pt ratio mandated by AB1725 • an increase in the full time faculty obligation number • allow more full time instructors to teach basic skills courses • put more full time instructors in the classroom, even with the inevitable demands made by new grants, such as Title V Gateway and GAUSS	EMP 1.1, EMP 1.2, EMP 1.3, EMP 3.1, EMP 3.2, EMP 3.3, EMP 3.4, EMP 3.5, EMP 4.3, SLOAC
	2.	Effectively use white boards.	Facilitate student learning.	ILO 2, ILO 3, ILO 4, ILO 6d, EMP 1.3

Precalculus, Calc, Stat	3.	Support infusion of technology into course content and delivery at all levels.	Improve student understanding of graphs of functions, relations, parametric equations, polar graphs, critical values, slope fields, tangents lines, conic sections, and graphs of derivatives. Provide access to interactive exercises and applications. Increasing technology in Math 136, 105, 107, and 108 will allow use of real world data sets, which not only makes the course material more interesting and topical but also prepares students for their future workplace needs. A component of this planned improvement includes the incorporation of online resources into our courses, possibly including the use of online homework systems.	ILO 2, ILO 7, EMP 3.5, Math 136: SLO 1, SLO 3, SLO 5
Precalc	4.	Instructor training with various software.	Instructors will be able to use software more effectively, which will translate into better student understanding.	EMP 1.2, EMP 1.3, EMP 3.5
Developmental	5.	Computerize homework, quizzing, testing for redesigned self-paced classes, digitizing of existing records, and creation of a database.	Students will receive their grades immediately along with a personalized study plan which will help them improve their weaknesses more efficiently. Instructor will have more time to give more individual attention to students.	EMP 1.2, EMP 1.3
	6	Validate course textbooks and ancillary material.	By ensuring that we have high quality textbooks and ancillary material we provide students with the best possible tools for learning.	EMP 1.3
Developmental	7	Implementation and investigation of alternatives for getting students to transfer level courses.	Implementation of an Intermediate Algebra Course for non-STEM students. Further implementation of Fast Track Algebra, an immersion elementary / intermediate algebra course package. Investigation of an accelerated elementary algebra / pre-algebra / arithmetic combined course.	EMP 1.2, EMP 1.3, EMP 3.4
Basic Skills	8	Common final coordination	Creating the two common finals for the algebra sequences, as well as coordinating rooms, proctoring, grading	Math 141, 146, 101, 120 SLOs
Basic Skills	9	At-risk intervention	Provides extensive interventions, such as individual contacts via email, phone, or mail offering advice on how to succeed in a math course, referrals to campus resources, information regarding drop down options and deadlines, and the opportunity for individual appointments, to "at-risk" math basic skills students.	EMP 1.1, EMP 1.2, EMP 1.3, EMP 3.2, ILO 6, ILO 7

Basic Skills	10	Adjunct mentoring	The mentoring program targets areas of weakness in individual instruction, and strives to implement best practices in the delivery of basic skills material. An orientation meeting is held each year, an adjunct manual, updated yearly, is provided, and two workshops per semester are held. These efforts provide invaluable feedback to complete the SLO cycle.	EMP 1.1, EMP 1.3, EMP3.1, SLOAC
Developmental	11	Math 155 faculty coordinator	The coordinator will work with all faculty currently teaching Math 155. This includes a pre-semester orientation, weekly email correspondence, in class assistance, and a post semester meeting. The Math 155 redesign incorporates interactive software into the classroom to standardize the delivery, learning activities and assessments. By changing the delivery from lecture to interactive software supplemented by instructor lecture and guidance, students will experience a new approach to topics that have repeatedly eluded them. Students will be more actively engaged in the learning process by spending most of the class time in interactive learning activities and assessments.	EMP 1.2, EMP 1.3, EMP 3.5
Developmental	12	Investigate placement test preparation	Various projects such as bridge programs, workshop sessions, and technology may be used to maximize student placement to facilitate completing their Math requirements for degrees or transfer.	EMP 1.2, EMP 3.4
Precalculus	13	Investigate the need and feasibility for a 1 unit class serving as a "pre-Business Calculus" bridge for students entering Math 112	Many students are unable to successfully transition from Intermediate Algebra to Business Calculus. This class would serve to improve student success in Math 112 and therefore, in student's educational goals	EMP 1.2, EMP 1.3, EMP 3.4
MDC	14	Add student workers in MDC	Increase success rates, retention, and persistence	EMP 1.3 ILO 1e, ILO 6a, ILO 6d
MDC	15	Enhance MDC website	Increase use of tutoring center	EMP 1.1, EMP 1.2, ILO 3
MDC	16	Develop the self-paced section on the current math division website.	This new feature will help answer questions about the self-paced classes. Students will also be able to watch videos about class content and policy.	EMP 1.1, EMP 1.2, ILO 3

MDC	17	Enhance the existing Division website with new information.	Raises awareness about the math sequence, the division as a whole and policies.	EMP 1.1, EMP 1.2, ILO 3
MDC	18	Investigate the incorporation of The Learning Center's math tutoring into the MDC	Provide a centralized center for math tutoring at GCC.	EMP 1.2, EMP 1.3
Precalc	19	Continue investigation of the need to adjust placement cut-off scores for transfer level math.	Appropriate levels of prerequisite skills support student success.	EMP 1.2, EMP 1.3, EMP 3.4
Precalculus	20	Continue the development of college algebra offerings.	Using less demanding content than that covered in Math 100 will make the course more palatable for students who do not plan on taking calculus. This course will still offer a rich and rigorous study of college level algebra similar to courses taught at other schools. Hopefully, this course will separate the student populations based on their academic goals and result in increased success in the Math 100/102/110 sequence.	EMP 1.2, 1.3, 3.4
Basic Skills	21	Mathematics Collaborative High School Student Support	By supporting alternative math courses and offering incentives for seniors to continue math in their senior year they are more likely to place in an AA level or Transfer Level math class when they enter college.	EMP 1.1, EMP 1.2, EMP 1.3, EMP 3.4, ILO 2
Basic Skills	22	Mathematics Collaborative Professional Support	Through monthly meetings, high school and college faculty share best practices; we facilitate discussions and providing resources to help high school students successfully transition to college. We host workshops for high school teachers to improve the quality of education provided in the classroom.	EMP 1.1, EMP 1.2, EMP 1.3, EMP 3.4, ILO 2
	23	Offer Additional Class Sections	Increase student access to Mathematics classes; thereby increasing the number of students obtaining certificates/degrees or transferring.	EMP 1.2
Calc	24	Investigate a plan for improved security in the MDC area	This action plan will facilitate an environment in which new technology is safe and secure. Hopefully, this will lead to a bigger conversation on campus regarding security issues.	

2012 PROGRAM REVIEW**Section 4
Resource Request****Math****White Board
Markers****I:MA-1****Mark Type of Request:**

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment		Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
x	Supplies		Other

4.1 Clearly describe the resource request.

To purchase markers in order to teach our classes. A number of years ago, the college replaced all the chalkboards with whiteboards without consulting the faculty and without creating a budget for markers and proper cleaning of the boards. Prior to this, facilities kept the rooms provided with chalk from their budget and kept the boards clean. This has been an ongoing problem ever since. Math instruction involves writing on the board almost the entire class meeting and our rooms are used from 6:30 am until 9:30 pm every day. **This amounts to approximately 24,000 hours of marker use per year.** The amount of markers required and cleaning of marker debris in math classrooms far exceeds any other division's classrooms. Historically the VPI has used lottery funds to make up for this oversight in budgeting the cost of changing over to whiteboards and resultant need to spend \$2500 per year for markers in math. We have repeatedly requested an ongoing supply budget sufficient to cover this additional cost but each year we have been denied.

(For many years the cleaning issue was solved by some of the Math Division full-time faculty taking home filthy towels full of marker debris, washing them at home, and returning them for use by the entire division. After washing such towels, the person had to wash the washing machine or it would ruin their personal laundry. We repeatedly asked for a budget augmentation to cover laundry service and were denied. About a year or so ago, we were down to one full-timer doing this chore for the entire division of 76 full-time and adjunct faculty. That person finally stopped and the boards became so filthy that facilities complained to us about the mess. We have now worked out an arrangement where the towels are being washed by facilities in a machine up in the gym.)

Amount requested: \$ 2,500

Breakdown of cost, if applicable.

4.2 Funding

	Requires One Time Funding
X	Requires Ongoing Funding
X	Repeat Request
Every Year	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

☐	Health & Safety Issue
☐	Accreditation Requirement
☐	Contractual Requirement
☐	Legal Mandate

Please explain how/why this request meets any of the above criteria.

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Mathematics is integral to all plans that the college has considered, including the Educational Master Plan and long-range planning. In particular, one of the core values of the Mission Statement is "helping students to develop important skills that are critical in the modern workplace, such as verbal and written communication, mathematics, the effective use of technology and research, ..." Several of our courses, e.g., statistics, use computers and a variety of software or graphing calculators, leading toward a more effective use of technology. Mathematical competency/Quantitative Reasoning is one of the core competencies listed in our institutional student learning outcomes (ILO 2). Much of what is taught in mathematics falls into other areas of the core competencies. For example, some of our courses teach research methods and evaluation of information, which are parts of the Information Competency section (ILO 3). Most of the teaching of mathematics emphasizes critical thinking, which is another core competency (ILO 4). The course outline for Math 155 includes study skills, which is another segment of the core competencies (ILO 6 d). Student persistence and success (EMP 1.3) in mathematics simply cannot be attained without markers for classroom instruction. Supports Math Action Plan 2

4.5 What measurable outcome will result from filling this resource request?

Without markers for classroom instruction, all SLOs in all mathematics courses cannot be achieved.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO, PLO or ILO	
	d) Report Incomplete	
PRC Comments		

2012 PROGRAM REVIEW**Section 4
Resource Request****Math****Math Software****I:MA-2****Mark Type of Request:**

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment	X	Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
	Supplies	X	Other

4.1 Clearly describe the resource request.

The Mathematic and Scientific Notebook are programs which are easy to use that have been around for years. Using these programs you can show graphs of derivatives, three dimensional surfaces, curves, implicit equations, polar graphs, slope fields, and more. The versatility of these programs allows them to be used in all algebra classes, pre-calculus, calculus, linear algebra, and differential equations. Additional training time is being requested to get all of the instructors up and running with the software, and to discuss ways to effectively use the software in the classroom. At times our current supply of 60 licenses of Mathematica has not been able to meet the demand of two classrooms that want to simultaneously use the software.

Amount requested: \$9860 Breakdown of cost, if applicable.

50 licenses of Scientific Notebook at \$79 = \$3950

50 licenses of Mathematica at \$118.20 = \$5910

4.2 Funding

X	Requires One Time Funding
	Requires Ongoing Funding
	Repeat Request
	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

	Health & Safety Issue
	Accreditation Requirement
	Contractual Requirement
	Legal Mandate

Please explain how/why this request meets any of the above criteria.

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Improve student understanding of graphs (EMP 1.2, 1.3, 3.4, and 3.5.1 and 3.5.2 , ILO 2)
Supports Math Action Plan 3

4.5 What measurable outcome will result from filling this resource request?

Increase understanding of graphing, functions, and relations from algebra to calculus.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

Reports determined to be "Non-Compliant" will be returned to the division member responsible. Reports must be resubmitted with needed changes to the Program Review Office. Requests will not move forward in the budget process if the report or request is Non-Compliant.

2012 PROGRAM REVIEW**Section 4
Resource Request****Math****Computer
Classroom/Relocation****I:MA-3****Mark Type of Request:**

	Facilities/Maintenance	x	Computer Hardware for Student Use
x	Classroom Upgrade	x	Computer hardware for Faculty Use
x	Instructional equipment	x	Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
	Supplies		Other

4.1 Clearly describe the resource request.

We request funding to outfit an additional computer classroom. One classroom will allow us to switch several of the statistics classes to being computer based, which will give our students workplace training as well as allowing them to become more sophisticated in their statistical analysis. Our goal is to use this technology to teach more realistic and useful statistics. This may include converting an existing outdated computer classroom to a traditional classroom.

Amount requested: \$60,000

Breakdown of cost, if applicable.

Type of Resource	Amount Requested	Description	Justification
Facilities	Unknown	Remodel of classroom(s)	We must provide data drops and power to the computers in the classroom.
Equipment	\$60,000	Computers, desks, chairs	We need 40 computers in a classroom setting for students to use while in class.
Training		Textbook publishers provide software training at remote locations.	Instructors will need hands on training to implement the new software.

4.2 Funding

X	Requires One Time Funding
	Requires Ongoing Funding
	Repeat Request
	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

	Health & Safety Issue
	Accreditation Requirement
	Contractual Requirement
	Legal Mandate

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Our request for a new computer classroom will address EMP 3.5, the plan to promote innovative learning. It will also support ILO 2(mathematical competency) and 7(computer and technical competency). Almost all of the course competencies for M136 are tied to this resource request. Since most students will be using Statistics in their workplace in a computational manner, it is more realistic for them to have the material presented in that form during the class. We seek to prepare our students to use statistics in their lives and work, rather than only in one course.

Supports Math Action Plan 3

4.5 What measurable outcome will result from filling this resource request?

If the classroom funding is granted, students will be able to advance their understanding of statistics, especially as it pertains to regression analysis and confidence intervals because they will be able to spend more of their time analyzing the results and less time crunching numbers. Furthermore, they will be able to use more realistic and larger data sets whose computation requires more sophisticated software and computing power. This will hopefully show improvements in SLOs 1, 3 and 5 for M136. There is another measurable outcome that would greatly benefit from this request being filled. Several years ago, UCLA removed articulation from Statistics courses around California due to a lack of realistic analysis. It was only by altering our course outline to include larger data sets and more technological analysis that we were able to recover articulation. As technology expectations change from UCLA, we must grow with them or risk losing students. The easiest way to make our Statistics course more realistic is to teach with computers.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

Reports determined to be "Non-Compliant" will be returned to the division member responsible. Reports must be resubmitted with needed changes to the Program Review Office. Requests will not move forward in the budget process if the report or request is Non-Compliant.

2012 PROGRAM REVIEW**Section 4
Resource Request****Math****Faculty Computers****I:MA-4****Mark Type of Request:**

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment		Software/Licenses/Maintenance/Agreements
X	Non-Instructional Equipment		Conference/Travel
	Supplies		Other

4.1 Clearly describe the resource request.

Replace 3 faculty computers. Faculty computers are becoming obsolete and are not capable of performing necessary tasks related to class management and preparation. Further, existing equipment is not adequate to the needs of those creating innovative curricula that incorporate educational technology.

Amount requested: \$3,750

Breakdown of cost, if applicable.

2 iMacs @ \$1,300 + 1 PC @ \$1,150

4.2 Funding

X	Requires One Time Funding
	Requires Ongoing Funding
	Repeat Request
	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

	Health & Safety Issue
	Accreditation Requirement
	Contractual Requirement
	Legal Mandate

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Faculty need adequate computers to support providing sound instruction, which undergirds EMP goals 1.2 and 1.3 (student access, persistence and success). Providing faculty with updated computers allow faculty to promote innovative learning for 21st Century Students (EMP: 3.5)
Supports Math Action Plans: 3, 4

4.5 What measurable outcome will result from filling this resource request?

Allow faculty to more effectively develop and implement innovative curriculum and more effectively address the requirements of the college in terms of course and class management.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	
	NON COMPLIANT OR INCOMPLETE	X
	a) Request not adequately described or incomplete	X
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments	No specifics. Description should state age or condition of computers, or what applications cannot be run?	

Form Revised 9.19.12

Reports determined to be "Non-Compliant" will be returned to the division member responsible. Reports must be resubmitted with needed changes to the Program Review Office. Requests will not move forward in the budget process if the report or request is Non-Compliant.

2012 PROGRAM REVIEW**Section 4
Resource Request****Math*****New Math Classes*****I:MA-5****Mark Type of Request:**

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment		Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
	Supplies	X	Other

4.1 Clearly describe the resource request.

20% Released Time for one semester to develop a new course

Faculty release time is necessary to design and implement the course(s), including establishing content, writing the course outline(s), selecting the textbook(s), developing promotional material, and informing students and GCC student services.

Amount requested: \$ _\$4500 (3 units @ \$1500 per unit)

4.2 Funding

X	Requires One Time Funding
	Requires Ongoing Funding
X	Repeat Request
2010	Year(s) Requested
2011	

4.3 Please check if any off the following special criteria apply to this request:

	Health & Safety Issue
	Accreditation Requirement
	Contractual Requirement
	Legal Mandate

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Introducing an Intermediate Algebra that meets the prerequisite for Math 111, 135, 136, 138 will increase student articulation by easing the path to transfer level classes. (EMP 1.2) Increase student success by providing a alternate Intermediate Algebra. (EMP 1.3) An Elementary/Intermediate immersion class and accelerated Elementary Algebra/Pre-algebra/Arithmetic class will streamline the movement through curriculum by allowing students to

complete two levels in one semester. (EMP 3.4) A Pre-Business Calc Bridge course will help students move more successfully through the subsequent course. (EMP 1.2 & 1.3)
 Supports Math Action Plan 7, Math Action Plan 13, and Math Action Plan 20.

4.5 What measurable outcome will result from filling this resource request?

Increase student success in Intermediate Algebra, streamline student path to transfer level mathematics, increase student success in Business Calculus, and increase student success in College Algebra.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

Reports determined to be "Non-Compliant" will be returned to the division member responsible. Reports must be resubmitted with needed changes to the Program Review Office. Requests will not move forward in the budget process if the report or request is Non-Compliant.

2012 PROGRAM REVIEW**Section 4
Resource Request****MATH*****Common Final*****I:MA-6****Mark Type of Request:**

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment		Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
X	Supplies	X	Other

4.1 Clearly describe the resource request.

Money is needed for released time for the coordinator of the final, and stipends for writing the finals (two versions each and create answer sheets). The coordinator must oversee the writing of the exams, distribute directions to the instructors before the end of the semester, put different classes into rooms, set up proctoring, coordinate the test grading, etc. Printing costs need to be included. Also, a stipend for a person to do the data transcription is also needed.

Amount requested: \$ 13,200

Breakdown of cost, if applicable.

Amount Requested	Description
\$6000 (4 units @ \$1500/unit)	Release time for faculty coordinators
\$3750	Faculty stipends for workshops and test writing
\$2950	Classified overtime to do data entry for about 1200 exams
\$500	Paper for exams, answer sheets, and directions

4.2 Funding

	Requires One Time Funding
X	Requires Ongoing Funding
X	Repeat Request
2010 2011	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

	Health & Safety Issue
	Accreditation Requirement
	Contractual Requirement
	Legal Mandate

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

The common final has become critical to maintaining consistency of subject matter in two of our pivotal courses. It is our vehicle for extensive assessment of our SLOs. With a huge percentage of our Math 141, 146, 101, and 120 classes being taught by adjunct, the ability to look at data for all of the SLOs for all instructors has made it possible to standardize our delivery. (SLOAC)
Supports Math Action Plan 8

4.5 What measurable outcome will result from filling this resource request?

The data collected from the Common Finals includes students GPAs for the class versus their score on the common final. The result of our analysis has been more consistent grading across the board. We are also able to identify and address student weaknesses in order to improve success rates.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

Reports determined to be "Non-Compliant" will be returned to the division member responsible. Reports must be resubmitted with needed changes to the Program Review Office. Requests will not move forward in the budget process if the report or request is Non-Compliant.

2012 PROGRAM REVIEW**Section 4
Resource Request****Math*****At Risk Intervention*****I:MA-7****Mark Type of Request:**

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment		Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
	Supplies	X	Other

Ong

4.1 Clearly describe the resource request.

Release time allows math faculty to act as mentors to students with repeated unsuccessful attempts in a basic skills math class. They meet with the students once a week, discuss study skills necessary to succeed in a math class, give students personalized study plans to help focus their attention to areas in which they are struggling, keep track of their progress throughout the semester, and encourage them to use the Math Discovery Center.

Achievement coaches seek out the students to be mentored, make appointments, contact all basic skills students various times throughout the semester with resources available on campus to help them succeed, remind them of drop down options and withdraw deadlines, contact students who are doing poorly in their current basic skills math class and/or who have poor attendance, and send out guidelines for registering in the correct math course.

Amount requested: \$ 45,600

Breakdown of cost, if applicable.

Type of Resource	Amount Requested	Description	Justification
Personnel	\$18,000 (12units @ \$1500/unit)	Released Time	Two to three math faculty to mentor students and help them succeed in their basic skills math class.
Other	\$27,600 (20 hours per week)	Achievement Coaches	Two contract employees to help contact, advise, and keep track of all at risk basic skills math students.

4.2 Funding

	Requires One Time Funding
x	Requires Ongoing Funding
X	Repeat Request
2010 2011	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

☐	Health & Safety Issue
☐	Accreditation Requirement
☐	Contractual Requirement
☐	Legal Mandate

Please explain how/why this request meets any of the above criteria.

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Subject specific mentoring provided to students with two substandard grades or one substandard grade and a withdraw in a basic skills math class. [EMP Goal 1.1, 1.2, 1.3, 3.2 and Core Competency 6, 7] Extensive interventions, such as individual contacts via email, phone, or mail offering advice on how to succeed in a math course, referrals to campus resources, information regarding drop down options and deadlines, and the opportunity for individual appointments, to math basic skills students. [EMP Goal 1.1, 1.2, 1.3, and 3.2] Supports Math Action Plan 9

4.5 What measurable outcome will result from filling this resource request?

An increase in the persistence, success and completion rate in basic skills math classes.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

Reports determined to be "Non-Compliant" will be returned to the division member responsible. Reports must be resubmitted with needed changes to the Program Review Office. Requests will not move forward in the budget process if the report or request is Non-Compliant.

2012 PROGRAM REVIEW**Section 4
Resource Request****Math*****Adjunct Mentoring*****I:MA-8****Mark Type of Request:**

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment		Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
X	Supplies	X	Other

4.1 Clearly describe the resource request.

The Adjunct Mentor serves as a resource and liaison with the 50-60 Math Adjunct Faculty. Duties of the mentor include organizing the annual orientation meeting, updating and distributing an adjunct manual and coordinating/presenting two workshops per semester are held. These efforts provide invaluable feedback to complete the SLO cycle.

Amount requested: \$ 15,700

Breakdown of cost, if applicable.

Amount Requested	Description	Justification
\$9000 (6 units @ \$1500/unit)	20% released time	Maintains adjunct handbook, keeps current info on courses, sets up adjunct workshops, sends resources to adjuncts
\$1700	Adjunct handbook and workshops	
\$5000	Stipends for adjunct attendees of workshops	
\$15700		

4.2 Funding

	Requires One Time Funding
X	Requires Ongoing Funding
X	Repeat Request
2010 2011	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

☐	Health & Safety Issue
☐	Accreditation Requirement
☐	Contractual Requirement
☐	Legal Mandate

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

The adjunct mentor is responsible for distributing the Division of Mathematics' adjunct handbook. This contains various division policies, course outlines, pacing guides, and schedules to help adjunct in their instruction. (EMP 1.1 , 1.3). The adjunct mentor also organizes two workshops per semester for the adjunct. One is usually devoted to common final analysis. (SLOAC, EMP 3.1). Usually one of the other three revolves around best practices for teaching certain topics.

Supports Math Action Plan 10

4.5 What measurable outcome will result from filling this resource request?

The mentoring program targets areas of weakness in individual instruction, and strives to implement best practices in the delivery of basic skills material.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

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2012 PROGRAM REVIEW**Section 4
Resource Request****Math*****Math 155 Coordinator*****I:MA-9****Mark Type of Request:**

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment		Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
	Supplies	X	Other

4.1 Clearly describe the resource request.

The coordinator will work with all faculty currently teaching Math 155. This includes a pre-semester orientation, weekly email correspondence, in class assistance, and a post semester meeting. Faculty release time is necessary to continue a standardized implementation of the redesigned course, including updates to the course package for standardized delivery across multiple sections, assisting new instructors in learning the mode of delivery, making adjustments to classroom activities and assessments as necessitated by multiple section usage, etc.

Amount requested: \$5,500

Breakdown of cost, if applicable.

10% released time : \$4,500. Stipends for instructor training: \$1000.

4.2 Funding

	Requires One Time Funding
X	Requires Ongoing Funding
X	Repeat Request
2010 2011	Year(s) Requested

4.3 Please check if any of the following special criteria apply to this request:

	Health & Safety Issue
	Accreditation Requirement
	Contractual Requirement
	Legal Mandate

Please explain how/why this request meets any of the above criteria.

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Changing the delivery of the content by utilizing interactive software will motivate students to improve these basic skills. (EMP Goals 1.2, 3.5) Increase student success by providing a more interactive approach and more student involvement. (EMP Goal 1.3) Student persistence will increase as students experience a different and successful approach to topics that they have repeatedly failed to master. (EMP Goal 1.3) Supports Math Action Plan 11

4.5 What measurable outcome will result from filling this resource request?

Increase Student Success in Arithmetic/PreAlgebra. Increase the persistence from Arithmetic/PreAlgebra into Elementary Algebra.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

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2012 PROGRAM REVIEW**Section 4
Resource Request****MATH*****Investigate
Placement Prep*****I:MA-10**

Mark Type of Request:

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment		Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
	Supplies	X	Other

4.1 Clearly describe the resource request.

Release time is requested in order to investigate various projects such as bridge programs, workshop sessions, and/or technology that may be used to maximize student placement into the Math sequence. It is well documented that the higher a student places in the Math sequence, the more likely s/he is to attain a certificate, degree, or transfer (See Appendix B). By providing a structured preparation for the Math placement test we can facilitate completing their Math requirements.

Amount requested: \$ 4500
Breakdown of cost, if applicable.

3 units RT @ \$1500

4.2 Funding

X	Requires One Time Funding
	Requires Ongoing Funding
X	Repeat Request
2011	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

	Health & Safety Issue
	Accreditation Requirement
	Contractual Requirement
	Legal Mandate

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Maximizing student placement into the Math sequence supports EMP Goal 1.2 (Increase student access by developing strategies and systems to improve student articulation, assessment, and basic skills preparedness). Reducing the number of Math courses students must take will streamline students' path through the curriculum (EMP Goal 3.4).

Supports Math Action Plan 12

4.5 What measurable outcome will result from filling this resource request?

After a program is developed, students who participate will place higher in the Math sequence. We will see an increase in the number of students completing certificates or degrees or transferring.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

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2012 PROGRAM REVIEW**Section 4
Resource Request****MATH*****MDC Student Workers*****I:MA-11****Mark Type of Request:**

☐	Facilities/Maintenance	☐	Computer Hardware for Student Use
☐	Classroom Upgrade	☐	Computer hardware or Faculty Use
☐	Instructional equipment	☐	Software/Licenses/Maintenance/Agreements
☐	Non-Instructional Equipment	☐	Conference/Travel
☐	Supplies	☒	Other

4.1 Clearly describe the resource request.

We need additional student workers to tutor in MDC during high-use times in all areas of math in our tutoring center for the benefit of our students.

Amount requested: \$6,000

Breakdown of cost, if applicable.

\$144/week

4.2 Funding

☐	Requires One Time Funding
☒	Requires Ongoing Funding
☒	Repeat Request
2010 2011	Year(s) Requested

4.3 Please check if any of the following special criteria apply to this request:

☐	Health & Safety Issue
☐	Accreditation Requirement
☐	Contractual Requirement
☐	Legal Mandate

Please explain how/why this request meets any of the above criteria.

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Increase persistence and success through peer tutoring (EMP 1.3) Enhance and provide for interpersonal interactions in math. (ILO 1 e) Improve self-management for our students. (ILO 6 a) Improve study skills for our students. (ILO 6 d) By increasing the number of student workers at the MDC, the workers will help the student checks-in and checks-out. This in turn will increase apportionment by insuring a more accurate reporting of MDC usage.

Supports Math Action Plan 14

4.5 What measurable outcome will result from filling this resource request?

More student tutors will increase use of lab and hopefully increase success rates for those who utilize this resource. Additional tutors are especially critical during peak use hours as our students are often discouraged by an overly busy tutoring center where they cannot readily obtain their tutoring needs.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

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2012 PROGRAM REVIEW**Section 4
Resource Request****MATH*****Math Collaborative*****I:MA-12****Mark Type of Request:**

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment		Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
X	Supplies	X	Other

4.1 Clearly describe the resource request.

Amount requested: \$ 66,200

Breakdown of cost, if applicable.

Amount Requested	Description	Justification
\$18,000 (12 units @ \$1500/unit)	Released Time	Two full time math faculty are needed to oversee the program.
\$21,000	Printing, Scantrons, Office Supplies,	Various supplies needed to administer the program.
\$9,600	Contract services	Speaker and participant fees
\$7,000	Classified Overtime	Assessment center.
\$10,000	Trips to GCC by HS seniors	Motivation for HS seniors to pursue a college education
\$600	Clerical	Data gathering to update database.

4.2 Funding

X	Requires One Time Funding
	Requires Ongoing Funding
X	Repeat Request
2010 2011	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

	Health & Safety Issue
	Accreditation Requirement
	Contractual Requirement
	Legal Mandate

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Among the goals of the GCC Math Collaborative are:

- Improve the awareness of local high school students as to the programs available at GCC through classroom visits. (EMP Goal 1.1)
- Improve student basic skill preparedness by supporting high school teachers develop new high school math courses for high school seniors. (EMP Goal 1.2)
- Increase student success of their educational goals by improving placement level. (EMP Goal 1.3, 3.4)
- Improve students Mathematical Competency & Quantitative Reasoning by encouraging high students to take a math class during their senior year. (Core Competency 2)
Supports Math Action Plans 21, 22

4.5 What measurable outcome will result from filling this resource request?

This program helps increase the number of incoming freshmen who place in an AA or Transfer Level math class. This in turn increases the number of students who obtain a certificate, an AA, or transfer.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

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2012 PROGRAM REVIEW**Section 4
Resource Request****MATH*****Additional FTEF*****I:MA-13****Mark Type of Request:**

	Facilities/Maintenance		Computer Hardware for Student Use
	Classroom Upgrade		Computer hardware or Faculty Use
	Instructional equipment		Software/Licenses/Maintenance/Agreements
	Non-Instructional Equipment		Conference/Travel
	Supplies	X	Other

4.1 Clearly describe the resource request.

Increase the FTEF allotment so that more Mathematics classes are offered to make progress in satisfying student demand.

Statistics overwhelmingly show that student demand for Math classes is not being met. The data in Section 1.0 shows that consistently since 2008-2009 our fill rates have exceeded 100%. [Please note that in the last several years we have lost the equivalent of 58 sections of Math, a reduction of over 17% when compared to the number of sections offered in 2007-2008.]

With most mathematics classes having a seat load of 40, a fill rate of over 100% is extremely significant. It is much harder to reach 100% filled with a seat load of 40, than a seat load of 27 or less. For areas that were inefficient (with a below average fill rate) prior to the FTEF rollback, it is easier to increase their fill rate than areas that started with high fill rates with large class sizes. Areas with low fill rates may have seen their numbers increase artificially when the high-demand classes students want are filled, and the only classes left to take are classes that had low fill rates, i.e., had room. This is not the case for mathematics.

In 2008-2009, the college credit average fill rate was 91.4%, for 2009-2010 it was 97.2%, for 2010-2011 it was 102.8%, and for 2011-2012 it was 103.3%. In all cases, we exceeded the college credit average by 6-26%, which is significant considering the large class size and number of sections for mathematics.

There is obviously an unmet demand, when the entire division averaged more than 100% fill rate and there were still students turned away. The fill rate does not take into account waitlisted students. Beginning in 2008, the Division of Mathematics began keeping records of students wanting to add classes, but who were turned away. (These lists are available in the office of the Division of Mathematics, as well as the offices of the Dean of Instructional Services and the Vice President of Instructional Services.)

Our neighboring colleges have addressed this demand for Mathematics classes. Even in a time of cutting, the superintendent of PCC for the third year in a row has added new sections of mathematics in response to student need. In Fall 2010, he added 17 additional sections. Fall 2011, he added 32 sections more than what was offered in Fall 2010; total growth of 15%. Even in this year's fiscal climate, he added 4 math classes to the Fall 2012 schedule. For Spring and Winter 2012, an additional 20 sections of mathematics were offered above the number offered in 2011. PCC is at an all-time high in the number of sections in mathematics, offering 52 additional sections in the 2011-2012 academic year. In contrast, here at GCC in 2008-2009, Math offerings were cut back to the number of sections offered in the 2006-2007. In 2009-2010 and 2010-2011,

the number of sections was further reduced by the elimination of one summer session and the reduction of winter session offerings. For the 2011-2012 academic year, with the elimination of winter, we offered the equivalent of 58 less sections than we offered in 2007-2008; a reduction of over 17%. (The self-paced reformatting into 1-unit classes was taken into account in this computation. In Fall 2007 and Spring 2008, we had 10 sections meeting 5 hours/week. In Fall 2011 and Spring 2012, we had 15 sections meeting 3 hours/week. This was counted as a loss of 1 section per semester.) For the current 2012-2013 academic year, summer was reduced by an additional 10 sections and fall was reduced by 7 sections. The increased allocation of classes for Spring 2013 will almost make up for our losses in Summer 2012 and Fall 2012. Thus, we will still be offering 17% less sections during the current academic year as we did in 2007-2007.

4.2 Funding

	Requires One Time Funding
X	Requires Ongoing Funding
X	Repeat Request
2010 2011	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

	Health & Safety Issue
	Accreditation Requirement
	Contractual Requirement
	Legal Mandate

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

Offering sufficient classes underlies many specific goals, in particular EMP Goal 1.2 addressing student access. The state trend on evaluating community colleges is moving to include the number of degrees/certificates awarded and number of students transferring. The lack of access to Mathematics classes is prohibiting students from achieving these goals, and thus having a negative impact on the evaluation of GCC.

Supports Math Action Plan 23

4.5 What measurable outcome will result from filling this resource request?

We will see an increase in the number of students obtaining certificates/degrees or transferring.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	x
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

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2012 PROGRAM REVIEW**MATH*****Assist. Instructional
Computer Lab Tech*****I: MA-14****Section 4: CHAC REQUEST**

If this is a repeat request, please list the year(s) requested: 2011

4.1. Describe the position including the complete description used to advertise for the position. Also include the division/department/program or service and full-time percentage for the position.

The Mathematics division requests an Assistant Instructional Computer Lab Technician to assist in providing instructional support within our Self-Paced Mathematics program.

Duties include:

Proctor student examinations.

Assists in providing instructional assistance to faculty such as grading and recording student scores.

Assists students with use of hardware and software within the Self-Paced Mathematics program.

Assists in responding to student questions and concerns.

Maintains the security of tests, materials, equipment, and facility.

Assists in collecting and reporting data regarding use of the lab and equipment performance.

Assists in maintaining inventory records of programs, supplies and equipment.

May proofread student work.

60% Position

4.2 Criteria:

a) Are there state or federal mandates particular to this program/service?

If so, please describe.

None

b) How does this position support the objectives and functions of the college in regards to the Mission Statement, EMP goals, annual college goals and/or student need?

This position supports EMP goal 1.2 by addressing student's basic skills preparedness, and EMP goal 1.3 by increasing student persistence and success.

By providing support to the instructor in the Self-Paced Math program, we can serve more students, addressing the overwhelming student demand for these classes and increase the number of students that are able to complete their math requirements for certificates, degrees, and transfer level mathematics.

Supports Math Action Plan 5

- c) Please provide quantitative data to support your request (such as program review, research office reports, surveys, etc.)

The fill rate in Mathematics is over 100%. Student demand for math courses is unmet. Providing assistance to the instructors will enable more students to be able to participate in the Self-Paced program.

The Self-Paced program is currently undergoing re-design to incorporate more technology. This model has been successful across the country. However, in order to be effective, we need to hire an Assistant Instructional Computer Lab Technician to take on various tasks thus allowing the instructor to focus his/her attentions on student learning.

- d) Is this request related to compliance with a collective bargaining agreement?
If so, please explain.

No

- e) Are there industry standards that directly relate to this position? If so, please explain.

4.3 Additional Information

- a) What implications does the addition of this position have on: budget, staffing, facilities and equipment?

Budget: Full time Salary Range: \$3,245.42 – \$4, 142.03 Monthly. At 60%, this equates to \$1,947.52 -\$2,485.22 per month.

There would be no implications on facilities and equipment as these are already in the process of being modified to address the needs of the Self-Paced program.

- b) Discuss any benefits your program may have lost from not receiving this requested position.

Historically, while Self-Paced instructors are involved in individually working with student on the material they must simultaneously deal with distributing and proctoring tests, checking out books and DVD's, and looking up student scores. Although these are necessary tasks, they distract from the instructor's primary duty of teaching. Without an assistant to take on these tasks, we will continue to inefficiently use our faculty and not be able to increase the number of students served.

- c) Are there any special concerns that are not addressed in this request? If so, please explain.

- d) Describe how this position enhances student success and/or program outcomes.

By providing instructional assistance, students will receive more direct help from the instructor thus improving their understanding of the material. This will result in improved student success.

4.4 Please attach data from Human Resources on new classified hires in your program during the past five years, including the full-time percentage of each new hire.

Michael Davis 100%

2012 PROGRAM REVIEW**Section 4
IHAC Request****MATHEMATICS****5 Replacement Math Faculty****I: MA-15**

If this is a repeat request, please list the Resource ID code or year requested: 2010 I:MA-1
and 2011 I:MA-10

4.1 The Office of Instruction will provide data on instructional hires during the past five years, including the full-time percentage of each new hire.***

a) Number of full-time faculty currently assigned to the Program	18 (Fall 2007:22)
b) Number of full-time faculty assigned to the Program in 2005	20
c) Does this position cover classes currently taught by adjuncts? Yes or No	Yes
d) Does this position contribute to program expansion? Yes or No	No
e) Retirements since 2005: Lynn Pomeroy (12/2008) – Parker Award 2008 Sid Kolpas (6/2010) – Distinguished Faculty Award 2004 Pete Witt (6/2011) – Parker Award 2002 Steve Marsden(12/2012) – Parker Award 2000 Anticipated Retirement: Gary Massion (6/2013) – Distinguished Faculty Award 2003 GAUSS Grant: Tom Voden (2/2013)	

4.2 CPF Index (Committees Per Full-time Faculty)

1. Total number of full-time faculty members in this department/program.	20 (Fall 2012)
2. Total number of committees in which all FT faculty members in this area participate (Governance and other campus related committees & participation).	130
3. CPF INDEX (Total of # 2 divided by #1)	6.5

4.3 Status of Released Time Faculty

Faculty Name	Release Time Position	% RT	Term of Assignment
Allen, Mike	Guild Chief Negotiator	40%	Fall 2012-Spring 2013
Djrbashian, Ashot	Title V Gauss	20%	Fall 2012
Hassakoursian, Yvette	Basic Skills, Math Common Final Coord.	13.3%	Fall 2012-Spring 2013
Hassakoursian, Yvette	Title V Gateway Math 145 Redesign	10%	Fall 2012
Hassett, David	Title V Gateway Algebra Fast Track	3.3%	Fall 2012-Spring 2013
Holmes, Kathy	Division Chair	80%	Five Year Appointment 2008-2013
Marsden, Steve	Guild Negotiation Team	10%	Fall 2012
Massion, Gary	Basic Skills, High School Collaborative	20%	Fall 2012-Spring 2013
Paxton, Carol	Assistant Division Chair	20%	Fall 2012-Spring 2013
Russell, Elizabeth	Basic Skills, Math Retention Program	6.7%	Fall 2012-Spring 2013
Russell, Elizabeth	Title V Gateway Math 145 Redesign	6.7%	Fall 2012
Saber, Isabelle	Guild President	70%	Fall 2012-Spring 2013
Shamhart, Bill	Title V Gateway Math 155 Redesign	10%	Fall 2012
Shamhart, Bill	Title V GAUSS Alternate Int. Algebra	10%	Spring 2013
Stathis, Peter	Basic Skills, High School Collaborative	20%	Fall 2012-Spring 2013
Talaoc, Jeremy	Title V GAUSS Alternate Int. Algebra	10%	Spring 2013
Voden, Tom	Title V GAUSS Grant Co-PI	80% 100%	Fall 2012 Spring 2013
Young, Andrew	Senate Treasurer	20%	Fall 2012-Spring 2013

4.4 How does this assignment relate to the college's Mission Statement?

Mathematics instruction at Glendale Community College improves students' skills in communication, mathematics, effective use of technology for work and research, information analysis and evaluation, and problem solving. Mathematics is required for students to develop understanding and appreciation of the environment in which they live. It is the basic tool of the sciences, economics, statistics and most scholarly research analysis. These positions will bring new faculty members that will further all these goals. Also, as detailed below, we are targeting someone for one of these positions who will bring commitment to work with our developmental curriculum team to improve the various programs in our Basic Skills areas. Lastly, through the extensive emphasis placed on understanding the total mathematics program in our tenure process, each new faculty will add one more trained student advisor to the department.

4.5 How does this position relate to the objectives and functions of the college?

- | | |
|--|------------------------------|
| a) Associate Degree | d) Basic Skills development |
| b) Transfer to a four-year institution | e) Noncredit Adult Education |
| c) Career and Technical Education | f) Personal enrichment |

A course at the level of Intermediate Algebra is a requirement for all Associate degrees and many certificates. A course beyond Intermediate Algebra is a transfer requirement to all UC and CSU universities. According to the State Superintendent of Schools, only fifty percent (50%) of high school students taking the state mathematics exam are passing. Unfortunately, the fact that students are underprepared in mathematics upon entry to GCC means that students usually have to take one or more developmental courses before taking the courses that satisfy their mathematics requirement.

Because so many students come in lacking the preparation to take college level mathematics courses, we offer an extensive number of sections of pre-collegiate basic skills mathematics courses. 63% of the math hours taught in the Fall 2011 and Spring 2012 semesters were pre-collegiate. In the Fall 2011 and Spring 2012 semesters about 26.1% of our basic skills classes were taught by full-timers. In other words, full-timers taught only 36 of the 138 sections offered in those two semesters. It gets even worse, if our three lowest level courses (Math 155, 145, and 146) are examined. Full-timers taught only 11 of the 60 sections offered, which is only 18.3% (For Fall 2011, this dipped to 3 sections out of 30, which is 10%)

The chancellor's office has made Basic Skills courses a priority and has allocated categorical funding to improve the success and retention of these students. Even though funding from the chancellor's office has dwindled, we still support projects developed under this funding. The delivery of Basic Skills mathematics is undergoing transformation across the nation, driven by student success and financial considerations. GCC is lagging behind in its ability to participate in these efforts because we do not have enough FT Math faculty. More full-time Math faculty are needed to support and maintain initiatives.

In October 2011, the college received two 5-year Title V STEM grants totaling over \$10 million. Both have major components that require mathematics faculty participation. In fact the GAUSS Grant has a mathematics faculty member, Tom Voden, as a Coordinator. This important work is taking full-time faculty out of the classroom.

By and large, the 60 adjunct faculty do a good job teaching their classes. The problem is that many other aspects of the job are needed besides solid teaching to fully help the students. These include being knowledgeable about the many different formats in which several of our courses are offered, our drop down policy, setting up SI's, all the resources of the Math Discovery Center, how to advise students about these issues and what is the appropriate next course, getting training on learning disabilities, being accessible to students, and so on. It is unreasonable to expect our adjunct faculty, the very best of whom are teaching close to 30 hours or more at various schools each semester, to be able to become skilled at this level of detail. All full-time mathematics faculty sit on one or more curriculum groups. It takes the full four years of the tenure process with attendant participation in a curriculum group to fully understand the intricacies and be able to creatively address student needs.

Many occupations, such as nursing, require a certain level of mathematical competency. Our courses serve these occupational paths as well. We also offer a course in personal improvement (Math 190 – Overcoming Math Anxiety.)

A long-term initiative at GCC is enrollment growth, although it may not be needed in the short term. However, with the loss of WSCH resulting from block scheduling and from cutting back to the 2006 FTEF, the need for enrollment growth will soon be on us again. With the already huge fill rates, the only way to meet the student demand for mathematics classes will be to add sections. Unless something is done in terms of full-time hires, this may lead to a further deterioration in the already miserable full-time/part-time ratio.

AB 1725 mandated a 75% full-time percentage. Although this was for each college, rather than department, there is no reason to have a large division such as mathematics in the 30-40% range. Even though the college has been cutting classes the last two years, the FT/PT ratio has been dropping due to not replacing full-time faculty. The FT/PT ratio in mathematics has been dropping faster than the college-wide rate as can be seen in the Program Review data. In credit classes, the college has experienced a drop from the 2008-2009 FT/PT ratio of 48.2% to 46.2% in 2011-2012, whereas mathematics has dropped from 41.3% to 38% during those years. This Spring 2013 semester the FT/PT ratio in mathematics is an abysmal 32%. Everyone suffers, but especially the students who are denied the extensive services provided by a full-time instructor.

- 4.6** Describe how this position enhances student success. Ex: enhances instructional skills, meets community or industry needs. Contributes to state of the art technical education, etc. What measureable outcome will result from filling this request?

Mathematics instructors teach the full-range of courses in the discipline and serve on a multitude of committees within the department and throughout campus. A new full-time faculty member would be expected to contribute a significant portion of his or her time outside of their teaching assignment to departmental initiatives, such as our current Basic Skills Retention Program, the common final, adjunct mentoring, the high school collaborative, or the division retreat, as well as curriculum development, and other activities, that improve the success rate of GCC mathematics students.

What is needed by industry and the community with regards to Mathematics is two-fold. On the one hand, there is a core requirement of basic mathematics skills for all businesses. Human resource personnel in industry use the level of mathematics completed as a measure of a candidate's analytical skills. All students need to have mastered the basic skills of mathematics so that their job prospects will not be limited. Secondly, in technical fields and in research positions, transfer level mathematics skills are required. Our new position would serve both these areas.

Some of the classes in technical education (such as nursing and machine technology) require math courses as prerequisites or a certain level of strength in mathematics.

Mathematics is integral to all plans that the college has considered, including the Educational Master Plan and long-range planning. In particular, one of the core values of the Mission Statement is "helping students to develop important skills that are critical for success in the modern workplace, such as verbal and written communication, mathematics, the effective use of technology for work and research, ..." Several of our courses, e.g., statistics, use computers and a variety of software or graphing calculators, leading toward a more effective use of technology.

Mathematical Competency/Quantitative Reasoning is one of the core competencies listed in our institutional student learning outcomes. Much of what is taught in mathematics falls into other areas of the institutional student learning outcomes. For example, some of our courses teach research methods and evaluation of information, which are parts of the Information Competency section. Most of the teaching of mathematics emphasizes critical thinking, which is another core competency. The course outline for Math 155 includes study skills, which is another segment of the institutional student learning outcomes.

The Division of Mathematics has always been a supporter of the goal of promoting innovative learning opportunities (EMP 3.5). (Mathematics did one of the first pilots of SI's in 1991 as part of the first Title III grant.) Unfortunately, virtually all of the opportunities for innovative programs have been offered by FT Faculty. In addition, there is an increasing need to incorporate more and more technology into the curriculum so that students can be familiar with the technological tools they will

be using in the workplace. Adjunct staff often do not have the time and access to the technology in order to integrate it into the courses. It is unrealistic and unfair to expect them to learn 4 different software technologies—a different one at each college they teach. We need more full-time faculty in order to generate and implement innovation in the curriculum.

The Division holds an annual retreat, which is now a two-night, three-day affair. At the retreat, we use data to plan future semesters offerings (EMP 3.1), examine assessments and basic skills preparedness (EMP1.2), and make appropriate changes to the curriculum to streamline it (EMP 3.4). We also spend one session examining the data from the common finals (SLOAC).

The Mathematics Collaborative has led to improved external communications with several school districts. (EMP 1.1) It has also improved student preparedness and articulation. (EMP 1.2) The creation of senior mathematics classes by several districts, as a result of our collaboration and data, has had an impact in student success. (EMP 1.3)

Our Basic Skills Math At-Risk Intervention Program, funded by the Basic Skills Initiative, has been successful. As a pilot, it has only been able to reach a limited number of students, but shows promise if expanded. (EMP 1.3, EMP 3.3).

As has been mentioned earlier, mathematics has been an important part of many of the college's grants. This has allowed us to diversify our revenue sources. (EMP 4.3) The GAUSS grant for over \$6 million was secured largely due to the efforts Tom Voden with support of full-time math faculty. In addition, the Mathematics Division shoulders a large portion of the responsibilities of the Gateway grant. The college must support the work required by these grants bringing in over \$10 million. It is untenable to accept the money and the increased workload without providing the resources of full-time faculty needed to carry out the endeavors.

Several of our Math 145 classes have worked with Student Services in implementing SEP's. (EMP 3.2). We have increased awareness of students' choices for their next mathematics class by having full-time instructors go into a class before registration with data showing the success rates of students going into the next class. These visits help clarify the choices between an accelerated course (Math 101), versus a normal paced class (Math 119) or a self-paced class (Math 219). (EMP 1.1)

Our Developmental group has implemented a project that incorporates extensive use of computers and online resources into all sections of our Arithmetic/PreAlgebra courses to invigorate student learning and is now piloting a similar project in our Elementary Algebra courses. (EMP 3.5) We have implemented Fast Track, an immersion Elementary/Intermediate Algebra learning community in order to allow students to streamline getting to their transfer level mathematics classes. We are currently piloting a new course, Intermediate Algebra for Statistics, in order to facilitate movement through the sequence and improve success rates in non-STEM transfer level mathematics courses. (EMP 3.4)

A full-time faculty member would be expected to contribute to all of the above. Adjunct faculty simply do not have the time to participate in most of the activities that have been mentioned. Unfortunately, our existing full-time faculty are stretched so thin that progress on these and other innovations are impacted.

Hiring a full-time mathematics instructor will have the following outcomes:

- an increase in the current abysmal ft/pt ratio mandated by AB1725
- an increase in the full-time faculty obligation number
- allow more full-time instructors to teach basic skills courses

- put more full-time instructors in the classroom, even with the inevitable demands made by new grants, such as Title V Gateway and GAUSS grants
- by taking up some governance tasks, allow other full-time instructors to decrease their committee assignments to more manageable numbers
- increase the number of hours per week donated by the full-time mathematics faculty to the Mathematics Discovery Center
- increase the number of full-timers to analyze data and related SLOs to implement changes to improve student success.
- Contribute to the ongoing efforts to incorporate innovation into the math classes.

4.7 Are there anticipated negative impacts for not hiring this position? If so describe.

As the mathematics offerings are increased (which will eventually happen), and a new hire is not granted, then the division's already dismal FT/PT ratio will worsen. The service the students will receive will be thus degraded. Failing to fill these positions simply means that one of the biggest divisions, as well as one of the most efficient providers of WSCH, will continue to backslide.

The year before last, we were told that we needed to change all of our variable unit classes to one-unit classes because PeopleSoft could not manage it. Even though we have had variable unit mathematics classes for more than 30 years, it seems that our new system cannot handle it. While it sounds a simple task, it meant that we had to create 13 course outlines within the first few weeks of fall, in order to offer the classes in the spring. This is the type of work that can only be done by full-time instructors.

The closer the Division of Mathematics gets to the 75% goal established by AB1725, the greater the possibility of meeting all the demands made by competing interests. Without more full-timers, it will be next to impossible to participate in more grants. It will be difficult to make curricular changes that would benefit student learning. It is unlikely that we could get more full-timers involved in teaching the basic skills classes, since we are already stretched thin.

A number of requests are being made of the mathematics division by the Basic Skills Initiative. These include the aforementioned retention project, common final coordinators, adjunct mentors, and high school collaborative coordinators. Again, these need to be done by full-time instructors.

The common final is only possible through the efforts of full-time faculty with release time. The organization required to assess all students in all sections of our four most popular courses every semester is considerable. Continuing to assess these courses is extremely important in meeting student needs. This is only possible if we increase the number of full-time instructors in the division. Taking full-time faculty away from the higher level courses with students who have the greatest chance of transferring is not a practical solution. The content of the higher level courses is such that the questions of students in these courses are much more involved and take more in-class time to answer. Furthermore, the preparation by the instructor for each class meeting is more difficult and time-consuming. Again, it is unfair to expect adjunct to teach these classes with the same degree of thoroughness expected of our full-time faculty.

We would like to expand our assessments to all our courses, and in order to do that as carefully as we have done with the common final will require coordination by full-time faculty. Simply put, there is no course or program in the Division of Mathematics that does not require another full-time faculty member.

A comparison with our nearest “competitor” college seems worthwhile. In 2000, PCC had 19 full-time mathematics faculty. In 2013, they have 40 full-time faculty, a one year hire, and have been approved for one growth position. They have more than doubled in size in the last decade. (a 105% increase) While PCC is about 50% larger than GCC, the percentages are still relevant. In 2000, GCC had 17 full-time mathematics faculty, and in 2013 we have 18 which is only a 6% increase over the decade.

In fact, even in a time of cutting, the superintendent of PCC for the third year in a row has added new sections of mathematics in response to student need. In Fall 2010, he added 17 additional sections. Fall 2011, he added 32 sections more than what was offered in Fall 2010; total growth of 15%. Even in this year’s fiscal climate, he added 4 math classes to the Fall 2012 schedule. For Spring and Winter 2012, an additional 20 sections of mathematics were offered above the number offered in 2011. PCC is at an all-time high in the number of sections in mathematics, offering 52 additional sections in the 2011-2012 academic year. In 2008-2009, we were cut back to the number of sections offered in the 2006-2007. In 2009-2010 and 2010-2011, the number of sections was further reduced by the elimination of one summer session and the reduction of winter session offerings. For the 2011-2012 academic year, with the elimination of winter, we offered the equivalent of 58 less sections than we offered in 2007-2008; a reduction of over 17%. (The self-paced reformatting into 1-unit classes was taken into account in this computation. In Fall 2007 and Spring 2008, we had 10 sections meeting 5 hours/week. In Fall 2011 and Spring 2012, we had 15 sections meeting 3 hours/week. This was counted as a loss of 1 section per semester.) For the current 2012-2013 academic year, summer was reduced by an additional 10 sections and fall was reduced by 7 sections. The increased allocation of classes for Spring 2013 approximately makes up for our losses in Summer 2012 and Fall 2012. Thus, we will still be offering 17% less sections during the current academic year as we did in 2007-2008.

As mentioned previously, the new Title V STEM Gateway and GAUSS grants have major mathematics components. In fact, the consultant for writing grants, Melanie Tang, has called mathematics the “Bermuda Triangle.” By this she meant, that it pulls in students and funding. Grants with a mathematics component are more attractive to the reviewers of the grant requests. She mentioned that including mathematics makes it more likely that a grant will be funded. These two grants will require work from full-time instructors, again taking them away from the classroom. Tom Voden, Co-Principal Investigator, is on leave from his faculty position for at least a year and a half, in order to carry out grant responsibilities. Most likely he will either be on leave or have released time of 80% or more for the duration of the five year grant (Oct. 2016). It is not unreasonable to project that the needs of these two grants will require the equivalent of an additional 1.5-2.0 FTEF per year in released time.

4.8 Are there any other special concerns not previously identified? If so, please explain.

Historically, Mathematics has consistently needed more full-time faculty. This need has been supported with statistics and validated regularly by Program Review and IHAC allocations. The recent retirement of four of our valued faculty (Lynn Pomeroy, December, 2008; Sid Kolpas, June 2010; Pete Witt, June 2011; Steve Marsden, December 2012) has intensified the need. In addition, we have already lost Tom Voden to the Title V GAUSS Grant and we will lose Gary Massion to retirement at the end of Spring 2013. Although we were able to replace Lynn, we are still functioning at a deficit of 5 full-time faculty members – in an environment where we were already in need of additional faculty before we lost any! We desperately need more individuals to assist in our efforts.

The loss of so many full-time faculty comes at a time when there are increased demands due to the work required by the GAUSS and Gateway grants. The Math Division has large responsibilities in the GAUSS, Gateway, and BSI grants. Gateway Projects: Math 155 Redesign; Math 145 Redesign; Self-Paced Redesign; Fast Track Algebra; AS 102, AS 104, and Self-Paced Computerization and Remodels. GAUSS Projects: Math 131 Intermediate Algebra for Statistics course; 3-D Printing Support; Moodle Lesson Development for Calculus, Pre-Calculus, and Statistics; Discussion Elements of Abstract Mathematics; AS 114, AS 115 and MDC Computerization and Remodels. BSI Projects: Math Retention/Intervention, High School Math Collaborative, Algebra Common Finals. All of these projects require full-time faculty leadership. We are stretched so thin that it will become impossible to support these valuable efforts. New projects such as a Fast Track Pre-Calculus and Engineering-Themed Math 103 are begging for the attention of full-time faculty.

We are concerned by the large number of faculty (4.3 FTE Fall 2012) on release time in the division, but the full-time Mathematics faculty in general do not want to be out of the classroom getting release time. One (1.0) FTEF is for the division chair and assistant chair, 1.4 FTEF goes toward college governance, 1.9 FTEF of the release time is for grant-funded positions.

The college has received grant funding, some by the Chancellor's Office, some by Federal Agency like Title V grant from the DOE, which have been awarded to GCC because of our record of excellence in carrying out new initiatives. These grants very often carry a mathematics component. The Basic Skills initiative is one example. Our staff is being pulled out of the classroom. We feel compelled to participate because these initiatives ultimately help students. It does not seem likely that similar demands will recede in the future, increasing our need for more full-time classroom instructors. In fact, both new Title V STEM grants received funding totaling over \$10.3 million. The Gateway grant, with an emphasis on basic skills, has a large mathematics component. The GAUSS grant, with an emphasis on integrated transfer level science, technology, engineering and mathematics, also requires both leadership and participation from mathematics faculty. Other released time positions are more elective, such as Academic Senate Treasurer, but these are integral parts of the college governance and require faculty that are willing to perform these duties. The full-time mathematics faculty involved in these activities are providing a service to the college at large.

The Division of Mathematics has a long tradition of service to the college and community. We have also been instrumental in serving the community through our HS collaborative, the Science Scholars Academy, and other outreach efforts with local schools. It has done all these while being one of the most efficient generators of FTES, having most class sizes at 40 and fill rates of over 100%. We generated 1557 FTES in the 2011-2012 academic year, which is far more than any single department on campus and more than all other divisions except Social Science, a division of 11 different departments. This represents nearly 13% of all credit FTES generated by the college. These facts must be kept in mind when arbitrary policies of limiting one hire per department are considered. The staffing needs of a department of this magnitude cannot be compared to departments with only a fraction of the amount of students served. If mathematics is not allowed to hire more than one instructor per year, we will never attain adequate staffing. We have hired instructors in pairs six times going back to 1976. The quality of our hires cannot be disputed. We have had three DFA's and five Parker Award winners. The division has been strong in both its instructional mission, as well as its mission to the college as a whole.

*** The Division of Mathematics should be requesting seven full-time mathematics instructors (five replacement and two new). However, due to the volume of replacement positions, we are not requesting new positions this year. Since there is only one FSA for all of mathematics, the job description for all of the requests would read like the following: "A full-time classroom instructor who can teach the whole range of subjects from arithmetic through linear algebra and differential

equations. Also, it is expected that the selected candidate will participate in professional activities, curriculum development, and campus committees.”

1. Position One of Five is a replacement for Sid Kolpas, who retired in June 2010.
2. Position Two of Five is a replacement for Pete Witt, who retired in June 2011.
3. Position Three of Five is a replacement for Steve Marsden, who retired in Dec. 2012.
4. Position Four of Five is a replacement for Gary Massion, who will retire in June 2013.
5. Position Five of Five is a replacement for Tom Voden, who is a Coordinator for the GAUSS Grant through Fall 2016.

2012 PROGRAM REVIEW**Section 4
Resource Request****MATH*****Website Redesign*****I:MA-17****Mark Type of Request:**

☐	Facilities/Maintenance	☐	Computer Hardware for Student Use
☐	Classroom Upgrade	☐	Computer hardware or Faculty Use
☐	Instructional equipment	☐	Software/Licenses/Maintenance/Agreements
☐	Non-Instructional Equipment	☐	Conference/Travel
☐	Supplies	☒	Other

4.1 Clearly describe the resource request.

Stipend needed for faculty to create new videos, handouts, info sheets, etc. along with researching resources on the web.
Amount requested: \$1500

4.2 Funding

☒	Requires One Time Funding
☐	Requires Ongoing Funding
☒	Repeat Request
2010 2011	Year(s) Requested

4.3 Please check if any off the following special criteria apply to this request:

☐	Health & Safety Issue
☐	Accreditation Requirement
☐	Contractual Requirement
☐	Legal Mandate

4.4 Justification and Rationale: What EMP Goal, plan, SLO, PLO, or ILO does this request address? Please use information from your report to support your request.

EMP Goal 1.1 Awareness. Improve awareness of GCCD resources with increased and effective internal and external communication
EMP Goal 1.2 Increase student access by developing strategies and systems to improve student articulation, assessment, and basic skills preparedness.
Core Competency 3: Information Competency

Supports Math Action Plans 15, 16, and 17

4.5 What measurable outcome will result from filling this resource request?

Increase accurate enrollment in correct math course. Increase student success due to resources outlined for student use.

APPROVAL

AGENCY	DECISION	
The Program Review Committee has reviewed the information in this request and finds it to be:	COMPLIANT	X
	NON COMPLIANT OR INCOMPLETE	
	a) Request not adequately described or incomplete	
	b) Request not linked to assessments or assessments not completed	
	c) Request not linked to EMP, plan or SLO,PLO or ILO	
	d) Report Incomplete	
PRC Comments		

Form Revised 9.19.12

Reports determined to be "Non-Compliant" will be returned to the division member responsible. Reports must be resubmitted with needed changes to the Program Review Office. Requests will not move forward in the budget process if the report or request is Non-Compliant.

Appendix A

Math 141/146 Common Final Exam Data, Fall 2011

exam mean		10.2296		mean GPA		2.21636									
exam st. dev		6.50336		GPA st. dev.		1.26852									
	COURSE	FT/PT	enrolled on census	received grade	# students took final	passed	exam mean	exam z score	course GPA for stds took final	course z score	course z - exam z	success	retention	pass rate per completed	pass rate for stds that took final
1	141	FT	44	33	31	24	13.2258065	2.5652024	2.51612903	1.315743	-1.2494594	0.54545	0.75	0.7272727	0.7741935
1	146	PT	42	34	34	16	8.14705882	-1.8671747	1.47058824	-3.4280449	-1.5608702	0.38095	0.809524	0.4705882	0.4705882
2	141	PT	39	28	25	19	8	-1.7141528	2.32	0.4085113	2.122664	0.48718	0.717949	0.6785714	0.76
3	146	PT	40	36	36	22	10.0833333	-0.1349008	2.11111111	-0.4978125	-0.3629117	0.55	0.9	0.6111111	0.6111111
4	146	PT	39	35	35	24	13.7428571	3.1960383	2.48571429	1.256208	-1.9398303	0.61538	0.897436	0.6857143	0.6857143
5	141	PT	36	29	22	14	12.1363636	1.3752488	1.95454545	-0.968066	-2.3433148	0.38889	0.805556	0.4827586	0.6363636
6	146	PT	40	35	35	25	12.0571429	1.6625517	2.14285714	-0.342794	-2.0053456	0.625	0.875	0.7142857	0.7142857
7	141 # 2047	PT	39	32	26	16	5.61538462	-3.6177786	1.73076923	-1.9519012	1.6658774	0.41026	0.820513	0.5	0.6153846
8	141 # 2055	PT	42	38	33	29	8.24242424	-1.7552729	2.54545455	1.4903249	3.2455979	0.69048	0.904762	0.7631579	0.8787879
9	141	PT	43	29	24	14	9.91666667	-0.2356959	1.95833333	-0.9964833	-0.7607874	0.32558	0.674419	0.4827586	0.5833333
10	141	PT	44	25	22	17	14.4545455	3.0471894	2.59090909	1.3849153	-1.6622741	0.38636	0.568182	0.68	0.7727273
11	146	PT	41	34	30	26	10.2	-0.0248887	2.63333333	1.800412	1.8253007	0.63415	0.829268	0.7647059	0.8666667
12	146	PT	43	31	26	23	6.80769231	-2.6829391	2.34615385	0.5217308	3.2046699	0.53488	0.72093	0.7419355	0.8846154
	MEAN PT			32.17	29	20.4167	8.91954023	-1.0847659	1.97126437			0.50205	0.790984	0.634715	0.704023
	total		532	419	379	269						0.50564	0.787594	0.6420048	0.7097625

Math 141/146 Item Analysis, Fall 2011

purple	tan		Part Time		Math 146		Math 141		Overall	
A	B		Mean	St. Dev.	Mean	St. Dev.	Mean	Mean	Mean	St. Dev.
1	17	Rationalize complex fraction with i	0.21	0.41	0.23	0.42	0.22	0.41	0.23	0.42
2	18	Quadratic Equation	0.38	0.49	0.46	0.50	0.34	0.47	0.40	0.49
3	19	Graph a parabola	0.56	0.50	0.56	0.50	0.55	0.50	0.56	0.50
4	20	Exponents (+, fraction)	0.46	0.50	0.49	0.50	0.46	0.50	0.48	0.50
5	21	Composition of functions	0.49	0.50	0.40	0.49	0.60	0.49	0.50	0.50
6	22	Graph a circle	0.32	0.47	0.35	0.48	0.32	0.47	0.33	0.47
7	1	Order of Operations	0.71	0.45	0.74	0.44	0.70	0.46	0.72	0.45
8	2	Prime factorization	0.45	0.50	0.51	0.50	0.39	0.49	0.45	0.50
9	23	Rational Expression	0.36	0.48	0.37	0.48	0.35	0.48	0.36	0.48
10	24	Linear equation with decimals	0.65	0.48	0.74	0.44	0.58	0.49	0.66	0.47
11	25	Graph linear inequality (1 variable)	0.29	0.45	0.24	0.43	0.32	0.47	0.28	0.45
12	26	Graph absolute value inequality	0.32	0.47	0.32	0.47	0.28	0.45	0.30	0.46
13	27	Find the equation of a line	0.32	0.47	0.29	0.45	0.38	0.49	0.33	0.47
14	3	Graph linear inequality (2 variables)	0.26	0.44	0.28	0.45	0.23	0.43	0.26	0.44
15	4	3 x 3 system	0.28	0.45	0.32	0.47	0.30	0.46	0.31	0.46
16	5	WP - Mixture	0.23	0.42	0.27	0.44	0.23	0.42	0.25	0.43
17	6	Exponents (+, -)	0.36	0.48	0.38	0.49	0.36	0.48	0.37	0.48
18	7	FOIL and subtract an expression	0.27	0.45	0.24	0.43	0.32	0.47	0.28	0.45
19	8	Factor by grouping	0.36	0.48	0.38	0.49	0.36	0.48	0.37	0.48
20	9	Factor sum of cubes	0.26	0.44	0.24	0.43	0.31	0.46	0.27	0.45
21	10	Quadratic Equation (w/GCF)	0.39	0.49	0.42	0.49	0.38	0.49	0.40	0.49
22	11	Rational Equation (Proportion)	0.33	0.47	0.33	0.47	0.36	0.48	0.35	0.48
23	12	WP - D=RT	0.21	0.41	0.24	0.43	0.17	0.38	0.21	0.41
24	13	Complex fraction, factor, cancel	0.29	0.45	0.31	0.46	0.31	0.46	0.31	0.46
25	14	Variation (directly)	0.50	0.50	0.53	0.50	0.49	0.50	0.51	0.50
26	15	"Rationalize" radical expression	0.33	0.47	0.38	0.49	0.35	0.48	0.36	0.48
27	16	Radical equation with one rad	0.41	0.49	0.38	0.49	0.45	0.50	0.41	0.49

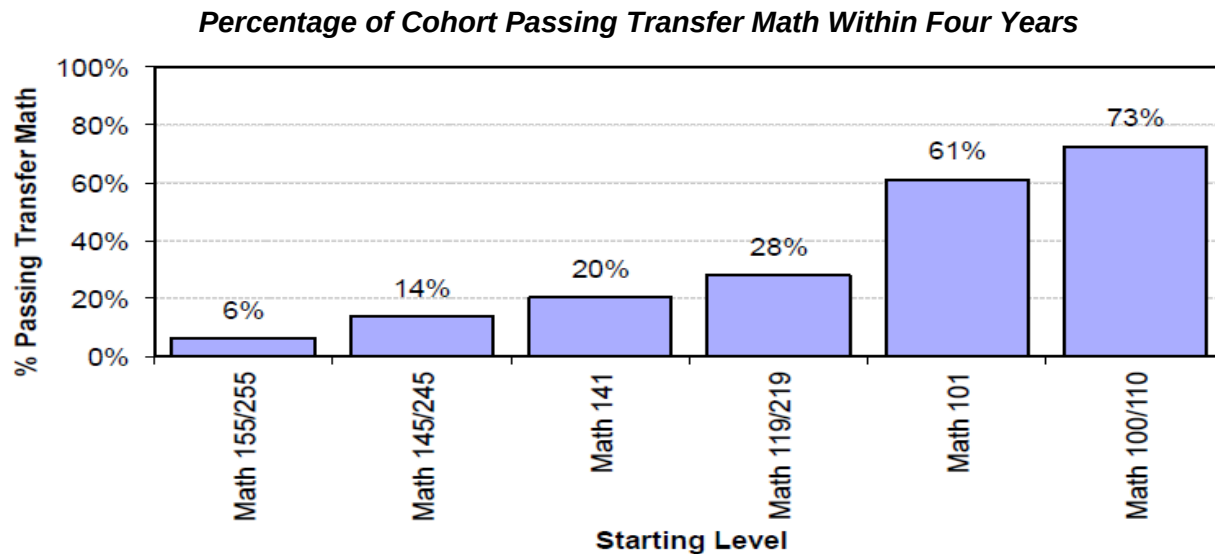
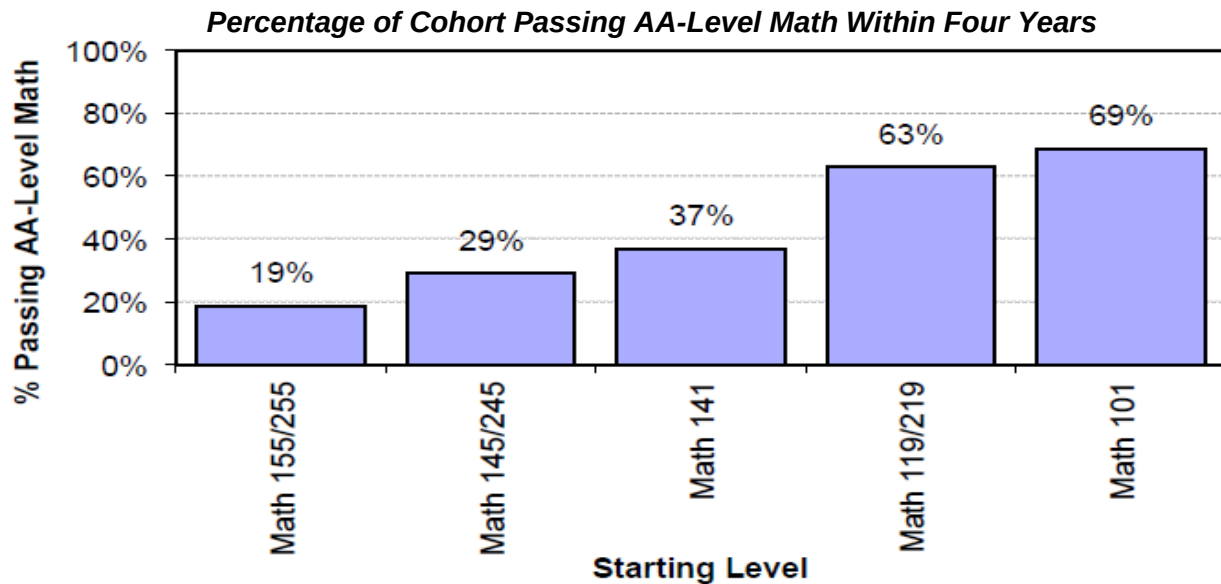
Appendix B

Glendale Community College Report on Basic Skills Student Progress Mathematics

Summary

Summary of Success by Starting Level

The following graphs show the percentage of students starting at each level of the course sequence who passed AA-level Math or transfer-level Math within four academic years.



The above graphs are based on data from 9,544 students (the most recent three cohorts).