

PROGRAM REVIEW 2008-2011

Division: _____ PSME _____
Department or Program: _____ Mathematics _____
Name and Title of Preparer(s): Dr. Lisa Markus, Mathematics Department Coordinator

In providing responses in the following areas, **please utilize the quantitative data available in the Program Review Enrollment Data Document and the Budget Document.** For the purposes of the Program Review, both departments and programs will be referred to as “program.”

I. Description and Mission of the Program

Which area(s) does this program considerably address (check all that apply):

Basic Skills Transfer Career/Technical Other (describe)

- A. Provide a brief description of the program including any services provided and the program’s mission.

The Mathematics Department encourages critical thinking. We remediate basic skills, prepare students for transfer, graduation and certificates, teach mathematical content and encourage students to understand the “why”, not just “what”.

- B. Provide a summary of the program’s main strengths.

Our retention rate of 82% in 2007-2008 is well above the state average (statewide mathematics retention rates for Spring 2008 is 74.87%, Fall 2007 is 75.45%) due to the excellence of our instructors and the efficacy of our programs such as the highly regarded Math Performance Success program and the enableMath Program. We encourage the use of technology to facilitate learning and our tutorial center is critical in helping our students succeed. We encourage innovation and experimentation in our teaching. For instance, we recently introduced a yearlong Learning Community in conjunction with Language Arts and counseling, that takes students through our developmental mathematics sequence while they take language arts classes up to EWRT 1A. We deliver courses in a variety of ways: face-to-face 5 days a week and 2 days a week, distance learning, computer aided and hybrid. We offer 19 different courses, including a wide variety at the transfer level in order to accommodate those students who may not be interested in taking the more typical statistics or finite mathematics courses. At the pre-college level we have 3 course Developmental Mathematics sequence. At higher levels we offer Discrete Mathematics, Linear Algebra, Differential Equations and Engineering Statistics for advanced students who are considering careers in the engineering, mathematical or medical sciences, or in econometrics/finance. We also offer a Special Projects course that enables students to engage in independent study supervised by a faculty member. We expect to work closely with the new Resource Center Supervisor to enhance our basic skills efforts, and offer technology based assessment, review, and prescriptive modules to assist students struggling in mathematics.*

* Data from California Community Colleges Chancellors Office website

- C. Provide a summary of the program’s main areas for improvement.

We wish to continue to improve our retention and success rates. We would also like more class-to-class consistency, especially in those classes with multiple sections. Every math class except Math 210 has prerequisites, so we would like to improve the placement process for students.

- D. What are your expected outcomes (such as learning outcomes, transfer, career goals, certificate and degrees) for students in your program?

We hope students will start taking math classes early on in their college career and proceed through their chosen sequence in a timely manner. While they are at De Anza, we want our students to gain a solid knowledge of mathematics, and at the same time develop the ability to apply their mathematical knowledge in a variety of contexts. We wish to maintain our high retention rates and hope that our students will continue to be successful after they transfer.

II. **Retention and Growth**

- A. How has the program responded to the institutional goal of increased access, growth and retention? (Include the number of students enrolled in the program and the retention rate over the last three years.)

In the area of growth and increased access, during the past 3 years the department has added sections in Math Performance Success, enableMath, online, hybrid, weekend, and precalculus MPS-style sections. We have increased the emphasis on quantity and quality of tutoring and will introduce a new tutor-training course specially designed for math and science tutors in Fall 2009. Overall, we have greatly increased the number of mathematics sections offered each year – from 456 sections and 14,338 students in 2005-06, 495 sections and 15,491 students in 2006-07, to 521 section and 16,538 students in 2007-08, an increase of over 15% over that time period. Our growth during the past year continues that trend, and our waiting lists have reached 20% of our total enrollment and represent more than 1000 students per quarter. Our retention rate has increased from 80% in 2005-06 and 2006-07, to 82% in 2007-08.

- B. How has the program responded to the institutional goal of increased access, growth and retention specifically for the identified targeted populations of African Ancestry, Latino/a, and Filipino/a students? (Include the number and percentage of the program’s enrollment that was made up of the targeted populations and the retention rate of the targeted populations over the last three years.)

For the targeted populations,

<i>Year</i>	<i>Number</i>	<i>Percent of enrollment</i>	<i>Retention rate</i>
2005-06	3,379	24	75
2006-07	3,492	23	74
2007-08	3,739	23	76

The data show a 10.7% increase in the number of targeted students taking mathematics classes over the 3-year period, while their percentage of the total mathematics students has remained fairly constant.

- C. The Statewide Basic Skills Initiative defines “basic skills” as English, mathematics, reading, writing and ESL skills. In what ways does your program address the basic

skills needs of students? For programs that do not directly address basic skills, how does the lack of basic skills impact student success rates for your program?

The Mathematics Department has a 3 course Developmental Mathematics sequence that is comprised of approximately 41% of our course offerings in 2007-08, up from 36% in 2005-06 (using the percent of nontransferable sections). Of these, Math 210 and 212 are considered Basic Skills, but due to recent renumbering (from Math 112 to Math 212) our true Basic Skills percent is not accurately recorded in the Program Review data. Future Program Review data will indicate a higher percent of students classified as Basic Skills. We are continuing to work to find additional ways to improve student learning at this level. In recent years, we have expanded the number of MPS sections and have introduced enableMath sections that use technology to support learning. We are offering a sequential yearlong Learning Community with Language Arts and Counseling, and have recently used Title 3 grant money to promote peer tutoring in Math 212. We recently formed a committee to study our basic skills program and a committee looking at developing review modules to meet the needs of students in the Developmental classes. The math department initiated a Basic Skills Retreat during the past year that drew substantial part-time participation. A follow up retreat is planned for spring 2009. The availability of stipends to compensate part time faculty is crucial to ensure their participation.

III. **Student Equity**

- A. What progress or achievement has the program made towards decreasing the student equity gap? (Include student success rates for targeted populations compared with other students over the last three years.)

The table below shows the success rates for the targeted populations over the last 3 years (data from De Anza College Program Review):

<i>Year</i>	<i>Percent Success non-targeted</i>	<i>Percent success targeted</i>
2005-06	66	53
2006-07	67	51
2007-08	67	52

The special programs of enableMath, Math Performance Success, LinC and Title III tutoring have shown increased success for the targeted populations. The table below shows student success rates for Fall 2008 for some special programs: Math Performance Success (MPS), enableMath (EM), the Learning Community (LinC) and the Title III tutoring project. The 3-year data for the targeted populations in our special programs is not available at this time. (Data below from draft of institutional research report on enableMath in Fall 2008)

<i>Class</i>	<i>Program</i>	<i>Percent success for targeted populations</i>
<i>Math 210</i>	<i>MPS</i>	<i>86</i>
	<i>EM</i>	<i>87</i>
	<i>LinC</i>	<i>53</i>
	<i>Not special program</i>	<i>52</i>
<i>Math 212</i>	<i>MPS</i>	<i>62</i>
	<i>EM</i>	<i>61</i>
	<i>Title III tutoring</i>	<i>62</i>
	<i>Not special program</i>	<i>38</i>
<i>Math 114</i>	<i>EM</i>	<i>61</i>
	<i>Not special program</i>	<i>46</i>

The above table shows that we have a solution that would completely erase the success gap for the targeted population; however, the successful programs such as MPS, enableMath and targeted tutoring would require additional resources to scale up.

- B. In what ways will the program continue working toward achieving these goals?

We will continue the above programs and expand if support is available. These programs require counseling support and coordination. We continue to ask for smaller class size, especially at the Developmental Level, where personal attention to students is crucial. We wish to expand the tutorial center both in terms of number of tutors and the number of hours the center is available. Having a Supervisor and some Instructional Associates for the Tutorial Center will greatly help student access to these services. We'd like to have counseling services for all our developmental classes.

- C. What challenges exist in the program in reaching such goals?

Our main challenges are money to support our special programs: college support, counseling support, and coordination of the different programs. In addition, we need more classrooms so as to expand our offerings, particularly MPS.

IV. **Budget Limitations** (Please be specific in your responses.)

- A. Identify any limitations placed on the program based on limited funding. What increases in resources are critical to the program and what are the consequences of continued limited funding on the program?

We are a large department that teaches a compulsory subject. In our last Program Review (2005-2006) we requested two growth positions in mathematics. We repeat that request here. Since the last Program Review, the percent of classes taught by full time faculty has declined every year. In addition, we have extensive course offerings that are required to be updated every 5 years, several special programs that perform well for all students at the pre-college level, and different modes of instruction and technology. We need a much higher percentage of full time faculty to support these efforts. Also, if a vacant position in mathematics occurs due to retirement or resignation, a replacement full time math faculty member should be hired as soon as possible.

In addition, we need to continue the reassigned time for the Mathematics Coordinators and compensation for a special programs (MPS, enableMath, etc.) coordinator. We need the opportunity and compensation to study and develop effective strategies for student equity and retention. In the past, we have been supported by one-time monies for adjunct faculty to attend workshops. Because we have a large number of adjunct faculty who teach many of our basic skills classes, we need to continue training stipends for these faculty.

We need money to maintain and increase our current levels of instructional support – computer labs, handouts, tutorial support, and classroom supplies.

We would like our evening students to have the same level of instructional support as the day students by expanding the hours of our tutorial center. Under Title III a math/science tutorial center supervisor and an instructional associate are being hired. When Title III ends, these positions need to be continued with funding from the district. These positions are crucial to coordinate and expand services.

We want more money to provide instructor training, to teach more hybrid classes, to train faculty to use new technologies, to have teaching assistants in class, and to make sure the use of technology does improve learning.

- B. Describe the consequence to students and the college in general if the program were eliminated or significantly reduced. Please be specific.

Since Mathematics is a compulsory subject for any college degree, any reduction or elimination of the program would be devastating to our student population. There will be a negative impact on our students - they may not earn an associates degree or certificate and may not be able to transfer. In fact, if the College is truly committed to increasing the success rate of students in our discipline, we will require an increase of resources in order to support and expand our proven successful programs such as enableMath and MPS.

- V. **Additional Comments (optional)**: What additional information is important to consider when reviewing the budget of your program for possible reductions? You may include any or all of the following, or other information.
- **Strategic Planning Initiatives (Community Collaborations, Cultural Competency, Outreach, and Individualized Attention for Retention)**: Describe any other Strategic Planning Initiatives your program has addressed.
 - **Relationships with Other Programs**: Describe any partnerships or collaborations that the program is actively engaged in, which reduce costs and/or improve service delivery.
 - **State and Federal Mandates**: Describe any State or Federal mandates that directly impact the program.
 - **Trends (such as enrollment, certificate and degrees conferred, transfer rates, job placement, etc.)**: Describe any positive and/or negative trends in the program.
 - **Comparable Programs at other Institutions**: Provide any information that you have that would allow for a comparison of the program to similar programs at other institutions in the State.