



Instructional Program Review Saddleback College Mathematics

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Program: Mathematics

Division: Math, Science and Engineering

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1.0 Overview

The mission of the South Orange County Community College District requires a systematic review of the Saddleback College Mathematics Program to ensure quality and relevance, and the effective use of resources. This program review is used for making judgments about the effectiveness of the program and to improve student learning. It is a means of ensuring that the Saddleback College Mathematics Program is effective and responsive to the local college community.

The results of this review of the Mathematics Program will be incorporated into the Saddleback College strategic planning process. Further, this program review will support the Western Association of Schools and Colleges accreditation standards, interface with the College Enrollment Management Plan and, most importantly, provide the information necessary for effective program planning and improvement.

This document includes an analysis of the current state of the Saddleback College Mathematics Program and lists several recommendations that will lead to significant Program enhancements. In the overview section the mission and goals of Saddleback College, the Mathematics, Science and Engineering Division, and the Mathematics Department are presented. This section is followed by the program analysis and list of recommendations concerning: curriculum, instruction, student success, staffing and resources, staff development, community outreach, and articulation and accreditation. Presented in the final section are important statistics related to the Mathematics Program including student enrollment, success, and retention data.

1.1 Saddleback College Mission and Goals

1.1.1 Mission Statement

The mission of Saddleback College is to provide access to learning opportunities that promotes student success; to foster intellectual growth, individual expression, and character development; and to support a dynamic and diverse environment of innovation and collegiality.

1.1.2 Goals

The primary goal of Saddleback College is to provide a comprehensive post secondary education and a full range of student services. Emphasis is placed on open access to all students, including a changing and diverse student population. Academic success and student achievement are joint responsibilities of the students, the staff, and the College. To this end, the college will:

- 1.1.2.1. Provide educational programs leading to the Associate in Arts and Associate in Science degrees.
- 1.1.2.2. Provide a comprehensive, broad range of high-quality courses and programs to enable students to pursue their educational objectives and career goals.
- 1.1.2.3. Provide a meaningful general education program including baccalaureate-level transfer and occupational curricula.
- 1.1.2.4. Provide necessary developmental, remedial, and basic skills instruction so that students may be successful in their chosen course of study.

- 1.1.2.5. Provide access for the community to the educational, cultural, and recreational resources of the College.
- 1.1.2.6. Provide counseling and other support services that are responsive to the needs of students.
- 1.1.2.7. Provide opportunities in continuing education and community services including courses for skills upgrading and retraining for professionals and life-long learning for older adults.
- 1.1.2.8. Provide opportunities for the promotion of economic development within the scope of the mission of the District and the College.

1.2 Mathematics, Science, and Engineering Division Mission and Goals

1.2.1 Mission Statement

The mission of the Mathematics, Science, and Engineering Division is to develop, instruct and inspire all students in rigorous, high quality post-secondary education in lower division courses in mathematics, science and engineering with a vision for tomorrow.

1.2.2 Goals

The primary goal of the Mathematics, Science, and Engineering Division is to fulfill its mission. To this end, the Division will:

- 1.2.2.1. Facilitate and implement progress toward the goal of sustaining a one percent growth rate using the Weekly Student Contact Hours (WSCH).
- 1.2.2.2. Continue to improve performance evaluation and feedback processes so that faculty and staff receive regular and timely evaluations.
- 1.2.2.3. Recruit, hire, and maintain competent faculty and staff that reflect a diverse pool of educational expertise, talent, and skill.
- 1.2.2.4. Establish and expand efforts toward effective community relations.
- 1.2.2.5. Continue to plan for the renovation and revitalization of the Science&Mathematics (SM) building.
- 1.2.2.6. Ensure that a responsible safety and occupational health program is in place to support a safe and secure learning and work environment for students, faculty, and staff.

1.3 Mathematics Department and Program

1.3.1 Mission Statement

The mission of the mathematics program is to provide classes that allow students to bring their basic mathematics skills to the level required for the associate degree, vocation programs, and/or transfer and to provide interested students the mathematics skills needed for success in upper division courses in mathematics and mathematics related fields.

1.3.2 Goals

The primary goal of the Mathematics Program is to fulfill its mission. To this end, the Department will:

- 1.3.2.1. Provide necessary developmental, remedial, and basic skills instruction in mathematics so that students may be successful in their chosen course of study. For this purpose, the Mathematics Program offers three nontransferable courses: Math 351 (Prealgebra), Math 251 (Beginning Algebra), and Math 253 (Intermediate Algebra). This Program goal supports the following College goals: 1.1.2.1, 1.1.2.2, 1.1.2.4, and 1.1.2.7.
- 1.2.2.2. Provide a meaningful academic component for the general education portion of both the baccalaureate-level transfer and occupational curricula. For this purpose, the Mathematics Program offers twelve transferable mathematics courses. This Program goal supports the following College goals: 1.1.2.1, 1.1.2.2, 1.1.2.3, and 1.1.2.7.
- 1.2.2.3. Increase student retention and transfer to four-year colleges and universities by offering quality mathematics instruction at times convenient for both full-time and part-time students throughout the day and evening. This Program goal supports the following College goals: 1.1.2.1, 1.1.2.2, 1.1.2.3, 1.1.2.5, and 1.1.2.7.

1.4 Unique Characteristics of the Mathematics Program

The Saddleback College Mathematics Program is comparable to mathematics programs offered at most four-year colleges and universities in the United States. In particular, the Department strives to maintain a close relationship between the Saddleback College Mathematics Program and the mathematics curriculum at the various branches of the University of California (UC), California State University (CSU), and California State Polytechnic University (Cal Poly) because these institutions are the primary destinations of Saddleback College transfer students.

Unlike the lower division classes offered at most major universities and many other local community colleges, the mathematics program at Saddleback College utilizes small sizes (i.e. under 46) for all class sections of its courses. The lower division mathematics classes at the various branches of UC and CSU are generally offered in the large lecture format with an attached smaller sized discussion section. The lecture sections usually have 200 or more students and are taught by the class professor. The discussion sections are lead by teaching assistants who are graduate students. These teaching assistants are normally responsible for grading the class exams and providing individual guidance to the students. All mathematics classes at Saddleback College are offered in small lecture sections that have maximum

enrollments of either 40 or 45. The class professor is present at all class meetings and is solely responsible for grading the class exams and providing individual guidance to the students. Because the Mathematics Program uses small sized classes, the faculty member assigned to each class can more effectively focus on the individual learning needs of the students in that class. Students at Saddleback College are very appreciative of the personal efforts that the faculty members use to further their learning and publicly praise the quality of education they receive through the Saddleback College Mathematics Program.

The Mathematics Program employs state-of-the-art computer and video projection equipment to supplement the instruction and learning of students. This equipment is available in the various mathematics classrooms for instructor demonstrations. Further, this equipment is available in the Computer Science Laboratory for the use of students enrolled in mathematics classes. In this laboratory setting students have the freedom to experiment with the concepts presented in the lecture portion of their class. Several classes require learning activities to be completed by students using the equipment available in the laboratory.

1.5 Mathematics Program Statistics

A quantitative description of the Saddleback College Mathematics Program is presented in Section 3 of this program review. The statistics generally summarized in the tables of Section 3 are taken from the spring, 2003 through the fall, 2005 semesters. However, useful scheduling data is taken back to spring, 1996. The specific tables available in Section 3 are listed below:

Table 3.1 Overall Math Courses -- Grades/Success/Retention

Table 3.2 Math Program -- Courses by Grade/Success/Retention

Table 3.3 Math Program -- Educational Goals by Year/Term

Table 3.4 Math Program -- Distribution of Fall Semester Enrollments

Table 3.5 Math Program -- Distribution of Spring Semester Enrollments

Table 3.6 Mathematics, Science and Engineering Division Enrollment Summary Report by Department

Table 3.7 Saddleback College Enrollment Summary Report by Division

1.5.1 Access and Productivity

Offering multiple sections of almost all classes and scheduling those sections in the morning, afternoon, and evening encourages student access to the Mathematics Program. For example, 36 percent of the 109 class sections offered during the fall, 2005 semester had start times between noon and 5 p.m. Another 19 percent started after 5 p.m. and 42 percent started before noon. In an effort to allow students to fit mathematics classes into their busy schedules, three unit classes are offered in both one day per week and two days per week formats. Five unit courses are offered in both two days per week and three days per week formats. Three of the most popular courses are offered through a distance education format that is frequently convenient for students who have difficulty fitting those courses into their regular class or work schedules.

The standard measure of program productivity at Saddleback College is the ratio of Weekly Student Contact Hours (WSCH) to Full Time Equivalent Faculty (FTE). Any program with a value for this ratio at 525 or higher is considered to be very productive. It is clear from

Table 3.6 that this ratio has been consistently above 600 for the Mathematics Program over the last 3 years. Furthermore, the Mathematics Program maintains the highest ratio of WSCH per FTE for any program within the Mathematics, Science, and Engineering Division.

1.5.2 Student Success

The percent of students receiving a grade of C or higher varies widely over the Program curriculum as shown in Table 3.2. The lowest success rate (approximately 40%) is achieved in Beginning Algebra (Math 251). In general, the basic skills and entry-level courses tend to have the lowest success rates. Once students have found their proper course and begin to work their way up the mathematics course offerings, the course success rates improve dramatically. The capstone course, third semester calculus (Math 3C), generally has a success rate in the neighborhood of 70%.

1.5.3 Student Characteristics

Because completion of a mathematics course is required of essentially all Saddleback College students who seek an associate degree or who wish to transfer to a four-year college or university, the population served by the Mathematics Program is the same as the population of students at Saddleback College. Consequently, the demographic characteristics of students enrolled in mathematics classes are the same as students as a whole at Saddleback College. The educational goals of students actually enrolled in a mathematics course over the past five semesters are shown in Table 3.3. It is interesting to note that over half of these students intend to transfer to a four-year college or university, while 15 percent seek a vocational certificate and do not plan to transfer to another institution of higher education. The next largest group of students, 12 percent of enrolled in a mathematics class, have yet to decide on their educational goal.

1.6 Mathematics Program Recommendations

1.6.1 Faculty and Staff

All courses offered through the Mathematics Program are staffed by highly competent and professional full-time and adjunct faculty. The eighteen full-time faculty members teach the majority of the class sections. During the fall, 2005 semester, nearly two-thirds of mathematics class sections were taught by members of the full-time faculty. It is only through the dedicated service of the more than thirty excellent adjunct faculty members that the Mathematics Program can offer enough class sections to meet the demand for mathematics education at Saddleback College.

Service as an adjunct faculty member can be challenging. Frequently these excellent teachers are working at several different institutions and required to spend a good portion of their day commuting between assignments. When scheduling conflicts arise between these institutions, adjunct faculty members are forced to interrupt their service at one or more institutions. Consequently, the retention of adjunct faculty members is of the highest priority and the recruitment of new adjunct faculty who meet the standard of excellence expected of Saddleback College students is frequently challenging. It is recommended that the Mathematics Department continue to actively recruit adjunct faculty in order to meet the near-term need for replacement faculty and the long-term growth of the student population at Saddleback College.

Because of the projected increase in the number of mathematics classes required to meet the growth of the student population at Saddleback College over the next ten years, the full-time mathematics faculty must increase to at least twenty-five members from its

currently level of eighteen members. The difficulty inherent in the task of increasing the number of full-time faculty members by 40 percent over the next ten years is further complicated by the fact that half of the current full-time faculty will retire over that same length of time. It is recommended that the Mathematics Department continue to aggressively pursue additional full-time faculty positions through the full-time hiring subcommittee of the Saddleback College Academic Senate.

The Office of the Dean of the Mathematics, Science, and Engineering Division has only two administrative assistants available to meet the administrative and secretarial needs of the departments of Astronomy, Biology, Chemistry, Computer Science, Geology, Marine Science, Mathematics and Physics. This inadequate staff level leads frequently to a stressful work environment for the administrative assistants, department chairs, and division faculty. It is recommended that the Mathematics Department actively support the efforts of the Division Dean through the classified staff hiring subcommittee of the Classified Senate to gain authorization for a third full-time administrative assistant position in the Mathematics Science, and Engineering Division.

1.6.2 Facility Improvements

The expected growth in the demand by Saddleback College students for the services of the Mathematics Program can only be met if at least five additional dedicated lecture rooms are made available for mathematics classes. So that students can continue to be exposed to the technological advancements revolutionizing mathematics education, a mathematics computer classroom with a capacity of forty-five students is urgently needed. Further, a quality mathematics student testing area and a modern mathematics computer laboratory facility are needed within the Science&Mathematics building. Additionally, at least seven faculty offices within the Science&Mathematics building will be needed to house the increase in full-time mathematics faculty described previously. It is recommended that these spaces be made available to the Mathematics Program. It is expected that this space will become available on the second floor of the Science&Mathematics building when a new science building is constructed in the next five years. The current Science&Mathematics building will then become the Mathematics&Computer Science building.

The third floor of the Science&Mathematics building presently needs renovation and repair in several areas. It is recommended that a soundproof wall be placed between SM 309A and SM 309B, soundproofing be placed in the wall between SM 122 and SM 123, and that the large faculty office SM322 (a former administrative office) be divided into two normal sized faculty offices.

1.6.3 Course Scheduling and Curriculum Enhancements

A change in the Physics Program class schedule that became effective fall, 2005 has created a scheduling conflict for a number of the most advanced students whose major fields reside within the Mathematics, Science, and Engineering Division. Traditionally, the single day section of Physics 4B (General Physics) offered during the fall semester was scheduled on Monday and Wednesday. The lecture met both days from 10:30 a.m. to 12:00 noon and the laboratory met on Wednesday from 1:30 p.m. to 4:30 p.m. Because many of these students also need to take Math 26 (Introduction to Linear Algebra) the single section of that course offered each academic year was placed on Monday and Wednesday from 12:00 noon to 1:30 p.m. This scheduling arrangement was particularly convenient for students enrolled in both classes.

Beginning with the fall, 2005 semester an hour of instruction was added to the lecture portion of Physics 4B and the lecture was scheduled on Monday and Wednesday from 10:30 a.m. to 12:30 p.m. and the lecture was immediately followed on Wednesday by the laboratory from 12:30 p.m. to 3:30 p.m. This schedule change was not made known to the Mathematics

Department Chair until after the semester had begun. It created a serious class scheduling problem for a number of students and prevented many from enrolling in one course or the other. It is recommended that the Physics Department return the schedule for the day section of Physics 4B in the fall term to Monday and Wednesday from 10:30 a.m. to 12:00 noon and then add the extra hour of lecture to the first part of the laboratory session that would then meet on Wednesday from 1:30 p.m. to 4:30 p.m.

A scheduling conflict identical to that described above was created between Physics 4C (General Physics) and Math 24 (Elementary Differential Equations) for the spring semester when the Physics Department added an hour to the lecture component of Physics 4C. It is again recommended that the Physics Department return the schedule for the single section of Physics 4C in the spring term to Monday and Wednesday from 10:30 a.m. to 12:00 noon and then add the extra hour of lecture to the first part of the laboratory session that would then meet on Wednesday from 1:30 p.m. to 4:30 p.m.

The mathematics faculty strives to be informed about changing trends in the community college mathematics curriculum and pedagogy. This is accomplished through regular conference attendance, reading the appropriate journals, conversations with numerous colleagues, and individual research. Currently there is a significant amount of discussion in California concerning the Intermediate Algebra course. It is the recommendation of the California Academic Senate that successful completion of Intermediate Algebra be made a requirement for an associate degree from a California community college. Since this proposal is likely to become law in California, it is important that the mathematics faculty investigate the impact this associate degree change will have on the curriculum at Saddleback College to assure that there is an adequate array of basic skills courses available to prepare students for success in their quest for an associate degree.

In view of the changing role of Intermediate Algebra in the California community colleges, the mathematics faculty at Saddleback College is currently developing a second intermediate algebra course designed for those students who have a strong background in the beginning algebra. These students will need relatively little review of the basic algebra topics in the intermediate algebra course and so that course can be offered in a 3-unit, 3 lecture hours per week format. This new course will be pilot tested during the 2006-2007 academic year. It is thought that a 3-unit course will allow students with severely limited schedules to complete intermediate algebra more conveniently than may now be the case.

2.0 Program Review

2.1 Curriculum

2.1.1 Course Offerings

Shown in Table 2.1 is a complete list of the courses offered in the Mathematics Program at Saddleback College. Also indicated are those courses that allow certification of the Area B4 general education requirement for the California State University system and the Area 2 mathematical concepts & quantitative reasoning requirement of the Intersegmental General Education Transfer Curriculum (IGETC).

All Mathematics Program courses, with the exception of Math 351, satisfy the mathematics competency portion of the Saddleback College associate degree general education requirement.

Table 2.1
Mathematics Courses Offered At Saddleback College

Course	Course Title	Transferability
Math 351	Pre-Algebra Mathematics	<ul style="list-style-type: none"> • Neither associate degree applicable nor transferable
Math 251	Beginning Algebra	<ul style="list-style-type: none"> • Associate degree applicable but not transferable
Math 253	Intermediate Algebra	<ul style="list-style-type: none"> • Associate degree applicable but not transferable
Math 7	College Algebra	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4
Math 8	College Algebra for Brief Calculus	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4
Math 9	Finite Mathematics	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4
Math 10	Introduction to Statistics	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4
Math 124	Trigonometry	<ul style="list-style-type: none"> • CSU area B4
Math 11	A Brief Course in Calculus	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4
Math 2	Pre-Calculus Mathematics	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4
Math 3A	Analytic Geometry and Calculus	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4
Math 3B	Analytic Geometry and Calculus	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4
Math 3C	Analytic Geometry and Calculus	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4
Math 26	Introduction to Linear Algebra	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4
Math 24	Elementary Differential Equations	<ul style="list-style-type: none"> • IGETC area 2 • CSU area B4

2.1.2 Course Evaluation

The contents of each course in the Mathematics Program are routinely discussed by the faculty at the monthly meetings of the Mathematics Department. Working with the Saddleback College Curriculum Committee, revisions to the list of topics covered, learning objectives, methods of evaluation, assignments, prerequisites, corequisites, and recommended preparation for any course are made as the need is identified. A formal evaluation of each mathematics course takes place at least every five years under the guidance of the Curriculum Committee. A list of the courses in the Mathematics Program together with the date of the last formal curriculum evaluation, the corequisite, and the prerequisite is presented below in Table 2.2.

Table 2.2
Mathematics Courses List with Curriculum Evaluation Dates,
Corequisites, and Prerequisites

Course Number	Evaluation Date	Corequisite	Prerequisite
Math 351	Fall 2002	None	None
Math 251	Fall 2005	None	Math 351
Math 253	Fall 2005	None	Math 251
Math 7	Fall 2005	None	Math 253
Math 8	Fall 2005	None	Math 253
Math 9	Fall 2002	None	Math 253
Math 10	Fall 2002	None	Math 253
Math 124	Fall 2002	None	Math 253
Math 11	Fall 2005	None	Math 8
Math 2	Fall 2005	None	Math 124
Math 3A	Fall 2005	None	Math 2
Math 3B	Fall 2005	None	Math 3A
Math 3C	Fall 2005	None	Math 3B
Math 26	Fall 2002	None	Math 3B
Math 24	Fall 2002	None	Math 3C

2.1.3 Mathematics Courses Required By Other College Programs

In addition to the core role the Mathematics Programs plays in the general education of students at Saddleback College, numerous College academic programs in the physical and social sciences require students to complete specific mathematics courses. College programs with this requirement include Anthropology, Biology, Business, Chemistry, Computer Science, Economics, Engineering, Geology, Physics, Psychology, and Sociology. The specific mathematics courses that support these programs are listed in Table 2.3

The faculty and chair of the Mathematics Department frequently review the academic programs offered at CSU and UC to insure that the Saddleback College Mathematics Programs is compatible with these undergraduate programs. The mathematics faculty work closely with the counseling staff at the College to insure the Mathematics Program meets the needs of Saddleback College students. In addition, the mathematics department chair maintains contact with the numerous chairs of related programs at UCLA, UCI, CSU Fullerton, CSU Northridge, CSU Long Beach, UC San Diego and CSU San Diego.

Table 2.3
Mathematics Courses Required by Various College
Associate Degree Programs

Mathematics Course Requirement	Associate Degree
Math 251, 253	Biology, Chemistry
Math 3A, 3B, 3C, 24, and 26	Engineering, Physics
Math 3A or Math 11 Math 3B or Math 10	Economics
Math 3A and 3B	Astronomy, Computer Science , Geology
Math 3A, 3B, 3C, Math 10	Oceanography
Math 10	Anthropology, Psychology, Sociology
Math 11	Business

Irvine Valley College offers the course Math 105 (Mathematics for Liberal Arts Students). The suggestion has been made that Saddleback College also offer this course. The Mathematics Department faculty recommends that this course not be added to the Saddleback College curriculum. It is their feeling that liberal arts students have a rich variety of mathematics courses from which to choose. Math 7 (College Algebra) was specifically designed for these students and Math 10 (Statistics) contains an information base often useful to liberal arts students in their later academic and professional lives. Additionally, the enrollment figures for the Math 105 course at Irvine Valley College do not support the establishment of a competing offering at Saddleback College. Generally, the course has 100 students in the fall term, 100 in the spring term, and 50 in the summer session. Also it is worth noting that Math 105 is not transferable to UC campuses and not transferable to all CSU campuses.

2.2 Instruction

Learning goals and objectives are documented in the course curriculum. In addition, each instructor lists learning objectives and goals in the course syllabus handed out the first day of class or made available on web pages. The mathematics faculty uses a variety of methods to assess students and determine if learning goals and objectives are met. These methods include: daily and weekly quizzes, exams, homework, laboratory assignments, and oral presentations. Further details of the various assessment methods used by the mathematics faculty are described in the next section: Student Success. All math students have access to the Learning Assistance Program (LAP) where volunteers help them with their homework assignments.

The Mathematics Program strives to maintain the integrity of Saddleback College academic standards and achieve consistency in instruction amongst courses offered. To this end, all mathematics faculty members follow the course outline approved by the Curriculum Committee. The department chair and division dean have the responsibility of working with the department faculty to insure that this takes place. For the most part, all of the mathematics faculty members use the same assessment tools. Student grades are based on three to four multi-chapter exams, daily and weekly quizzes, homework problems assigned from the textbook, laboratory assignments, and a final exam.

Faculty members have the opportunity to attend various conferences and workshops on mathematics education. Financial assistance for such conference attendance is available through

the Saddleback College Faculty Development Office. Mathematics faculty members are encouraged to use and experiment with new and innovative teaching methods. In addition, new teaching tools are often available from textbook publishers. New and innovative teaching methods are discussed at the department meetings or via impromptu conversations between faculty members.

Technology is used in most mathematics courses. Some instructors have websites. Many use the computer for animation in graphing, solving of systems of linear equations, solving of polynomial equations. Students use computers for data entry and analysis. Calculators are common tools in all mathematics classes with the use of graphing calculators encouraged where appropriate.

Technology is used as an instructional aid in the lecture portions of some mathematics courses. Each faculty member has a personal computer with Internet access in his or her office. The Computer Science Laboratory is available for use by mathematics students and faculty. It is fully equipped with Internet access computers as well as software and tutors. Distance-learning courses via the Internet are available to students interested in prealgebra, beginning algebra, and intermediate algebra. Computers are used to: display Power Point presentations, demonstrate various mathematical concepts by using animation software available from the publishers, demonstrate the use of common data analysis software like Microsoft EXCEL, and access and display various interactive websites available for mathematics instructors.

Enrollment and productivity have increased over the past nine years. The fall mathematics enrollment increased from 3,381 students in the fall of 1996 to 4,444 students in the fall of 2004. This increase of 1,063 students represents a 31.4% increase in fall mathematics enrollment. The spring mathematics enrollment increased for 3,203 students in the spring of 1996 to 4,122 students in the spring of 2005. This increase of 919 students represents a 28.7% increase in spring mathematics enrollment. The annual mathematics enrollment increased 28.7% from 1996 to 2004. The Mathematics Program enrolled 6,584 students in 1996 and 8,475 students in 2004.

The Math 3A, 3B and 3C class schedules are adjusted to maximize enrollment. First, an attempt is made to schedule Math 3A, 3B and 3C courses in coordination with physics and chemistry courses. Students taking Math 3B and/or 3C may also be taking Physics 4A, 4B and/or chemistry. In the case where there is only one section of a course offered, the chairs of the mathematics and physics departments work together to insure these single section classes are not offered at the same time.

Every attempt is made to offer courses during the most desirable time slots for students. As an example, the optimum time during the week to offer the lecture portion of the course is between 9 a.m. and 12 noon. However, due to room limitations, it is not possible to offer all courses at these times. Night courses are offered to accommodate students with daytime jobs.

In order to maintain the instruction of mathematics at the level of excellence expected by Saddleback College students and staff it is recommended that the College continue to update computer hardware and software, to support and encourage faculty use of technology, and complete the installation of computer video projection systems in the mathematics classroom not yet so equipped. Further, it is recommended that the department chair continue to track enrollment trends in order to ensure the mathematics class schedule adequately meets the needs of students. Additionally, it is recommended that the Faculty Association negotiate an increase in the entry level portions of the faculty salary schedule so that Saddleback College will be competitive with other community colleges in the continuing effort to attract and retain faculty of the highest quality.

2.3 Student Success

It is clear from Table 3.2 that the Mathematics Program maintains superb course retention and success rates. This level of success is due to constant vigilance. The department faculty works diligently in conjunction with the Matriculation Office staff to provide proper initial student placement into the mathematics curriculum. In addition, faculty members use a variety of strategies and assessment tools to help students successfully complete mathematics courses. Several of these strategies and tools are summarized below:

- 1) All incoming students are given a mathematics placement test during the matriculation process. The placement test is offered at four levels of difficulty in order to accommodate the variety of mathematical preparedness of incoming students and to facilitate optimal placement of students.
- 2) Several assessment tools are used to monitor the progress of the students. Homework assignments aid student development of mathematical understanding and also provide near daily assessment of student knowledge and skills. Quizzes assess the student's short-term knowledge. Multichapter exams measure the student's longer term knowledge and overall command of important mathematical concepts.
- 3) Faculty members frequently advise students to seek outside help when it is necessary. In addition to offering help during office hours, faculty members encourage students to take advantage of the tutoring available from the Learning Assistance Program (LAP).
- 4) All mathematics prerequisites are automatically enforced during registration.
- 5) Students who have attempted a given mathematics course twice with a failing grade (D, F, or NC) are prevented from enrolling in the same course a third time.

The Mathematics Program meets the needs of matriculating full-time and part-time students. All necessary lower division courses are offered to meet the requirements of most majors. Students have had no problem transferring Saddleback College mathematics courses to other universities. These courses are compatible with all universities in the United States. Furthermore, to accommodate part-time students who have full-time jobs or other obligations during the day, a complete array of mathematics classes are scheduled during the evening hours.

In an effort to further raise success and retention rates, it is recommended that faculty members augment traditional instruction with new and varied approaches such as supplemental instruction, computer assisted instruction, a mathematics study center or learning community. It is further recommended that traditional courses be augmented with courses tailored to specific student subgroups. For example the newly proposed course Math 255 Intermediate Algebra - Accelerated is a fast paced, streamlined course designed specifically with the well-prepared, stronger student in mind. Also it is recommended that students who have completed a given mathematics course twice with a W be prevented from enrolling in the same course a third time. The mathematics faculty is very concerned about a proposal circulating through the governance groups at Saddleback College that will shorten the fall and spring semesters. This will result in a significant increase in the time students spend in a particular mathematics class each day and is very likely to reduce both student success and retention.

2.4 Staffing and Resources

The Mathematics Program has an adequate number of full-time instructors to support the current level of course offerings. There are currently 18 full-time mathematics instructors and 15 of these are tenured. A majority of the tenured faculty will be eligible for a sabbatical leave for the 2006-2007 academic year. During the fall 2005 semester, sixty-eight sections were taught by full-time instructors and forty-one sections were taught by members of the part-time faculty.

Many faculty members utilize technology to enhance the effectiveness of the Mathematics Program. A full-time faculty member has assumed responsibility for maintaining the Mathematics Department website. Several faculty members have developed websites for their courses that give their students access to useful learning materials. Graphing calculators are also used for demonstration purposes and topic exploration. Instructors have written laboratory activities for Math 3A, 9, 10 and 24, that are completed by students in the Computer Science Laboratory located in the Science&Mathematics building. Full-time instructors frequently work in the Computer Science Laboratory to help students learn how to use software needed to complete these assignments.

Mathematics courses are taught in eleven different classrooms located in the Science&Mathematics building. Three of these classrooms are equipped with video projection systems and three more projectors will soon be installed. Additional technology will be used in mathematics classes as more of the mathematics classrooms are equipped with video projection systems.

Courses offered through the Mathematics Department are taught from 7:30 am to 10 pm, Monday through Thursday, Friday 7:30 am to 1:30 pm, and Saturday 9:00 am to 12 pm. All full-time instructors have their offices in the Science&Mathematics building and provide additional help to students during regularly scheduled office hours. The Learning Assistance Program (LAP) supports the Mathematics Program by providing tutoring services. Student study groups also meet in the LAP center. Occasionally, faculty members hold office hours in the LAP so that large groups of students can be accommodated.

In order to insure that staffing levels will remain adequate to meet the increasing demand by students for mathematics classes, it is recommended that the Mathematics Department continue to aggressively pursue additional full-time faculty positions through the full-time hiring subcommittee of the Saddleback College Academic Senate. It is also recommended that the Mathematics Department continue to actively recruit adjunct faculty in order to meet the near-term need for replacement faculty and the long-term growth of the student population at Saddleback College. The Mathematics Department faculty recognizes the need for additional classified staff support in and around the division office. Consequently, it is recommended that the Mathematics Department actively support the efforts of the Division Dean through the classified staff hiring subcommittee of the Classified Senate to gain authorization for a third full-time administrative assistant position in the Mathematics Science, and Engineering Division. It is further recommended that the installation of video projection systems in all of the mathematics classrooms be completed in the near future.

2.5 Staff Development

All members of the mathematics faculty at Saddleback College strive to keep in touch with the latest developments in their preferred field of mathematics. They are aware of changing instructional methodologies as well as trends in mathematics education and applications of mathematics. This is accomplished through the reading of contemporary mathematics journals such as Mathematics Teacher, Science News, AMATYC Journal, SIAM Journal, and the Mathematics Journal of the Mathematical Association of America and through attendance at both

regional and national conferences of mathematics organizations. Members of the faculty have recently attended conferences held by the California Mathematics Council for Community Colleges, the National Council of Teachers of Mathematics, the American Mathematical Association for Two Year Colleges, and the Great Teachers Conference. Mathematics faculty members stay in contact with representatives of mathematics textbook publishers who, in turn, furnish the faculty member with copies of newly published textbooks and software for review and adoption consideration. The majority of the full-time faculty members have reviewed manuscripts for new mathematics textbooks and evaluated proposed instructional computer software packages.

The Mathematics Program is continuously enriched by the varied outside activities of full-time and adjunct faculty. Both full-time and part-time Saddleback College mathematics faculty members have taught courses through the Orange County Department of Education that prepare students for service as mathematics teachers at the secondary school level. Several full-time faculty members have served as mathematics consultants to local businesses, various Saddleback College grant programs, committees, and academic departments. Many faculty members routinely share their knowledge of practical applications of mathematics that they gained through years of service in private industry.

Many instructors continue to develop innovative educational methodologies to improve student retention and have written extensive supplemental materials for student use that enhance the teaching/learning process. Numerous instructors use websites to help students gain easier access to class materials, such as homework assignments, test reviews and practice quizzes. Following a lengthy presentation concerning distance education in mathematics and a retreat sponsored by the Saddleback College Mathematics Department, a full-time faculty member developed on-line versions of three existing mathematics courses. These distance education courses provide an important alternative venue for students to learn mathematics. The presence of these on-line courses in the schedule of classes has greatly improved the ability of the Mathematics Program to service the needs of Saddleback College students.

Four members of the full-time faculty hold earned doctorates and two additional members are currently enrolled in doctoral programs. A number of the members of the mathematics faculty are furthering their education both in and out of the field of mathematics. Some have attended seminars in their specialty fields at nearby universities and others are planning to take additional graduate level courses

The mathematics faculty members routinely share ideas regarding teaching techniques and recent developments in educational policy. This occurs during In-Service week, during monthly department meetings, and during frequent spontaneous discussions. Representatives from textbook and software publisher are often invited to attend Mathematics Department retreats and workshops for the purpose of demonstrating and discussing their new products.

It is critical to the continued success of the Saddleback College Mathematics Program that faculty members be encouraged to engage themselves in the activities described above. It is recommended that they continue sharing ideas at department meetings and during In-Service week, keep pursuing the use of technology to improve instruction, continue to develop supplemental materials for instruction, and reinstitute the Math Club.

2.6 Community Outreach and Articulation

The Mathematics Program offers courses suitable to majors in numerous fields. Since this program must be commensurate with the mathematics programs offered at four-year colleges and universities, the Saddleback College Mathematics Department Chair, with the assistance of the Saddleback College Articulation Officer, communicates with the mathematics department chairs at UCI, CSU Long Beach, CSU Fullerton, and UCLA to assure

the compatibility of the Saddleback College program. In addition, brochures are sent to the local high schools and university campuses advertising the Saddleback College Mathematics Program as an alternative lower division program ideal for students desiring smaller class sizes and more personal interaction with the instructor.

The Mathematics Department participates in Saddleback's yearly high school recruitment events (Senior Day, Welcome Day, and Family Night). At Senior Day, the Mathematics Department hosts a table, displays the mathematics textbooks currently in use and answers questions from local high school students. At the inaugural Welcome Day in fall 2005, mathematics faculty members hosted a table and provided tours of the Science&Mathematics building for incoming students and their families.

Mathematics faculty members serve as advisors of several on-campus student organizations and actively participate in the activities of the Saddleback College Foundation and the South Orange County Community College District Faculty Association. They have participated in off-campus programs such as the Cal State System Summer Bridge Programs and the preparation of future mathematics teachers for the CSET Mathematics examination. They work with current and past Saddleback College mathematics students by facilitating mathematics workshops through the Learning Assistance Program. The Mathematics Department also awards Mathematics Scholarships on a yearly basis to students who have consistently demonstrated excellence in their study of mathematics at Saddleback College.

In order to continue the Mathematics Department's commitment to community outreach and articulation it is recommended that the Mathematics Program brochure be updated annually. Further, it is recommended that mathematics faculty members be encouraged to give presentations on the Mathematics Program offered at Saddleback College at local high schools. It is also critically important that contacts between the Mathematics Department and the local university campuses be nurtured. Consequently, it is recommended that individual mathematics faculty members seek out members of the instructional staff at those universities in an effort to promote curriculum coordination involving courses of mutual interest.

2.7 Accreditation

The recommendations shown below were extracted from the 2004 Saddleback College Accreditation Report. Only a few of the recommendations in that report were applicable to the Mathematics Program.

Recommendation 2E:

The College fully develop, implement, and coordinate an integrated college planning and evaluation structure by requiring and implementing program review for *all* departments, including instructional, student services, and administrative departments.

With the completion of this documentation of the Mathematics Program Review, the Mathematics Department will have met its requirements concerning accreditation recommendation 2E.

Recommendation 3:

The College develop and implement student learning outcomes across the college.

The mathematics faculty members developed the Mathematics Department mission statement as well as the student learning outcomes and methods for assessment for the Saddleback College Mathematics Program during its annual retreat in August 2005. Consequently, the Mathematics Department has met its requirements concerning accreditation recommendation 3.

3.0 Mathematics Program Statistics

A quantitative description of the Saddleback College Mathematics Program is contained in the tables presented below. The statistics generally summarized in these tables are taken from the spring, 2003 through the fall, 2005 semesters. However, useful scheduling data is taken back to spring, 1996. The specific tables available in Section 3 are described below.

The distribution of final grades issued for all mathematics courses as a whole is presented in Table 3.1 Overall Math Courses -- Grades/Success/Retention. In addition, the percent of students who received a grade of C or higher and the percent of students who did not drop or withdraw from all mathematics classes as a whole are noted in this table. The highest retention and success rates occur during the summer session. There is not a significant difference in these rates when comparing the fall and spring semesters. This table indicates that the final grade of a significant number of students could not be determined. It is recommended that the Saddleback College Research Office review the program used to create this table and make the adjustments necessary to account for these students.

The distribution of final grades issued for all sections of each mathematics course is presented in Table 3.2 Courses by Grade/Success/Retention. In addition, the percent of students who received a grade of C or higher and the percent of students who did not drop or withdraw from all mathematics classes as a whole are noted in this table. Frequently, the highest retention and success rates occur during the summer session, but this is not the case for all courses. The highest retention rate observed was 100% and this occurred for the Math 11 summer class of 2004. The lowest retention rate was 67.5% and this occurred for the Math 2 sections offered in spring, 2003. The lowest success rate was 39.0% and this applied to the Math 251 sections offered during the spring, 2003 semester. The highest success rate observed was 81.2% and this was achieved by the Math 7 section offered in summer, 2003.

The distribution of the educational goals of students enrolled in mathematics classes is presented in Table 3.3 Educational Goals by Year/Term. The majority of students enrolled in mathematics classes expect to transfer to a four-year college or university. Three-quarters of these students also wish to earn an associate degree from Saddleback College. The next most popular educational goal is a vocational certificate with no plans to transfer to a four-year college or university. Approximately 10% of students enrolled in mathematics classes are seeking to acquire or update job skills.

The distribution of student enrollments over the mathematics courses for the fall semesters from 1996 is shown in Table 3.4 Distribution of Fall Semester Enrollments. The data in this table makes the steady growth of enrollments in mathematics classes clearly visible. The fall semester enrollments have grown from 3,381 in 1996 to 4,596 in 2005.

The distribution of student enrollments over the mathematics courses for the spring semesters from 1996 is shown in Table 3.5 Distribution of Spring Semester Enrollments. While the enrollments for the spring semesters tends to trail the enrollments for the fall semester, these enrollments have generally increased since 1996.

The summary of student enrollments over the various departments within the Mathematics, Science, and Engineering Division is presented in Table 3.6 Mathematics, Science and Engineering Division Enrollment Summary Report by Department. The number of students per section for mathematics classes is approximately 43 and the ratio of weekly student contact hours to full-time equivalent faculty is nearly 700. No other department in the division approaches this high level of productivity.

The summary of student enrollments over the various divisions at Saddleback College is presented in Table 3. 7 Saddleback College Enrollment Summary Report by Division. The number of students enrolled per section for classes in the Mathematics, Science, and Engineering Division is slightly lower than that achieved by the Social and Behavioral Science Division. The Mathematics Program contributes significantly to the ability of the Mathematics, Science, and Engineering to achieve this excellent level of service to students.

Appendix 1 – Grades, Success, and Retention

Table 3.1

Overall Math Courses – Grades/Success/Retention

**Math Program
Courses by Grade/Success/Retention**

		Grades											success	retention
		A	B	C	CR	D	F	I	NC	W	XX	Total	Percent	Percent
		Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count		
2003	Spring	473	628	688	47	309	489	7	52	834	322	3849	47.7%	78.3%
	Summer	94	129	97	12	33	53	0	6	37	103	564	58.9%	93.4%
	Fall	556	744	858	65	384	660	4	45	847	346	4509	49.3%	81.2%
2004	Spring	533	683	721	55	327	571	8	46	688	345	3977	50.1%	82.7%
	Summer	139	157	187	20	77	101	0	9	87	46	823	81.1%	89.4%
	Fall	558	776	998	59	415	716	1	37	819	322	4701	50.9%	82.6%
2005	Spring	469	665	816	65	337	613	3	37	688	361	4052	49.7%	83.1%
	Summer	0	0	0	0	0	0	0	0	0	0	0		
	Fall	0	0	0	0	0	0	0	0	0	0	0		

Grade XX = None of the above/unknown.

Success Rate: Percent of students successful in courses out of total enrolled in courses (RP Group, 1996).

The success rate is calculated by dividing the numerator (number of students duplicated with A, B, C, CR) by the denominator (number of students with A, B, C, D, F, CR, NC, I, XX).

Retention Rate: Percent of students retained in courses out of total students enrolled in courses (RP Group, 1996).

The retention rate is calculated by dividing the numerator (number of students duplicated with A, B, C, D, F, CR, NC, I, XX) by the denominator (number of students with A, B, C, W, I, XX).

Grade Definitions:

Grades	Meaning
A	A
B	B
C	C
D	D
F	F
CR	Credit
NC	No Credit
I*	Incomplete where "*" indicates the default grade to be received by the student if the incomplete is not completed within one year.
FW	Withdrawn without permission & without having achieved a final passing grade
W	Withdrew (after last day to drop), Military Withdrawal
XX	None of the above/unknown

Table 3.2
Math Program
Course by Grade/Success/Retention

			Grades										success	retention		
			A	B	C	CR	D	F	I	NC	W	XX	Total	Percent	Percent	
			Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Percent	Percent
Math 351	2003	Spring	86	87	68	10	33	87	0	8	83	34	496	50.6%	83.3%	
		Summer	7	13	5	3	0	6	0	0	2	0	36	77.8%	94.4%	
		Fall	120	105	89	8	50	86	0	1	64	22	545	59.1%	88.3%	
	2004	Spring	101	78	96	7	33	91	3	2	70	26	507	55.6%	86.2%	
		Summer	4	6	7	1	6	5	0	0	9	1	39	46.2%	76.9%	
		Fall	82	106	121	9	47	106	0	6	89	23	589	54.0%	84.9%	
	2005	Spring	64	79	84	7	41	95	0	3	61	31	465	50.3%	86.9%	
	Math 251	2003	Spring	99	99	130	8	91	138	0	8	216	72	861	39.0%	74.9%
			Summer	19	23	17	3	5	10	0	0	10	4	91	68.1%	89.0%
Fall			109	142	201	15	98	210	0	18	241	80	1114	41.9%	78.4%	
2004		Spring	107	118	132	15	87	186	1	15	196	95	952	39.1%	79.4%	
		Summer	16	20	27	6	16	30	0	3	27	15	160	43.1%	83.1%	
		Fall	105	131	223	13	119	251	0	9	224	107	1182	39.9%	81.0%	
2005		Spring	73	103	210	20	96	199	3	11	197	91	1003	40.5%	80.4%	
Math 253		2003	Spring	90	126	137	25	82	109	2	33	192	54	850	44.5%	77.4%
			Summer	16	29	36	4	9	10	0	3	4	3	114	74.6%	96.5%
	Fall		91	147	225	35	94	135	2	22	182	80	1013	49.2%	82.0%	
	2004	Spring	94	161	166	29	61	120	1	22	162	83	899	50.1%	82.0%	
		Summer	18	30	52	8	16	20	0	5	16	5	170	63.5%	90.6%	
		Fall	109	176	246	32	86	153	1	17	183	65	1068	52.7%	82.9%	
	2005	Spring	74	134	192	24	75	147	0	16	157	83	902	47.0%	82.6%	
	Math 7	2003	Spring	42	61	62	3	10	12	0	0	22	17	229	73.4%	90.4%
			Summer	7	9	9	1	0	3	0	0	1	2	32	81.2%	96.9%
Fall			48	64	41	2	15	24	0	0	38	21	253	61.3%	85.0%	
2004		Spring	45	61	40	0	14	14	0	1	34	20	229	63.8%	85.2%	
		Summer	24	14	12	1	2	5	0	1	4	2	65	78.5%	93.8%	
		Fall	49	46	63	0	23	26	0	1	48	12	288	59.0%	82.1%	
2005		Spring	36	55	71	1	17	27	0	0	30	18	255	63.9%	88.2%	
Math 8		2003	Spring	16	36	41	0	11	24	0	0	51	23	202	46.0%	74.8%
			Summer	13	9	2	0	1	5	0	1	1	4	36	66.7%	97.2%
	Fall		22	43	53	1	29	21	0	0	47	23	239	49.8%	80.3%	
	2004	Spring	13	39	36	0	24	28	0	0	34	28	202	43.6%	83.2%	
		Summer	4	16	8	0	7	6	0	0	12	3	56	50.0%	78.6%	
		Fall	38	37	61	2	21	29	0	1	31	10	230	60.0%	86.5%	
	2005	Spring	38	48	30	2	14	23	0	1	36	20	212	55.7%	83.0%	
	Math 9	2003	Spring	7	11	7	0	1	2	0	0	5	5	38	65.8%	86.8%
			Fall	6	9	2	0	7	1	0	0	7	6	38	44.7%	81.6%
2004		Spring	8	6	8	0	2	2	0	0	9	3	38	57.9%	76.3%	
		Fall	2	6	6	0	5	2	0	0	2	7	30	46.7%	93.3%	
2005		Spring	3	4	6	0	5	3	0	0	2	3	26	50.0%	92.3%	
Math 10		2003	Spring	47	79	93	1	27	38	0	1	99	34	419	52.5%	76.4%
	Summer		19	18	15	0	3	13	0	1	10	4	83	62.7%	88.0%	
	Fall		53	77	74	0	26	52	1	1	98	43	425	48.0%	76.9%	
	2004	Spring	44	95	89	3	45	38	1	2	76	26	419	55.1%	81.9%	
		Summer	40	36	30	1	9	14	0	0	6	4	140	76.4%	95.7%	
		Fall	56	92	102	0	25	48	0	1	84	22	430	58.1%	80.5%	
2005	Spring	68	95	89	2	41	36	0	2	70	30	433	58.7%	83.8%		

Grade XX = None of the above/unknown.

Success Rate: Percent of students successful in courses out of total enrolled in courses (RP Group, 1996).
 The success rate is calculated by dividing the numerator (number of students duplicated with A, B, C, CR) by the denominator (number of students with A, B, C, D, F, CR, NC, W, I, XX)

Retention Rate: Percent of students retained in courses out of total students enrolled in courses (RP Group, 1996).
 The retention rate is calculated by dividing the numerator (number of students duplicated with A, B, C, D, F, CR, NC, I, XX) by the denominator (number of students with A, B, C, D, F, CR, NC, W, I, XX).

Table 3.2 (continued)
Math Program
Course by Grade/Success/Retention

			Grades										success	retention	
			A	B	C	CR	D	F	I	NC	W	XX	Total	Percent	Percent
			Count	Count	Count	Count	Count	Count	Count	Count	Count	Count	Count		
Math 11	2003	Spring	12	19	21	0	4	2	0	0	23	18	99	52.5%	76.8%
		Fall	14	12	16	0	2	12	0	0	14	10	80	52.5%	82.5%
	2004	Spring	19	12	14	0	6	4	0	0	16	10	81	55.6%	80.2%
		Summer	7	5	10	0	1	3	0	0	0	6	32	68.8%	100.0%
	2005	Fall	18	23	23	0	7	10	0	0	23	15	119	53.8%	80.7%
Math 2	2003	Spring	9	19	23	0	5	16	0	0	41	13	126	40.5%	67.5%
		Fall	15	31	45	1	18	26	0	1	39	11	187	49.2%	79.1%
	2004	Spring	22	19	27	0	10	12	0	1	18	5	114	59.6%	84.2%
		Summer	5	5	7	0	4	5	0	0	4	0	30	56.7%	86.7%
	2005	Fall	18	39	48	1	11	19	0	1	34	8	179	59.2%	81.0%
Math 3A	2003	Spring	11	32	33	0	17	22	0	0	39	15	169	45.0%	76.9%
		Fall	26	45	54	0	18	33	0	0	40	18	234	53.4%	82.9%
	2004	Spring	28	33	45	0	13	21	0	0	15	17	172	61.6%	91.3%
		Summer	4	10	9	0	2	5	0	0	6	4	40	57.5%	85.0%
	2005	Fall	34	38	34	0	25	23	0	0	45	19	218	48.6%	79.4%
Math 3B	2003	Spring	21	19	32	0	13	11	1	0	17	15	129	55.8%	86.8%
		Summer	11	16	6	0	7	1	0	0	2	3	46	71.7%	95.7%
	2004	Fall	18	18	15	0	9	6	0	0	12	3	81	63.0%	85.2%
		Spring	22	24	25	0	13	10	1	0	10	4	109	65.1%	90.8%
	2005	Summer	9	5	14	0	6	4	0	0	3	3	44	63.6%	93.2%
Math 3C	2003	Fall	12	17	21	0	17	7	0	0	11	6	91	54.9%	87.9%
		Spring	18	21	18	0	12	13	0	0	15	10	107	53.3%	86.0%
	2004	Spring	7	10	11	0	0	1	0	0	5	3	37	75.7%	86.5%
		Fall	11	13	6	0	2	0	0	0	8	3	43	69.8%	81.4%
	2005	Spring	13	13	6	0	0	3	0	0	9	4	48	66.7%	81.2%
Math 26	2004	Fall	9	11	15	0	0	2	0	0	6	6	49	71.4%	87.8%
		Spring	12	9	12	0	1	4	0	0	4	1	43	76.7%	90.7%
Math 999	2003	Fall	5	4	7	0	1	2	1	0	6	8	34	47.1%	82.4%
		Summer	4	11	5	0	5	4	0	0	7	1	37	54.1%	81.1%
Math 999	2003	Summer	0	0	0	0	0	0	0	0	0	83	83	.0%	100.0%

Grade XX = None of the above/unknown.

Success Rate: Percent of students successful in courses out of total enrolled in courses (RP Group, 1996).
 The success rate is calculated by dividing the numerator (number of students duplicated with A, B, C, CR) by the denominator (number of students with A, B, C, D, F, CR, NC, W, I, XX)

Retention Rate: Percent of students retained in courses out of total students enrolled in courses (RP Group, 1996).
 The retention rate is calculated by dividing the numerator (number of students duplicated with A, B, C, D, F, CR, NC, I*, XX) by the denominator (number of students with A, B, C, D, F, CR, NC, W, I, XX).

Appendix 2 – Educations Goals

Table 3.3

**Math Program
Educational Goals by Year/Term
Duplicated Headcount**

educational_goal	2003				2004				2005	
	Spring		Fall		Spring		Fall		Spring	Column %
	Count	Column %	Count	Column %	Count	Column %	Count	Column %	Count	Column %
AA/AS and transfer	1488	38.7%	1839	40.8%	1724	43.3%	1975	42.0%	1717	42.4%
Transfer w/o AA/AS	516	13.4%	579	12.8%	504	12.7%	625	13.3%	573	14.1%
AA/AS w/o transfer	21	.5%	24	.5%	19	.5%	38	.8%	17	.4%
2-yr Voc. w/o transfer	86	2.2%	100	2.2%	89	2.2%	87	1.9%	77	1.9%
Voc. certif. w/o transfer	579	15.0%	741	16.4%	628	15.7%	739	15.7%	599	14.8%
Discover Interests	178	4.6%	181	4.0%	136	3.4%	155	3.3%	137	3.4%
Acquire job skills	283	7.4%	284	6.3%	228	5.7%	279	5.9%	289	7.1%
Update job skills	70	1.8%	57	1.3%	55	1.4%	53	1.1%	57	1.4%
Maintain cert. or lisc.	10	.3%	12	.3%	11	.3%	12	.3%	18	.4%
Ed. development	76	2.0%	76	1.7%	63	1.6%	72	1.5%	72	1.8%
Basic Skills	33	.9%	24	.5%	24	.6%	28	.6%	14	.3%
HS or GED	15	.4%	27	.6%	14	.4%	19	.4%	19	.5%
Undecided	484	12.8%	564	12.5%	483	12.1%	619	13.2%	483	11.4%
Unknown	0	.0%	1	.0%	1	.0%	0	.0%	0	.0%
Total	3849	100.0%	4509	100.0%	3977	100.0%	4701	100.0%	4052	100.0%

Appendix 3 – Distribution of Enrollment by Semester

Table 3.4
 Mathematics Program
 Distribution of Fall Semester Enrollment

COURSE	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005	
	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL
M 2	5	175	5	205	5	201	5	202	5	196	5	201	5	214	5	189	5	171	5	187
M 3A	5	189	5	210	5	199	5	201	5	225	5	233	5	240	5	233	5	200	5	218
M 3B	2	65	2	85	2	90	2	94	2	78	2	82	2	93	2	83	2	85	2	92
M 3C	1	46	1	45	1	43	1	52	1	50	1	45	1	46	1	43	1	43	1	31
M 7							5	183	6	229	6	227	6	239	6	252	6	258	6	266
M 8	4	189	6	260	9	401	5	230	2	261	6	219	6	244	6	245	6	224	5	203
M 9	1	39	1	40	1	36	1	37	1	27	1	29	1	29	1	37	1	23	1	38
M 10	4	189	6	270	7	332	8	357	10	397	10	417	10	446	10	422	10	409	10	427
M 11	2	72	2	85	2	67	2	75	2	54	2	76	2	71	2	83	3	104	2	100
M 26	1	49	1	45	1	42	1	44	1	38	1	30	1	42	1	34	1	36	1	25
M 124	3	135	5	210	5	200	5	228	5	214	5	217	5	210	5	224	5	190	5	215
M 251	21	914	23	976	25	1035	24	1064	25	1030	25	1094	26	1166	26	1139	27	1080	26	1152
M 253	21	817	22	895	27	1087	24	894	22	865	21	931	24	1023	23	1018	25	1009	24	1012
M 351	12	502	14	598	14	593	14	581	15	595	15	574	15	596	15	543	15	612	15	630
Total		3381		3924		4326		4242		4259		4375		4659		4545		4444		4596

Table 3.5
 Mathematics Program
 Distribution of Spring Semester Enrollment

COURSE	1996		1997		1998		1999		2000		2001		2002		2003		2004		2005	
	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL	SEC	ENRL
M 2	4	150	4	142	4	150	4	141	4	159	4	142	4	153	4	146	4	117	4	144
M 3A	4	158	4	150	4	167	4	166	4	169	4	170	4	186	4	186	4	176	4	166
M 3B	3	105	2	78	3	100	3	120	3	120	3	96	3	101	3	140	3	110	3	107
M 3C	1	34	1	43	1	33	1	42	1	46	1	44	1	39	1	43	1	49	1	43
M 7									5	192	6	204	6	188	6	236	6	230	6	255
M 8	8	314	5	208	7	335	9	400	5	225	6	213	6	194	6	220	6	202	6	213
M 9	1	33	1	38	1	37	1	38	1	32	1	34	1	26	1	40	1	38	1	26
M 10	7	319	5	229	6	298	8	353	9	383	10	405	10	402	10	432	10	423	10	436
M 11	2	70	2	74	2	74	2	71	2	73	2	71	2	75	3	104	2	81	2	97
M 24	1	43	1	36	1	29	1	19	1	45	1	27	1	22	1	28	1	21	1	31
M 26							1	26												
M 124	5	199	4	170	6	218	6	224	5	206	6	213	5	202	5	207	5	213	5	203
M 251	16	665	18	737	21	855	22	915	24	975	24	829	25	925	24	914	24	954	26	997
M 253	17	654	22	846	24	933	22	785	22	761	19	748	22	877	22	905	22	895	25	890
M 351	13	459	11	437	14	502	12	456	12	442	12	504	14	494	14	551	13	522	14	514
Total		3203		3188		3731		3756		3828		3700		3884		4152		4031		4122

Appendix 4 – Access and Productivity

Table 3.6
 Enrollment Summary Report by Mathematics, Science and Engineering Division and Department
 Compare Fall 2005 to Previous Fall Terms

YR	IOI SECS	CIR WECH	OL WECH	LL WECH	PI WECH	EXC WECH	IOI WECH	IOI FTE	CRS CAP	ESI ENRL	C1 ENRL	CUR ENRL	RPI ENRL	CURRENT WECH	RPI WECH	WSCH FTE	ENR WECH	ENRL SEC	
DEPARTMENT: Biology																			
05	32	89	25	0	73	0	221	13.27	1,414	1,215	1,142	1,023	1,142	7,123	7,958	600	5.2	35.7	
04	32	98	22	1	66	0	215	12.95	1,401	1,151	1,185	1,053	1,185	7,061	7,959	615	5.5	37.0	
03	32	104	19	0	77	0	220	13.24	1,427	1,091	1,129	1,115	1,129	7,787	7,902	597	5.1	35.3	
DEPARTMENT: Chemistry																			
05	21	85	17	0	27	0	129	7.77	628	600	599	533	599	3,243	3,677	473	4.6	28.5	
04	23	85	18	0	31	0	136	8.21	701	691	635	568	635	3,409	3,834	467	4.7	27.6	
03	20	68	18	0	30	0	116	7.02	600	586	595	576	595	3,387	3,489	497	5.1	29.8	
DEPARTMENT: Computer Science																			
05	11	45	9	0	36	0	99	4.40	375	242	246	229	246	2,061	2,214	503	2.5	22.4	
04	13	45	16	0	36	0	117	5.20	443	336	284	255	284	2,295	2,556	492	2.4	21.8	
03	31	51	18	0	44	0	171	7.00	1,073	1,094	1,670	1,655	1,670	6,981	4,785	684	9.8	53.9	
DEPARTMENT: Engineering																			
05	1	0	0	0	3	0	3	0.20	35	18	12	14	12	42	36	180	4.0	12.0	
04	1	0	0	0	3	0	3	0.20	35	14	18	15	18	45	54	270	6.0	18.0	
03	1	0	0	0	3	0	3	0.20	35	6	14	14	14	42	42	210	4.7	14.0	
DEPARTMENT: Geology/Earth Science/Marine Science																			
05	17	68	9	0	8	0	85	5.28	713	452	436	402	436	2,017	2,197	416	5.1	25.6	
04	18	52	8	0	17	0	87	5.39	746	446	433	403	433	2,060	2,162	401	5.0	24.1	
03	16	39	5	0	32	0	86	5.33	655	357	421	415	421	2,269	2,235	419	4.9	26.3	
DEPARTMENT: Mathematics																			
05	108	284	35	0	175	0	525	33.15	4,860	4,584	4,596	4,140	4,596	20,186	22,383	675	8.8	42.6	
04	112	269	34	0	211	0	545	34.47	5,040	4,932	4,722	4,295	4,722	20,883	22,999	667	8.7	42.2	
03	106	248	39	0	201	0	519	32.75	4,770	4,576	4,583	4,517	4,583	22,149	20,383	622	8.8	43.2	

Table 3.6 (continued)
 Enrollment Summary Report by Mathematics, Science and Engineering Division and Department
 Compare Fall 2005 to Previous Fall Terms

YR	IOI SECS	CIR WFECH	OL WFECH	LL WFECH	PI WFECH	EXC WFECH	IOI WFECH	IOI ETE	CRS CAP	ESI ENRL	C1 ENRL	CUR ENRL	RPT ENRL	CURRENT WFSCH	RPT WFSCH	WSCH ETE	ENR WFECH	ENRL SEC	
DEPARTMENT: Physical Sciences																			
05	22	51	5	4	53	0	114	7.17	970	819	708	645	708	3,014	3,298	460	6.2	32.2	
04	22	55	0	6	47	0	116	7.31	970	866	849	765	849	3,491	3,661	501	7.3	38.6	
03	21	68	0	6	32	0	113	7.11	925	754	811	806	811	3,723	3,549	499	7.2	38.6	
MATH, SCIENCE AND ENGINEERING DIVISION/SCHOOL TOTALS:																			
05	212	622	100	4	376	0	1176	71.24	8,995	7,930	7,739	6,986	7,739	37,686	41,763	586	6.6	36.5	
04	221	605	98	7	410	0	1219	73.73	9,336	8,436	8,126	7,354	8,126	39,244	43,225	586	6.7	36.8	
03	227	578	99	6	419	0	1228	72.65	9,485	8,464	9,223	9,098	9,223	46,338	42,385	583	7.5	40.6	

Table 3.7
 Enrollment Summary Report by Division /School
 Compare Fall 2005 to Previous Fall Terms

YR	IOI SECS	CIR WFECH	OL WFECH	LL WFECH	PI WFECH	EXC WFECH	IOI WFECH	IOI FTE	CRS CAP	ESI ENRL	C1 ENRL	CUR ENRL	RPI ENRL	CURRENT WFSCH	RPI WFSCH	WSCH FTE	ENR WFECH	ENRL SEC
DIVISION/SCHOOL: Business Sciences																		
05	118	207	52	18	224	0	521	29.00	7,085	5,125	4,207	4,090	4,519	16,680	18,422	635	8.7	38.3
04	128	163	66	26	274	0	565	31.30	7,360	5,507	4,833	4,488	4,833	18,443	20,887	667	8.6	37.8
03	255	238	70	5	235	0	769	37.83	13,298	9,009	8,370	7,989	8,370	27,025	19,578	518	10.9	32.8
DIVISION/SCHOOL: Counseling and Special Programs																		
05	47	85	2	0	43	0	129	8.38	1,788	1,395	1,298	1,333	1,330	3,650	3,642	435	10.4	28.3
04	52	101	4	0	36	0	141	9.20	1,985	1,359	1,416	1,348	1,416	3,741	3,797	413	10.1	27.2
03	45	96	4	0	25	0	125	8.13	1,693	1,153	1,365	1,306	1,365	3,759	3,336	410	10.9	30.3
DIVISION/SCHOOL: Fine Arts																		
05	183	285	69	14	349	0	723	45.50	7,428	5,396	5,234	4,947	5,289	18,003	19,269	423	7.3	28.9
04	180	259	48	12	380	0	704	44.25	7,401	5,326	5,302	4,990	5,302	18,291	20,804	470	7.5	29.5
03	174	306	74	2	289	0	682	42.76	7,140	5,199	5,491	5,426	5,491	20,108	22,129	518	8.1	31.6
DIVISION/SCHOOL: Health Sciences and Human Services																		
05	120	404	23	8	149	0	629	37.42	3,463	3,322	3,043	2,905	3,156	11,464	12,153	325	5.0	26.3
04	124	418	31	5	131	0	632	37.80	3,527	2,988	3,112	2,978	3,112	11,765	12,974	343	4.9	25.1
03	125	390	50	6	173	0	629	37.44	3,526	3,201	3,157	3,090	3,157	12,054	12,320	329	5.0	25.3
DIVISION/SCHOOL: Liberal Arts																		
05	418	423	94	3	571	0	1141	72.42	13,906	11,347	11,091	10,410	11,085	31,112	33,241	459	9.7	26.5
04	411	365	88	3	620	0	1126	71.49	13,749	10,068	10,759	10,061	10,759	29,975	34,817	487	9.6	26.2
03	389	471	90	0	473	0	1081	68.76	13,169	9,560	11,131	10,966	11,131	32,823	33,238	483	10.3	28.6
DIVISION/SCHOOL: Learning Resources																		
05	4	0	5	0	5	0	10	0.60	180	34	50	62	47	154	110	183	4.7	11.8
04	3	0	2	0	6	0	8	0.49	135	60	22	27	22	70	54	110	2.8	7.3
03	4	0	7	0	3	0	10	0.60	180	61	72	72	72	185	186	310	7.2	18.0
DIVISION/SCHOOL: Math, Science and Engineering																		
05	212	622	100	4	376	0	1176	71.24	8,995	7,930	7,739	6,986	7,739	37,686	41,763	586	6.6	36.5
04	221	605	98	7	410	0	1219	73.73	9,336	8,436	8,126	7,354	8,126	39,244	43,225	586	6.7	36.8
03	227	578	99	6	419	0	1228	72.65	9,485	8,464	9,223	9,098	9,223	46,338	42,385	583	7.5	40.6

Table 3.7 (continued)
 Enrollment Summary Report by Division / School
 Compare Fall 2005 to Previous Fall Terms

YR	IOI SECS	CIR WFECH	OL WFECH	LL WFECH	PI WFECH	EXC WFECH	IOI WFECH	IOI ETE	CBS CAP	ESI ENRL	C1 ENRL	CUR ENRL	RPI ENRL	CURRENT WFSCH	RPI WFSCH	WSCH FTE	ENR WFECH	ENRL SEC
DIVISION/SCHOOL: Physical Education, Health and Athletics																		
05	151	253	58	0	175	0	487	28.62	6,597	4,457	3,827	3,654	3,908	10,879	11,600	405	8.0	25.9
04	148	236	55	0	179	0	475	27.82	6,487	3,778	4,152	3,912	4,152	11,491	14,383	517	8.7	28.1
03	138	203	44	0	197	0	449	26.04	6,022	3,475	4,044	3,979	4,044	11,733	15,064	578	9.0	29.3
DIVISION/SCHOOL: Social and Behavioral Sciences																		
05	286	291	85	61	486	0	923	61.08	13,088	12,847	10,875	10,854	11,851	32,720	35,698	584	12.8	41.4
04	265	287	73	62	436	0	859	56.87	12,243	12,677	11,121	10,602	11,121	31,858	33,509	589	12.9	42.0
03	252	303	58	24	387	20	780	51.64	11,620	12,350	11,876	11,104	11,876	33,360	36,001	697	15.2	47.1
DIVISION/SCHOOL: Advanced Technology and Applied Sciences																		
05	159	266	45	30	291	0	650	40.48	6,405	4,695	4,245	4,019	4,255	15,211	16,087	397	6.5	26.8
04	159	217	42	30	341	0	647	40.37	6,372	4,591	4,490	4,266	4,490	16,135	17,869	443	6.9	28.2
03	151	224	45	15	303	0	599	37.32	6,073	4,292	4,582	4,574	4,582	17,275	18,662	500	7.7	30.3
DIVISION/SCHOOL: Emeritus Institute																		
05	173	73	8	0	323	0	405	24.28	7,563	8,568	9,244	9,671	8,713	21,095	19,339	796	21.5	50.4
04	162	56	6	0	358	0	420	25.14	7,419	9,921	9,406	9,701	9,406	24,619	23,863	949	22.4	58.1
03	161	73	19	0	324	3	419	25.16	7,394	9,917	9,576	9,646	9,576	24,450	24,270	965	22.9	59.5
SADDLEBACK COLLEGE TOTALS:																		
05	1871	2909	541	138	2990	0	6793	419.02	76,498	65,116	60,853	58,931	61,892	198,653	211,323	504	9.1	33.1
04	1853	2706	513	145	3171	0	6795	418.46	76,014	64,711	62,739	59,727	62,739	205,631	226,181	541	9.2	33.9
03	1921	2881	558	58	2827	23	6770	408.33	79,600	66,681	68,887	67,250	68,887	229,108	227,167	556	10.2	35.9