Mathematics Department
Program Review Report
2013
1. **Description of the Program**

The Mathematics Department at Cerritos College provides high quality, academically rigorous instruction, in a comprehensive curriculum designed to meet the needs of the community, industry, and local transfer institutions. The Cerritos College Mathematics Department encourages innovation and creativity in faculty and in the development and nurturing of partnerships on campus and within our community.

In all of its courses, the Mathematics Department focuses on the teaching and student learning of problem solving and critical thinking skills through mathematics, applying those skills into a broader context that enhances quality of life. The Mathematics Department strives to promote personal and academic success and believes in the worth and dignity of each student learner.

a. **Course and Program Content**

i. The Mathematics Department has course outlines available for every course. We are currently updating the course outlines to include Student Learning Outcomes (SLO) statements.

A committee within the department recently updated the course outlines for Math 80A and Math 80B. Some of the course contents between the two classes were swapped in the interest of making the material more balanced so that students can be more successful in both courses. Those outlines will be presented to the curriculum committee Spring 2013 to be effective for Fall 2013.

ii. Our courses serve a wide variety of students and majors. The department offers multiple strands of courses to accommodate the needs of students in a wide variety of majors, clearly delineating the pre-requisites leading to each college level course, stating the pre-requisites in the course outlines. Sequencing of courses is illustrated in the flow chart below.
In conjunction with Teacher TRAC, we offer the nationally recommended (Mathematical Science Education Board) mathematical content preparation for future Elementary Teachers. These three courses: Math 110A, Math 110B, and Math 105 address mathematical content for students wishing to teach in elementary education.

Our Calculus series consists of Math 170, Math 190, Math 220, and Math 240. We are currently investigating ways to update the content in Math 220 and 240 to better articulate with universities and prepare our students for future courses.

Many of our courses that are offered within the Learning Communities Program (LCP) have had notable success. One example is the Mathematics Department’s collaboration with EOPS through Project AIM (Achievement in Mathematics). This collaboration has been in place for many years and together with EOPS and LCP, the Mathematics Department has worked to keep the project’s offerings despite budget cuts. In addition, the department offers innovative Math 40 / Coun200, Math 40 / Math 05 and Math 40 / Inst 100 learning communities. It has offered Math 116 / Econ 202 in the past and hopes to again. Furthermore, the Mathematics Department offers courses targeted for special populations – Teacher TRAC and Career Technical Education (CTE) students. Despite their success,
very few Mathematics Department full-time faculty participate in learning communities or other programs that promote integration of disciplines. Our department needs to encourage greater faculty participation in such programs, especially when there are so many other disciplines to which mathematics applies.. To this end, the faculty involved in these programs will brief the department on a regular basis regarding current happenings.

A number of our courses are offered as semi-independent courses through the Math Learning Center (MLC). The MLC is a valuable yet often misunderstood resource on our campus. It allows students flexibility in both schedule and pace, but it is sometimes mistaken as a tutoring center. The students taking semi-independent courses earn credit for courses ranging from Math 40 to Math 140. Our department will continue to inform the campus as a whole on the Math Learning Center and its operations.

A small number of sections (3 – 4) are offered online every semester. Much work needs to be done in analyzing “best practices” of online teaching and improving the quality of online instruction.

b. Student Demographics
The Mathematics Department serves over 13,500 students per year, with a wide range of student diversity in its demographic profile (illustrated in the table below). Students of Hispanic/Latino descent comprise the majority, accounting for approximately 61% of the student population. Approximately 56% of our student population is female.
## Math Department Completion Rate

<table>
<thead>
<tr>
<th></th>
<th>2010/11</th>
<th>2011/12</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>73.9%</td>
<td>76.1%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Asian</td>
<td>80.5%</td>
<td>78.2%</td>
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<tr>
<td>Black</td>
<td>68.2%</td>
<td>71.0%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>73.8%</td>
<td>77.3%</td>
<td>3.4%</td>
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<tr>
<td>American Indian or Alaska Native</td>
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<td>73.3%</td>
<td>-2.4%</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
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<td>70.1%</td>
<td>12.2%</td>
</tr>
<tr>
<td>Two or More Races</td>
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<td>71.2%</td>
<td>-5.4%</td>
</tr>
<tr>
<td>White</td>
<td>73.9%</td>
<td>74.8%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Unknown/Non-Respondent</td>
<td>73.5%</td>
<td>72.6%</td>
<td>-0.9%</td>
</tr>
<tr>
<td>Female</td>
<td>75.1%</td>
<td>77.2%</td>
<td>2.1%</td>
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<tr>
<td>Male</td>
<td>72.2%</td>
<td>74.7%</td>
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<tr>
<td>Unknown</td>
<td>76.2%</td>
<td>76.1%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

## Math Department Completion Rate Comparison with State

<table>
<thead>
<tr>
<th></th>
<th>2011/12 Cerritos College</th>
<th>2011/12 State Average</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>76.1%</td>
<td>78.8%</td>
<td>-2.7%</td>
</tr>
</tbody>
</table>

## Math Department Success Rate

<table>
<thead>
<tr>
<th></th>
<th>2010/11</th>
<th>2011/12</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>53.8%</td>
<td>55.0%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Asian</td>
<td>66.6%</td>
<td>63.8%</td>
<td>-2.7%</td>
</tr>
<tr>
<td>Black</td>
<td>41.0%</td>
<td>44.5%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>53.5%</td>
<td>55.5%</td>
<td>2.0%</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
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<td>Native Hawaiian or Other Pacific Islander</td>
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<td>Two or More Races</td>
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<td>White</td>
<td>58.4%</td>
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<td>-0.3%</td>
</tr>
<tr>
<td>Unknown/Non-Respondent</td>
<td>52.5%</td>
<td>51.4%</td>
<td>-1.1%</td>
</tr>
<tr>
<td>Female</td>
<td>54.9%</td>
<td>56.1%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Male</td>
<td>52.2%</td>
<td>53.7%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Unknown</td>
<td>56.5%</td>
<td>52.7%</td>
<td>-3.8%</td>
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</tbody>
</table>

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<tr>
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<td>55.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>
c. **Faculty, Staff and Management Issues**

i. The Mathematics Department is one of the largest departments on campus and serves more students than any other department. With this distinction comes a need for strong communication and coordination among faculty and between faculty and students. While individual instructors are exceptional in their classrooms, the Mathematics Department as a whole recognizes the need to achieve stronger communication and coordination within the department. This will facilitate a concerted effort focused on student success.

The Mathematics Department consists of faculty who love mathematics and have a passion for teaching mathematics. This is one of the most valuable aspects of our department. However, we are hard-pressed to find members who seek a leadership role on campus that does not directly involve teaching students mathematics. Subsequently, the voice of the largest department on campus is oftentimes missing or under-represented in campus-wide discussions and decision-making. We have to decide how best to address the Mathematics Department presence campus-wide, with respect to both promoting campus leadership among our ranks and supporting our current leaders.

ii. There is very little to no access to division instructional support for individual faculty. Some members of our department would like to see the addition of adult-hourly’s to provide instructional support, but due to the current economic condition, that appears to be a losing battle. Our department needs to create a plan to gather and present clear evidence for the need of an instructional support position.

iii. The Mathematics Department receives administrative support from the SEM Division staff. In the past year, our department has expressed concern regarding the availability of support staff to provide assistance to faculty. Although collaboration has improved, we need to continue our efforts.

Our SEM Division Dean Carolyn Chambers has been very supportive of our Mathematics faculty retreats, sponsoring them through her STEM grant off-site where we can focus on the matters at hand and gain fresh perspective. She has also encouraged faculty to participate in Supplemental Instruction for various math courses, through the STEM grant. Her support of improving learning in mathematics is crucial to the success of our students and is very much appreciated by our department.

iv. **Faculty Staff and Management Resources**

The Mathematics Department faculty works collaboratively and in conjunction with our instructional dean on making sure all course
offerings each semester are “covered”. Each faculty member teaches a
variety of courses and brings a rigorous and varied educational
background in mathematics and teaching. Faculty members regularly
participate in conferences organized by professional organizations,
among them:

AMATYC (American Mathematical Association of Two Year Colleges)
CMC (California Mathematics Council)
CMC³ (California Mathematics Council for Community Colleges)
MAA (Mathematical Association of America)
NCTM (National Council for Teaching of Mathematics)
LACTMA
Furthermore, organizations on campus – among them Teacher TRAC
and the LCP and CTX – offer regular professional development
opportunities on campus, including guest speakers, workshops, faculty
inquiry groups, etc. Many of our faculty participate in these professional
development activities.

2. Instructional Improvement

a. Teaching Effectiveness
The Mathematics Department directly assesses teaching effectiveness
through faculty and student evaluations. Individual faculty receive the
results of student evaluations for their own review.

Many of the mathematics faculty have participated in Faculty Inquiry
Groups (FIG’s) offered through Teacher TRAC and/or Learning
Communities. These groups examine teaching effectiveness by reviewing
student work.

b. SLO Assessment
The Mathematics Department has directly assessed SLO’s for Math 40, 60
and 80. Our assessments are quiz questions that are administered at the
end of the semester. Each section of the course administers the same quiz
to provide consistency over the different sections. The department then
grades the quizzes all together where faculty discuss results and ideas for
improvement. This method has promoted discussion among colleagues
regarding student success, and we hope to continue along this route for
future course assessments.

The Mathematics Department is currently updating all of our course
outlines to include all SLO’s for each course. We need to develop a system
to regularly monitor the currency of all of our course outlines.
c. Alignment of Syllabi with Course Outlines
Faculty are responsible for aligning their syllabi with course outlines. We do not have a system of checking this other than in faculty evaluations.

d. Course Grading, Retention Patterns, and Institutional Data

Student success has increased over the past four years at an approximate growth rate of 2.5% per year.

The department is improving steadily at a rate (2.5% per year) greater than the similar state-wide rate (1.2% per year).

The department is currently performing below (change = 4%) the state peer average. However, the rate of growth of the department (2.5% per year) is significantly higher than for the similar state-wide data (1.2% per year). This difference in the growth rates (change = 1.7% per year), over time, has resulting in the department’s success rate matching the statewide rate for the 2011-2012 academic year (55.0%)
Student retention has steadily increased over the past four years at an approximate growth rate of 1.3% per year.

The department is improving steadily at a rate (1.3% per year) greater than the similar state-wide rate (0.9% per year)

The department is currently performing below (change = 4%) the state peer average.

3. **Strengths and Weaknesses**

The department held a retreat (sponsored by the STEM grant) in Spring 2012 in which a number of strengths and weaknesses of the program were identified. The complete list is included in an appendix, but the condensed version follows:

**Strengths**

- Math department has improved the part-time to full-time ratio over the past five years
- Department Leadership is currently focused on building a solid, working team.
- Math Department is (overall) a positive presence in the Success Center
- Participation and success in Learning Communities
- Offer classes though a variety of mediums (online, MLC, Learning Communities, contextualized courses, etc.)
- Many faculty attend conferences and incorporate what they learn in the classroom
- Math Department offers nationally recommended mathematical content preparation with its three courses for future Elementary Teachers
- Wide variety of resources and manipulatives available for all of our classes

**Weaknesses**

- Lack of cohesiveness and collegiality. Faculty working in isolation; ignorant of programs (and sometimes even course outlines) valuable to our department
• Part-time Faculty do not have the opportunity (through workshops funded by grants) to interact with Full-time Faculty as they have in the past

• Faculty does not take enough advantage of opportunities in professional development on campus; lacking integration among disciplines

• Online classes have been individually constructed, with little to no communication between faculty on best practices for online teaching

• Lack of both awareness and understanding of various teaching styles; faculty are concerned that students aren’t getting consistency in core topics and thus not prepared for success in subsequent classes

• No clear protocol on evaluating and re-electing Dept. Chair

• Misunderstanding and prejudgment of particular courses: particularly MLC and Math for Teacher courses

• Need to be more responsive to our students’ professional goals, including advocating about the teaching profession

• Lack of SB 1440 Mathematics Transfer AA degree

4. Opportunities and Threats of the Program
The department held a retreat (sponsored by the STEM grant) last Spring in which a number of opportunities and threats of the program were identified. The complete list is included in an appendix, but the condensed version follows:

Opportunities
• Since it appears that funding may eventually be based on success/retention rates, we need to review how our students get placed into their Math Class

• PST 215: A conference room that is rarely used for conferences.

Threats
• Many of our faculty who teach higher level classes are poised to retire within the next 6 years

• Inconsistencies among counselors in placing students into Math classes

• Although improving, there is still a lack of support from classified staff

• Insufficient manpower in the Success Center tutoring; students getting discouraged at long wait times
5. Accomplishments of Previous Goals
   • Math 60/80/80A/80B curriculum revised.
   • Accuplacer replaced Placement Test from 1980’s.
   • Collaborated on creation of Math Success Center.
   • Increased number of classes for STEM Majors.
   • Math Club developed calculator rental program for students