Texas A&M University-Corpus Christi

Detailed Assessment Report
2007-2008 BS Mathematics

Mission/Purpose
The mission of the Mathematics Program at Texas A&M University-Corpus Christi is to increase the knowledge and use of mathematics by persons both at the University and in the surrounding area. We strive to educate students at the University so that they are prepared to use mathematics intelligently in their chosen fields of study and to understand mathematics as it affects their lives and participation in public affairs. In addition, the Mathematics Program provides its majors and graduate students with preparation for careers in education, science, and commerce, as well as providing a solid foundation for further study in mathematics. In support of the graduate program, the mathematics faculty pursues scholarship in mathematics, applications of mathematics, and instruction in mathematics. Finally, the Mathematics Program serves the community by providing its expertise to local schools, industry, and businesses.

Student Learning Outcomes, with Any Associations and Related Measures, Achievement Targets, Findings, and Action Plans

O 1: Have a command of principles of mathematics
Mathematics graduates will demonstrate a command of principles of general mathematics at the undergraduate level.

Associations:

General Education or Core Curriculum:
5  Critical Thinking
13  Use logical reasoning in problem solving

Strategic Plans:
Texas A&M-Corpus Christi
1.1 Provide excellent academic programs & instruction.

Related Measures:

M 1: MFT-Mathematics
Student Performance on the Major Field Assessment Test
Source of Evidence: Comprehensive/end-of-program subject matter exam

Achievement Target:
Median performance by our students meets or exceeds the national median, both overall and in each subsection of the test.

Findings (2007-2008) - Achievement Target: Not Met
Our median score improved over last year, but remains below the national median. The same remains true for four of the five subscores; on one
subscore (Non-routine problems) our median matched the national median.

**Findings (2006-2007) - Achievement Target: Not Met**
Our median falls below the national median. This is the first time in years, and can be explained through random variation in students from year to year: in particular, last year we had 3 students (of 13) take the test who were much weaker than usual. All 3 scored lower than any student scored in the previous year; one score below random. Had any one of them not been included in the cohort, we would have achieved the target level performance. No action planned, assuming this is a one-year aberration, but we will continue monitoring.

**Related Action Plans:**

**Analysis of MFT Results versus Grades**
We will look at grades in key Mathematics classes vis-a-vis scores on the MFT tests. The purpose will be to identify (at least) the following:

1. We have had 4 students in the last 2 years who have scored in the bottom 1%, whereas statistically we should have had only 1: does this represent retaining students who should be failed, or a lack of effort on the test on the part of those students?
2. Are the correlations between grades in particular courses and performance on the MFT?

Based on the results of our findings, we will plan curricular and/or advising actions as indicated.

For more information, see the **Action Plan Details** section of this report.

**M 2: TExES exam**
Student Performance on the Texas Examinations of Educator Standards (TExES)

Source of Evidence: Comprehensive/end-of-program subject matter exam

**Achievement Target:**
80% pass rate by 15 months after graduation (this is above the state minimum of 70%)

**Findings (2007-2008) - Achievement Target: Met**

- MATH 8-12 Final Pass rate for 2008: 8/9 = 89.9%
- MATH 4-8 Final Pass rate for 2008: 13/13 = 100%
- MATH 8-12 Initial Pass rate for 2008: 7/8 = 87.5%
- MATH 4-8 Initial Pass rate for 2008: 5/5 = 100%

**Findings (2006-2007) - Achievement Target: Met**
A. MATH 8-12 Initial Pass rate for 2007: 8/9 = 89.9%  B. MATH 8-12 Final Pass rate for 2007: 5/5 = 100%  C. MATH 4-8 Initial Pass Rate for 2007: 13/13 = 100%  D. MATH 4-8 Final Pass Rate for 2007: 15/15

**M 3: Alumni Survey**
(1) Responses by all undergraduate students on Alumni Survey Questionnaire to question 3, “Developing effective mathematical/quantitative skills”; (2) Responses by mathematics majors on Alumni Survey Questionnaire to questions 50, 55, conditional on their answers to 58 and 61 [Q50. The preparation in your major for employment or graduate/professional school; Q55. How well did your education at TAMU-CC prepare you for your first job or graduate/professional school?; Q61. To what extent does your current job make use of the education you received at TAMU-CC?; Q58. How
closely is your current position related to your field of study at TAMUCC?

Source of Evidence: Alumni survey or tracking of alumni achievements

**Achievement Target:**
(1) 70% of respondents note a "major" or "moderate" impact; (2) Among students whose jobs require mathematics, as measured by questions 58 and 61, 90% rank their education in the best two categories on questions 50 and 55.

**Findings (2007-2008) - Achievement Target: Met**
The Alumni Survey is only performed every other year, so there is no more recent data than that used in last year's Unit Assessment. However, the annual Graduating Student Survey has the same language for the first measure, and indicates that 78.7% of our graduates, an increase of 4.3% over the previous year's Graduating Student Survey, report the University had a "major" or "moderate" impact in developing effective mathematical/quantitative skills.

**Findings (2006-2007) - Achievement Target: Partially Met**
(1) In 2006, 57% reported that their experiences at TAMUCC had had a "major" or "moderate" impact in developing effective mathematical/quantitative skills. This is down from 74% in 2004, and mirrors the precipitous drop in on the same measure for "Acquiring a basic knowledge of the Liberal Arts". (2) We had to combine 2004 and 2006 results to have a large enough response (9 majors) for PIO to release the results. Also we received only summaries for each question, so we could not relate responses on 58 and 61 to 50 and 55. Of the respondents, 6 of 9 had jobs related to their major field of study (question 58) and 4 of 6 felt that their jobs used their education heavily (question 61). From this group, 8 of 9 were satisfied or very satisfied with their preparation for employment or graduate/professional school (question 50), and 7 of 8 felt the level of preparation for their first job or graduate school was "good" or better (question 55). Although we did not meet the 90% standard, the small sample size would have required unanimous positive responses to meet this standard, so we are satisfied with these results.

**O 2: Recognize & apply math outside the classroom**
Mathematics majors will recognize mathematics outside the realm of the classroom, and apply undergraduate level mathematical content as a matter of professional practice.

**Strategic Plans:**

**Texas A&M-Corpus Christi**
1.1 Provide excellent academic programs & instruction.

**Related Measures:**

**M 3: Alumni Survey**
(1) Responses by all undergraduate students on Alumni Survey Questionnaire to question 3, "Developing effective mathematical/quantitative skills"; (2) Responses by mathematics majors on Alumni Survey Questionnaire to questions 50, 55, conditional on their answers to 58 and 61 [Q50. The preparation in your major for employment or graduate/ professional school; Q55. How well did your education at TAMU-CC prepare you for your first job or graduate/ professional school?; Q61. To what extent does your current job make use of the education you received at TAMU-CC?; Q58. How closely is your current position related to your field of study at TAMUCC?]

Source of Evidence: Alumni survey or tracking of alumni achievements

**Achievement Target:**
(1) 70% of respondents note a "major" or "moderate" impact; (2) Among students whose jobs require mathematics, as measured by questions 58 and 61, 90% rank their education in the best two categories on questions 50 and 55.

**Findings (2007-2008) - Achievement Target: Met**
The Alumni Survey is only performed every other year, so there is no more recent data than that used in last year's Unit Assessment. However, the annual Graduating Student Survey has the same language for the first measure, and indicates that 78.7% of our graduates, an increase of 4.3% over the previous year's Graduating Student Survey, report the University had a "major" or "moderate" impact in developing effective mathematical/quantitative skills.

**Findings (2006-2007) - Achievement Target: Partially Met**

(1) In 2006, 57% reported that their experiences at TAMUCC had had a "major" or "moderate" impact in developing effective mathematical/quantitative skills. This is down from 74% in 2004, and mirrors the precipitous drop in on the same measure for "Acquiring a basic knowledge of the Liberal Arts". (2) We had to combine 2004 and 2006 results to have a large enough response (9 majors) for PIO to release the results. Also we received only summaries for each question, so we could not relate responses on 58 and 61 to 50 and 55. Of the respondents, 6 of 9 had jobs related to their major field of study (question 58) and 4 of 6 felt that their jobs used their education heavily (question 61). From this group, 8 of 9 were satisfied or very satisfied with their preparation for employment or graduate/professional school (question 50), and 7 of 8 felt the level of preparation for their first job or graduate school was "good" or better (question 55). Although we did not meet the 90% standard, the small sample size would have required unanimous positive responses to meet this standard, so we are satisfied with these results.

**M 4: Capstone projects**

A committee of five faculty members responsible for overseeing the upper level curriculum will assess final projects in the capstone course, MATH 4385.

Source of Evidence: Capstone course assignments measuring mastery

**Achievement Target:**

(2) 80% of the student projects assessed will be rated as "Satisfactory" or better by all faculty readers for their expertise in applying mathematics to real-world problems; (3) 80% of the student projects assessed will be rated as "Satisfactory" or better by all faculty readers for their effective communication skills.

**Findings (2007-2008) - Achievement Target: Not Met**

Eleven student projects were read by three faculty members each.

3 of 11 (27%) papers were rated Satisfactory or better on their math content by all readers (overall, 16 of 33 individual ratings were "Satisfactory" or better)

**Findings (2006-2007) - Achievement Target: Not Met**

Three faculty members rated 5 final projects from MATH 4385. Less than half of the ratings received were "Satisfactory" or better.

**O 3: Communicate mathematics effectively**

Mathematics majors will communicate mathematics effectively at the undergraduate level, in oral and written form, with appropriate use of technology.

**Strategic Plans:**

**Texas A&M-Corpus Christi**

1.1 Provide excellent academic programs & instruction.

**Related Measures:**

**M 4: Capstone projects**

A committee of five faculty members responsible for overseeing the upper level curriculum will assess final projects in the capstone course, MATH 4385.

Source of Evidence: Capstone course assignments measuring mastery
Achievement Target:
(2) 80% of the student projects assessed will be rated as "Satisfactory" or better by all five faculty members for their expertise in applying mathematics to real-world problems; (3) 80% of the student projects assessed will be rated as "Satisfactory" or better by all five faculty members for their effective communication skills.

Findings (2007-2008) - Achievement Target: Not Met
Eleven student projects were read by three faculty members each.

0 of 11 (0%) papers were rated Satisfactory or better on their writing by all readers (overall, 15 of 33 individual ratings were "Satisfactory" or better)

Findings (2006-2007) - Achievement Target: Not Met
Three faculty members rated 5 final projects from MATH 4385. Less than half of the ratings received were "Satisfactory" or better.

Related Action Plans:
Increase writing in upper division mathematics
The Department will develop a plan to increase writing assignments in upper division mathematics courses prior to 4385.

For more information, see the Action Plan Details section of this report.

M 5: Undergraduate presentations at conferences
Undergraduate students making presentations at regional and state conferences will be assessed by faculty in attendance.

Source of Evidence: Presentation, either individual or group

Achievement Target:
All students making presentations receive median scores of "Satisfactory" or better from assessing faculty.

Findings (2007-2008) - Achievement Target: Met
Two students made a presentation at the statewide MAA conference. One received scores of 53 and 63 out of 80 possible points from two evaluators. We did not receive the evaluations for the other student.

Findings (2006-2007) - Achievement Target: Met
Two math students presented at the 7th Annual Undergraduate Research Symposium at TAMU-CC. One student was placed second among all entrants from the University by the judges, the other received generally positive marks (I’m still trying to get specific judge’s ratings). To my knowledge, no other undergraduate students presented at a regional or state conference in calendar year 2007.

Other Outcomes/Objectives, with Any Associations and Related Measures, Achievement Targets, Findings, and Action Plans

O 4: Faculty research
Mathematics Department Faculty will perform research related to teaching and learning in undergraduate mathematics classes.

Strategic Plans:
Texas A&M-Corpus Christi
1.1 Provide excellent academic programs & instruction.

Related Measures:

M 6: Sponsored research documents
Sponsored research documents
Source of Evidence: Academic Indirect Indicator

**Achievement Target:**
The sum of ongoing faculty grants supporting undergraduate education and the number of grant applications supporting undergraduate education will be at least 2.

**Findings (2007-2008) - Achievement Target: Met**
Giraldo: STEP grant, ongoing
Young:: PTEP I funded grant ended 2008

Preservice Teachers Learning to Engage Hispanic Parents in Mathematics and Science
   NSF DUE #0536827
   $120,650
   March, 2006 - February 2008
   PI: Kit Price Blount; Co-PIs: JoAnn McDonald, JoAnn Canales, Olga Ramirez (UTPA)
   Key Personnel: Cherie McCullough, Elaine Young, Mohammad Bhatti

PTEP II proposal 2008 -- not funded

Preservice Teachers Learning to Engage Hispanic Parents in Mathematics and Science (PTEP 2) - not funded
   NSF CCLI
   $300,000
   PI: Cherie McCollough; Co-PIs: Elaine Young, Katherine Price Blount, David Craig, David Huckaby

Findings (2006-2007) - Achievement Target: Met
Young: I was co-PI on the NSF grant John Fernandez submitted in July (included dual credit high school College Algebra classes). Young: I submitted the TQ grant in January 2007 (formally concerned with graduate classes) Tarazaga: submitted NSF grant on undergraduate research with members of other departments.

**M 7: Faculty activity reports**
Faculty activity reports

Source of Evidence: Academic Indirect Indicator

**Achievement Target:**
(1) Faculty will make at least 2 presentations at state and regional conferences regarding teaching and learning in undergraduate mathematics classes; (2) Faculty will publish at least two peer-reviewed papers on the topics of teaching and learning in undergraduate mathematics classes; (3) At least 3 faculty will be involved with regional, state, and national organizations involving mathematics; (4) At least 3 faculty will be involved with mathematics programs in local school districts.

**Findings (2007-2008) - Achievement Target: Met**
(1)
* Venzon: I presented at ICTCM in San Antonio in March. My topic was using Qwizdom and Interwrite School Pad to increase learning in higher education.

Research Council for Mathematics Learning, 6-8 March 2008, Oklahoma City OK.

(2)


(3)
* Abudiab: Member of the Statewide Mathematics Vertical Team, Texas Higher Education Coordinating Board, July 20, 2008-present.
* Giraldo: Increased involvement with both Project Kaleidoscope and NExT.
* Tintera: Served as NCTM Liaison for the Coastal Council of Teachers of Mathematics.
* Tintera: I worked as the campus representative for the TxCETP grant, a collaborative grant across the Texas A&M University system.
* Tintera: The College Readiness Special Advisors is technically not a mathematical organization, but directly supports the learning of mathematics in the first year. I have actively served at the CRSA in the last year.

* Young: President of CCTM (regional affiliate of NCTM), Secretary of RCML (national org)

(4)
* Abudiab: GEAR UP/STAR faculty fellow at Miller High School, Corpus Christi, Texas, 2008-date.
* Tintera: Serving as ‘Service Provider’ for West Oso ISD TEA Contract. Provides workshops and coaching of West Oso Junior High School and High School mathematics teachers.
* Venzon: In February, Dr. McCullough and I did the first combined Math and Science Family Night at Flour Bluff Intermediate Campus.
* Young: Math Survivor and Family Math Nights at various schools. Also co-hosted Family Learning Events for teachers from the region. Also TQ grant with district teachers. We are doing more Family Math Nights as the demand is increasing.

**Findings (2006-2007) - Achievement Target: Met**

(4) Young, Elaine (2007, March). Mathematical Autobiographies: The Stories of Preservice Teachers. A presentation for the Research Council on Mathematics Learning (RCML), 2 March 2007, Cleveland OH. Guardiola: Presentation at AMSTAT (5) Sterba-Boatwright: joined & participated in TAAAMS, statewide organization of Math Department Chairs (5) Young: I am also secretary of the Research Council for Mathematics Learning (RCML), a national organization, as of March 2007. (5) Giraldo: I attended the RUME (Research in Undergraduate Mathematics Education) in 2007. I was part of the the 3-member nominating committee of the organization to appoint the program chair and the secretary of this SIGMAA for the period 2008-2010. (5) Denny: I don’t know if giving a conference talk "counts", but if it does I gave a research talk at a contributed papers session (which I also chaired) at the Spring Western Section meeting of the American Mathematical Society in April, 2007 (held in Tucson). (6) Young, Venzon, Hutchings: If our Math Night at Montclair Elementary School can count for participation in local school districts, I did one with my SMTE classes on November 15th. I know Elaine did one at West Oso and also a conference for teachers and administrators to attend that was Saturday, November 10th. It was on how to put on a Math Science Night.
O 5: Faculty service
Mathematics Department Faculty will perform service activities extending beyond the immediate campus.

Strategic Plans:
Texas A&M-Corpus Christi
1.2 Achieve targeted national prominence.

Related Measures:

M 7: Faculty activity reports
Faculty activity reports
Source of Evidence: Academic Indirect Indicator

Achievement Target:
(1) Faculty will make at least 2 presentations at state and regional conferences regarding teaching and learning in undergraduate mathematics classes; (2) Faculty will publish at least two peer-reviewed papers on the topics of teaching and learning in undergraduate mathematics classes; (3) At least 3 faculty will be involved with regional, state, and national organizations involving mathematics; (4) At least 3 faculty will be involved with mathematics programs in local school districts.

Findings (2007-2008) - Achievement Target: Met
(1)
* Venzon: I presented at ICTCM in San Antonio in March. My topic was using Qwizdom and Interwrite School Pad to increase learning in higher education.


(2)

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* Abudiab: Member of the Statewide Mathematics Vertical Team, Texas Higher Education Coordinating Board, July 20, 2008-present.
* Tintera: Served as NCTM Liaison for the Coastal Council of Teachers of Mathematics.
* Tintera: I worked as the campus representative for the TxCETP grant, a collaborative grant across the Texas A&M University system.
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**Findings (2006-2007) - Achievement Target: Met**
(4) Young, Elaine (2007, March). Mathematical Autobiographies: The Stories of Preservice Teachers. A presentation for the Research Council on Mathematics Learning (RCML), 2 March 2007, Cleveland OH. Guardiola: Presentation at AMSTAT (5) Sterba-Boatwright: joined & participated in TAAAMS, statewide organization of Math Department Chairs (5) Young: I am also secretary of the Research Council for Mathematics Learning (RCML), a national organization, as of March 2007. (5) Giraldo: I attended the RUME (Research in Undergraduate Mathematics Education) in 2007. I was part of the the 3-member nominating committee of the organization to appoint the program chair and the secretary of this SIGMAA for the period 2008-2010. (5) Denny: I don’t know if giving a conference talk "counts", but if it does I gave a research talk at a contributed papers session (which I also chaired) at the Spring Western Section meeting of the American Mathematical Society in April, 2007 (held in Tucson). (6) Young, Venzon, Hutchings: If our Math Night at Montclair Elementary School can count for participation in local school districts, I did one with my SMTE classes on November 15th. I know Elaine did one at West Oso and also a conference for teachers and administrators to attend that was Saturday, November 10th. It was on how to put on a Math Science Night. Nadina, Faye and I helped her.

**Details for Action Plans Established This Cycle**

**Analysis of MFT Results versus Grades**
We will look at grades in key Mathematics classes vis-a-vis scores on the MFT tests. The purpose will be to identify (at least) the following:

1. We have had 4 students in the last 2 years who have scored in the bottom 1%, whereas statistically we should have had only 1: does this represent retaining students who should be failed, or a lack of effort on the test on the part of those students?
2. Are the correlations between grades in particular courses and performance on the MFT?

Based on the results of our findings, we will plan curricular and/or advising actions as indicated.

**Priority:** Medium

**Target Date:** 05/2009
End of May, 2009

**Responsible Person/Group:** Department Chair
Additional Resources Needed: None at this time.

Increase writing in upper division mathematics
The Department will develop a plan to increase writing assignments in upper division mathematics courses prior to 4385.

Priority: Medium
Target Date: 05/2009
May 2009
Responsible Person/Group: Upper Division Undergraduate Oversight Committee
Additional Resources Needed: None
Budget Amount Requested: $0

Detailed Assessment Report
2007-2008 Dept of Math & Statistics

Annual Reports

Executive Summary
The Department of Mathematics and Statistics has had notable successes in the past year. Our graduates show strong or improved performance in passing professional exams and in entering Ph.D. programs. Our scholarly productivity and our grant funding are both on an upward trend. We play a key role in improving K-12 mathematics education in the community, and we provide important support for the College's new Ph.D. programs. However, significant challenges face us going forward. Our personnel shortage is reaching a critical point, and we must find ways to improve the performance of our students, particularly at the lower division.

Public/Community Service
Math Education faculty have a prominent role in local school districts. Their activities include Family Math Nights in elementary schools throughout CCISD, consulting with West Oso ISD, and supporting the professional development of numerous math teachers throughout the Coastal Bend through grant-funded activities and additional coursework. In addition, a recent graduate and current Adjunct faculty has been promoted to the central administration of CCISD to oversee the district's mathematics at the middle school level, which we expect to lead to still more opportunities for interaction.

Anticipated Challenges
There are two key challenges facing the Department. First, the Department will have trouble meeting existing and anticipated demands for teaching with current personnel. With the existing personnel, we are juggling the demands of finding adequate adjuncts with increasing class sizes beyond reasonable levels with giving our majors adequate preparation at the lower division level. In addition, we face the impending replacement of our existing Department Chair and the strong possibility of losing one or more existing faculty members by the Fall. Second, the University, through the QEP, has identified mathematics as one of the key obstacles to success for students in their first year, and so we will need to develop and implement changes with the same or potentially fewer faculty resources.

Closing the Loop / Planned Actions
The Department acts as a committee of the whole on curriculum, program direction, and other critical issues. Faculty meetings are held at least monthly to discuss and vote on these issues. In addition, the results of Unit Plan Assessments are presented and discussed on an annual basis.
The Department seeks to add an M.S. in Mathematics Education in the coming two years.

**Summary of Requested Resources**
The Department is requesting additional faculty lines: one senior line suitable for a new Department chair, one junior tenure-track line, and two Instructors. The first line is needed because the current chair is stepping down and there has been no existing faculty member willing to serve. The latter three lines are critical to meet demands for improved performance in our lower-division service courses (as will appear in the QEP), demands for better preparation of our own majors, and demands for greater support of graduate programs in other Departments. We will also face increasing demands with the addition of Mechanical Engineering in the Fall. In addition, we have a faculty member who is too ill to work this semester and may be unable to return in future semesters. Finally, we have lost two FTE's to the College's Ph.D. programs and to illness over the past year. As a separate issue, two faculty members are being paid at substantially below market rates, and deserve equity raises to bring them up to even minimal pay standards.

**Administrative Unit Accomplishments**
The Department continues defining its own identity following the split from CAMS in Fall 2006. New Departmental procedures are being implemented to address issues as they rise to the surface. Overall, faculty morale has improved significantly over the last two+ years.

**Teaching Results / Accomplishments**
Recent results of our teaching have been mixed. On the positive side, our recent graduates have been passing the state certification test for high school math teaching at a 90%+ rate. Three of the last four graduates from the ACM track in our graduate program have gone on to Ph.D. programs at prominent research Universities. Declines in success rates in the lower division service courses have largely leveled off. However, significant challenges remain. We strive to bring the success rates in our service courses back to and better than the levels of five years ago, and we have identified weaknesses in our major curriculum that must be addressed to increase the mathematical knowledge and skills of our graduates.

**Research/Scholar Activity Accomplishment**
In the last three years, the number of peer-reviewed papers published annually by Department faculty has more than doubled, from 4 to 10 papers per year, with numerous additional presentations and proceedings. Over the same period of time, funding from grants with Department faculty as PI or co-PI has increased nearly 10-fold, from $164,000 to $1,560,000.

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**Detailed Assessment Report**
**2007-2008 MS Mathematics**

**Mission/Purpose**
The mission of the Mathematics Program at Texas A&M University-Corpus Christi is to increase the knowledge and use of mathematics by persons both at the University and in the surrounding area. We strive to educate students at the University so that they are prepared to use mathematics intelligently in their chosen fields of study and to understand mathematics as it affects their lives and participation in public affairs. In addition, the Mathematics Program provides its majors and graduate students with preparation for careers in education, science, and commerce, as well as providing a solid foundation for further study in mathematics. In support of the graduate program, the mathematics faculty pursues scholarship in mathematics, applications of mathematics, and instruction in mathematics. Finally, the Mathematics Program serves the community by providing its
expertise to local schools, industry, and businesses.

Student Learning Outcomes, with Any Associations and Related Measures, Achievement Targets, Findings, and Action Plans

O 1: Demonstrate command of math principles
Demonstrate a command of principles of general mathematics at the graduate level.

Strategic Plans:
Texas A&M-Corpus Christi
1.1 Provide excellent academic programs & instruction.

Related Measures:

M 1: Math content rubric
The department will develop and use a rubric to assess the mathematics content of all project reports (CC track) and theses (ACM and potentially CC tracks). Each report or thesis will be assessed by at least two faculty using this rubric.

Source of Evidence: Project, either individual or group

Achievement Target:
90% of project reports and theses will be rated as "Satisfactory" or better on all items of the rubric by all raters.

Findings (2007-2008) - Achievement Target: Partially Met
The Department's Graduate Committee reviewed one ACM thesis using a three part rubric (see attached) using two different readers. The student's thesis was rated satisfactory or excellent by all raters on all three aspects of the rubric.

The Department's Graduate Committee reviewed seven CC theses or project writeups on a three-part rubric (see attached) using two readers for each student. The results were as follows:

a) Knowledge of math content: 3/14 satisfactory or better, 21.4%
b) Teaching insights gained from mathematical understanding: 9/14, 64.3%
c) Integration of multiple mathematics concepts: 12/14, 85.7%

Findings (2006-2007) - Achievement Target: Not Met
There were no EM theses evaluated. For the CC track, three faculty evaluated three projects and one thesis. In general, the ratings were "Unsatisfactory" rather than "Satisfactory". This will be discussed more in the Action Plan, but in general, the problem is that the CC projects tend to be more pedagogically focused, and thus do not serve as a good place to measure mathematical learning in this population.

M 2: Texas Exam for Master Teachers in Mathematics
Student performance on the Texas Examinations for Master Teachers in Mathematics. (CC track only)

Source of Evidence: Certification or licensure exam, national or state

Achievement Target:
A pass rate among first-time takers of 80%.

Findings (2007-2008) - Achievement Target: Not Met
Our program is STILL pending approval, although progress has been made
**O 2: Apply mathematics to model real-world situations**

Apply mathematics to model real-world situations at an appropriate level. (remark: On the advice of Gale Stuart, this has been re-worded from the outcome submitted for the catalog.)

**Strategic Plans:**

**Texas A&M-Corpus Christi**

1.1 Provide excellent academic programs & instruction.

**Related Measures:**

**M 3: Embedded assignments**

Embedded assignments from MATH 5370 and 5378 will be assessed to measure students’ ability to model real-world situations, using a rubric developed by the department. Each student’s skills will be assessed by at least two faculty.

Source of Evidence: Project, either individual or group

**Achievement Target:**

80% of all such assessments will be at the level of "Satisfactory" or better for all items on the rubric.

**Findings (2007-2008) - Achievement Target: Not Met**

The Department did not offer MATH 5370 in AY 2007-8. The Department’s offering of MATH 5378 failed to make. Thus, there are no assignments to assess.

**Findings (2006-2007) - Achievement Target: Not Met**

Three faculty members assessed five student assignments from 5370, and four faculty members assessed three student assignments from 5378. Less than 50% of the assessments of the 5370 materials were "Satisfactory" or better; approximately 80% of the assessments of the 5378 were "Satisfactory" or better.

**M 4: Alumni Survey**

Assessment #2: Responses by mathematics majors on Alumni Survey Questionnaire to questions 50, 55, conditional on their answers to 58 and 61

Source of Evidence: Client satisfaction survey (student, faculty)

**Achievement Target:**

Among students whose jobs require mathematics, as measured by questions 58 and 61, 90% rank their education in the best two categories on questions 50 and 55.

**Findings (2007-2008) - Achievement Target: Not Met**

The Alumni Survey is only done in alternate years, so no additional data was collected this year.

**Findings (2006-2007) - Achievement Target: Not Met**

2004 and 2006 surveys contained no responses from students with MS in Mathematics.

**O 3: Communicate mathematics effectively**

Communicate mathematics effectively at the graduate level, in oral and written form, with appropriate use of technology.

**Strategic Plans:**
Texas A&M-Corpus Christi
1.1 Provide excellent academic programs & instruction.

Related Measures:

M 5: Oral theses defense
(in alternate years) Mathematics Department faculty attending the oral defenses of projects and theses will assess the oral communication skills and use of technology in communication by these students, using a rubric developed by the department. The rubric will focus on (i) organization (ii) argumentation (iii) syntactically correct English.

Source of Evidence: Senior thesis or culminating major project

Achievement Target:
All students will receive a rating of "Satisfactory" or better on at least two of the three rating components.

Findings (2007-2008) - Achievement Target: Met
We assess oral and written components in alternate years; this assessment was not made this year.

M 6: Written theses
(in alternate years) Students’ thesis and project committees will assess the written communication skills, using a rubric developed by the department. The rubric will focus on (i) organization (ii) argumentation (iii) syntactically correct English.

Source of Evidence: Senior thesis or culminating major project

Achievement Target:
All students will receive a rating of "Satisfactory" or better on at least two of the three rating components.

Findings (2007-2008) - Achievement Target: Met
The Department's Graduate Committee reviewed one EM thesis using a three part rubric (see attached) using two different readers. The student's thesis was rated satisfactory by all raters on all three components of the rubric.

The Department's Graduate Committee reviewed seven CC theses or project writeups on a three-part rubric (see attached) using two readers for each student. Three students were rated as satisfactory or excellent by all raters on all three ratings components, and four were rated as satisfactory on two of three ratings components.

Findings (2006-2007) - Achievement Target: Not Met
To be performed next year

M 7: College TA Assessment Instrument
Responses by students in mathematics labs to questions 2, 4, and 10 on the College TA Assessment instrument.

Source of Evidence: Student satisfaction survey at end of the program

Achievement Target:
Over 75% of the individual ratings on these three questions will be either 4’s or 5’s for TA's who are M.S. Mathematics students.

Findings (2007-2008) - Achievement Target: Not Met
For AY 0708:

Q2: 52% of ratings of TA's who were M.S. Math students were 4 or 5
Q4: 62.5% of ratings were 4 or 5
Q10: 66% of ratings were 4 or 5
Findings (2006-2007) - Achievement Target: Partially Met
College Mean Score not available. For TA’s that are graduate students in Mathematics: Q2: 67.2% of students rated their TA’s 4 or 5 on "teaching style that encourages learning" Q4: 87.9% of students rated their TA’s 4 or 5 on "stresses important concepts during lab session" Q10: 73.4% of students rated their TA’s 4 or 5 on "provides constructive feedback for students"

Related Action Plans:

Improve TA training
For new TA's: The Department Chair will review the syllabus of the SMTE 510x course where new TA's are trained to look for ways to better ensure training that will help TA communication.

For existing TA's: The Department Chair will arrange visitations by faculty to TA's in the labs to better understand where failures of communication may be taking place.

Related Action Plans:

For more information, see the Action Plan Details section of this report.

Other Outcomes/Objectives, with Any Associations and Related Measures, Achievement Targets, Findings, and Action Plans

O 4: Faculty scholarship
Increasing quality in faculty scholarship

Strategic Plans:

Texas A&M-Corpus Christi
  1.1 Provide excellent academic programs & instruction.

Related Measures:

M 8: Promotion & tenure applications in third year
There is general agreement among the faculty that this is the appropriate goal. However, measuring the quality of faculty scholarship is a difficult task and we have not reached consensus on how to do it. Our first task is to develop an adequate internally accepted measure of the quality of faculty scholarship. Our method will be sourced out of faculty evaluations, and will look at the quality of publications and presentations. Interim Assessment: While the above work is going on, we will use the assessment of faculty scholarship embedded in third year reviews and in promotion and tenure applications.

Source of Evidence: Professional standards

Achievement Target:
Although the conversation about measuring faculty scholarship continues, no consensus that would result in measurable outcomes has emerged. In addition, changes in curriculum appear more urgent topics for limited faculty time right now. Interim Assessment: 75% of faculty in their third year review, and 100% of faculty in subsequent promotion and tenure decisions, will be judged to have adequate scholarship to merit retention/tenure/promotion.

Findings (2007-2008) - Achievement Target: Met
In AY 2007-8, the Department had one faculty member who received a Third Year Review. The Department faculty who reviewed the candidate's scholarship judged the candidate to have scholarship that, if continued, would be adequate for tenure.

In AY 2007-8, the Department also had one faculty member who applied for Tenure. Both the Department faculty and the College faculty who reviewed the
candidate's scholarship judged it to be adequate for tenure.

**M 9: Collaborative scholarship with other disciplines**
In furtherance of our mission "to pursue scholarship in . . . applications of mathematics", Math Departmental faculty should pursue publications and grants with colleagues in other Departments.

Source of Evidence: Professional standards

**Achievement Target:**
1. Faculty will submit at least two papers a year jointly with faculty members from other Departments.
2. Faculty will submit at least two grant applications a year jointly with faculty members from other Departments.

**Findings (2007-2008) - Achievement Target: Met**
1. Refereed papers/presentations with members of other departments:
   - "Monte Carlo Simulations and Factor Analysis to Optimize Neural Network Input Selections and Architectures", G. Beate Zimmer, Alexey L. Sadovski, Philippe E. Tissot, Blair Sterba-Boatwright, in Intelligent Engineering Systems through Artificial Neural Networks, Vol. 18

2. Grants submitted with members of other departments:
   - Buck, Guardiola, "Morbidity Rates In Diabetic Hispanics Infected By Drug-Resistant Staphylococcus", Steps Toward Academic Research, $25,000, funded
   - Sterba-Boatwright, Scherger, "Threshold Modeling of Water Levels Using EMC Methods", TRDF, $20,000, funded
   - Jensen, Tarazaga, Denny, Mestas-Nunez, "Surface Circulation of Corpus Christi Bay using HF Radar Observations for Applications such as Oil Spill Trajectory Modeling", $50,000, funded

**Related Action Plans:**
- **Hire an additional statistician**
  There is substantial unmet demand for statistical consulting with faculty and graduate students in other Departments, especially Biology and CMSS. An additional faculty member would help meet this demand.

For more information, see the Action Plan Details section of this report.

**M 10: Scholarship in K-12 Math Education**
In furtherance of our mission to "pursue scholarship in . . . instruction in mathematics", Math Departmental faculty will publish papers and obtain grants in K-12 Mathematics Education.

Source of Evidence: Professional standards

**Achievement Target:**
1. Department faculty will submit at least two papers a year on topics related to K-12 Mathematics Education.
2. Department faculty will submit at least two grants a year on topics related to K-12 Mathematics Education.

**Findings (2007-2008) - Achievement Target: Partially Met**
1. No Math Ed papers were submitted in AY 07-08.
2. Two Math Ed grants were submitted and approved in AY 07-08:
   - Conceptual Development of Rational Numbers Teacher Quality grant, Texas Higher Education Coordinating Board
Problem Solving: Discrete to Continuous Mathematics
Teacher Quality grant, Texas Higher Education Coordinating Board
$86,990
1 May 2008 - 31 May 2009
Director: Elaine Young; Co-directors: George Tintera, Faye Bruun

**Related Action Plans:**

**Hire an additional Math Educator**
Only one of three faculty members in Mathematics Education is currently productive in the scholarly arena. In addition, we are at risk of losing a senior SMTE faculty member to illness. The Department needs established leadership in scholarship in K-12 Math Education.

For more information, see the *Action Plan Details* section of this report.

**O 5: Faculty involvement in recruiting**
Increased faculty involvement in recruiting students for the Environmental Modeling track.

**Strategic Plans:**

**Texas A&M-Corpus Christi**
1.1 Provide excellent academic programs & instruction.
1.2 Achieve targeted national prominence.

**Related Measures:**

**M 11: Number of new students from TAMU-CC math majors**
Number of new students recruited from our own undergraduate majors.

Source of Evidence: Activity volume

**Achievement Target:**
An increase of two students.

**Findings (2007-2008) - Achievement Target: Met**
EM track: Added one student who was a math major here.
CC track: Added one student (at least) who was a math major here.

**Findings (2006-2007) - Achievement Target: Partially Met**
EM: We had one TAMU-CC student, not a math major, start a graduate program with us in the Fall. However, we have three who have verbally committed to start in Fall 2008. CC: None; not sure who’s in the pipeline.

**Related Action Plans:**

**Obtain additional TQ grants**
The SMTE faculty will seek additional Teacher Quality grants, which have been successful in the past in bringing degree-seeking students into the CC track program.

For more information, see the *Action Plan Details* section of this report.

**M 12: Number of new students from outside**
Number of new students recruited from other universities’ majors.

Source of Evidence: Activity volume

**Achievement Target:**
An increase of two students.
Findings (2007-2008) - Achievement Target: Met
EM track: added 5 students, 4 from other Universities and 1 from TAMU-CC Chemistry
CC track: added 4 students from other Universities

Findings (2006-2007) - Achievement Target: Met
EM: We had two students from other universities start in September, plus one more who will start in January 2008. CC: We had at least four start in September from other universities.

Related Action Plans:

Obtain additional TQ grants
The SMTE faculty will seek additional Teacher Quality grants, which have been successful in the past in bringing degree-seeking students into the CC track program.

For more information, see the Action Plan Details section of this report.

Details for Action Plans Established This Cycle

Hire an additional Math Educator
Only one of three faculty members in Mathematics Education is currently productive in the scholarly arena. In addition, we are at risk of losing a senior SMTE faculty member to illness. The Department needs established leadership in scholarship in K-12 Math Education.

Priority: Medium
Target Date: 09/2009
September 2009
Responsible Person/Group: Department Chair
Additional Resources Needed: A senior faculty line
Budget Amount Requested: $110500

Hire an additional statistician
There is substantial unmet demand for statistical consulting with faculty and graduate students in other Departments, especially Biology and CMSS. An additional faculty member would help meet this demand.

Priority: High
Target Date: 09/2009
September 2009
Responsible Person/Group: Department Chair
Additional Resources Needed: New junior faculty line
Budget Amount Requested: $70000

Improve TA training
For new TA's: The Department Chair will review the syllabus of the SMTE 510x course where new TA's are trained to look for ways to better ensure training that will help TA communication.

For existing TA's: The Department Chair will arrange visitations by faculty to TA's in the labs to better understand where failures of communication may be taking place.

Priority: High
Target Date: 08/2009
August 2009
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<th align="center"><strong>Responsible Person/Group:</strong> Department Chair</th>
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**Obtain additional TQ grants**

The SMTE faculty will seek additional Teacher Quality grants, which have been successful in the past in bringing degree-seeking students into the CC track program.

**Priority:** High

**Target Date:** 06/2009

June 2009

**Responsible Person/Group:** Elaine Young; Blair Sterba-Boatwright

**Additional Resources Needed:** Matching pay for faculty and adjuncts

**Budget Amount Requested:** $53849