Home

Amarillo College

Program Review

Form for External Review Committee

Instructional

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Form ID
55
Division
Sciences and Engineering
Department
Math and Engineering
Program
Mathematics
Review Year
2006-2007
Member Names
Gay Mills
Division Overview
Kathy Wetzel and the Math & Engineering Department created a relevant and thorough program review narrative. They addressed each question factually; the committee was impressed with their numerical data and ratios. It's easy to tell

that is their expertise. They should be commended on the time invested in this project.

Program/Department Purpose

State the purpose of the program/department. How is this purpose within the mission of Amarillo College?

The following statements are the departments, divisions, and colleges missions statements.

> The Mathematics and Engineering Department supports the goals of the Sciences and Engineering Division by providing educational opportunities for improvement in foundational mathematics skills and for success in transfer-level math and engineering courses required in a broad spectrum of technical fields and advanced degrees.
>
> "The Sciences & Engineering Division supports the goal of AmarilloCollege by providing a quality education and an opportunity for students to excel in technical fields and advanced degrees."
>
> AmarilloCollege, a public community college, is dedicated to providing educational, cultural and community services and resources to enhance the quality of life for the diverse population in the service area.

As the departments goal states, we directly support the divisions mission to excel in technical fields and advanced degrees. By providing educational opportunities for people in the community to improve skills and be successful in completing educational goals, the Mathematics and Engineering department directly supports the mission of the college as it enhances the quality of life for the population.

Does the answer include a purpose statement for the program/department? Does the answer indicate how this program/department is within the

mission of Amarillo College?
Acceptable
N/A
The Math & Engineering Department tied their purpose into the department, division, and college mission statements. They clearly state their departmental goals, support the division goals to excel in "technical fields and advanced degrees," and directly support the mission of AC as they enhance the "quality of life" for the Amarillo and area population.
When was the last time the program's/department's purpose statement was reviewed/revised by faculty and staff in the program/department?
Fall2006
Does the answer indicate the last time the program's/department's purpose statement was reviewed/revised by faculty and staff in the program/department? Does the answer indicate how this program/department is within the mission of Amarillo College? within the mission of Amarillo College?

Acceptable

N/A

The department's reviewed/revised its purpose statement within the last two years.

If the program/department offers continuing education credits, how are these courses consistent with the mission of Amarillo College?

The Math&EngineeringDepartment does not offer any continuing educationcourses.

Does the program/department offer continuing education credits? Does the answer indicate how these courses are consistent with the mission of Amarillo College?

Acceptable

N/A

Does the program have admissions policies?

no

Where are the policies published?

Are all the locations where the policies are published included in the answer?

Acceptable

N/A

Explain how these policies are consistent with the mission of Amarillo College.
Does the explanation of how the policies are consistent with the mission of Amarillo College appear to be accurate?
Acceptable N/A
Is the program/department accredited? **no** Which agencies or organizations accredit the department/program?
Are the complete names of the agencies or organizations which accredit the department/program cited?
Acceptable N/A
How many years are in the accreditation cycle?
How many years are in the accreditation cycle?
Acceptable N/A
When were the accreditations affirmed or granted?

When were the accreditations affirmed or granted?
Acceptable N/A
What is the current status of the accreditation?
Are the current statuses of the accreditations identified (e.g. accredited, in process of renewal, in process of candidacy, other)?
Acceptable N/A
If not required, is the program eligible for accreditation?
Acceptable N/A
Has this program/department sought accreditation even though it is not required (e.g. yes; If no, explain)?
Acceptable N/A
Is this program/discipline required to receive approval from an external agency or organization (other than the Texas Higher Education Coordinating Board) in order to offer courses? **no**

Identify the external approver(s) for the department/program.
IF the program/discipline is required to receive approval from an external agency or organization (other than the Texas Higher Education Coordinating Board) in order to offer courses, was (were) the external approver(s) for the department/program identified?
Acceptable N/A
What approval schedule is required by the external approver(s)?
Was the approval schedule required by the external approver(s) identified?
Acceptable N/A
When did the program/department last receive approval?
When did the program/department last receive approval?
Acceptable N/A
Is the reason why the program/department is required to

receive this approval clear?

Acceptable

N/A

Improvements

Identify at least one example of an improvement/revision which resulted from the annual PET forms for the last five years

In the 2004-2005 PET forms for the Mathematics & Engineering Department, there are four Goal Statements:

1. Academically Disadvantaged Student Success: Assure that students needing remediation in math achieve success in developmental coursework and in subsequent college-level courses after completing the highest-level of remediation needed. Reference: AmarilloCollege Goal II, Success Indicator 3.
2. Ensure that high course completion rates are achieved and maintained.
3. Ensure that those students who complete the Math and Engineering courses do so successfully with an A-C average.
4. Assure that students are satisfied with the academic advising and course planning they receive. Reference: AmarilloCollege Goal II, Success Indicator 4.

Numerous changes have been made in the Math & Engineering Department in the last five years. The primary focus of these changes is augmentation of the learning experience for the student and faculty/classified employee. These improvements include upgrading teaching supplies and technological resources for faculty, improving student access to tutoring services, revising course content, and improving the delivery of that content.

Especially significant are the changes made in the developmental math program in response to Goal #1 in the PET form.

1. Academically Disadvantaged Student Success: Assure that students needing remediation in math achieve success in developmental coursework and in subsequent college-level courses after completing the highest-level of remediation needed. Reference: AmarilloCollege Goal II, Success Indicator 3.

In Fall 2002, the Blitzer series of Beginning and Intermediate Algebra texts were adopted to address the need for a more college-level preparatory text than the earlier workbook-type McKeague texts that the Department had

used for years. These texts also offered a significant increase in the number and overall quality of real-world application problems compared to the earlier McKeague texts. This change was followed in Fall 2004 by the Blitzer College Algebra text. This text exhibited the same improvements shown in Blitzers developmental texts, along with the additional advantage that the students would now benefit from a more seamless transition between Intermediate Algebra and College Algebra. Books written in the same writing style and using the same approach give the students a better sense of the connection between topics in the developmental algebra sequence and the College Algebra course. To further improve that seamless transition, a meeting on the vertical alignment of the Intermediate and College Algebra courses was held in Fall 2006. The changes that were suggested during that meeting will further streamline the coverage of topics and improve the students learning experience in these two courses.

Another developmental math curriculum change implemented to increase student success is the implementation of what are known as skill drills in all three of the developmental math courses. These five-minute exercises, given at the beginning of each class, are like a mini-quiz over the material recently covered in class. All of the skill drills added together are given the weight of one major exam. Students are required to attend class regularly, to keep up with the course content, and to maintain their skill level on a topic in order to do well on the skill drills. The skill drills further benefit the students by giving them an idea of the kinds of questions that will be on the major exams. The skill drills, which consist of 2-4 very short, simple questions, must be completed in 5 minutes. As chapter tests in the developmental sequence have traditionally been taken in the Math Lab where there is no time limit, these mini-tests prepare the developmental student for the timed tests that are first encountered at the transfer class level. The incentive for doing well on these skill drills is that students may replace their lowest test grade with their overall skill drill grade if it is higher.

One other change specifically aimed at the developmental math program is the implementation of a mandatory tutoring policy. The policy states that if any student scores below a 70 on a major exam in a developmental math course, they must obtain at least thirty minutes of tutoring from their instructor or the OutreachCenter before they will be allowed to take their next exam. (NOTE: The OutreachCenter is described in detail in Section II.D.) The student must bring a specific form, filled out by the tutor, to the Testing Lab when they come in to take their next exam. All of the changes listed above were adopted to improve student success in the developmental courses as well as their success in the subsequent transfer-level courses.

The establishment of the OutreachCenter in the EngineeringBuilding was in

response to the second and third PET Goal Statements:

1. Ensure that high course completion rates are achieved and maintained.
2. Ensure that those students who complete the Math and Engineering courses do so successfully with an A-C average.

The Department recognized a need for math tutoring in a more convenient location for our students because many students, especially the developmental students, were reluctant to seek peer tutoring help due to the somewhat removed location of the peer tutoring program in the Lynn Library. Thanks to the extensive help and cooperation of Charlotte Goebel, Peer Tutoring coordinator, peer tutoring for math is now located in what is known as the OutreachCenter in Room ENGR-104. Students in both the developmental and early transfer-level courses now have a convenient, central location where they may get tutoring help. Both drop-in tutoring and tutoring by appointment are available in the OutreachCenter.

Several additional programs of faculty development have been implemented to improve student success from the faculty side of the equation. These programs include the requirement that all full-time faculty must make two classroom observations of other departmental faculty teaching methods every semester. Moreover, one or two full-time faculty members are required to give a short presentation on one of their personal teaching methods--a teaching tip--at one of the departmental meetings throughout the school year. And the newest innovation, meetings, on an as-needed basis, will be held to discuss more effective methods for presenting material in class that is often difficult for the majority of students to understand. For example, a meeting is planned for the Spring 2007 semester to discuss ways of teaching exponents and logarithms more effectively in College Algebra.

Work is ongoing to improve the technology available to both faculty and students. Two years ago, a professional development grant was obtained from AmarilloCollege to purchase EXP mathematical word processing software for the math faculty. This software allows faculty to produce professional-looking documents, particularly tests, more quickly and easily than they could previously produce with Word software. A workshop was held to provide training in the use of the software.

Three grants are being prepared at the time of this writing and will be submitted by the end of November. A $475,000 grant, Building a Bridge, Mathematics, Engineering and Science Education at Work is being written and submitted to the Army Research Office for the purchase of technological teaching supplies for math and engineering, as well as for

science classes in the division. Two Texas Workforce development grants, each for over $400,000 are also being developed, and will be used to develop an Aeronautical Engineering and Electrical Engineering two-year degree, including the creation of laboratories to support these endeavors. These two grants require partners in the workforce. Our partners are Bell Helicopter for the Aeronautical grant and Xcel for the Electrical emphasis. These industries have promised to help with the development of the program, availability of equipment, and have also promised to interview each of our graduates. These technology improvements enable faculty to teach their classes more professionally, which not only facilitates student success in these courses but also reflects well on AmarilloCollege in general. We cannot serve effectively as teachers and mentors to our students without up-to-date equipment and technology to support the excellent instruction for which AmarilloCollege is known.

After reviewing at least one example of improvements/revisions that resulted from the annual PET forms for the last five years, determine the extent that this program/department has used the PET forms to make improvements/revisions. Does this meet the minimum expectations for using PET forms to make improvements/revisions to the program/department?

Acceptable

Commendation

The Math & Engineering Department set goals, invested themselves in the process of attaining those goals, and the level of improvement is outstanding. Both students and faculty will benefit from the improvements. Particularly notable are

the significant changes in the academically disadvantaged student success goal, a stong emphasis at AC.

Identify at least one example of improvements/revisions which resulted from the last Program Review.

In the 2000 Program Review,areas of concern included:

- Engineering and Math syllabi "do not follow the AmarilloCollege approved guidelines."
- Limited number of faculty in the Engineering program.
- Large percentage of part-time faculty providing instruction, particularly in developmental math courses.

Since the last Program Review conducted in the spring of 2000, nine additional full-time faculty members have been hired. Four transfer-level instructors were hired to meet the needs of increasing enrollment and five developmental instructors were hired to meet the needs of increasing enrollment as well as to improve the full-time/part-time faculty ratio in the three developmental math courses. One of the faculty members was hired to help teach engineering courses in addition to mathematics courses.

The 2000 Program Review also recommended that specific recruiting strategies for low-enrollment programs be developed.

Measures have also been taken to help build these programs. Moreover, extra recruiting efforts have been implemented including Badgerama, SneakPeak, Engineering Day, Top of Texas Career Expo, high school visitations, Women in Science Endeavors, and Go Girls Fair workshops.

After reviewing at least one example of improvements/revisions that resulted from the last Program Review, determine the extent to which this program/department values the Program Review process

to make improvements/revisions.
Acceptable N/A Each area of concern expressed in the 2000 Program Review has been addressed and corrected. It appears a great deal of focus and attention was given to the previous Program Review.
Identify all the delivery approaches used for courses within this program/department: (Select all that apply.) traditional classroom, web, video, interactive TV (ITV),
After reviewing all delivery approaches for courses within this program/department, is this program positioned for growth? Does the committee have recommendations for delivery options which will provide additional growth?
After reviewing at least one example of improvements/revisions that is a response to accomplish a strategy or tactical objective within the Strategic Plan 2010-2015, determine the extent to which this

program/department has contributed to the implementation success of the Strategic Plan? Does this department/program understand how it relates to the institution's future based on the Strategic Plan?

Acceptable

N/A

The department gave several examples where they successfully accomplished the objectives within the Strategic Plan.

Identify at least one example of an improvement/revision that is a response to accomplish a strategy or tactical objective within the Strategic Plan 2010-2015.

Just a brief note for Item C above.ITV mathematics courses had been taught in the past, but not since 2005.

Now for Item D.

At the time of implementation of these improvements/revisions, Strategic Plan 2006 was in place.
Reference: Strategic Plan 2006.

Action 1.2.1	Conduct training needs assessment.
Action 1.2.3	Expand technical training on East Campus.
Action 1.4.2	Provide additional options for baccalaureate degree seekers.
Action 9.2.2	Identify new grant opportunities and increase external funding for strategic plan initiatives.

The department is in the process of applying for two grants to provide needed training for Bell Helicopter and Xcel Energy. One grant is the Meeting Industries Critical Workforce Needs for the Aerospace and Defense Cluster grant from the Texas Workforce Commission. The grant will be for over $400,000 and we have already received word from Bell Helicopter that they are willing to help with the grant in providing teachers, equipment, and interviewing each AmarilloCollege student that graduates with an associates degree. If a student is hired, Bell Helicopter will provide funding for the student to complete his/her baccalaureate degree. A second grant is Meeting Industries Critical Workforce Needs for the Energy Cluster. This grant would also be in the amount of over $400,000.

To provide our students and teachers, throughout the division, with the needed equipment for hands-on learning and classroom demonstrations, an Army Research Office grant from the military is being sought. The grant will be for $475,000. The Mathematics and Engineering department chair will serve as Principal Investigator.

While these grants, if obtained, will not increase our departments presence on the East campus, they will increase training efforts, in general.

Reference: Strategic Plan 2006,
Action 3.2.1 Align instructional methodologies with student learning styles.
Success Indicator II 50% of FT faculty will participate in professional development on this topic.

The Mathematics and Engineering Department holds meetings approximately once a month. At each meeting, two full-time faculty members share one teaching technique with the department. In addition, each full-time faculty member is required to observe two other faculty members each semester to gain some tips that would better equip them in their own classroom. These alternative approaches to teaching allow faculty to have more techniques at their disposal to meet the students needs and preferences. The department has 100% full-time faculty participation in the above professional development opportunities.

Reference: Strategic Plan 2006,
Action 4.1.1 Determine

whether students are learning and adjust accordingly.

Success Indicator II Develop student outcome assessments for general education programs.

Developmental Mathematics: Unless students meet certain exemptions, they are required to take a standard, state-recognized test that indicates their level of understanding of mathematics. The majority of students take the Accuplacer test as it is short and inexpensive (the cost is $5). Those students who place into remedial mathematics (Basic Math or Beginning Algebra) are required to retest using the Accuplacer at the end of the Beginning Algebra course in order to assess learning.

College Algebra: A pilot program of embedded assessment has been instituted in College Algebra. By implementing Embedded Assessment, useful data is now being gathered. This data is being

used to continue to improve teaching techniques and to construct more efficient and effective assessment strategies. Successful implementation of this type of assessment will be encouraging to the rest of AC and provide useful data and experience which other departments can use to construct effective assessment strategies as well. (See Section E.1 for more detail.)

Reference: Strategic Plan 2006,

Action 11.2.1 Identify the technology skill set necessary for individual positions.

One of the skills necessary for Mathematics and Engineering teachers is the ability to quickly and efficiently create handouts, WebPages, tests, etc. that are heavy in symbolic word processing. Working with a symbolic language in a typical word processing software such as Word is extremely cumbersome. The department

received a mini-grant from Professional and Organizational Development that was used to purchase copies of EXP Scientific Word Processing software for all faculty and staff to access. This software reduced the time necessary to create documents by over 80% (this percentage obtained by an informal comparison of a faculty member expert in Word and a faculty member expert in Exp typing the same material). In addition, the grant provided funds for a training workshop in the use of Exp.

Reference: Strategic Plan 2005,

Tactic 3.1.12 Design Early Alert System to identify at-risk students.

Action 4.1.1 Determine whether students are learning and adjust accordingly.

Action 4.1.2 Identify and implement best practices.

Reference: Strategic Plan 2006,

Strategy 3.2 Modify and expand educational

programs to address changing student demographics.

The OutreachCenter provides a wide range of services for the students as well as faculty. Diminished student math skills are a documented characteristic of our targeted students. One of the most important aspects of the OutreachCenter is its tutoring services. Students can receive tutoring from peer tutors as well as sign up for one-on-one tutoring from a learning specialist. The OutreachCenter houses one 40-hour tutoring position, three 19 hour tutoring positions, and fifteen to twenty student tutors.

The majority of the student tutors in the OutreachCenter are funded by the peer tutoring budget. In the spring of 2005, Peer Tutoring recorded 515 tutoring sessions when housedin the Library. Bringing the math portion of peer tutoring

into the OutreachCenter, over 4,200 visitor signatures were recorded a year later in the spring semesterof 2006. The log-in sheet station was not manned and an unknown percentage of students did not log in. The average length of stay for those in the spring of 2006 who logged in and logged back out was 62 minutes. We want to offer our sincere appreciation to Peer Tutoring and Charlotte Goebel, in particular, for working outside the box and helping to fund the tutoring in our Center. The Outreach program is indebted to Peer Tutoring for working so successfully with our program.

A mandatory tutoring program has been introduced for at-risk students in developmental math. If they receive a score below 70 on an exam, they must receive thirty-minutes of tutoring before being allowed to take the next exam. Currently, this fall of 2006, the log in sheet indicates the attendance

shown in the table below.

Month in 2006	Number of students who logged in	Number of students who logged back out	Total number of minutes	Average number of minutes per student who logged in and out
August	249	172	8,342	48.5
September	1139	569	33,818	59.43
October	1634	645	40,870	63.36

After reviewing at least one example of improvements/revisions that is a response to accomplish a strategy or tactical objective within the Strategic Plan 2010-2015, determine the extent to which this program/department has contributed to the implementation success of the Strategic Plan? Does this department/program understand how it relates to the institution's future based on the Strategic Plan?

Acceptable

Commendation

Several items deserve commendation as the Math and Engineering Department has addressed strategies highlighted in the Strategic Plan:

1. Applying, receiving, and successfully using grant money.

2. Holding monthly departmental meetings to share effective teaching

techniques and observing other full-time department faculty members for successful teaching strategies.

3. Striving to ensure success of developmental math students by piloting assessment options.

4. Providing peer tutoring through the Outreach Center (over 4,200 visitors signed in during Spring 2006 semester).

5. Requiring a mandatory tutoring program for at-risk students in developmental math.

Does this Committee have recommendations as to how this program/department may contribute to the implementation of the Strategic Plan?

Acceptable

N/A

This department is already contributing fully to the implementation of the Strategic Plan.

Provide names and titles of those who determined the process used to assess outcomes of the program and/or courses in the department.

Developmental Mathematics:
Edythe Carter, Assistant Professor
Tonja Hester, Mathematics Laboratory Assistant
Aimee Martin, Associate Professor
John Pool, Instructor
Dr. Kathryn Wetzel, Department chair, Professor

College Algebra:
Diana Johnson, Assistant Professor
Macy Kohler, Instructor
Kim McGowan, Instructor
Catherine Mechenbier, Instructor
Wendy Poling, Instructor
Karen White, Instructor
Collin Witherspoon, Instructor

Has the program/department had a broad base of involvement from a majority of faculty and staff with the program/department regarding implementation of student learning outcomes of the program(s) (or department) and courses? What recommendations does the committee have for increasing involvement?

Acceptable
N/A
Faculty selected topics to be included in College Algebra curriculum for assessment purposes, and College Algebra instructors implemented them. The department sought further input about implementation of embedded assessments, and made adjustments.
Explain the primary reasons behind the competencies that were selected. **Developmental Mathematics**: The Accuplacer was chosen from a state approved list of assessment tests. It is an adaptive test since it adapts to the individual students level of mastery. It selects problems for the student to work during the test based on how they answered the prior question. For example, the first problem given to the student may be of medium difficulty. If the student answers it correctly, the next problem will be more difficult. If the student does not answer it correctly, the next problem will be easier. **College Algebra:**

College Algebra was selected for piloting of assessment within the department as it in the core curriculum. A list of the major topics presented in the College Algebra course was created and presented to the department faculty. Those full-time faculty that taught the class were asked to select eight of the topics that they believed essential to go College Algebra. The five concepts selected most frequently are the topics which are currently being assessed.

For each area assessed, three sample questions were developed, along with sample instructions and answers to each question. Detailed instructions on procedures to be followed were compiled and given to College Algebra instructors during a meeting where implementation of embedded assessment was discussed. Some adjustments were made to the instructions and problems at that time.

Do the selected competencies appear

to be valid?
Acceptable
N/A
Identify the primary reasons for the assessment tool(s) selected. **Developmental Mathematics**: Students are given a variety of state approved assessment tests to choose from to evaluate their math skills and place them into an ability appropriate course. The Accuplacer is the test selected by most students basically for two reasons: it is the shortest, and it is the least expensive. Since most students choose to take the Accuplacer, it is the test best suited to evaluate and assess the students average gain of math skills after completing a course. Initially, the assessment of students abilities at the completion of remediation (the end of Beginning Algebra) was state mandated. The Mathematics Department has elected to continue assessment. The $5 fee for the testing is part of the student fees charged when enrolling in the course.

College Algebra: Within the Mathematics and Engineering Department there is a core curriculum class, Math 1314 College Algebra. This core curriculum class lends itself to embedded assessment. All instructors use the same text with the same sections assigned for coverage. This provides a wide-cross section of instructors teaching. This embedded assessment is being piloted in the traditional classroom but has not yet expanded into the online College Algebra classes.

Will the assessment tool(s) selected provide valid and reliable results?

Acceptable

N/A

Evaluate the assessment approaches to date.

Developmental Mathematics: Student Accuplacer scores before taking a developmental course have been tracked and compared to their Accuplacer scores obtained just before completing their developmental course. For students earning a grade of A-C in their

course, the average range of points gained is 29-36 points.

College Algebra: Although the department is in the pilot stage of assessment, it has been determined that it is possible to implement embedded assessment in a very large department within a core curriculum course that is taught by many different instructors.

From the data collected, possible conclusions and suggestions were made. For example, it was determined that it would be worthwhile to strengthen the connection between Intermediate Algebra and College Algebra. Intermediate and College Algebra instructors have begun meeting to discuss ways to vertically align the two courses.

Teachers embedded specific questions (See the discussion in Section E.1.) within their tests. Copies of those portions of the test were made and

saved for analysis after the end of the semester. From the data collected, it was clear that one class (as evidenced by unique formatting of the test layout) performed substantially better on one area of assessment (solving logarithmic equations) than other classes did. Since instructors were asked to make copies of the embedded problems prior to grading without revealing names of students or instructors, it was impossible to determine whose class was the one that excelled. To protect anonymity, no effort was made to identify this instructor.

Because of this finding, instructors will meet spring 2007 in an open-forum workshop so that College Algebra instructors may discuss different methods of presenting this concept. It is felt that conducting more open-forum workshops, in addition to sitting in on each others classes and the sharing of teaching tips in department meetings will benefit the faculty and students

learning.

A survey was given to the instructors that participated in the assessment process asking for feedback and suggestions to determine areas where the assessment process excelled and areas in which it can be improved. A committee has been formed to investigate and follow-up on these concerns in order to find more effective and efficient techniques of assessment implementation.

There are still obstacles to overcome in administration of assessment. This department is willing to assist other departments wanting to begin this process.

Will the assessment approaches(s) selected provide valid and reliable results?

For student or program/course outcome assessments, review the program's/department's five-year graph(s) of quantitative results or provide

a brief narrative summary of qualitative results.

The Math department has taken the initiative in beginning these outcome assessments. These assessments are still in their genesis. Therefore, there is not enough data to summarize results.

1. What changes have been made in the curricula of the program/department because of the analysis of these results?

See Section E for discussion.

Review the program's/department's five-year graph(s) of quantitative results for student or program/course outcome assessments, or provide a brief narrative summary of qualitative results.

Acceptable
N/A

What changes have been made in the curricula of the program/department because of the analysis of these results?
See Section E for discussion.

Have any changes been made in the curricula because of the analysis of these results?
Acceptable N/A
Review the five-year graph(s) of course completions for the program/department. Explain any increase or decrease that is more than a one-year anomaly. **Developmental Mathematics** The percentage of students completing their course with a grade of A-C are: 2001 53.23% 2002 52.42% 2003 51.29% 2004 51.44% 2005 50.57% The percentage of students completing their course with a grade of D-F are: 2001 24.54% 2002 23.00% 2003 26.91% 2004 25.67% 2005 26.69% The percentage of students that are in the category of AU-W are: 2001 21.87% 2002 24.38%

2003 21.76%
2004 22.56%
2005 22.66%

The trend forfewer developmental students to successfully pass developmental mathematics courses was disturbing.
Discussions in department meetings, brainstorming sessions with all part-time and full-time faculty teaching developmental classes and focus sessions resulted in our commitmentin the Math and Engineering department to "save dreams". The decision was made to implement major changes. These changes are described in Section G.2 below.

Transfer
College Credit Mathematics
The percentage of students completing their course with a grade of A-C are:

2001 65.40%
2002 64.61%
2003 65.06%
2004 66.34%
2005 66.02%

The percentage of students completing

their course with a grade of D-F are:

2001 10.65%
2002 11.09%
2003 10.46%
2004 11.09%
2005 11.02%

The percentage of students that are in the category of AU-W are:

2001 23.66%
2002 24.24%
2003 24.44%
2004 22.42%
2005 22.91%

There are no "more than one year anomalies" in the transfer level math courses.

Engineering

The percentage of students completing their course with a grade of A-C are:

2001 69.13%
2002 65.12%
2003 80.71%
2004 78.23%
2005 77.33%

The percentage of students completing their course with a grade of D-F are:

2001 7.41%

2002 4.65%
2003 2.86%
2004 7.48%
2005 4.00%

The percentage of students that are in the category of AU-W are:

2001 23.46%
2002 30.23%
2003 16.43%
2004 12.93%
2005 18.67%

The percentage of students who passed the engineering courses significantly increased beginning in 2003. Just prior to that year, the advising infrastructure for engineering students changed. The students were now required to see only one of two advisors as opposed to any available counselor. Though there is no proof that this contributed to the increase in pass rate, that was the only change made in that time frame. Since that time, the percentages have been relatively stable.

Does the review of the five-year

graph(s) of course completions demonstrate the use of analysis to implement a plan of action for retention? Is the analysis of any increase or decrease that is more than a one-year anomaly accurate?

Acceptable

N/A

Provide the program's/department's plan of action for improving any identified problem or results from the implementation of the plan of action.

Developmental Mathematics

The trend forfewer developmental students to successfully pass developmental mathematics courses was disturbing. As discussed in previous sections of this internal review, new books that have been adapted for these courses, an increased emphasis on professional development activities, implementation of daily skill drills, the hiring of additional full-time instructorsto teach developmental mathematics courses, and the Outreach Tutoring Center. The OutreachCenter has been established to assist in tutoring. The mandatory daily skill drills designed to keep material fresh in the students minds, as well as mandatory tutoring for those who fail a test, are all part of the

departments plan of action to improve this situation.These actions have all been implemented in the past two years in order to reverse this decline and save dreams.

Transfer College Credit Mathematics

While the levels for transfer courses seem stable, the department (as stated previously) has committed to saving students' dreams. The preparation of the developmental math students who move into transfer level, the search for better textbooks at the transfer level, the opportunities for professional development such as sharing of teaching strategies and workshops on teaching specific topics,tutoringin the Outreach Center,the hiring of additionalinstructors to teach transfer level mathematics courses, have all been implemented to help us help the students more efficiently and more effectively. In addition, the assessment strategies being piloted in the College Algebra, core curriculum course, will hopefully yield some strategies or ideas we may use to improve our program in this and other courses.

Engineering

The pass rates for the Engineering courses are already high. This is felt to be due to the small class sizes and the opportunities for individual help.

Will the plan of action likely improve the number of course completers?

Acceptable

N/A

The Outreach Tutoring Center and Math Lab appear to be valuable department assets.

Does the program/department provide for alternative methods of awarding credit?

CLEP Advanced Placement SAT ACT

Has the program/department provided for alternative methods of awarding credit? If not, which alternative methods would be recommended?

What approaches are used to assure outcomes are comparable to those expected of students who enrolled and completed the course?

Acceptable
N/A

For general education and/or core curriculum required by this program/department, identify the relevant competencies approved by the Academic Affairs Committee (see Catalog section entitled Degrees and Certificates: General Education Competencies).

Mathematical skills: Students will analyze and solve mathematical problems using computational skills.
Application of Skills (Analytical Thinking, Critical Thinking, Problem Solving): Students will analyze problems, acquire and evaluate information, organize concepts, and

construct solutions.
Have all relevant competencies for general education and/or core curriculum been identified for this program/department? If not, which are obviously a part of this program/department's general education competencies?
Acceptable N/A
Explain how outcomes for the competencies have been assessed and achieved and provide links to the documentation. The department is in the beginning stages of assessment implementation. These competencies have not yet been assessed.
Is the explanation of assessment approach(es) for general education competencies (outcomes) thorough? Is the analysis of the results accurate? Have links to documentation which verify the assessment results been included?
Acceptable Concern

The department should present the analysis when it is available.

Outline a plan for correcting any weaknesses.

These competencies have not yet been formally assessed.

If assessment results and analysis are included, is there a plan for correcting any weaknesses included?

Acceptable

Concern

The department should present the analysis when it is available.

Do students/graduates in this program/department have to be certified or licensed?

no

Review the results for certification/licensure results of the program/department and/or job placement for the past five years. Explain any increase or decrease that is more than one-year anomaly.

Provide a plan of action for the identified problem.

IF students/graduates in this program/department have to be certified or licensed, do the results over the past five-years indicate that

certification/licensure have been equal to or greater than the average of the past five-years AND/OR equal to the statewide or national benchmark for this certification/licensure? IF NOT, does the analysis and plan of action appear that the program/department has thoroughly reviewed the problem?
Acceptable N/A
Is the program's/department's plan of action for improving any identified problem or results likely to improve the certification/licensure results? Did program/department explain any increase or decrease that is more than a one-year anomaly? Does the plan correct any weaknesses included? If not, what is missing?
Acceptable N/A
IF the department or program offers one or more technical programs (Associate in Applied Science or Certificates), has the program/department included an explanation of the job placement success

during the past five years AND are these results at least equal to the statewide annual benchmark (90%)?
Is the analysis of any increase or decrease that is more than a one-year anomaly accurate?

N/A

Is the program's/department's plan of action for improving any identified problem or results likely to improve the job placement rate for graduates of the technical program(s)? If not, what is missing?

N/A

IF the department or program offers one or more technical programs (Associate in Applied Science or Certificates), has the program/department included an explanation of the job placement success during the past five years? Is the analysis of any increase or decrease that is more than a one-year anomaly accurate?

Acceptable

N/A

Is the program's/department's plan

of action for improving any identified problem or results likely to improve the job placement rate for graduates of the technical program(s)?

Acceptable

N/A

Curricula

Does the program/department have affiliation(s)/agreement(s)/contract(s) with any other entity for the purpose of delivering instructional content?

yes

Review the affiliation(s)/agreement(s)/contract(s), consider Amarillo College's mission, and then make a recommendation to:

Provide an analysis of the review.

This department does not currently employ entities outside Amarillo College for the purpose of awarding college credit. However, this department does coordinate with outside companies and schools for the purpose of providing education. For example, dual credit courses are offered to local high school students by Amarillo College instructors and qualified teachers of record employed by local school districts. Because this is

an excellent opportunity for young students, we recommend continuing the dual credit program with an increased focus on maintaining high academic standards by 1.) improving communications between Amarillo College instructors and dual credit instructors, 2.) insuring a combination of good supervision and instruction for the students at their respective high schools, and 3.) establishing and enforcing earlier enrollment deadlines for high school students in order to provide better scheduling of teachers. In addition to dual credit classes, individual faculty members occasionally provide training for Amarillo organizations. A robotics math course for Owens Corning employees was offered in Spring 2006. Two continuing education workshops for the Institute of Electrical and Electronics Engineers, Inc (IEEE) and workshops for Nursing Home Activity Directors have also been provided by faculty members though these courses were not formally part of the departments offerings. The department will continue such intermittent workshops, as this enhances AC's influence in educating the

public.

If the program/department has affiliation(s)/agreement(s) with any other entity for the purpose of delivering instructional content, do these affiliations/agreements make it clear that Amarillo College maintains the responsibility for controlling all aspects of the educational program? Has the College ensured the quality of the program with these affiliations/agreements? If so, how? What is the schedule for reviewing the quality of these programs? Has the College ensured that programs remain with Amarillo College's mission?

Acceptable

Commendation

The Math & Engineering Department has done a remarkable job seeking additional students. Their dual credit courses and community projects provide positive impressions of AC in the community, as well as potential courses resulting from the alliance with companies like Owens Corning.

How many curricula changes were approved by the Academic Affairs Committee during the past five years?
2
Which steps in the curricula change process had faculty involvement prior to submitting the curricula proposal(s) to the Academic Affairs Committee?
The department chair initiates ideas for curriculum changes, subject to faculty approval. Faculty members of this department participate in the selection of textbooks, designing course syllabi, assessing current curricula, and making reccommendations based on assessment outcomes.

Was the departmental faculty involvement documented and broad in representation? If not, what steps within curricula change process should have had more proof of greater departmental faculty involvement? Is the primary responsibility for curricula changes under the control of faculty? Does the program have a qualified faculty member in charge of the program's coordination and curriculum

development?
Acceptable
Concern
The department needs to explain how faculty express approval for curriculum changes presented to the Academic Affairs Committee. Is it a vote? Is it permissible for a faculty member to initiate an idea for a curriculum change?
Is any program within the department a technical program (e.g. AAS or certificate)?
no
When was the last Advisory Committee meeting?
Provide a link to the minutes of the last Advisory Committee(s) minutes in the Electronic Archives.
Provide a link to the appropriate committee membership of the Advisory Committee(s) in the Electronic Archives.
If the department offers an AAS and/or certificate, do the minutes of the Advisory Committee prove that the curricula for each program is appropriate to the degree and/or certificate? Has the Advisory Committee been consulted in

designing each degree and certificate? Has the Advisory Committee met at least once a year and been provided ample opportunity to guide the faculty in curricula changes?

Acceptable

N/A

Is the membership of the Advisory Committee broad enough to provide the scope of advice necessary for input on curricula? If not, what changes are recommended to the program/department?

Acceptable

N/A

Enrollment Data

After receiving the data indicating the number of students enrolled in the program/department, by total students, number of full-time equivalents, and number of completers, determine if there is more than a one-year anomaly.
If so, provide the faculty and staff analysis of their assessment of the problem.

According to the NCCBP Report of 2006 Aggregate Data, the attrition rate of AmarilloCollege was 17.46%, which falls in the 84th percentile of the sample. The attrition rate of the Division, as a whole, from 2001

to 2005 has been between 35% and 38%. If the Math & Engineering Department data is removed from the Division, then the attrition rate has been between 29% and 32% with the low in 2002 and the high in 2005.

The enrollment in Division courses has increased by 35% since 2001. The Math & Engineering Department showed an increase in enrollment from 6,368 in 2001 to 9,234 in 2005, which is a 45% increase. Engineering courses showed a steady increase in enrollment between 2001 and 2004 but dropped below 2001 enrollment in 2005. The department anticipates an increase in enrollment again for 2006.

There is not a more than a one-year anomaly in any area.

Does the analysis by the faculty and staff of this data address any obvious problems/declining statistics?

Acceptable

Concern

The Mathematics courses have shown a steady increase in enrollment; however, the Engineering courses have recently seen a decline (2005). The department anticipates an increase in enrollment again, but needs to explain why it anticipates this increase.

Create an action plan for needed improvement and commendation for any dramatic improvement.

Individually, the Math & Engineering department has had a steady attrition rate between 41% and 42%. The data set consists of total students, number of full-

time equivalents, and number of completers by Academic year over a five year period. The five-year small data set makes it difficult to determine if this is normal for the department over a more extensive time frame. Nonetheless, it is necessary to determine what is causing the large attrition rate and, to that effect, we suggest adding a Drop Survey to the online Add/Drop system. The survey would ask the student to check all statements that apply out of a list of possible reasons for dropping a course and the same survey would be filled out by those students who drop on campus through the Registrar. In turn, we could use the survey data to assess what the Department and college should focus on to retain students.

Does the action plan or commendation address the problem addressed within the analysis? Does it appear that implementation of the action plan will resolve the problem and correct the decline?

Acceptable

Concern

The department has a high student drop

rate (41%-42%), especially in online courses. However, it presents a good idea to add a Drop Survey to the online Add/Drop system and the same survey would be filled out by those students who drop on campus through the Registrar.

Does the External Review Committee have any other analysis or recommendations for increasing enrollments based on the program/department's data?

Acceptable

Concern

Because the Mathematics Department student enrollment is growing, the programs may want to seek additional marketing opportunities to recruit majors.

For programs/departments with majors, review the graphs of program majors and the number of new majors by year. Provide an analysis of the program's/department's faculty and staff assessment of the problem and an action plan for needed improvement and commendation for any dramatic improvement.

Housed in this department are the Architecture, Computer Science Engineering, Engineering, Engineering Technology and Mathematics majors. Overall, the number of students who declared their major in a

program that the Division offers increased by more than 20% from 2001 to 2004 and then decreased by more than 7% from 2004 to 2005.

The number of students who declared their major in a program that the Math & Engineering Department offers increased by 11% from 2001 to 2005. The Math & Engineering Department comprised between 12% and 14% of Division majors from 2001 to 2005. The number of Math majors decreased by more than 30% from 2001 to 2005 but have been between 1% and 2% of Division majors. The number of Engineering majors has increased by more than 18% and has been between 10% and 12% of Division majors.

	2001	2002	2003	2004	2005
Division	3216	3412	3590	3876	3571
Division Without Department	2729	2881	3095	3321	3040
Department	487	531	495	555	531
Architecture	63	50	58	90	60
Engineering	362	402	394	416	428
Math	62	79	43	49	43

Does the analysis by the faculty and staff of this data address any obvious problems/declining statistics regarding students enrolled as majors within the program/department? Does the action plan or commendation address the problem addressed within the analysis? Does it appear that implementation of the action plan will resolve the problem and correct the decline? Does the External Review Committee have any other analysis or recommendations for increasing the number of students majoring in this program/department

based on this program's/department's data?

Acceptable

N/A

Resources

Review the five-year graph(s) of the student-to-faculty ratio in the program/department.
Explain any increase or decrease that is more than a one-year anomaly.

The department has made great progress in recruiting and advising of the Engineering majors. Engineering consists of at least seven different Engineering majors, one of which is Computer Science Engineering. While efforts have been made in all areas to increase enrollment, Computer Science Engineering is lagging. The graphs show a decline; however, the decline is mainly in Computer Science Engineering. The five-year averages show a slight peak in 2003 with a leveling to follow; yet we are still above the 2001 enrollment. We expect to see higher ratios of student per faculty member once the data for 2006-2007 is available. Advising has become more accurate since students must see an Engineering Advisor to enroll. Students are encouraged to begin their Engineering studies here at AmarilloCollege before transferring to a four-year university to be properly prepared. In prior years, students were advising one another and gathering misinformation which encouraged them to delay enrollment in Engineering courses until transferring to a four-year institution.

The Mathematics and Engineering Department shows a 45% increase in enrollment from 2001 to 2005. Nine new full-time instructor positions have been created and filled since 2000. Four of these faculty members teach only developmental mathematics. The hiring of additional faculty members held the student-to-faculty ratio steady at 22-23 for the last five years.

Does the analysis by the faculty and staff of this data address any obvious problems/declining statistics

regarding student-to-faculty ratio within this program/department?

Acceptable

N/A

Provide an action plan for improvement of any identified problem.

While overall enrollment is up, efforts need to be made to increase the number of majors in specific fields. Members of the department have been working diligently during the last two years to generate interest in all types of engineering among high school students. These presentations will be expanded to address potential architecture and math majors, as well. Opportunities to present at the high schools and workshops such as Top of Texas Career Expo, Women in Scientific Endeavors, Go Girls Fair, etc. have been, and are continuing to be, pursued. In addition, the department is a major supporter of Math Counts, TAME Math and Science Bowl, and Engineering Day.

Does the action plan or commendation address the problem addressed within the analysis? Does it appear that implementation of the action plan will resolve the problem and correct the decline? Does the External Review Committee have any other analysis or recommendations regarding student-to-faculty ratio within this program/department?

Acceptable

N/A

It appears the implementation of this action plan will assist enrollment numbers and encourage potential majors.

In the database for Roster of Instructional Staff (also known as Roster of Faculty), review the credentials of each full-time and part-time faculty member within the program/department. If any faculty member does not meet the SACS and THECB requirements, evaluate whether additional documentation is significant to grant an exemption.

Two faculty members who teach transfer level math courses have graduate engineering degrees and do not have the required 18 hours of graduate level courses with the MATH rubric. Both meet SACS and THECB requirements with additional documentation provided from an external source. This documentation is located in their personnel files.

One faculty member who teaches transfer level math courses geared toward the Education majors has a Master of Education in Supervision with a minor in Special Education and does not have the 18 hours of graduate level courses with the MATH rubric. As a corrective measure, this faculty member must take at least six hours of graduate level math classes each year until the required 18 graduate level hours are completed. Six hours of graduate-level math courses have been completed and another math course is in-progress.

Identify any faculty teaching a transfer course which, according to the information within the database for Roster of Instructional Staff (also known as Roster of Faculty) do not meet the requirements of faculty teaching a transfer course and explain the credential problem. Identify any faculty teaching a technical course which, according to

the information within the database for Roster of Instructional Staff (also known as Roster of Faculty) do not meet the requirements of faculty teaching a technical course and explain the credential problem based on SACS requirements and/or THECB requirements. Identify any faculty teaching a developmental course which, according to the information within the database for Roster of Instructional Staff (also known as Roster of Faculty) do not meet the requirements of faculty teaching a developmental course and explain the credential problem.
Acceptable N/A
List the names and the last date for all full-time faculty evaluations based on the schedule indicated in the Faculty Performance Review (FPRP). The list is quite extensive and can be accessed by clicking on the following link:Math and Engineering full-time faculty eval schedule
If any full-time faculty member (or

Board-appointed faculty member) has not been completed the Faculty Performance Review (FPRP) within the past two years and is listed in the aforementioned Roster of Instructional Staff (also known as Roster of Faculty), identify the faculty member's name and the date of the last FPRP.
Acceptable N/A
List the names of each part-time faculty and the last date of evaluation by students and supervisor for each course taught. The list is also quite extensive and can be accessed by clicking on the following link: Math and Engineering part-time faculty eval schedule
If any part-time faculty member has not been evaluated by both students and supervisor for each course taught within the past year and is listed in the aforementioned Roster of Instructional Staff (also known as Roster of Faculty), identify the faculty member's name and state the

specific problem.
Acceptable N/A
Amarillo College's Board Policy Manual defines each faculty member's academic freedom as "full freedom in the classroom in discussing the subject being taught and to pursue research and publications. However, a faculty member must not attempt to force on students a personal viewpoint and must at all times allow for diversity of opinion." Has anyone in the program/department filed a grievance for violation of the aforementioned academic freedom? no
If anyone within the department has filed a grievance for violation of academic freedom based on the definition stated in Amarillo College's Board Policy Manual, briefly describe the violation (excluding personal identifiers) and the total number of violations.
Acceptable N/A
Which of the following library collections/resources/services have been

used by faculty, staff and/or students within the past five years? (Select all that apply.)
Reserve collection Circulating collection Reference collection Tutorials/guides Interlibrary loan Classroom instuction Personalized instruction Proprietary databases Electronic journals Circulating collection Electronic books Meeting services Other
Students use the VHS provided in the library to view telecourse tapes.

Does it appear that the library collections/resources/services used by the faculty, staff, and/or students within the past five years are accurate and thorough?

Acceptable
N/A

Which two or three collection/resources/services should be improved to support Amarillo College's mission regarding teaching and service?

1.) The Foundations of Math classes offered for education majors at AmarilloCollege require students to use research materials as part of a semester

project. They are to examine elementary and middle school math textbooks in order to explore various teaching methods. Currently, AmarilloCollege does not have such textbooks available in the library, so students are required to travel to WTAMU to use the library there. This presents challenges to students who are unable to travel to WTAMU. We recommend that the library maintain current examples of elementary, middle school, and high school texts on the Washington Street Campus library to be available for AC students to access.

2.) This committee also recommends that the library maintain current AmarilloCollege textbooks in the reserve collection for students to access when books are not available in the bookstore or when textbooks are lost or stolen.

Has the program/department identified which two or three collections/resources/services should be improved to support Amarillo College's mission regarding teaching and service?

Acceptable

N/A

Does your program/department have discipline accreditation?

no

How has the library participated in this discipline's accreditation?

Does the program/department have a discipline accreditation? IF SO, has the library participated in completing the approver's evaluation?

Acceptable

N/A

After assessing the strengths and weaknesses of the program's/department's access to technology, what improvements would ensure that students have access and training in the use of technology?

One of the departments strengths is the introduction to students of software and equipment to deepen their understanding of topics and to prepare them for the skills with technology they will need at the next institution. An assessment of the programs/departments current access to technology produced the observations described in the following paragraphs.

Maple software is used in all levels of the Calculus I, II, and III series. The Calculus labs are held in the Calculus Lab in Engineering 102 which houses 21 computers. Maple is also packaged with each calculus textbook sold in the AC bookstore. In addition, Maple software is loaded on the computers in the computer lab on the second floor of the colleges library and on the four computers in the StudentOutreachCenter in the colleges EngineeringBuilding.

Usage of Mini-Tab software is required for the Statistics courses.

Software is loaded on two computers in the StudentOutreachCenter in the EngineeringBuilding, on the computers on the second floor of the library and the computers of the instructors teaching this course.

Amarillo College students have access to the SmartThinking 24-hour online tutoring service. This is available through any computer that can access the internet.

Transfer-level courses require the use of the TI-83 graphing calculator. AmarilloCollege has loaner calculators available for students to use. View screens for the graphing calculators are located in every classroom in the EngineeringBuilding, and portable view screen kits can be taken to classrooms in other buildings. These screens facilitate instruction in the use of the TI-83 calculator as part of the course. Several TI-83 graphing calculator tutorials are available for College Algebra online courses. Several department instructors have developed a supplemental study guide for the College Algebra courses which includes extensive instructions in using the TI-83 graphing calculator.

Basic Math, Beginning Algebra, and Intermediate Algebra classes are conducted as a hybrid course. This enables students and instructors to communicate and to access grades and course information online using WebCT. Some transfer level courses are also conducted in this manner if the instructor has designated that their course be of hybrid status. Math Zone is being used in the Intermediate Algebra online courses.

All program/department courses have access to the MyAC web portal which allows students and instructors to communicate and to obtain course information on any computer which has internet capabilities. Many instructors place assignments and handouts online for the students to access.

The department uses computer based Accuplacer Testing for initial placement and follow-up assessment of remediation. This gives students two points of access to and interaction with technology.

Thus the Math and Engineering department provides many opportunities at all of the transfer levels for introduction to the use of and access to technology and software.

Does the program's/department's assessment of strengths and weaknesses include ways to improve

both students' access to & training in the use of technology?

Acceptable

N/A

What improvements would ensure that students use technology?

After assessing strengths and weaknesses in the departments access to technology, the following are possible improvements to ensure that students have access and training in the use of technology.

One improvement would be to create as many smart classrooms in the EngineeringBuilding as is financially possible. These classrooms would be equipped with a computer containing the software associated with the math courses taught at AC, internet connection capabilities, and the ability to project the image from the computer screen to the class in such a way that it will enhance instruction. The presence of this software and the ability to project in the classroom would greatly increase the students ability to be trained in the use of the technology during class.

A second improvement would be planning, developing, and providing a series of TI-83 calculator training sessions to be conducted at the beginning of each semester. These sessions would be open to any AmarilloCollege math student enrolled in a course requiring the use of the TI-83 calculator. Plans are being made to provide these training courses by fall 2008 at least and possibly as early as summer 2007.

Over the years the initial acquisition of TI-83 calculators (for both the teachers and students) and classroom view screens have been reduced due to wear and tear, age, damage, etc. and need to be replaced. Obtaining more TI-83 graphing calculators would then increase availability of loaner calculators to students. A grant is being pursued to provide 300 newer model TI calculators for loan to students and the same new model TIs and view screens to faculty.
Faculty computers are supplied by rolling down the computers in the students labs and are thus always inferior to those in the Calculus Lab in Engineering 102.Faculty computers need to be upgraded to a standard that is equal to or superior to the computers used by students in the computer labs. If the computers made available to faculty do not have capabilities equal to that of the student computers, faculty will not be able to demonstrate and instruct the use of technology to their students

if they do not have access to it themselves. This will adversely affect the student use of technology accordingly.

A second recommendation that arose as a result of this internal review is to provide training opportunities to faculty and staff in the use of the tutorial CDs available in the StudentOutreachCenter. This training could be provided to faculty and staff by the textbook representative. Once this training is completed, faculty and staff will be better able to demonstrate and encourage this use of technology to students. A textbook company representative has been contacted and will provide this training to faculty and staff at the beginning of the spring 2007 semester.

Directly relating to the suggestion above is to have a computer lab available for demonstration of the use of the tutorial CDs to an entire class. This demonstration will be incorporated into the classroom tour of the Math Testing Lab at the beginning of each semester.

Does the program's /department's answer include improvements that would ensure that students use technology? Are the recommendation(s) of this program/department feasible?

Acceptable

N/A

Review program/department operations. Does any operation present the possibility for violations of security, confidentiality, or integrity of student records?

yes

What changes need to be made to prevent violations of this nature?

We have a few areas of concern with regard to security issues. The open

faculty mailboxes located in the Outreach Center have been used to place graded homework, notices, drop slips, etc. for the developmental math instructors. Our faculty mailboxes are located in the Student Outreach Center and are open to everyone entering the Center. We have relocated the general access mailboxes to a more secure location. We will also limit what is put in these mailboxes. Care will be taken to insure material with privileged information will be placed in the secured drawers in which the tests to be graded are locates where they will be under supervision. Calling contact cards for students have not been well secured but are now kept in a locked file cabinet. These cards with students information such as telephone numbers and email addresses are supposed to be kept under lock and key. However several incidents have been noted in which unsecured cards were left on a desk in the Outreach Center. The need for security has been emphasized and periodic walk-throughs will be conducted. This is thought to be the reason that one classs cards cannot be located. In the future cards to be

turned in to the Center will be left at the Math Lab desk with a worker to oversee rather than on the Outreach Center desk. Inconsistent operation of the security cameras caused problems several times shortly after they were installed. Shortly after our security cameras were installed we experienced several problems with the system not working properly. We have worked closely with Telecommunications/Network Services to work out the bugs and the system seems to be operating properly. Lastly, we are now asking that all our faculty and staff log-off the network before they leave each day
After a review of this program's /department's operations based on this Self-Study and any other information available to this Committee, does any operation present the possibility for violations of security, confidentiality, or integrity of student records? If so, describe those operations and identify the violation possibility in detail.
Acceptable

N/A

What changes need to be made to prevent violations of this nature?

Acceptable

Concern

The Math and Engineering Department could share its plan to protect student records with other AC faculty.

Which support services need to be strengthened to better serve students in this program/department?

Although each of the following support services are doing a fine job, there is always room for improvement. The strengthening of the following support services would better serve students in the Mathematics and Engineering Department: Advising and Counseling; Adult Student Services; Bookstore; Distance Education; Assessment Center; Math Lab; Outreach Center.

Explain what aspects of the services need to be strengthened.

Persons within the Mathematics and Engineering Department and Advising and Counseling need to improve communication and cohesiveness of strict adherence to student placement procedures and policies. For example, students who fall close to the required Accuplacer testing score are sometimes overridden into the next class rather than placed in the class the score indicated without approval from the Mathematics and Engineering department. Exceptions to such placement procedures and policies should only be considered with written approval by the Mathematics and Engineering Chair.

Adult Students Services could be strengthened by a much needed increase in budget, in order to meet the needs of students in the Mathematics and Engineering department. In the past, students qualified for the loaning of books and calculators on the basis of financial need evidenced by being on a PELL grant, etc. This service gave a priority to students who qualified financially, in the loaning of calculators and textbooks. Due to the increasing cost of textbooks and the limited income of many Mathematics and Engineering students, An increase in the budget providing loan out

materials would help. In addition, due to time and budget constraints, requests for borrowing a calculator are not investigated or verified to be need driven. So calculators are being loaned out on a first-come, first-served basis in which only the speediness of the students arrival is a criterion for the borrowing of a calculator or textbook. This puts those students who have classes later in the week at a severe disadvantage and may result in the direction of resources to the speedy rather than the needy.

Improvement of communication of requisition information between the Amarillo College Bookstore and the Mathematics and Engineering Department would better serve students in the Mathematics and Engineering Department. Textbooks not available at the beginning of the semester, is a huge disadvantage and cause of frustration to students.

Distance Education Services could better serve Mathematics and Engineering students in the area of registration of dual credit courses. Dual credit students should complete registration for a current semester, no later than one week before classes begin at AmarilloCollege. Late registration of dual credit courses causes delay in obtaining textbooks and assignment of courses to Mathematics and Engineering faculty. This area is a frustration to dual credit students, their parents, their high school teachers and administrators, and the Mathematics and Engineering faculty, as well. Additionally, dual credit course enrollment should be limited to students taking a dual credit course.

This year, the AssessmentCenter reduced the hours of operation. The AssessmentCenter could better serve students in the Mathematics and Engineering Department by expanding hours available to students to test. Our faculty report that students cannot leave work and get to the AssessmentCenter before the deadline. We would suggest that the AssessmentCenter stay open later at least one or two nights a week. In addition, some students needed the Sunday testing accessibility. While these students needing Sunday access were in the minority and only need the AssessmentCenter to be available to them once every three to four weeks, we suggest having Sunday hours perhaps once or twice a month.

Do the Self-Study recommendations of this program/department for support services that need to be improved appear to be valid?

Acceptable

N/A

Describe any indicators or problems that prevent a healthy, safe and secure environment for the students, faculty and staff of this program/department.

Although rare, disruptive and potentially physically threatening behavior of some students in the Mathematics and Engineering Department prevent the assurance of a healthy, safe and secure environment for students, faculty and staff.

Are recommendations to assure a healthy, safe and secure environment for staff and students of this program/department valid? Are any of these recommendation(s) more significant and/or urgent?

Acceptable

N/A

Describe any indicators or problems that hamper adequate physical facilities, both on and off campus, to meet the needs of the program/department.

Automatic handicap doors should be available at all building entrances, classrooms, bathrooms, faculty offices, and support services entrances, including any entrance available to the student population.

Student enrollment indicates the need for more classrooms, centralized faculty offices (faculty is currently spread across the campus in three different buildings), faculty workspace, faculty restrooms, storage space for supplies and student records, increased space for the Math Lab and increased space for the OutreachCenter. We have had an average of 26 classes per semester taught outside of the EngineeringBuilding in the last 4 semesters.

Do any of the problems or concerns

regarding adequate physical facilities appear to be significant and/or urgent? Are there any other needs which this Self-Study didn't cite but are critical based on other information? Which of these needs are most significant and/or urgent?

Acceptable

N/A

Budget

Which program/department outcomes have resulted in budget requests to date?

Although formal outcomes are not available as analysis has not started, there are three significant improvements requiring budget requests that have been accomplished in the last five years.

Outcome 1: Requests for five (5) additional developmental math instructor positions were made and approved. As a result, the full-time/part-time faculty ratio in the three developmental courses was improved. This created a more cohesive developmental math program providing full-time services for all students taking these courses. These instructors also help shoulder the 19.4% increase in course offerings required to meet the growing demand for developmental education. (An increase from 159 sections of developmental courses offered in 2001 to 190 sections offered in 2006)

Outcome 2: Requests for four (4) additional transfer-level instructor positions were made and approved. These additional faculty members are needed to help carry the teaching loads created by the 59% increase in demand for transfer-level mathematics courses. (An increase from 141 sections of transfer-level courses offered in 2001 to 225 sections offered in 2006)

Outcome 3: Creation of the MathOutreachCenter required the hiring of a 40-hr/week Professional Tutoring Specialist-Grader and three 19-hr/week tutoring positions. The OutreachCenter supports the mandatory tutoring of students taking developmental courses who have failed a test as well as those students requesting tutoring. This policy has benefited approximately 2000 students, raising the average grade of students retested after tutoring

by approximately 20.4 points the Intermediate Algebra course alone.

Have any of this program's/department's outcomes resulted in budget requests to date? If not, why not?

Acceptable

N/A

Project the program's/department's strategic initiatives for the next five years based on the program's/department's outcomes.

As stated previously, the department does not yet have outcomes. But the department does have goals and initiatives that require the following budget considerations for proper implementation.

Student enrollment indicates the need for more classrooms, centralized faculty offices (faculty is currently spread across the campus in three different buildings), faculty workspace, faculty restrooms, storage space for supplies and student records, increased space for the Math Lab and increased space for the OutreachCenter. We have had an average of 26 classes taught outside of the EngineeringBuilding in the last 4 semesters.
Increase the enrollment for the Computer Science Program, in particular, and the other majors in general. This process has begun with the high schools, Badgerama, Top of Texas, and Career Expo. All these recruitment activities require supplies and often travel expenses. In addition, an advertising budget would be very helpful in increasing enrollment in all areas.

Update calculators and view screen panels. As stated previously, a grant is in the process of being submitted. But even if it is not approved, the calculators and view screens are in desperate need of updating.

The department has also submitted a grant for the purchase of hands-on manipulatives for engineering and additional manipulatives for the Foundations I and II courses. These manipulatives will help the students understand the material better and teach them techniques they must know in subsequent courses. These manipulatives will also be used in recruitment activities as well.

Has this program/department been able to project strategic initiatives for the next five years based on the program's/department's outcomes? If not, what appears to be blocking this program/department from accomplishing this?

Acceptable

N/A

Publications

If the program/department publishes any advertising or recruitment documents (electronic or paper), do the documents accurately represent Amarillo College and the program/department?

no

If no, explain what is inaccurate.

We don't publish any advertising or recruitment documents as of yet though we are considering a newsletter.

IF the program/department has published any advertising or recruitment documents (electronic or paper), check at least one copy of each document and determine whether it accurately represents Amarillo College and the

office/department?
Acceptable N/A
IF anything appears to be inaccurate, identify the apparent violation.
Acceptable N/A
Does the program/department publish any documents (electronic or paper) with references to SACS accreditation? no Are the references in compliance with SACS approved statement? Which reference is not in compliance? Describe how you will assure compliance for all references in the future.
IF the program/department has published any document(s) with a reference to SACS accreditation, are all references consistent with the approved statement? (Approved reference: Amarillo College is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award associate degrees. Contact the Commission on Colleges at 1866 Southern Lane Decatur, Georgia

30033-4097 or call 404-679-4500 for questions about the accreditation of Amarillo College.) IF any references are inconsistent, identify all documents with the inconsistent reference(s).

Acceptable

N/A

IF the Self-Study did identify the inconsistencies, does the plan for assuring future compliance appear to correct the problem? IF the Self-Study did NOT identify all inconsistencies, what plan does this Committee recommend?

Acceptable

N/A

Other

State any additional comments/concerns which may impact this program/department during the next five years.

The Math Lab could be strengthened to better serve students. Specifically, the Math Lab could use an increase in Budget consideration for a much needed expansion of physical space, more student and professional workers/staff, updated technology to improve the process of test taking and logging student information, updated technology to improve grade/assessment feedback to students in the form of a gradebook program conducive to the Math Lab procedures. The Math Lab currently services 2000 students per semester but was originally designed to service only 800.

The addition of a larger facility for the OutreachCenter would improve their service to Mathematics and Engineering students. A budget increase would also allow for the critical need of additional professional learning specialists, as well as more student tutors. Last spring, the OutreachCenter logged over 4200 students who signed in and out. Their average stay was 62 minutes. Currently, this fall of 2006, the sign in sheet indicates the attendance shown in the table below.

Month in 2006	Number of students who logged in	Number of students who logged back out	Total number of minutes	Average number of minutes per student who logged in and out
August	249	172	8,342	48.5
September	1139	569	33,818	59.43
October	1634	645	40,870	63.36

The Math Lab and OutreachCenter are both services that support the Mathematics and Engineering Department and are in critical need of budget increase. The Mathematics courses accounted for over 239,000 contact hours in each of the fall semesters in the last three years for a net income (profit) of $827,333.79 for 2004-2005.

Testing in the StudentServicesAssessmentCenter is becoming a critical issue for online and dual credit testing. These courses have at least a mid-term and the final that must be taken under proctored circumstances. We average over 500 students in these courses every semester. The vast majority of these students come to the AmarilloCollege campus as only a few are actually located out of the area. With restrictions on the number of students who can test on any given day and restricted hours of operation, we will not be able to service as many students as we have in the past and

will need to restrict the math offerings in these courses.

As stated previously, the teachers and all students at the transfer level use graphing calculators. The ones in use by the faculty (approximately 40would be needed) that plug into the classroom view screens and the view screens themselves (arppoximately 20 would be needed)are over 8 years old. Many have broken and teachers share calculators and classrooms share viewscreens. It is becoming a critical need to replace both the teachers calculators and the view screens. It would also be ideal to replace the 190 that are currently available for check-out by students as it becoming increasingly difficult for students to afford to go to school.

IF additional comments/concerns were included in the Self-Study regarding items which may impact this program/department during the next five years, what recommendations and/or concerns are warranted? IF NO such items were included in the Self-Study but this Committee feels such comments or concerns are valid, cite them and include any relevant recommendations.

Acceptable

Concern

Additional funding is vital to continue student services in the Math Lab and the Outreach Center. The statistics provided indicate faculty are in need of updated graphic calculators, and more helpers are needed for the increased student load in the Math Lab, Outreach Center, and

Testing/Assessment Center.