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To: Dr. Jimmie Yeiser
Provost & Vice Chancellor for Academic Affairs

From: Morris Bramlett
Dean, School of Mathematics and Natural Sciences

Subject: Response to Mathematics Program Review

The Mathematics program underwent a comprehensive ten-year review in April 2013. The review team consisted of one onsite reviewer, Dr. James Wright, and one reviewer of our program review self-study, Dr. Paula Young. The team reviewed our program in a professional manner and with appropriate rigor. They were given adequate time to ask questions about any issues that felt needed additional attention during the reading of the reports or during the on-site visit.

Overall, I am pleased with the reports submitted by each reviewer; however, it should be pointed out that the self-study reviewer had an error in their report when they stated that each math faculty had an average of 330 students per semester. The reviewer was contacted about this error, but at this time, no response from Dr. Young has been received. In reality, the mathematics faculty have an average of 330 student semester credit hours (SSCH) per term, which is still somewhat higher than the recommended SSCH for mathematics faculty; however, this average is somewhat misleading since the faculty teaching upper level courses have smaller SSCH numbers, while the instructors that teach the larger remedial courses have much higher number of SSCH per term.

Both reviewers recognized our strength as having a dedicated, caring faculty. The faculty were recognized for having appropriate qualifications for the courses that they teach. Major courses, support courses, general education, and remedial math courses were all taught with appropriate expectations, using well respected texts, or an equivalent in-house prepared textbook/workbook. There are sufficient mathematics and mathematics education courses to support the major, the minor, and teacher preparation efforts in mathematics. The mathematics courses have done an excellent job in preparing students for majoring in the sciences. There are sufficient course offerings to support under-prepared students that are admitted to the University, even though, in my opinion, some of the poorer prepared students really need an additional course in basic mathematics at a level below Introduction to Algebra. The reviewers were complimentary of the positive interaction between the math faculty and the science faculty. The math faculty were praised by both reviewers for their commitment to face-to-face instruction. They were also praised for their participation in outreach efforts, such as, mathematics contests, exam prep efforts, and the Southeast Arkansas Regional Science Fair. The reviewers were pleased with the assessment efforts of our program, especially with the use of nationally normed exams such as the Praxis II Math and the GRE exam; however, it was recommended that the exit interview process be improved to provide an additional assessment piece.

Each reviewer also indicates areas for improvement. Listed below are the primary concerns of the reviewers and our plans to address each of these issues.

Reviewer Suggested Areas of Need:

- **Increasing the number of mathematics majors**

Even though this was not strongly stressed in the reviewer's reports, both mentioned the small number of majors in mathematics. The math faculty recruit the better students from the remedial and freshmen level courses to be math majors. UAM has recently become an AP Mathematics test preparation site, hosting three test preparation events on Saturdays during each spring semester. Additional efforts are being made to contact the mathematics teachers in the local schools to identify potential math majors and recruit them to UAM. The math faculty are planning to use events such as the ACTM Mathematics Contest and the Regional Science Fair to recruit the top students into the mathematics major.

We will consider partnerships with other programs and departments to develop interdisciplinary majors. Specific examples provided by one reviewer include mathematical business, mathematical biology, and biostatistics. A possible collaborative effort with Physics or with Computer Information Systems would seem to be popular offerings at UAM.

- **Addition of an elective course in Advanced Calculus (Introduction to Real Analysis)**

This is a rigorous course and is often offered in universities with graduate programs. We offer a special topics in Mathematics once every two years, which may include elements of the Advanced Calculus. With the current faculty, it is likely we would have to drop in order to be offer a course of this nature. If additional faculty are added in the future, this will be considered.

- **Addition of another statistics course (Math Stats, Non-parametric Statistics, Mathematics of Finance, etc...)**

We will consider developing an elective 2000-level Mathematical Statistic course. This course would prepare our teachers for statistics courses which are becoming more popular in the high schools, and also prepare students for a potential career as an actuary, which is one of the fastest growing careers in the country.

- **Consideration of requiring a computer programming course (C++, Java, or similar course)**

Years ago, computer programming courses were commonly taken by math majors; however, with the dissolving of the Computer Science program, the options become very limited. The programming courses are now being taught in the School of Computer Information Systems, and those courses require several prerequisites. At some point, we hope to develop a curriculum path that would allow mathematics majors to take these courses without having to remove other courses from the curriculum in order to do the prerequisite courses. Some of the math majors are also doing undergraduate research with a faculty member using a computer cluster. Those students are learning programming languages on these projects.

- **Reduction of student to faculty ratio, especially in remedial and freshmen level courses**

One reviewer felt that the Intro Algebra, Intermediate Algebra, College Algebra, and Trigonometry courses are too large for effective learning. Mathematics faculty would need to be added in order to have smaller sections of these courses in the traditional classroom setting; however, we are considering alternatives, such as having additional class time in labs with very small groups (app. 10 students). This is planned for the Fall 2013 term as a pilot program. The success of the students in those sections will determine the future of that course.

- **Improve access to modern technology**

Even though the classrooms are equipped with computers, document cameras, and digital projectors, the classrooms are not well equipped for the preparation of future teachers. Essentially all mathematics teachers in the public schools use Smartboards or Promethean systems. Our graduates are not exposed to that technology until they get their first teaching position. We are considering equipping one classroom with this type of technology in order to better prepare our graduates for proper use of that technology.

The Science Center computer lab currently has 10 computers. During open hours, this is typically sufficient; however, the number of computers is too small for a class to use for instruction. When funds become available, additional equipment will be put into the computer lab so that it is better suited for class use.

There are also plans for improving mathematical modeling software, such as Maple. Faculty are also looking for freeware, shareware, or cheaper software packages for use in math courses.

- **Improve scholarly activities of mathematics faculty**

Some of the mathematics faculty are involved with scholarly activities, such as doing statistical analysis of student performance; however, no students are involved with this work and the work has not been submitted for publication. Some math faculty are considering engaging in research that would involve upper level undergraduate students. Some have begun to collaborate with faculty from physics on computational projects. Several mathematics faculty have a fantastic relationship with teachers in the public schools. They are encouraged to collaborate with the high school teachers on educational projects. One reviewer noted that an excellent opportunity of this type would be helping the local school teachers prepare for changes in curriculum due to the Common Core State Standards in Mathematics (CCSS-M) implementation. One faculty member in mathematics is already scheduled for a workshop of this nature during the summer. Some of the faculty do have plans to work more closely with the schools in order to better prepare students for the rigors of college mathematics courses. Since the faculty spend an enormous amount of time working with students out of class, the teaching load would likely need to be reduced, or restructured to allow more time for scholarly activities.

- **Improve the Exit Interview**

One reviewer felt the exit interview didn't address issues in mathematics, but was more geared toward the University as a whole. Because of reviewer recommendations during the site visit, this year's exit interview was trimmed to five questions and made open response. The interview was still optional to the graduates. In mathematics, the graduation survey will become part of the Seminar in Mathematics course, and the Assistant Dean for Mathematics will collect the information at the completion of the course.

- **Improve classrooms and facilities**

Both reviewers noted that the current condition of the Science Center created a less than optimal learning environment. Both felt that technology upgrades were needed in the classrooms and the computer laboratory. It was noted by the on-site reviewer that there was essentially no space for students to use as a learning environment between class periods, the overall condition of the building was old and uninviting to students. There are plans for a new Science Center in the future. Architects have toured the facility on numerous occasions and have recommended a new facility be built rather than renovating the current facility. The Chancellor has announced that our building will be the next facility replaced when funds are available. Although this will likely be several years in the future, we are pleased that this commitment has been made by the administration and initial plans are being made for improving our facilities. We strongly feel this will solve many of our problems that we are currently experiencing. It should get us up to date with technology, it will help with student recruiting. It will provide space for students to use

during their off hours. It will provide research space for faculty and students. We very much look forward to possibility of new facilities in our academic unit.

The ten-year program review has been very helpful in confirming our strengths and weaknesses in the Mathematics program. The self-study is an important part of the process because it forces us to take a critical look at our successes and failures. The reviewers did a very thorough job of looking at every aspect of our program. I am pleased that the reviewers recognize our program as having a strong, dedicated group of faculty. I am pleased that the reviewers recognize the efforts in preparing top-notch mathematics teachers for our local school districts, and the effort put into the remedial and general education math programs. The reviewers were very positive in pointing out our weaknesses. They have given us several ideas that we can use to improve the program in the future.