

Department of Mathematical Sciences



To: Greg Fant, Interim Dean, Arts and Sciences
From: Patrick Morandi, Academic Department Head
Date: 18 December 2009
Subject: Department Summary

Mission Statement.

The Department of Mathematical Sciences provides core education in mathematics and statistics that prepares graduate and undergraduate students to be knowledgeable and responsible citizens of the world. It does this by conducting research, scholarship, and teaching, including teaching service courses for other programs, to fulfill the land grant mission of the university.

Accomplishments.

As with most academic departments, there were many individual accomplishments, many of which do not fit so well in a departmental summary. Listed below are several accomplishments, most of which were done by groups of departmental faculty.

Grant Funding. The department had its best year in many years for obtaining grant funding. The Mathematically Connected Communities (MC²) project, a joint project with faculty and staff in the College of Education, received 3 years of renewed funding, totaling \$4,500,000, from the New Mexico Department of Education. This project has been funded continuously since 2004. The project involves 7 faculty members from the department. In addition, a subgroup of the MC² members applied for and received an NSF grant to fund the project MC²-LIFT (Leadership Institute for Teachers), a 5 year program to develop mathematics teacher leaders. The project has a total of \$5,000,000 in funding. The department also has teaching-related grants from the Park City Mathematics Institute and the NSF, projects which have been funded in previous years. This year a joint project between members of the department and the Biology Department received NSF funding for the project "Research Mentoring in Mathematical Biology". This 3 year project will receive nearly \$250,000 in funding. Another teaching-related grant-funded project, the MESH project, ended in 2009. Four faculty members have research grants from NSF, which are extremely hard to get in mathematics.

Awards. David Pengelley was recognized locally and nationally for his teaching expertise. In January David received the Mathematical Association of America's Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. He was recognized for placing the NMSU Mathematical Sciences Department at the forefront of teaching innovation nationally and internationally through projects such as a national calculus teaching reform movement and the enhancement of student learning via primary sources (first-hand documents or publications of original discovery) in mathematics. In many instances, his research and teaching methods focus on student projects and student research as well as work done alongside his colleagues. David also won the 2009 Westhafer Award for Excellence in Teaching, NMSU's highest faculty honor.

The department is dedicated to its research mission, and has many members with strong national and international reputations in their research fields. However, it is also strongly committed to its teaching mission, its members work very hard on teaching, and currently over half of the faculty are involved in a grant funded teaching-oriented project. I view David receiving this teaching award in a broader context, as nice recognition of the department's well-respected work in its educational projects.

Hiring. In 2009 the department hired three tenure-track faculty, two at the Assistant Professor rank and one at the Associate Professor rank. They were hired out of a pool of over 700 applicants, which allowed us to hire only the very best. All three are very talented researchers and are either experienced and successful teachers or show excellent promise to develop into wonderful teachers. Each assimilated successfully into the department in fall and are making nice contributions to the department.

Fundraising. The department received several donations each year to fund departmental activities and scholarships. Joe Kist contributes money for the Anna Kist scholarship, an award for an outstanding graduate student. John and Laura Thomas contribute toward the Debra Thomas Scholarship, which is awarded to outstanding tutors in our Math Tutoring Center. In 2009 the department received a \$250,000 endowment from Elbert and Carol Walker to support mathematical research. This donation will help us support faculty travel to work with colleagues, to bring in visitors for collaboration and colloquia, and will occasionally help us support research conferences at NMSU.

Student Credit Hour and Ph.D. production. The department has continued to increase its student credit hour production, in spite of having fewer faculty in the past. This has been accomplished by a combination of factors, such as increasing engineering calculus from 3 to 4 credits, running supplementary instruction sections for intermediate algebra and college algebra, running large lecture sections of mathematics appreciation, and carefully scheduling classes to avoid as many small classes. This has come at a cost, however, since we are forced to cover an increasing number of courses with temporary faculty, some of which are hired at the last minute to teach newly created sections. Course development and maintaining the curriculum has become harder as regular faculty are stretched more thinly. The graduate program has also been growing, in part due to an increased effort toward recruiting. In 2009 the department graduated 5 Ph.D. students, and should graduate a similar number in Spring 2010. Since the size of a

mathematics graduate program is usually very dependent on the number of graduate assistantships it has to offer, this level of production is quite good given the resources we have to fund graduate students.

Outcomes Assessment.

The last few years have been a period of change in the outcomes assessment procedures, and it is still early in the process to report much about how it is working. We developed a five year cycle in which to assess our common core courses, and we are in the second year of collecting and analyzing data.

Program assessment is also changing, and we are looking at our assessment methods to decide what aspects to keep and what to change. Unofficially, the department has always put a great deal of thought into our programs and how to make them better. The official assessment methods only show a small amount of our effort in this regard. For example, we have made substantial changes in some of our most important graduate course sequences due to thought over many years about the courses.

Progress on Goals.

The department's goals, as listed on our strategic plan, are

1. The department will retain 5% more of its majors each year, by keeping them at NMSU, until its retention rate is 65% of existing majors.
2. The department will be at or above the median publication rate of the university's peer institutions.
3. To increase its visibility, the department will increase the number of internationally recognized visitors through invitations to give talks the department organizes.

We are working on curriculum of some math major classes to make them more useful to help students get through the program. We are also organizing social events for majors to make them more comfortable with the department, and to help them make contacts with other majors.

The department is encouraging publications by supporting, as much as possible, faculty travel for research collaborations, and bring in colleagues to give colloquia and to work with faculty members.

Thanks, in part, to the Walker endowment, we will be in a better position to bring in well-known speakers who can help give the department exposure, and to help faculty gain a broad view of research areas.