Mathematics Programs that Make a Difference

Each year the AMS Committee on the Profession (CoProf) selects outstanding mathematics department programs to be designated as *Mathematics Programs that Make a Difference.* For 2009 the honored programs are the DEPARTMENT OF STATISTICS AT NORTH CAROLINA STATE UNIVERSITY, and the DEPARTMENT OF MATHEMATICS AT THE UNIVERSITY OF MISSISSIPPI.

CoProf created the Mathematics Programs that Make a Difference designation in 2005 as a way to bring recognition to outstanding programs that successfully address the issue of underrepresented groups in mathematics. Each year CoProf identifies two exemplary programs that:

1) aim to bring more individuals from underrepresented minority backgrounds into some portion of the pipeline beginning at the undergraduate level and leading to an advanced degree in mathematics, or retain them in the pipeline;

2) have achieved documentable success in doing so; and

3) are replicable models.

Previously designated Mathematics Programs that Make a Difference are: the graduate program at the University of Iowa and the Summer Institute in Mathematics for Undergraduates/Research Experience for Undergraduates at Universidad de Puerto Rico, Humacao (2006); Enhancing Diversity in Graduate Education (EDGE) and the Mathematical Theoretical Biology Institute (2007); and the Mathematics Summer Program in Research and Learning (Math SPIRAL) at the University of Maryland and the Summer Undergraduate Mathematical Science Research Institute at Miami University (Ohio) (2008).

The selection committee for the 2009 Mathematics Programs that Make a Difference consisted of: Alejandro Adem (chair), Dennis Davenport,

Students working together in the NCSU computer lab.

NCSU photographs by Marc Hall.

Susan Loepp, Francis Su, Vasant Waikar, and Leon Woodson.

Below are CoProf's citations, followed by brief descriptions of the programs prepared by *Notices* staff.

Citation: North Carolina State University

Be it resolved that the American Mathematical Society and its Committee on the Profession recognize the Department of Statistics, North Carolina State University, for its significant efforts to encourage students from underrepresented groups to continue in the study of mathematics and statistics.

In the past ten years the department has graduated fifteen minority students with master's degrees in statistics or biomathematics and two with Ph.D. degrees in statistics. The department actively recruits in order to attract minority students to its programs and to create diversity within its faculty and staff. The department is committed to providing the mentoring and support resources needed to guarantee that students succeed in its programs, and has received several grants to support these efforts.

The AMS commends the faculty and staff members of the Department of Statistics at North Carolina State University for their high level of commitment and their successful efforts to improve the diversity of the profession of the mathematical sciences in the United States.

Description of Program: NCSU

The Department of Statistics at North Carolina State University (NCSU) has made diversity of students and faculty a top priority. Out of forty faculty in the department, eleven are female, three are African American, and two are Hispanic. In the past ten years, fifteen minority students have received master's degrees and two have received Ph.Ds. The department has about 160 graduate

A sampling of the North Carolina State University Department of Statistics graduate students and their mentors.

The faculty and some of the graduate students, University of Mississippi Mathematics Department.

students, including nine African-Americans and four Hispanics; over fifty percent are female.

The department's approach includes communication with faculty at other institutions, active and sustained recruiting of minority students, and careful mentoring. NCSU has cultivated ties to other institutions, in particular historically black colleges and universities, as well as to organizations such as the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS). Through such connections, NCSU has reached undergraduate students interested in advanced work in statistics and provided them with information to decide whether NCSU is a good fit for them for graduate school. A co-director of graduate programs, Pam Arroway, travels extensively to various small colleges and summer programs to recruit students and to network and maintain strong relationships with their mentors.

Once students are recruited into the graduate program, they benefit from extensive mentoring from faculty advisors. Each new student is also assigned to a more advanced student who acts as a mentor, or "stat buddy". A key figure in the department's mentoring efforts has been faculty member Kimberly Weems, who organizes many social activities for minority students and meets individually with them to ensure their successful progress through the program. Setting the student-centered tone is department head Sastry Pantula, who has twice been selected for a university diversity award. Other department faculty have received similar recognition, including Weems and Jackie Hughes-Oliver. Recently a graduate student in the department, Anthony Franklin, received a university diversity award for his support of students and for recruiting new students of all backgrounds.

This dynamic department has pursued and received many grants, including two National Science Foundation VIGRE grants that proved crucial in supporting minority students. Recently the department received an S-STEM (Scholarships in Science, Technology, Engineering, and Mathematics) grant from the NSF, which will provide scholarships for United States undergraduate and graduate students with financial need. The department participates in many existing diversity programs, workshops, and conferences, and also designs and hosts some of its own. Some of the more recent such events include StatFest, Infinite Possibilities Conference, a Pipeline Workshop for Faculty of Women's Colleges and Minority Institutions, and Building Future Faculty. NCSU's long-term commitment, with strong support from its administration, is making a difference in diversity in the mathematical sciences.

Citation: University of Mississippi

Be it resolved that the American Mathematical Society and its Committee on the Profession recognize the Department of Mathematics, University of Mississippi, for its significant efforts to encourage students from underrepresented groups to continue in the study of mathematics.

The department's exceptional commitment to its students includes research guidance, mentoring, and professional development opportunities in addition to financial support provided by grant funding. In one outstanding year, 2006, the department graduated six African American Ph.D.s in mathematics, over one-third of all African Americans who received Ph.D.s nationally that year. The department at Ole Miss has made, and continues to make, a remarkable contribution to the national effort to produce more minority Ph.D.s in the mathematical sciences.

The AMS commends the members of the Department of Mathematics at the University of Mississippi for their high level of commitment and their

successful efforts to improve the diversity of the profession of mathematics in the United States.

Description of Program: University of Mississippi

The southern United States is home to many of the nation's African-Americans, and yet the universities in that part of the country have not historically been large producers of African-American Ph.D.s in mathematics. But the University of Mississippi (UM) has started to reverse this trend, becoming a national leader in nurturing and mentoring African-Americans in doctoral study. Over the past decade, eleven African-Americans have received mathematics doctorates from Ole Miss. That the university was once a symbol of educational segregation in the United States gives this success story special importance.

Since 2001 the UM mathematics department has received two GAANN (Graduate Assistance in Areas of National Need) grants from the U.S. Department of Education; the grants provide fellowships for graduate study. The fellowships proved to be transformational for the department, allowing it to quadruple the number of graduate students and to ensure that they are financially well supported. At the same time the department worked diligently to provide more careful nurturing of its graduate student population, both in research and in professional development.

Contributions to these achievements were made by the entire UM mathematics department, including ten faculty who have served as GAANN dissertation advisors. Among the key leaders have been the co-principal investigators of the GAANN grants, Gerard Buskes and Donald Cole. As an African-American faculty member and assistant to the chancellor for multicultural affairs, Cole has been a role model and mentor for the African-American graduate students, while Buskes serves as advisor and mentor to the GAANN students. Buskes eloquently described the department's efforts in an article, "Mississippi mathematics renaissance", which appeared in the January 2007 issue of the *Notices*. This article celebrated a high point in the department's efforts, the awarding of Ph.D.s to six African-Americans in 2006, which is the largest cohort of African-American mathematics Ph.D.s ever produced at any university in the United States.

Philip Kutzko of the University of Iowa, in his letter of nomination for the award, summed up the achievements of the mathematics department of the University of Mississippi: "By the work that it has done in welcoming and nurturing minority students as well as in building ties to nearby communities, the department is unique, as far as I know, nationally, in providing minority students with a place where they can do advanced mathematics without 'leaving home'."

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Onesimo Hernandez-Lerma (CINVESTAV)
Niky Kamran (McGill)
Rachel Kuske (UBC)
Alberto Verjovsky (UNAM-Cuernavaca)

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Algebraic Geometry and Singularity Theory
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Probability
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Topology

Scientific Committee

Alejandro Adem (UBC), Fernando Brambila (SMM; UNAM), Walter Craig (McMaster), Isidoro Gitler (CINVESTAV), Andrew Granville (Montréal), Jose Seade (UNAM)

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