Nebraska Conference for Undergraduate Women in Mathematics (NCUWM) has been chosen for this honor in 2013 for its efforts in encouraging women to attend graduate school in mathematics.

Each year, the AMS Committee on the Profession (CoProf) selects outstanding programs to be designated as Mathematics Programs That Make a Difference. For 2013 CoProf selected the Nebraska Conference for Undergraduate Women in Mathematics, an annual event of the Department of Mathematics at the University of Nebraska.

Citation

Be it resolved that the American Mathematical Society and its Committee on the Profession recognize the Nebraska Conference for Undergraduate Women in Mathematics (NCUWM) for its significant efforts to encourage women to continue in the study of mathematics.

The mission of the NCUWM is to encourage undergraduate women to go to graduate school in mathematics and to increase the success of those who do. Participation at the NCUWM links young women to a network of peers that helps them maintain the confidence and motivation needed for success in graduate school. Founded in 1999, the conference has grown from fifty-three participants to two hundred seventy undergraduate women participants. In 2012 there were fifty research talks and thirty-four research posters presented by these undergraduate women. Testimony from alumnae of the conference verifies that the impact of the NCUWM has been life-changing for significant numbers of women. The conference has made a remarkable contribution to the national effort to produce more women Ph.D.'s in the mathematical sciences.

The AMS commends the Nebraska Conference for Undergraduate Women in Mathematics for its high level of commitment and successful efforts to improve diversity in the profession of mathematics in the United States.

About the Program

"It would be no exaggeration to say that [the Nebraska Conference for Undergraduate Women in Mathematics] changed my life." Kalyani Madhu wrote these words in a letter supporting the nomination

of the NCUWM to receive the Programs That Make a Difference award. Madhu earned a bachelor's degree in English in 1984. Some years later, while raising her four children, she took calculus at a community college and considered getting a master's degree in mathematics and teaching high school. A professor encouraged her to attend the Nebraska conference, and by the time it was over, "my idea of what I might be able to accomplish had completely changed." Madhu received her Ph.D. in mathematics in 2011 from the University of Rochester, where she is currently an instructor.

Since its founding in 1999, the NCUWM has been a boon for women like Madhu, stimulating their motivation and interest in mathematical sciences research. The conference has touched the lives of more than 2,600 women undergraduates, who come from across the nation to attend the annual event. Participants leave energized and inspired by interactions with other under-graduates, accomplished women graduate students, and prominent women mathematicians. The conference expands horizons by providing information about educational and professional opportunities in the mathematical sciences and by boosting self-confidence and a sense of community.

The growth of the conference has been tremendous. In 1999, forty-three undergraduates attended, with thirty schools represented. In 2013, there were two hundred fifty-seven undergraduates and one hundred seven schools represented. The conference runs midday Friday through midday Sunday and is packed full of activities. As one participant put it in her department newsletter, "[Y]ou should be prepared to be exhausted by the end of it, but … you will definitely learn a lot about what being a math major means to you and what implications that has for your future."

The 2013 NCUWM provides a good example of how the conference works. There were two plenary speakers: Cathy O'Neil, an independent mathematical consultant who spoke on careers outside of academia, and Rekha Thomas of the University of Washington, Seattle, who spoke about optimization. One of the four panel discussions, "Random Bits of Advice", traditionally takes place during the banquet on the first evening of the conference and has an entertaining format designed to remove barriers of formality between the students and the role models. Another panel focused on choosing a graduate program and featured six women graduate students from six different schools. As with previous conferences, this year's had multiple role models from outside academia, including one from the National Security Agency (NSA). Several hours were devoted to the more than ninety talks and poster presentations by undergraduates. At the Saturday pizza dinner, one plenary speaker, panelist, or invited graduate student was assigned to each table, and participants could sit with the role model they wished to talk to.

Because the conference draws together women at a variety of educational and career stages, there is a good deal of "vertical integration" of mentoring. The younger undergraduates are inspired by the older ones who give talks and present posters, who are in turn inspired by the graduate students. Students at all levels have the opportunity to observe and interact with experienced and successful women mathematicians. Seeing themselves in these mentors is enormously empowering for the students. "Never before had I realized the community I was a part of as a woman in math, the magnitude of the field, or the boundless opportunities available to me now and in the future," one participant wrote in her department newsletter. "The NCUWM was … inspiring and invigorating."

Tracking the educational and career paths of all NCUWM participants is not feasible, but the students' nearly uniform enthusiasm and other anecdotal evidence show the positive impact of the conference. Sue Geller of Texas A&M University has been bringing students to the conference since 2000. In a letter in support of the nomination for the Programs That Make a Difference award, she wrote: "Out of the more than fifty students I have taken, only one switched into pre-med; the rest graduated as mathematics majors and most went on to graduate school in mathematics, either directly or after a few years working." Undergraduate participants often return to the conference as invited graduate students or panelists, and invited graduate students often return as panelists.

Some years back, it was almost unheard of for mathematics departments to provide support for undergraduates to attend conferences. Many departments do so today, and the NCUWM contributed to this change: For many departments, sending students to NCUWM marked the first time they sent undergraduates to any conference. The frequent—and glowing—reports about the NCUWM in mathematics department newsletters show that the conference has become a highly valued and much-anticipated event for departments across the nation. Registration fills up soon after opening in October each year.

Sponsored by the Department of Mathematics at the University of Nebraska–Lincoln, the NCUWM fits seamlessly into the department's mission. The department is a national leader in producing female Ph.D.'s in the mathematical sciences and is known for its inclusive atmosphere and nurturing approach. In recognition of this success, the department received the 1998 Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring. The NCUWM was established to celebrate this award, and funds from the award were used to leverage university support for the first few conferences. Since then, the conferences have been fully supported by the National Science Foundation and the NSA. In 2009, the Nebraska department received yet another honor, the AMS Award for an Exemplary Program or Achievement in a Mathematics Department. That award recognized the department's overall success in creating a supportive and welcoming atmosphere and in integrating research, teaching, and outreach. The present award to the NCUWM shines a spotlight on one of the department's most outstanding programs.

Kalyani Madhu posed the question, "Why did three days in Nebraska have such an impact?" The main reason, she noted, is that the conference was fun—it was fun to hear the talks, fun to meet other moms like her, fun to beat an eminent topologist at the game of Set. "Under all the fun, however, there was a sense of purpose that eliminated any frivolity… The contribution that the NCUWM makes to the advancement of the participation of women in higher mathematics is a powerful one."

About the Award

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 under-represented groups in mathematics. Each year CoProf identifies one or 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); 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 Department of Statistics at North Carolina State University and the Department of Mathematics at the University of Mississippi (2009); the Department of Computational and Applied Mathematics at Rice University and the Summer Program in Quantitative Sciences, Harvard School of Public Health (2010); the Center for Women in Mathematics at Smith College and the Department of Mathematics at North Carolina State University (2011); and the Mathematical Sciences Research Institute (2012).