

## Deborah and Franklin Tepper Haimo Award

### Darren A. Narayan

*Rochester Institute of Technology*

Dr. Darren Narayan is a dynamic teacher. He engages students with challenging problems, applications to industry, and research opportunities. His influence goes beyond his institution through publications, talks, and acting as director of the MAA Preparation for Industrial Careers in Mathematics Program, MAA PIC Math. Darren is recognized as a bridge between the mathematics community and industry, as well as between students from underrepresented groups and research opportunities.

Darren engages students on an individual level. He seeks out every possible means for getting his students to see the power of mathematics. Quoting one of his former students, “His eyes light up when a student asks a challenging question.” Mixing content with humor and surprise, he has mastered the art of creating dynamic lectures. Students respond to his enthusiasm and his love of mathematics both in-person and online. Darren is recognized as one of the most passionate teachers at Rochester Institute of Technology. He has had a tremendous impact on students and faculty, not only at RIT, but at colleges and universities across the nation.

As the recipient of two NSF-DUE grants and as a current director of the MAA PIC Math Program, Darren is directly involved in creating nationally distributed curricula based on real world applications of mathematics. He has also disseminated his teaching materials in three papers in the *College Mathematics Journal*. Darren addressed the question of what to do with math after graduation with the STEM Real World Applications Project, which focuses on the integration of real-world examples of mathematics into undergraduate curricula. These materials were circulated in the form of sixteen publications in mathematics and education journals and through talks at conferences. As part of the PIC Math leadership team, Darren has helped faculty at more than 70 colleges and universities prepare their students for careers in industry where they will apply their mathematical expertise.

In 2005, Darren received a National Research Experience for Undergraduates Program grant from the MAA to run a summer research program with students from underrepresented groups. He used this springboard to garner NSF funding for the larger Research Experience for Undergraduates at Rochester Institute of Technology program. This program has funded and engaged a diverse group of students to conduct research in mathematics for the past 14 years.

Darren’s impact extends to the K-12 sphere. He worked with the Rochester Museum and Science Center as they hosted traveling exhibits from the Museum of Mathematics: this activity led to visits to talk with students at multiple schools and hosting elementary school classes for activities at RIT. Darren also engaged high school students during RIT’s Summer Mathematics Institute.

The MAA recognizes the positive impact Darren has had on students at his own institution, his creation of engaging real-world problems to incorporate into the national mathematics curriculum and his support for underrepresented groups doing research in mathematics. The MAA is honored to present Dr. Darren Narayan with the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics.

### Response

I am truly honored to receive this prestigious award from the MAA. Having been raised by two outstanding teachers, Jack and Marion Narayan, I learned early at an early age the importance and responsibility that comes with being an educator. I do my best to include an “Aha!” moment in each lecture—where students form a connection that they remember well after they leave the classroom. I want my students

to tap into the tremendous amount of positive energy that lies within mathematics. In the classroom this can come from solving a problem or identifying a pattern. The effect become even more powerful in the realm of undergraduate research, where there is the additional aspect of mathematical discovery. I want students to appreciate the theoretical art form of mathematics with its inherent beauty as well as the power of applied mathematics. Concrete examples of real world applications of mathematics found in undergraduate curricula are rare. As a result students often ask, “What else can I do with a mathematics degree besides teach?” To help answer this question I started the STEM Real World Applications of Mathematics Project funded by two NSF-DUE grants. We uncovered examples of how mathematics is used to solve and analyze problems at companies such as IBM, Mack Trucks, National LambdaRail, Wikipedia, the Tuition Exchange Network, and Microsoft Research. I have shared the mathematics that underlies UPC codes and the optimization of traffic routes with undergraduate students and K–12 students. I want everyone to appreciate mathematics even when they are outside of the classroom. Mathematics is all around us—sometimes students just need to know where to look. I am grateful to all of my students, many of which have helped me broaden my teaching skills by asking me to explain a topic in a different way or by showing me an alternative approach to solving a problem. Thank you to my outstanding colleagues for sharing their novel techniques and engaging activities. All of you have pushed me become a better teacher. Finally I would also like to thank my brothers Dwayne and Drew for 40+ years of encouragement and my wife (and Project NExT Fellow) Tamara, and my daughters, Sedona and Micada.

### **Biographical Sketch**

Darren A. Narayan was born and raised and raised in Oswego, NY. He received his BS in mathematics from SUNY Binghamton, where he first served as a teaching assistant at the age of 18. Later he received his MS and PhD degrees in mathematics from Lehigh University developing his research area in graph theory. He joined the Rochester Institute of Technology in 2000 as an Exxon Mobil Project NExT Fellow, and was promoted to the rank of full professor in 2010. In addition he has had visiting appointments at the University of South Carolina and the University of Rochester. He has published nearly 100 papers, including publications in *Mathematics Magazine*, the *College Mathematics Journal* and *MAA FOCUS*. He has received over \$1.5 million in NSF grants supporting both innovations in teaching and undergraduate research. He lives in Rochester, NY with his wife Tamara (who he met through Project NExT) and daughters Sedona, and Micada.