New Jersey Section Award
For Distinguished
College or University Teaching of Mathematics

Dr. Aihua Li

The New Jersey Section of the Mathematical Association of America (MAA) is pleased to present its 2023 sectional award for Distinguished College or University Teaching of Mathematics to Dr. Aihua Li of Montclair State University.

Dr. Li is a dedicated and gifted teacher and mentor. Students and colleagues describe her as both approachable and motivating, teaching students the beauty of mathematics, how it works, and how it relates to the real world. Dr. Li supports and encourages students to reach high academic standards, to conduct mathe-matical research, to publish peer-reviewed research, and to build career paths.

Dr. Li believes students learn better by exploring and by doing research and that the most valuable commodity she can give to students is her time and love of mathematical research that opens the door to the research mathematics world. She has mentored over 50 undergraduate students in mathematical research, supervised 17 masters' theses and collaborated with more than 10 doctoral or master students from other schools. Her students have published 23 peer-reviewed research papers, delivered over 25 poster presentations, presented many research talks at conferences, and received numerous awards for their research. Dr. Li seeks out and mentors students from underrepresented populations, serving as Director of the Montclair Louis Stokes Alliance for Minority Participation from 2015-2018. Dr. Li helps her students gain confidence and achieve potentials they did not realize they had. Students describe their experience working with Dr. Li as life-changing, with benefits beyond mathematics.

> "*… Dr. Li did not give up on me. She gave* ***more*** *of her time, energy, and resources to help me succeed. This incredible display of perseverance has taught me more about life than just mathematics*."

Dr. Li brings the same spirit of exploration and guidance to the classroom that she brings to mentoring research. She adapts to and supports her students while motivating them to learn and understand challenging mathematical concepts. She provides extended office hours, helping students at night and on weekends to work around their busy schedules. She uses innovative pedagogical methods, such as computer-produced examples and a discovery approach to learning theorems in an abstract algebra course. She uses formative feedback and surveys to better understand her students' needs and differentiates assignments to challenge advanced students and provide guidance for students who require more filling of gaps.

> "*Instructor was very approachable; was able to "hint" at an answer that encouraged student to reach a solution on his own*."

Dr. Li also supports math majors who want to pursue careers in industry. In 2017, she obtained a grant from the MAA program, Preparation for Industrial Careers in the Mathematical Sciences (PIC Math) to create a project-based course with real-world projects provided by industry. The course was designed to improve students' skills needed by industry, like statistics, data science, and programming (Python, R, etc.), as well as to develop soft skills, including working in teams and for a stakeholder. The students worked on projects from companies such as Citigroup and Staples and made transformative recommendations to Staples leading to internships and job offers.

> *"I feel like PIC math has truly helped us not only see how math is used to solve real life problems but actually put us in these scenarios."*

Dr. Li shares her expertise with the wider mathematical community. She has served as a mentor in the Association for Women in Mathematics (AWM) Mentor Network and a Council for Undergraduate Research (CUR) Council member. She served as the Director of the MAA National Research Experience for Undergraduates (REU) Program's Summer REU at Montclair in 2008, 2013, 2014, and 2022. She organized a National Security Agency (NSA) sponsored regional faculty workshop on REU Issues in 2013 and co-organized the Garden State Undergraduate Mathematics Conference from 2010-2013. She has published articles on mentoring undergraduate research and on global aspects of teaching and pedagogy, and she has presented numerous talks on these subjects. She was recognized for her work with a Faculty Mentoring Award from the Council on Undergraduate Research in 2013 and the University Distinguished Scholar Award for 2013-2014 Academic Year from Montclair State University.

Dr. Li is an active member of the New Jersey Section of the MAA, serving in many roles on the Executive Board including Chair of the section from 2017-2019.

Dr. Diana M. Thomas, Professor of Mathematics at the United States Military Academy at West Point, nominated Dr. Aihua Li for this Distinguished Teaching Award.

Response from Dr. Li

It is a great honor to receive this Distinguished Teaching Award from MAA New Jersey Section. I would like to thank all the colleagues of mine in the Department of Mathematics at Montclair State University for providing support to my teaching at MSU throughout the years. Special thanks to Dr. Diana Thomas, a former colleague at MSU, for guiding me on mentoring student research and for many conversations with me on teaching related topics.

I agree with the saying that teaching is "to instruct by precept, example, or experience" and I believe that the best way to learn something is to do it. Learning through doing research enhances the students' learning process and helps them build on appreciation of mathematics. Throughout my teaching career, I have used student research projects as an integrating educational force to help train students in the process of mathematical investigation, sparking their interest in mathematics and its applications to the real world, and encouraging them to consider a career in mathematics. I have been honored to guide numerous research students over the years and have shared an important time in their lives.

The positive academic changes in my students, their advancement to a better, more improved life, and their newly instilled passion for a subject I deeply love are so rewarding, I can think of no other profession as fulfilling.