**MATHEMATICAL ASSOCIATION OF AMERICA**

**NEW JERSEY SECTION**

# Award for Distinguished College or University Teaching of Mathematics

**Spring Meeting**

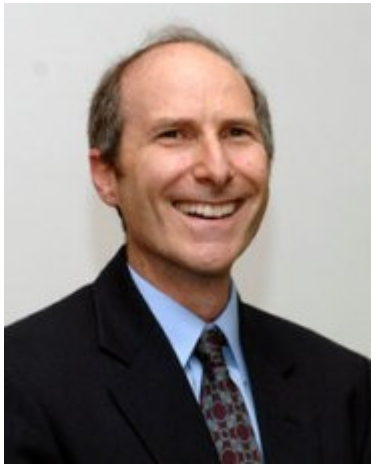
**Saturday, April 12, 2008**
**William Paterson University**
**Wayne, New Jersey**

In 1991 the Mathematical Association of America instituted Awards for Distinguished College or University Teaching of Mathematics in order to honor college or university teachers who have been widely recognized as extraordinarily successful, and whose teaching effectiveness has been shown to have had influence beyond their own institutions.

## Citation

## Dr. Bruce G. Bukiet

The New Jersey Section of the Mathematical Association of America is pleased to present its 2008 sectional award for Distinguished College or University Teaching of Mathematics to Professor Bruce G. Bukiet.



Professor Bukiet came to the New Jersey Institute of Technology (NJIT) almost 20 years ago, and it was immediately clear that he had a genuine passion and flair for teaching applied mathematics. He has been regarded as one of the best teachers at NJIT ever since, and students respect his knowledge, appreciate his dedication, and adore his keen sense of humor. But the one quality that has contributed the most to his extraordinary teaching success is his unparalleled enthusiasm for mathematics. Students cannot help but feel charged by the energy that Professor Bukiet brings daily to the classroom. His unique perspectives and intense personality have made him a popular choice as a mentor, advisor, and recruiter. Professor Bukiet's entertaining presentations on careers for math majors at high schools throughout New Jersey (and beyond) has helped stimulate the tremendous growth in the number of mathematics majors at NJIT over the past 10 years. He is valued as a role model for students and an example to colleagues that a career can be rewarding when you truly enjoy your work.



## RECIPIENTS OF MAA-NJ DISTINGUISHED TEACHING AWARD

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| Sr. M. Stephanie Sloyan, Georgian Court College | 1992 |
| Eileen Polani, St. Peter's College | 1993 |
| Richard Bronson, Fairleigh Dickinson University | 1994 |
| Siegfred Haenisch, The College of New Jersey | 1995 |
| Andrew Demetropoulos, Montclair State University | 1996 |
| Roger Pinkham, Stevens Institute of Technology | 1997 |
| Virginia Lee, Brookdale Community College | 1998 |
| Amy Cohen, Rutgers University-New Brunswick | 1999 |
| Janet H. Caldwell, Rowan University | 2000 |
| Evan Maletsky, Montclair State University | 2002 |
| Stephen J. Greenfield, Rutgers University-New Brunswick | 2003 |
| Arthur Schwartz, Mercer County Community College | 2004 |
| Bonnie Gold, Monmouth University | 2006 |
| Bruce Bukiet, New Jersey Institute of Technology | 2008 |

## MEMBERS OF THE SELECTION COMMITTEE

Janet H. Caldwell, Rowan University
Amy Cohen (chair), Rutgers University
Roger Pinkham, Stevens Institute of Technology
Arthur Schwartz, Mercer county Community College
Kenneth Wolff, Montclair State University

## Response from Professor Bukiet

I am an exponent of the power of math and so I am truly honored to be recognized by the New Jersey Section of the Mathematical Association of America to receive this award for contributions to the teaching profession. I love teaching and I love mathematics. Combining the two and being paid to do it makes me very lucky indeed.

For me, the most important aspect of teaching is to show respect for my students. This attitude comes from the realization that I have so much to learn from them. As Ben Zoma said (Ethics of the Fathers, Pirkei Avot) "Who is the one who is truly wise? It is the person who learns from all people." Teaching with this perspective in mind makes the whole experience extremely exciting. The students and I are all working and learning together in partnership to improve our understanding of the world around us.

I have had the privilege of being able to apply my understanding of mathematics and modeling to solve "real-world" problems. While some people have studied a subject from A to Z, almost all of my work can be classified into applications of math from B to B – baseball, biology, bombs and bugs. Having worked on problems that can be visualized and are relevant to many students helps me connect with my students and enables me to demonstrate the connections between math and their world. I have been fortunate that knowledge of some of my work has reached a wider audience and so I have been able to make more people aware of the value of mathematics.

While this award is conferred on me, it is the product of the efforts of many people. I must thank my high school teachers and college professors for educating me in the foundational skills I use each day. I must also thank my colleagues and students at NJIT for providing me with a stimulating and pleasant environment in which to work. Most of all, I thank my parents, my wife, Gail, and my children, Etan, Meira, Aviva and Elisheva for all the support they've given me over the years and for graciously putting up with the countless math stories, jokes and puzzles I have inflicted upon them.



Professor Bukiet received his Ph.D. from the Courant Institute of Mathematical Sciences at New York University in 1986. He went to the Los Alamos National Laboratory and then joined the Department of Mathematical Sciences (DMS) at NJIT in 1989.

Professor Bukiet has wide-ranging interests, some of which are reflected in his many publications on detonations, mathematical biology, and even baseball. He uses these to communicate to his students the power of mathematics and the excitement of using math to solve real world problems. He has taught a wide range of undergraduate and graduate courses at NJIT, and has proven to be an outstanding lecturer at all levels. He received the NJIT Excellence in Teaching Award for Undergraduate Instruction in 2006, and now co-chairs the selection committee for these awards. His outstanding performance in the classroom has earned him the Albert Dorman Honors College Teacher of the Year Award, as voted on by students in the Honors College. NJIT students have a genuine appreciation of Professor Bukiet's teaching talents, as evidenced by the exceptional scores and student comments that he receives on his teaching evaluations. Students praise his clear instruction, his carefully crafted problem sets, and his willingness to assist students as they grapple with difficult concepts. His classes are always entertaining. He has a reputation as a demanding teacher, yet large numbers of students are eager to sign up for his classes, producing numerous requests from students trying to get into his closed courses.

He has been an adviser to applied math majors and also revitalized the undergraduate math club. Under his leadership, the math club developed a real presence on campus by hosting speakers, ran math-related events, celebrated math awareness week, and participated in several undergraduate math conferences and competitions. In fact, Professor Bukiet mentored the first NJIT team to compete in the COMAP applied math modeling competition, and that team received an honorable mention designation for the solution they submitted. He was also the PI on a NASA-Sponsored Student Launch Program grant entitled "A Student-Designed Experiment to Analyze Particles during a NASA Balloon Flight." In this project, Professor Bukiet supervised approximately 30 NJIT Honors College undergraduates from different majors, including various engineering disciplines, math, computer science, chemistry, and humanities, in the building of an experiment that flew on a NASA balloon flight. He coordinated the interdisciplinary project to utilize all of the skills that the students were learning in their major areas.

He has developed a number of graduate and undergraduate courses in DMS, including an NSF-sponsored capstone course in applied mathematics that is now taken by every senior applied math major at NJIT. He presently is an investigator on the NSF grant for Course, Curriculum, and Laboratory Improvement, "Equipment and Modules for a Capstone Course in Applied Mathematics". In addition, he is the principal investigator of the NSF Robert Noyce Scholarship Program, "Teacher Education Collaboration for High Needs Schools - New Jersey" and is a co-principal investigator on an NSF Graduate Training Fellows in K-12 Education grant, "Computation and Communication: Promoting Research Integration in Science and Mathematics". Professor Bukiet also received funding from APS-NYSS to run workshops at NJIT to promote the value of mathematics and the math degree.

Among all of Professor Bukiet's accomplishments, his role as an advocate promoting the value of math is most extraordinary. It would be hard to find a more energetic and enthusiastic spokesperson to spread the word about the importance of mathematics and careers for math majors. Professor Bukiet gives dozens of talks every year to high school and junior high school students, as well as to high school teachers. No doubt, his efforts have convinced many students to pursue a degree in mathematics. He has been invited by numerous organizations, including AMTNJ and PCTM, to conduct workshops for, and give talks to, high school teachers to educate them on real world applications of math. Professor Bukiet has influenced innumerable students as these teachers return to their classroom with a renewed appreciation of mathematics, and share with their students the joy of solving problems. He routinely visits the Newark Public Schools to stress the importance of strong math skills to high school students from underrepresented groups. He has lectured at many high schools and community colleges in New Jersey.

The DMS relies heavily on Professor Bukiet to shoulder the bulk of the undergraduate recruiting effort. Professor Bukiet has served as chair of the recruiting committee for more than 10 years. He has developed all sorts of presentation materials, including power point presentations, posters, and simple experiments that can be modeled and understood using mathematics. He has also developed very effective recruiting tools to convince students to come to NJIT.

Professor Bukiet is a tireless worker who will never pass up an opportunity to promote mathematics. He has published many popular mathematics articles in various newspapers, journals, and other media outlets, including the Star Ledger, Behind the Union Symbol, and techcentralstation.com. He has even achieved a degree of celebrity as a scientist who can explain math to the "everyday man." He is often contacted by members of the news media to comment on a variety of math-related issues in a way that is understandable by the general public. He has been interviewed on CNN as well as by several radio stations in New Jersey to discuss a range of topics including food safety, pollution remediation, and the mathematics of sports. Below are some excerpts from the cover article in the Fall 2005 NJIT magazine written by Professor Bukiet on his favorite topic – why students should study math:

**Math: What is it good for?**

"I never could do math; I can't even balance my checkbook."

"I met someone who works with a friend of your wife's sister-in-law. What were the odds of that?"

Hearing such comments is frustrating for a math professor who recruits students to major in math in college.

It is unfortunate that in our society, which is becoming ever more technological, it is socially acceptable to declare proudly "I can't do math" while it would be unthinkable to hear someone boast, "I can't read."

Many students who enjoy math and who excel in math in high school are not encouraged to pursue these studies further in college. Often, guidance professionals, teachers and parents advise these students to go into other fields, thinking that all one can do with a math degree is teach.

The importance and influence of mathematics and mathematical thinking is under-appreciated and under-recognized. While most people view math as a bunch of numerical computations, algebraic manipulations and esoteric equations, math is also about deductive reasoning, logical and critical thinking, analysis, synthesis and problem solving.

It is disconcerting to note that few among those who make the most important decisions about educational, scientific and technical issues, i.e., Congressional representatives, have degrees in math, science or technological disciplines. Is it any wonder they have so much difficulty solving problems?

**Dr. Robert M. Miura** of the Department of Mathematical Sciences, New Jersey Institute of Technology, nominated Dr. Bukiet for this Distinguished Teaching Award.