

THE DEPARTMENT HEAD



Ordinarily, MathCONNECTIONS begins with an article called “From the Department Head,” a narrative derived from the annual report of the Mathematics Department. But this year we must sadly begin with the news that our beloved friend, colleague and leader Michael (“Miki”) Neumann passed away suddenly on Earth Day, 21 April 2011 – in the Jewish calendar, on the third day of Passover, 17 Nissan 5771.

Dean Jeremy Teitelbaum wrote the following message of appreciation.

Michael “Miki” Neumann, Head of Mathematics, Board of Trustees Distinguished Professor, and holder of the Stuart and Joan Sidney Professorship, passed away suddenly last night.

Miki was born in Jerusalem, received his undergraduate degree from Tel Aviv University, and his Ph.D. from London University in 1972. He joined the UConn faculty in 1985 after holding positions in South Carolina, California, Israel, and the United Kingdom. He held a variety of important editorial positions in key journals in his field of Linear Algebra and lectured around the world. He has advised at least 9 Ph.D. students and published more than 150 articles on all aspects of matrix theory and linear algebra.

Miki was a truly kind person who cared deeply for his colleagues in the Math department and who was devoted to the concept of service to his university and community. He had an impish sense of humor that never failed to lighten people’s mood. On a personal note, he and his wife Helen were exceptionally kind to my wife Mona and me since we arrived in Connecticut and I will always be grateful to him for that.

He is survived by his wife Helen and two adult children.

His memory will live on in the hearts and minds of those who knew and loved him. I know you all join me in extending our deepest condolences to his family.

Sadly, Jeremy T.

An *in memoriam* article by Miki’s former doctoral student Michael J. Tsatsomeros (PhD 1990) will appear in a future issue of the journal *Linear Algebra and Its Applications*, on whose board Miki served for several years.

2010-2011 ACTUARIAL SCIENCE PROGRAM HIGHLIGHTS

Jim Trimble and Michael Braunstein, directors

- (1) The Program continues to grow with over 240 students now enrolled in the undergraduate program. There are also 42 Masters and 8 Ph.D. students in the graduate program.
- (2) To accommodate the growing number of students and avoid crowded classrooms, a successful search was undertaken to secure a hire for a tenure-track role. Brian Hartman, ASA, Ph.D. will join the faculty in the fall.
- (3) The Society of Actuaries renewed the UConn Actuarial Science Program as a Center of Actuarial Excellence, one of only 21 in the United States and Canada.
- (4) In October of 2010, a small team of students competed in the 3rd Annual Travelers Actuarial Case Competition and placed first. The students won a \$1,500 first prize.
- (5) The University of Connecticut was selected as the host school for the 46th annual Actuarial Research Conference (ARC), an event that focuses on the academic frontiers of actuarial science and their business applications. The Actuarial Research Conference will be held August 11-13, 2011 on the Storrs campus. Business professionals and academics from around the world are expected to attend.
- (6) Thanks to continuing industry financial support from the Actuarial Program Sponsors, scholarships were awarded to 16 Actuarial Scholars on the basis of academic excellence, leadership, and exam progress.
- (7) For the first time, a \$5,000/year renewable diversity scholarship was earmarked for and offered to an actuarial student from an under-represented group. The Black, Hispanic, and Native-American populations are currently under-represented in the actuarial field.
- (8) The International Association of Black Actuaries (IABA) also agreed, for the next four years, to earmark one of their scholarships for a University of Connecticut student.
- (9) Students continue to demonstrate success on the actuarial exams. Of our 2011 graduates, 90% graduated with at least one exam and, of those, 80% graduated with multiple exams passed. By May of 2011, 6 students had each successfully completed 4 exams.
- (10) Bronze, Silver, and Gold Sponsorship levels were introduced to our industry partners along with the opportunity for companies to earn points toward those levels via student networking events, career fair participation, in-kind contributions, and diversity initiatives.

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**PROFESSIONAL MASTER'S DEGREE PROGRAM in APPLIED
FINANCIAL MATHEMATICS**

Jim Bridgeman, Director

The Professional Master's Degree program in Applied Financial Mathematics, a joint offering of the departments of Finance, Statistics, and Mathematics that is administered by the UConn Mathematics Department, continues to be successful. In the recent academic year, we conferred ten degrees, to Abdulmajid Abdullah Albasri, Yuanyuan Zhang, Yunhao Li, Llancyllius Learned Williams, Shuchi Bhargava, Fang Chen, Hami Golbayani, Jeffrey Haines, Christopher Johnson, and Jayce Watson. It appears that all have a job or a spot in further education. Forty degrees have been awarded in the program's short history.

Twenty-six students participated in the eighth full year of operation in 2010-2011, equally divided between those returning from last year and those newly admitted. After graduations and other departures we expect 14 returning students and 12 to 15 new admissions (out of 136 applicants) for the coming year.

A new three-credit course on Stochastic Yield Curve Models will be offered in the Spring, based on pilot seminars conducted over the past few years. We expect to join the International Association of Financial Engineers as an affiliated academic program in the coming year. This includes Career Fair access for students and access to advanced seminars for both students and faculty.

The woes of financial institutions have eased considerably and internship availability has improved slightly. Still, six students are working an unpaid internship with the program director this summer because they have not been able to locate an internship in industry.

The most difficult issues facing the program are common to most programs in the field:
(1) lack of financial aid to attract new students and
(2) inability to guarantee paid summer internships to all of the students who want one.

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GRADUATE DEGREES

Forty-eight students in our department received graduate degrees in 2010 – 2011 — four Mathematics Masters, twenty-six Actuarial Science Masters, the ten Applied Financial Mathematics Masters mentioned above, and eight Mathematics PhDs. Congratulations on your achievements!

Mathematics Masters went to **Matthew Joseph Lamoureux** (12/18/10, advisor Thomas Roby), **Caleb Joseph Martin** (12/18/10, advisor Yung S. Choi), **Jacob Suggs** (5/7/11, advisor Iddo Ben-Ari), and **Rebecca Tramel** (5/7/11, advisor Kyu-Hwan Lee).

Officially, Jim Bridgeman was the advisor to all 26 who earned the MS in Actuarial Science. These were in three cohorts. August 2010 graduates were **Jingwen Cao, Yanqi Liu, Amy Mayberry, Kyle Matthew Ryan, Nan Wu, Bin Xie, Hua Yang, Bingyu Ye, and Zhen Zhang**. December 2010 graduates were **Nurhatiah Ahmad Chukari, Matthew Thomas Goff, Eli Greenberg, David Andrew Lisevick, Pamela McKenna Minahan, Tian Qin, Yifan Zhang, and Yuanyuan Zhang**. And the May 2011 graduates were **Eric Anderson, Kehui Kaycee Fu, Haoyu Gu, Qi Lu, Yi-Hsuan Lu, Phani Poranki, Chun Shang, and Yanming Zheng**.

Mathematics doctoral recipients, conferral dates, dissertation titles, and professional positions obtained are:

- **Xiang Huang** (advisor Changfeng Gui); 8/24/10
“Nonrigid Image Registration Problem Using Fluid Dynamics and Mutual Information”
Postdoctoral Fellow, University of Oklahoma
- **Mang Wu** (advisor Maria Gordina); 8/24/10
“Stochastic Analysis on Some Infinite Dimensional Groups”
Assistant Professor, University of California/ Riverside
- **Fangjun Xu** (advisor Richard Bass) ; 8/24/10
“A Class of Singular Symmetric Markov Processes”
Visiting Assistant Professor, University of Kansas
- **Su Liang** (advisor Sarah Glaz); 12/18/10
“Investigating the Model of High School Mathematics Teacher Preparation in China”
Assistant Professor, California State University/ San Bernardino
- **Pavel Zhlobich** (advisor Vadim Olshevsky) ; 12/18/10
“Quasiseparable Matrices and Polynomials”
Research Assistant, University of Edinburgh
- **Jeffrey Ledford** (advisor Wolodymyr Madych); 5/7/11 “On the Convergence of One Parameter Families of Interpolators”
Collateral Instructor, Virginia Commonwealth University
- **Brian Whitehead** (advisor Richard Bass) ; 5/7/11
“Time Spent in Sets by Jump Processes”
Visiting Assistant Professor, Eastern Connecticut State University
- **Fang Zhang** (advisor Changfeng Gui) ; 5/7/11
“A Qualitative Research on Allen-Cahn Equations”
Visiting Assistant Professor, The University of Iowa.

MATHEMATICS DEPARTMENT TA TRAINING PROGRAM 2010 – 2011
Sarah Glaz, Graduate Director for Instructional Development

A large share of the lower division courses offered by the Mathematics Department is taught by graduate student TAs. This academic year, we offered 14 courses at or below the Differential Equations level. Seven of these courses were taught in large lectures with enrollments of 150 to 200 students per lecture. The rest of the courses were taught in 108 sections with average enrollment of 30 to 35 students per section. TAs taught 79 of these sections and also taught the 200 discussion sections associated with the large lectures. Out of the total 279 sections taught by TAs, 131 were taught by first year TAs.

In spite of the strain imposed by budget cuts, we continued our efforts to support our graduate student TAs in the performance of their teaching duties. This support is particularly crucial for first year TAs, who are often fresh out of college and have no prior teaching experience. Our support helps the TAs balance their teaching duties and student responsibilities so that neither suffers and it helps them improve their classroom performance, to the benefit of their current students and the benefit of the teaching component of their future careers as mathematicians.

Entering graduate students start their TA training in the week before the beginning of the Fall semester with a bonding and pedagogy-learning lunch, followed by faculty-mentored sessions of teaching practice. The TAs continue in a semester-long Mathematics Pedagogy course which was taught this year by Professor Steve Miller. In addition, each new TA is paired with an experienced TA who volunteers to act as a mentor for the entire first year.

One of the most successful innovations of our TA program was the institution of the practice of first year TA classroom observations and individual teaching consultations. This practice eliminated all students' complaints about our TAs. Each consultation involves a considerable investment of time since it includes classroom observations, before and after discussions, and written suggestions. The budget cuts restricted, but did not eliminate, this feature of our program. Classroom observations and teaching consultations were carried out this year with the help of emeritus Professor Eugene Spiegel. In addition, most of the lower division courses taught by TAs were coordinated by faculty, providing TAs with course specific support.

We maintain a website, <http://www.math.uconn.edu/TAProgram/taprogram.php>, which is geared toward helping the TAs with all aspects of their teaching. It also includes sections useful for course coordinators and various items useful for Post-Docs and new faculty. The most recent addition to this website is the pedagogy section's "Course Handouts" webpage.

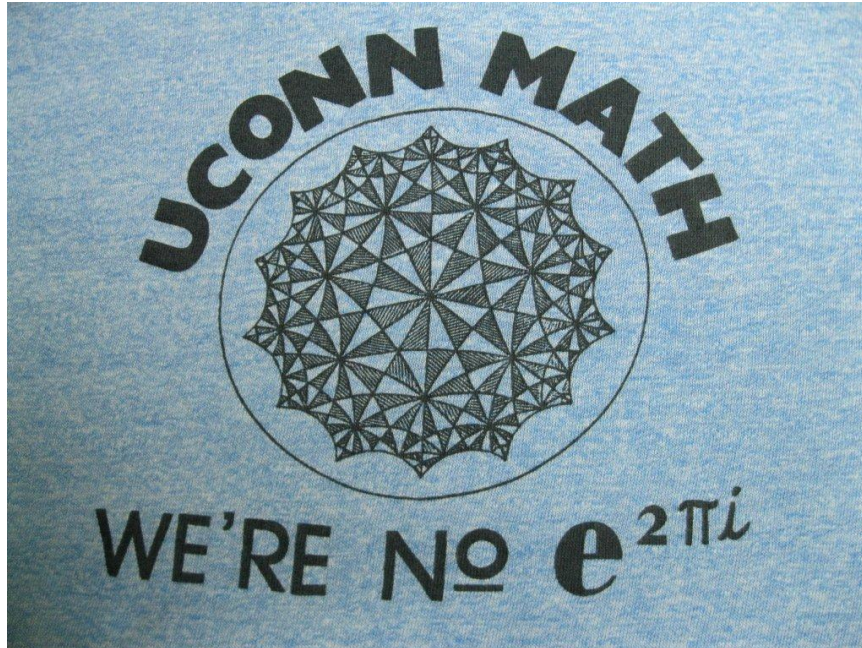
The TA Program extends its teaching support to experienced TAs who need assistance with teaching issues. Graduating TAs receive support with the teaching component of their job applications, including teaching recommendations and help with composing Teaching Statements.

Our efforts and our TAs' natural talents rewarded us with a successful year of teaching. All indications, including student evaluations of teaching, show that the quality of instruction provided by our TAs exceeds all expectations.

Our TAs Alex Baldenko and Gabriel Feinberg received the 2011 Louis J. DeLuca Outstanding Teaching Award; and Lucas David-Roesler and Benjamin Salisbury received the 2011 Connie Strange Graduate Community Award.

To this year's recipients of the department's TA awards, Congratulations! We are proud of your accomplishments.

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THE UCONN MATH CLUB 2010–2011

Ryan Kinser, Faculty Advisor

The talks in the math club this year covered topics from statistics, logic, geometry, combinatorics, graph theory, and fractals, to name a few areas.

In the Fall there was a discussion panel for students interested in pursuing mathematics at the graduate level. We also had a very nice talk from one of our own undergraduates, Matt Begué (B.S. 2011), on summer research that he had conducted on Eigenvalue Data on the Sierpinski Carpet. Andy Stein, who is a senior modeler at the Novartis Institute for BioMedical Research, gave a talk on how differential equations are used to gauge the effectiveness of leukemia drugs.

In the spring we had speakers from Fairfield, Brown, Yale, and Sacred Heart universities. Sam Payne of Yale explained how adding a bidding feature to common games such as tic-tac-toe leads to interesting mathematics, and Janet Striuli of Fairfield talked about studying the chromatic number of a graph through polynomials and commutative algebra. Both Sam and Janet have worked with undergraduates on research in these areas.

Funding for the talks was provided by the Undergraduate Student Government and the Mathematics Department. Student officers this year were Tyler Engel (president), John Watterlond (vice-president), and David Wierschen (treasurer).

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UNDERGRADUATE COMPETITIONS 2010 – 2011

Stu Sidney

Each year UConn undergraduates are invited to participate in two mathematical competitions.

The William Lowell Putnam Mathematical Competition, *the* major undergraduate mathematics competition in the United States and Canada, was held Saturday 4 December 2010. Twenty-two students from UConn were among the 4296 students from 546 colleges and universities who participated. As usual, they found the Putnam very challenging: Nationally, 2023 participants had a score of 0, 91 scored 1 point, and 95 scored 2 points, so the median score was 2 (out of 120), as it was last year; it is almost always 0, 1, or 2. Two of our students – Antoni Brzoska (repeating) and Gregory Koch (a freshman!) – did much better than that, landing comfortably in the top quarter of all competitors, and four others – Craig Blouin, Daryl Klakouski, Jonathan Plumb, and Nicholas Stanford – landed well within the top half. All six were recognized appropriately by the Mathematics Department at its Awards Day Ceremony in April 2011; see the article *Awards Day, April 2011*.

Each spring the Mathematics Department at The University of Connecticut conducts its own challenging Calculus Competition and awards prizes in three categories: Beginner, Intermediate, and Overall. The most recent competition, held Wednesday 23 March 2011, attracted 22 participants, and all but one submitted papers of substance. Nine of the twenty-two students were honored at the Awards Day Ceremony (see *Awards Day, April 2011* for the entire list). Antoni Brzoska (repeating) tied with Scott Norton for First Overall, Daryl Klakouski was First Intermediate, and John Patrick Bartolotta and Luocheng Wang tied for First Beginner.

Very few of our award winners are seniors, so the UConn undergraduate math future looks very promising.

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OTHER HONORS

The BERNARD SIPPIN '52 SCHOLARSHIP AWARDS May 2011

This year three UConn mathematics students, William David Lindsay, Jr., Aaron A. Nelson, and William C. Snider II, were chosen as recipients of the Bernard Sippin '52 Scholarship. Each scholarship is awarded to an academically outstanding undergraduate student enrolled full time as a mathematics major (or intending to declare a major in mathematics) at the University of Connecticut. The selection committee chose those three recipients from a very impressive pool of applicants. Congratulations to all three winners for this well-deserved honor and to Mr. Sippin for his generosity.

PHI BETA KAPPA INVITEES April 2011

Fifteen of our senior majors and recent graduates were elected to membership in Phi Beta Kappa, the nation's oldest liberal arts and sciences honor society, which was founded in 1776: Mathematics/Actuarial Science students Jessica Anne Gilbert, Kathryn Anna Heinzer, Peter Gabriel Tramont, Dennis Michael Whitehead, and Lan Yu; Applied Mathematical Sciences students Khrystyna Nechyporenko and Shuang Wu; Mathematics students Matthew Joseph Begué, Sandie Shandi Gong, Maureen Elizabeth Malley, Rebecca Dzizyc Millichamp, Charles Leonard Talbot, and Allan Ray Tanchiatco; and Mathematics/Statistics students Michael John Bergeron and Prasant Venimadhavan.

AWARDS DAY, APRIL 2011

Stu Sidney

The Annual Awards Ceremony of the Department of Mathematics took place on April 14, 2011. **Dr. Jeremy Teitelbaum**, Dean of the College of Liberal Arts and Sciences, welcomed the audience of undergraduates, graduate students, families, and faculty members. Professor Emeritus **Stuart Sidney** was the master of ceremonies.

Various awards and honors were presented in recognition of student achievements.

Calculus Competition

First Overall (Tie):

Antoni Brzoska and Scott Norton

Honorable Mention Overall:

Michael Ignatowich, Daryl Klakouski,
and James Luczynski

First Intermediate:

Daryl Klakouski

First Beginner (Tie):

John Patrick Bartolotta and Luocheng Wang

Third Beginner (Tie):

Savas Tsikis and Zhuoqing Xu

William Lowell Putnam Competition honors went to Antoni Brzoska and Gregory Koch for Outstanding Performances, and Craig Blouin, Daryl Klakouski, Jonathan Plumb and Nicholas Stanford for Noteworthy Performances.

The **CIGNA Award** for the Outstanding Actuarial Science Major went to Tracy Margiott.

Brian Basiaga, Antoni Brzoska, Timothy Burke, Matthew Burrill, Lindsay King, Ashley Kocsis, Jackson Lautier, Noah Nathanson, Aaron Nelson, Jessiga Pirog, David Pynch, Christopher Roberts, Ashley Ruegg, Allan Tanchiatco, Peter Tramont, and Jonathan York were initiated into **Pi Mu Epsilon**, the national mathematics honor society.

Graduate students honored: Alex Baldenko and Gabriel Feinberg won the **Louis J. DeLuca Memorial Award** for Outstanding Teaching Assistant; and Lucas David-Roesler and Benjamin Salisbury won the **Connie Strange Graduate Community Award**.

Wenyuan Zheng was named the **ING Actuarial Graduate Program Scholar**.

Awards Day always closes with an invited address by a guest speaker. In 2011, the lecture on "Geometry and Surfaces" was given by Professor **Robert Meyerhoff** of Boston College.

STU'S PUZZLE CORNER 2011

Stu Sidney

How old is Prof. Brown's son?

This edition's puzzle is one of those that at first glance appears not to offer enough information to yield a unique solution. **Trust me, it does.** It was shown to me many years ago by G. M. Leibowitz, and it seems particularly appropriate to offer it now on the occasion of his retirement. Be very sure to understand the logic of the puzzle, or you might go down many a blind alley. In particular, you must not only produce a number, but you must also show that no other number works! Also, you should know that Prof. Jones is a very talented mathematician, so you can rely on everything he says. Now I will state the problem *verbatim* as it came to me so long ago (including abbreviations for "Professor," "Mathematics" and "Department," which I usually spell out in full in documents of this sort).

Prof. Smith asked Prof. Brown of the Math. Dept. the age of the latter's son. Brown promptly wrote on the blackboard a polynomial $f(x)$ with integral coefficients and said: "Well, my boy's age is the only positive integer which is a root of this polynomial." Smith, not being a mathematician, resorted to trial and error and tried the value 2, but the value of the polynomial, $f(2)$, came out different from zero. So he tried another value n for the age, but $f(n)$ also came out different from zero. Then, discouraged, he gave up.

Later Smith ran into another mathematical colleague, Prof. Jones, and told him about the problem. Unfortunately he had by then forgotten the polynomial and the second trial value n , but he did remember the two values $f(2)$ and $f(n)$ and mentioned them to Jones. Jones looked at these numbers thoughtfully for a bit, and observed: "It isn't important that we don't know the polynomial or your second trial number. Even if we allowed the possibility of zero or a negative value for n , I can see that the age of Prof. Brown's son must be _____."

What is the age of Prof. Brown's son?

Please keep in touch. Offer suggestions or solutions *via* e-mail to:

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or *via* surface mail to:

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