



Vectors

The Newsletter of the Mathematics Department at Rowan University

Chair's Corner



Hello students, faculty and friends of Rowan Mathematics! As we reach the end of the Fall'14 semester, and I think about what, if anything, hasn't changed since last fall, I can only come up with this: things are still changing! To begin, two of our long-time members have officially retired. Larry Howe, a

Rowan faculty member of over 40 years has retired to Avalon. Khaled Amer, who finished his career split between Computer Science and Mathematics, will eventually be going home to Egypt. To help cover their absence, we were able to hire a $\frac{3}{4}$ -time instructor in Benjamin Daniels, an alumnus of Rowan's M.A. in Mathematics. Also, thanks to an expanded Select-Start/Rowan-Select program, our two $\frac{3}{4}$ -time Fall'13-only instructors from last year, Elizabeth Volz and Ira Fine, were able to come back for this whole year. The same program will enable us to have $\frac{3}{4}$ -timer Eric Jones teach for us in Spring'15.

This last summer was a scream with a total of ten (10) orientations, and hiring even more $\frac{3}{4}$ -time and adjunct instructors. As for the adjuncts, we have gone from 26 in Fall'12, to the equivalent of 40 in Fall'13, and now 51 adjuncts covering 72 sections in Fall'14! The tempest of student demand for mathematics is also illustrated in the Fall'14 10th Day Snapshot. Mathematics is again teaching more student/FTEs than any other department, and more than the colleges of Business and Engineering.

Finally, another measure of the increased activity around here is the number of signatures that I write and students that I see. Alas, withdrawals, prerequisite waivers, and gripes abound. I bought two new elbow braces for my tennis elbow, but I have to remind myself of the statistical lesson: correlation is not causation.

- Dex Whittinghill

WHO'S NEW IN THE MATH DEPARTMENT

The Rowan Mathematics Department welcomes several new faces for the 2014-2015 academic year.

Mike Schillo is the new embedded Program



Advisor for Mathematics and Computer Science. He earned his Bachelor's degree in History and his Master's degree in Higher Education Administration from Rowan University. Mike serves as the academic advisor for Mathematics B.A. and B.S. majors who have fewer than 60

earned credit hours; once a student has earned 60 credits, he or she will be assigned a Mathematics faculty mentor based on academic and career interests. According to Mike, his goal is "to help Mathematics students succeed academically, outline and achieve their goals, and to encourage them to take full advantage of the opportunities they have here at Rowan." He will assist students with understanding program requirements, course selection, career planning, and utilizing other Rowan resources, such as tutoring or counseling. You can contact Mike at (856) 256-3624 or schillo@rowan.edu; he also accepts appointments via the Rowan [Starfish](#) system. Mike's office (330B) is located inside the Computer Science suite on the third floor of Robinson Hall.

Eric Jones '10 graduated from Rowan with dual



B.S./M.A. degrees in Mathematics. Prior to his current position as a $\frac{3}{4}$ -time Instructor of Basic Skills Mathematics (Fall 2014) and Mathematics (Spring 2015), Eric taught as an adjunct instructor at both Rowan and DeVry University. Eric was a member of the Rowan roller hockey team that reached the semifinals in the National Championships held in Madison, Wisconsin.

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Benjamin Daniels '12*14 joins the department



this academic year as a 3/4-time Instructor of Mathematics. He received both his undergraduate and Masters degrees from Rowan University. Ben coordinated the Math Team tutoring program while he was a grad student, and he now serves as a Math Team advisor. His mathematical interests include numerical estimation methods, applied linear algebra, and biomathematics. In his spare time, Ben enjoys skiing and rock climbing.

As Dex points out in his "Chair's Corner," we have a record number of adjunct faculty this year. Newcomers include **Robertson Bamfo, Elijah Brookes, Justin Buchanan, Michael Dantonio, Olivia DiGiorgio, Ryan Dobson, Dorvid Durant '06*14, Gail Eastwick, Roy Goldfarb, Michelle Greenberg, Anthony Marchetta, Deoki Sharma, Lenora Sheppard, Christopher Urban '10*14, Kumar Virbhadra, Sky Waterpeace '05*14,** and **Andrew Weston.**

Rosemary Keenen has also joined the Math Department as a secretary while **Barbara Miraglia** is on medical leave.

Alumni Spotlight: Tom Gallagher '72



Tom graduated from Glassboro State College in 1972 with a degree in Mathematics. He was drafted into the military immediately after graduation and served 12 years in the 170th Combat Support Squadron. Tom is currently the Head of Rare Gases for Linde North America and has travelled

frequently to China, India, Japan, and Europe to speak about the effects of gases in light bulbs. His previous projects at Linde have focused on "Pop Rocks" candy (1977), the cryogenics of food freezing (1974-1983), xenon ion propulsion for space travel (1988-1990), and window insulation (1989-2014). In 1993, Tom was inducted into the New Jersey Soccer Hall of Fame. He is married to his college sweetheart, Alice Watson '72, who still teaches fifth grade. They have two daughters, Michelle and Kristin.

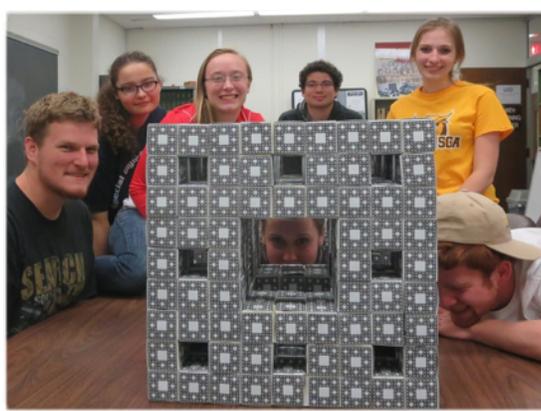
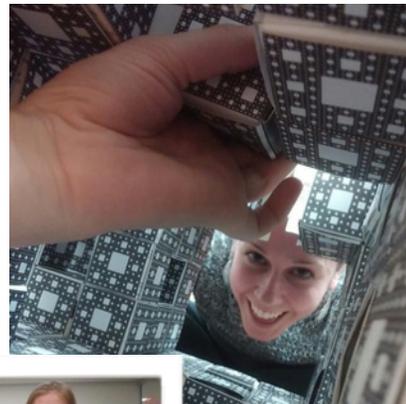
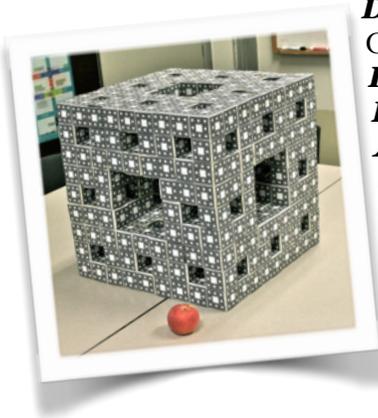


*Math Team members **Keith Ferrante, Stephanie Gomez, Charles Kiersznowski, Brooke Logan, and Phuong-Trang Vu** participated in the banner competition during Homecoming 2014.*

ROWAN MATH TEAM CONSTRUCTS A “LEVEL-TWO” MENGER SPONGE

The Rowan Math Team, under the guidance of faculty **Ira Fine** and **Ben Daniels**, spent nearly twelve hours building a “level-two” Menger Sponge on October 23, 2014. Participants included **Kelsey Borrell**, **Melissa Canavan**, **Si Doan**, **Nick Felker**, **Keith Ferrante**, **Adam Fincke**, **Stephanie Gomez**, **Elizabeth Hartkopf**, **Charles Kiersznowski**, **Brooke Logan**, **Erin Posch**, **Angel Ramos**, **Ashley Shepp**, **Corey Vollmer**, and **Phuong-Trang Vu**. They constructed this fractal from 2400 business cards and 1056 tiles; no tape or glue was used. Although it appears to be three-dimensional, the Menger Sponge has a fractal dimension of 2.726833028..., which is the ratio of the log of its volume (400 cubes) to the log of its length (9 cubes). Curiously, a Menger Sponge has zero volume, but it has infinite surface area.

To learn more about the Menger Sponge, visit www.megamenger.com. Contact Brooke Logan (loganb50@students.rowan.edu) for more information about the Rowan Math Team. New members are always welcome!



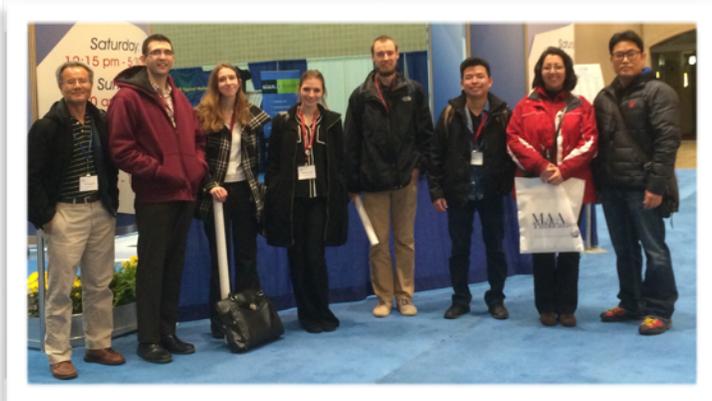
ALUMNI SPOTLIGHT: ARLENE HAHN STEPHENSON '73

Arlene Stephenson has had a varied and successful career since graduating from Glassboro State College in 1973 with a bachelor's degree in Mathematics Education. She later earned a Masters of Administrative Science with a concentration in management and a Certificate in Aging, both

from Johns Hopkins University.

Arlene began her career as a math teacher at Kingsway Regional High School. After discovering a love for statistics, she became a statistical analyst for Blue Cross and Blue Shield of Delaware. She relocated to Maryland after getting married and soon embarked upon a long career with the Maryland Department of Health and Human Hygiene (1981-2011). Working at the intersection of statistics and healthcare policy, she used insurance data to help get a motorcycle helmet law passed in

Maryland. Arlene eventually rose to the rank of Deputy Director. After retiring, she served as chief of staff for the American Public Health Association in Washington D. C. from 2011 to 2013. Arlene has since moved to coastal North Carolina, where she enjoys living near the beach with her husband of 38 years.



The Rowan Math Department contingent at the 2015 Joint Math Meetings in San Antonio, TX, included (L to R): Dr. Hieu Nguyen, James Rosado, Jennifer Crawford, Brooke Logan, Dante Gates, Tuan Le, Olcay Ilicasu, and Ik Jae Lee.

**ADJUNCT SPOTLIGHT:
KUMAR SHWETKETU VIRBHADRA**


Dr. K.S. Virbhadrha joined us this year as an adjunct instructor. After receiving his undergraduate and graduate degrees from Patna University in India, he has since worked on four continents at such prestigious institutions as the University of Pennsylvania, Duke University, Rutgers University, the Tata Institute of Fundamental Research, and the University of Cape Town. His eminent research collaborators include Nathan Rosen (best known for his work with Albert Einstein) and G.F.R. Ellis of Hawking-Ellis fame. He is especially proud that his paper with G.F.R. Ellis entitled, "Schwarzschild black hole lensing," was recently designated a "famous paper" by INSPIRE for being cited by over 250 other papers. His work in the areas of Einstein's relativity and relativistic astrophysics is widely respected. In particular, his Virbhadrha-Ellis lens equation has rejuvenated black hole lensing research. Locally, Dr. Virbhadrha has taught courses in applied and pure mathematics, physics, and astronomy at TCNJ, University of the Sciences in Philadelphia, and Temple University. He taught Calculus I and II for us in Fall 2014 and will be teaching Mathematics for Engineering II in Spring 2015.



Upcoming Events

April 11, 2015

Spring 2015 MAA-NJ Meeting at Monmouth University (Abstracts due February 2, 2015)

April 11, 2015

12th Annual Garden State Undergraduate Mathematics Conference and Competition at Monmouth University

April 24, 2015

Rowan University STEM Student Research Symposium in the Eynon Ballroom of the Chamberlain Student Center

May 12, 2015

Rowan University Commencement, College of Science and Mathematics (10 AM on University Green; inside the Rec Center if we have inclement weather)

August 5-8, 2015

MAA Centennial MathFest in Washington D.C.

HOMEcoming 2014: PROFtoberfest

The College of Science and Mathematics sponsored a tent during Homecoming 2014 (PROFtoberfest). Math faculty members **Dex Whittinghill**, **Bethany Gummo**, and **Ira Fine** along with students **Brooke Logan**, **Stephanie Gomez**, and **Phuong-Trang Vu** helped visitors create origami hexaflexagons, participate in a π contest, and even learn a bit of statistics.

Also, the Rowan Math Team fielded a Battleship Team comprised of **Brooke Logan**, **Ashley Shepp**, **Elizabeth Hartkopf**, and **Adrienne Novak** that won first place (out of 24 teams!) in a competition held in the Rec Center pool.



STUDENT AND FACULTY NEWS

Senior **Jennifer Crawford** received a perfect score on the ETS Math Major Field Test in Fall 2014.

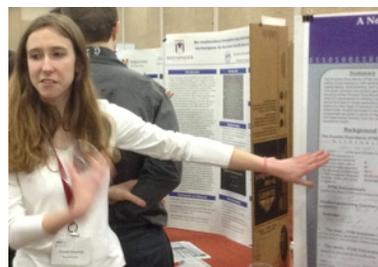
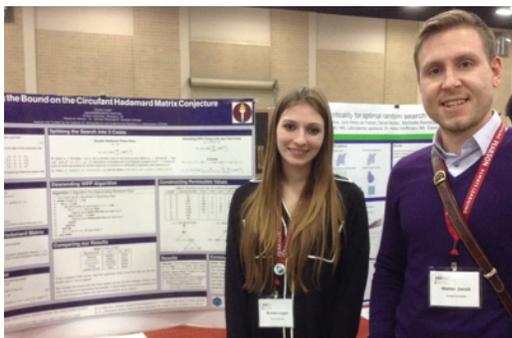
Graduate student **Aaron Iles** ran the 100-mile Pine Creek Challenge in September 2014 (and attended Dr. Osler's graduate Real Analysis class the next evening). He finished the race in 22 hours 44 minutes and placed 11th out of 88 runners. Aaron is a graduate assistant in the Dean's office for the College of Education.

J. Scott Summerill was selected as a 2015 Woodrow Wilson New Jersey Teaching Fellow.

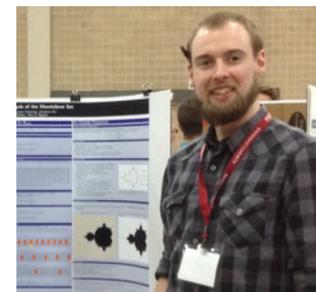
Prof. Vincent Mateescu co-authored a paper entitled, "How does undergraduates' understanding of the function concept evolve during the course of a semester?" that was published in the proceedings of the 17th Annual Conference on Research in Undergraduate Mathematics Education.

Dr. Hieu Nguyen gave a talk entitled, "A New Proof of the Prouhet-Tarry-Escott Problem," at the 2015 Joint Mathematics Meetings in San Antonio, TX. Two of his undergraduate research students also made presentations during the MAA undergraduate poster session at this meeting. **Dante Gates** presented "An Outside Analysis of the Mandelbrot Set," and **Jennifer Crawford** presented a poster entitled, "A New Class of Basis Polynomials Derived from the Generalized Prouhet-Thue-Morse Sequence."

Brooke Logan gave an undergraduate poster presentation entitled, "Raising the Bound on the Circulant Hadamard Matrix Conjecture," at the 2015 Joint Mathematics Meetings. Her research was supervised by Michael Mossinghoff of Davidson College at the 2014 Summer@ICERM program held at Brown University. As pictured below, **Walter Jacob '08** dropped by Brooke's poster presentation.



Jennifer Crawford



Dante Gates

Graduate student **Tuan Le** presented research entitled, "Decoding and Merging of Helberg Codes," with **Dr. Hieu Nguyen** at the 2015 Joint Mathematics Meetings.

Graduate student **James Rosado** gave a presentation entitled, "A table of definite integrals from the marriage of power and Fourier series," with **Dr. Tom Osler** at the 2015 Joint Mathematics Meetings.



Drs. Abdul Hassen and Hieu Nguyen travelled to Addis Ababa University in Ethiopia in May 2014 to participate in the Ph.D. dissertation defense of **Hunduma Legesse Geleta**. Hunduma was a visiting graduate student in our department in 2013.

ALUMNI NEWS

Michael Dempsey '98 earned a Masters degree in subject matter teaching in 2005. He currently teaches AP Statistics and Honors Precalculus at Washington Township High School, and he is an adjunct instructor at Peirce College in Philadelphia. He has also had two papers published in the *Mathematics Teacher* journal.

Walter Jacob '08 is a first-year Math Ph.D. student at Temple University.

Timothy Grussenmeyer '12 began studying for a Master's degree in actuarial science at the University of Leicester in Fall 2014.

ROWAN MATH STUDENTS VISIT MOMATH MUSEUM IN NYC

Students in **Dr. Eric Milou's** Math Seminar organized a trip to the National Museum of Mathematics (MoMath) in New York City in December 2014. The trip, partially funded by the Rowan Math Department, was open to all senior Math majors. **Brooke Logan** especially enjoyed the world-premiere Luminaries exhibit showcasing the optical imagery of Matthew Brand. Other highlights included riding the square-wheeled tricycle (demonstrated by **Elizabeth Hartkopf** in the photo below) and the coaster rollers with solids of constant diameter.



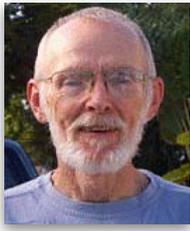
Trip participants included (standing, left to right): Brooke Logan, Nicole Croge, Adrianna Macaro, James Dixon, Dr. Eric Milou, Nicole Santoro, Kathleen Macintosh, Nicolas Wright, Ashley Payne, (sitting, left to right): Elizabeth Hartkopf, Charles Kiersznowski, Amanda Dixon, and Jessica Moratelli.



If you go...

The [National Museum of Mathematics \(MoMath\)](http://momath.org) is located at 11 East 26th Street, New York, NY 10010. It is open 7 days a week, 364 days a year from 10 AM until 5 PM; it's closed on Thanksgiving (and closes early at 2:30 PM on the first Wednesday of each month). Email info@momath.org or call (212) for more information.

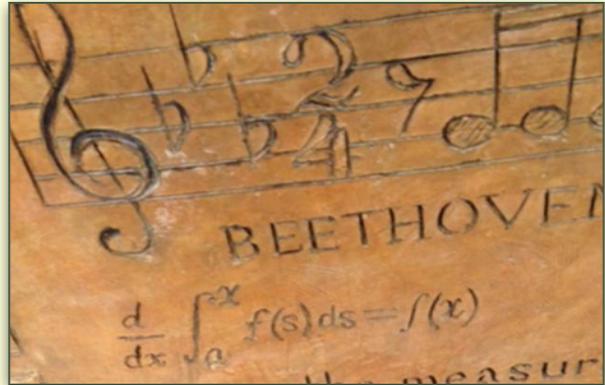
PROFESSOR EMERITUS FRANCIS MASAT DIES



Dr. Francis (Fran) Masat passed away on December 30, 2014. After teaching in the Rowan Mathematics Department from 1972-1998, Fran relocated to Key West, FL. His lifelong love of poetry and haiku deepened during retirement. Fran was an avid runner who ran his first (of many) marathons at age 66. He was also a devoted volunteer for the Key West Wildlife Center, where he was recently elected to the board of directors. Fran is survived by his wife Carol, daughter Betsy (Mike), son Thom, and two granddaughters, Stephanie and Tiana. Donations in his memory may be made to the Key West Wildlife Center, 1801 White St., Key West, FL 33040.

*end of the lesson -
the last note
still echoing*
-Francis Masat (2004)

WHAT'S WRONG WITH THIS PICTURE?



Detail from a sculpture recently unveiled outside James Hall

ROWAN MATH GRADUATE ALUMNI SUCCESSFULLY LAND FULL-TIME COLLEGE JOBS

It is notoriously difficult to land a full-time teaching position at a community college; yet, several of our recent Master's degree recipients have succeeded in winning these desirable jobs.



Lee Collins *11 has been a tenure-track Assistant Professor at the County College of Morris (CCM) since Fall 2013. Previously, he put in his time as an adjunct instructor at five different colleges. He currently teaches linear algebra and the calculus sequence (I-III). Also, he created a new course in Discrete

Mathematics that he hopes to teach for the first time in Fall 2015. Lee continues to conduct research and has been able to attend conferences. He also recently began the first math club at CCM.



Jonathan Weisbrod *12 started as a full-time lecturer at Burlington County College (BCC) in Fall 2013 after previously serving as a community college teaching career intern and an adjunct instructor. His courses include the calculus sequence, linear algebra, differential

equations, and special projects in mathematics. He has also formed a math team at BCC, supervised student research projects, and attended professional conferences. Jonathan was recently selected to participate in NJ-NExT, a statewide professional development program for relatively new college-level faculty sponsored by the Mathematical Association of America.

Other graduate alumni with full-time positions at community colleges include **William Osler *07** (Assistant Professor of Developmental Mathematics at Atlantic-Cape Community College), **Stephen Donahue *11** (Lecturer at Cumberland County College), **Jennifer Hoxworth *13** (Instructor I at Rowan College at Gloucester County), and **Michelle Briles** (Assistant Professor and Coordinator of Mathematics at Rowan College at Gloucester County).

Photo Credits:

The Editor graciously thanks the following individuals for contributing photographs that were featured in this issue of Vectors.

- Ira Fine
- Elizabeth Hartkopf
- Chris Lacke
- Brooke Logan
- Hieu Nguyen