MATH DEPARTMENT

2016-2017 Newsletter

Sacred Heart University

WELCOME to our annual Mathematics Department Newsletter. We have had a very exciting year on many fronts. The college is gearing up for the launching of the 3+2 engineering program this coming Fall. This will be a wonderful opportunity to offer many more upper level courses for our students, and for more students to be taking math courses.

We would also like to take the opportunity to say good-bye to our colleague, Dr. Julianna Stockton. Dr. Stockton left the university in December to accept a position as a founding faculty member at the Woodrow Wilson Academy of Teaching and Learning. We will miss Dr. Stockton and all she has done for the department, and wish her well in this new chapter in her career.

The department is excited about many of its accomplishments this past year. Our students have participated in and presented at conferences, our graduates have exciting plans for the future, and our faculty have had some notable accomplishments. We have also been fortunate to keep in touch with several alumni who have written to us letting us know how they are doing. We have noted their accomplishments as well. We hope you enjoy reading about all of this in our annual newsletter.

Graduating Seniors

As we say goodbye to our graduating seniors, we are excited for what the future holds for them. Angelo Ciambriello plans to return to SHU to pursue his M.A.T. He will be interning at Shelton High School which is the high school he attended. Lauren Puskar will also be pursuing her M.A.T. here. Her degree will be in elementary education. David Iacono will be returning to the Toronto area to pursue work there, looking for analyst positions in asset management and trading. Daniel Hayden also plans to pursue employment after graduation. Amy Ellis plans to work at Lululemon and will be moving to San Diego. She is planning to explore graduate school opportunities. Gabrielle Barberi plans to pursue an M.S. degree in Education in order to be certified for grades 7 through 12.

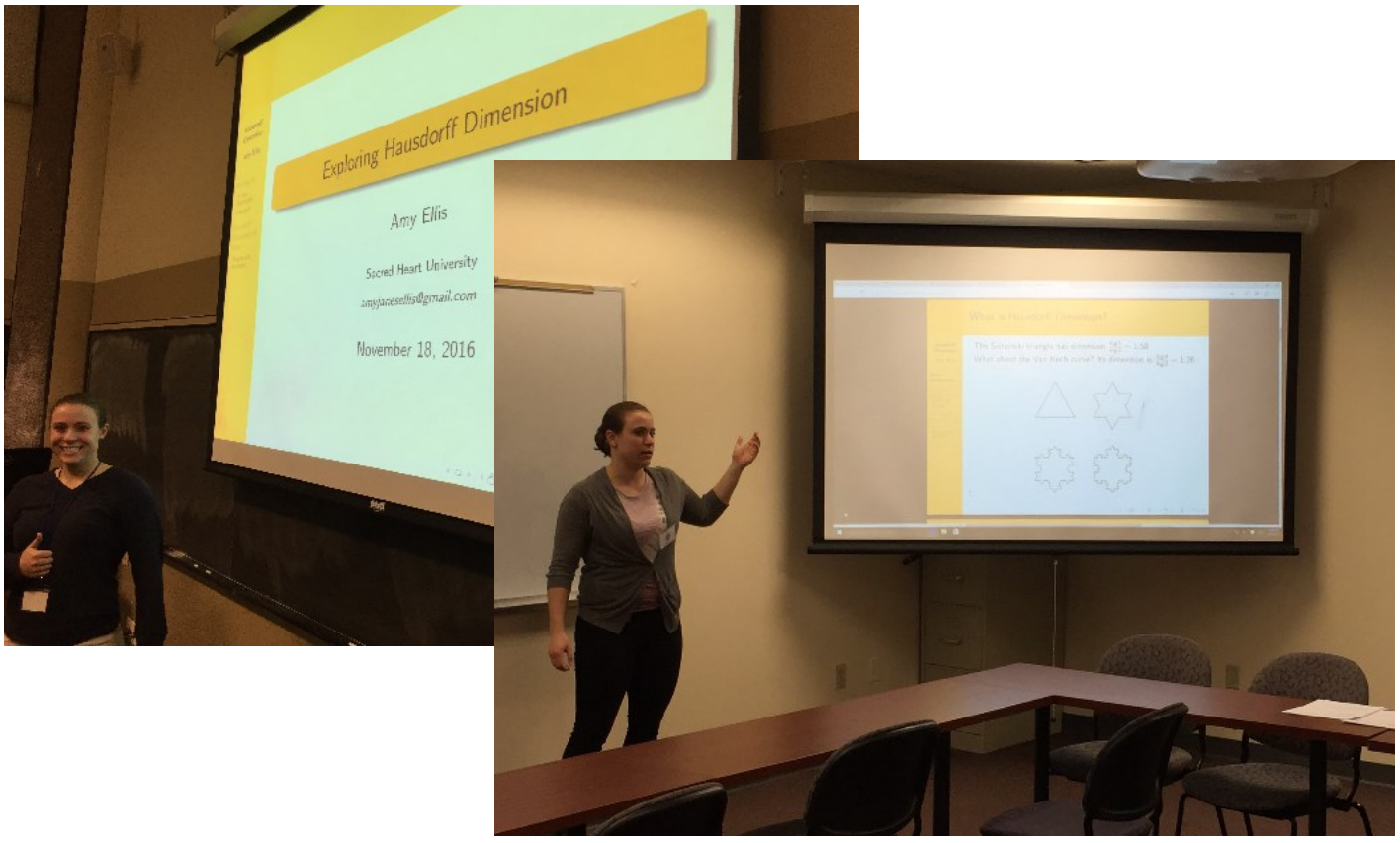
We wish our graduating seniors all the best as they embark on their futures.

Left to right: Daniel Hayden, Angelo Ciambriello, Alicia Southiseng, Lauren Puskar, Gabrielle Barberi, Amy Ellis, and David Iacono.

Student Accomplishments

We had several student accomplishments during the past academic year. First, under the advisement of Dr. Loth, two teams of students participated in COMAP (The Consortium for Mathematics and its Applications) Mathematical Contest in Modeling, a worldwide mathematical contest. The students, Michael Boyles '18 and Christopher Domville '18, received the final designation ``Successful Participant'' for their solution to *Problem B.* The students, Nancirose Piazza '18 and Mariko Yamamoto '18, received the final designation ``Finalist'' for their solution to *Problem B: Merge After Toll*. It is very noteworthy that only seven schools in the United States had teams of students with a designation of Finalist or above! The designation of Finalist or above is awarded to only the top two percent of all participants.

Students in the department were also active in presenting their work during the academic year. Amy Ellis '17 gave the presentation "Exploring Hausdorff Dimension" at a meeting of the Northeastern Section of the Mathematical Association of America held at Trinity College. She gave a similar presentation at SHU's Academic Festival. Also presenting at the Academic Festival were Lauren Puskar '17 and Gabrielle Barberi '17. Lauren presented "An Exploration of the Minimum Clue Sudoku Problem" and Gabby presented "Single Vertex Flat Foldability". Gabby won the prize for Best Paper/Talk at the Academic Festival. Congratulations to Gabby!



Math Club and Special Events

The Math Club had a successful year under the leadership of the president Rachel Andriunas ‘18. As in years past we had a successful pie sale for Pi Day. In December they hosted Coca and Cram which provided students with free hot chocolate and free math tutoring during finals week. They also experienced the Panic Room in Norwalk, CT where they were able to escape the room “A Broken Mind: Psych 102” with 3 minutes and 28 seconds remaining. The participating group included faculty, current students, and alumni.

At the university level, Dr. Molitierno invited Dr. Frank Morgan from Williams College to present the annual mathematics talk to the general university community. Dr. Morgan’s talk, “Soap Bubbles and Mathematics” was well received as a standing-room only crowd of over 400 students and faculty packed the University Commons! In his talk, Dr. Morgan gave interesting visual demonstrations of the geometry of soap bubbles which involved audience participation. His talk was captivating and made advanced mathematical theory accessible to the general university audience.

Pi Mu Epsilon Inductions and Awards Night

On April 5th we held our annual Pi Mu Epsilon Induction Ceremony and Awards Night. Dr. Dawn Nelson from St. Peter's University was invited as a special guest and presented "Number Theory: The Queen of Mathematics."

Inductees of Pi Mu Epsilon were Gabrielle Barberi, David Bocach, Angelo Ciambriello, Christopher Domville, Nicole Esposito, Arianna Leo, John Munday, and Sarah Riccio. Current members of Pi Mu Epsilon are Sarah Aanonsen, Rachel Andriunas, Amy Ellis, and David Iacono.

Winners of the Freshmen Award were Lauren Bolcar and Zachary Tsekos; winners of the Sophomore Award were Michale Bubolo and Sarah Riccio. Nicole Esposito won the Junior Math Award; Rachel Andriunas won the Rose Marie Kinik award for top junior math major. The Silver Medal of Excellence went to Gabrielle Barberi, and the Gold Medal of Excellence went to Amy Ellis. Congratulations to everyone who was recognized!

Alumni Page

One of the greatest joys of the math department is keeping in touch with our alumni. It's always exciting to hear about their accomplishments, both professional and personal. Here are some highlights:

Christopher Carbone '11 just finished up his third semester of teaching math at Post University as an adjunct professor. He tutors students in math at Mathnasium of Trumbull. Additionally, he has been accepted to the Master of Science in Mathematics program at Fairfield University and just finished his first semester there.

Lauren DiStefano Dominick '09 is currently the math department chair at Newtown High School. However, she will be leaving at the end of the school year. She is pregnant and when she and her husband found out, he applied for a promotion and got it! So they will be moving closer to their family in New Jersey. Lauren is hoping to take the year off with the baby and find an adjunct position at a local community college.

Michael Fenech '13 is currently working at Akins High School teaching Algebra 1 and Pre-AP Algebra 2 . This is his fourth year teaching.

Jesse Gatten '10 is still working at Bluesky ETO. He recently got engaged to his fiancé, Anthony. They plan on getting married in 2018.

Nicole Gomes '09 is finishing her seventh year of teaching at Fairfield Warde HS. She also completed her sixth season coaching cheerleading there. Most excitingly, she and her husband were blessed with a baby boy, Landon, on March 31st!

Stephen Hanshaw '13 is still living in Charlotte, NC. He did move jobs though! He is now working as a Marketing Metrics Consultant for Brighthouse Financial. He is also getting married in October in Savannah, GA

Nick Kapoor BS '11 MBA '14 continues to work at his family's business, I-Engineering, as a Financial Analyst. Nick also adjuncts at SHU and Fairfield University in the Math and Political Science departments. At SHU this past year, he was instrumental in creating a new minor in Human Rights and Social Justice. Pending the Connecticut General Assembly's confirmation, Nick will also serve as a Commissioner for the Connecticut Commission on Human Rights and Opportunities.

Lauren Lindsay '14 is currently teaching seventh and eighth grade math in Florence, NJ. She also just got engaged a few months ago to her eighth grade boyfriend!

Bobby Lycoudes '12 recently left his job at Goldman Sachs in January and has since been working at Tulane University's Investment Office working for the Endowment Fund, located in Darien, CT as a Performance Analyst.

Nichole Mangione '14 moved down to Palmerston North, New Zealand 18 months ago. She is working for the Horowhenua District Council (it's similar to working for a state department in the US) as an IT Business Analyst. She automates business processes and plans large software/infrastructure upgrades. She recently accepted a 12-month secondment to become apart of the Strategic Planning Team to Project Manage the Long Term District Plan (20-year plan, mapping out the direction of all current and future projects/enhancements the council will facilitate). Living so far away from home has its challenges, but she has found it to be a life changing opportunity.

Suzanne May '13 got a new job and is now a Senior Data Analyst at 451 Research. She has also recently completed graduate school.

Sarah Novotny Vigliotta '08 and her husband welcomed their third child, Sophia Anne, on New Year's Day. This comes during a whirlwind of a year where she finished her PhD requirements last June and has started a teaching position at Yale University.

Katie Perzanowski '13 is currently working as a wildlife office assistant with the bureau of natural resources with DEEP. She helps with hunter safety education and answers questions from the public dealing with wildlife concerns. She also still performs comedy regularly at the Sea Tea Comedy Theater in Hartford, mainly playing with the group called KnucklePuck that she is in.

Malvina Reinhold '15 is currently working for one of the biggest banks in the Nordics, in the treasury department. She mainly works with and develops the models and processes used for the company's internal interest rate and the regulations and risk factors associated with that. She is also finishing her Masters degree in Mathematical Modelling and Computation at the Danish Technical Institute (DTU). Her thesis is about Stochastic volatility models on state space form.

Marc Wilson '09 is living in Newtown with his wife of almost two years, Rachel, and their dog, Suzie. They enjoy traveling to National Parks; they went to the Grand Canyon in April and will be heading back up to their favorite, Acadia in Maine, this summer. Marc is still working at Madison Middle School in Trumbull and, after teaching sixth and seventh grade, he is excited to be teaching eighth grade for the first time next year. He is also continuing to teach a LEGO Architecture summer class for elementary school students in Trumbull.

In Memoriam
Dr. Kathleen Kingston

Dr. Kathleen Kingston, mathematics faculty member from 1979 to 2006, passed away on December 1, 2016, at age 71. Dr. Kingston received a Bachelor of Science and a Master of Science from Fairleigh Dickinson University in Teaneck, NJ. In 1993, she earned her Ph.D. in Mathematics from Stevens Institute of Technology in Hoboken, NJ upon performing significant work in Group Theory, exploring Bianchi groups class one.

Kathleen was an avid Civil War buff, having toured several historical Civil War battlefields up and down the East Coast. She was also a print model for IBM, and an extra in the 1974 film Man on a Swing – all before starting her career in academia. She was adored by her husband James and by her sons Kevin, Robert, and Jimmy.

Faculty Spotlight

The faculty have accomplished a lot this year. Dr. Jason Molitierno was on sabbatical in the Fall semester. Aside from enjoying a two week trip to Italy, he focused on his research. His research paper *An upper bound on the algebraic connectivity of outerplanar graphs* was accepted for publication in Discrete Mathematics Journal and will appear in August: (340) 1851-1870. His paper *Entries of the group inverse of Laplacian matrix for generalized Johnson graphs* was accepted to the journal Linear and Multilinear Algebra. He presented "Mathematics Without Calculations, It's a Beautiful Thing!" at MathFest in Columbus, OH and "Maximal outerplanar graphs whose algebraic connectivity is at most one" at the Joint Mathematics Meetings in Atlanta. Finally, at MathFest in Chicago this summer, Dr. Molitierno will be presented with the Meritorious Service Award for his service to the Northeastern Section of Mathematical Association of America.

Dr. Peter Loth had a very productive year. He was the advisor for three teams in the COMAP competition. More details on his successes there can be found in the Student Accomplishments section of this newsletter. In addition to his accomplishments with COMAP, Dr. Loth's research paper *The classification of Z_p-modules with partial decomposition bases in $L_{\infty\omega}$* (with C. Jacoby) was published in the refereed journal Archive for Mathematical Logic 55 (2016), 939-954. Also, his research paper *The classification of infinite abelian groups with partial decomposition bases in $L_{\infty\omega}$* (with C. Jacoby) was published in the refereed periodical Rocky Mountain Journal of Mathematics 47 (2017), 463-477.

Dr. Andrew Lazowski had a successful year of teaching and working with the Math Club. He got to know the freshmen class well as he taught the Calculus sequence and multiple sections of the Art of Thinking. In addition, he enjoyed teaching complex analysis in the spring where he had one last chance to work with some fantastic graduating seniors along with some quality juniors and sophomores. Dr. Lazowski also gave the Pi Mu Epsilon Karim Foroud Memorial Lecture at Fairfield University's induction ceremony. The title of his talk was "Learning Hyperbolic Geometry From Sports". Finally, he became a Co-Pi on the Noyce Scholars program here at SHU which is a grant funded by the National Science Foundation.

This academic year Dr. Bernadette Boyle presented on her research on the Index of a Numerical Semigroup at the Joint Mathematics Meetings in Atlanta this past January. She also enjoyed teaching the senior seminar in mathematics for the first time in the fall. Several of the senior seminar students presented their research projects at the SHU Academic Festival and Dr. Boyle took a few to the Mathematical Association of America's Northeast regional meeting in November where they competed in an undergraduate competition. In addition to her teaching and research, Dr. Boyle continues to enjoy her work as the faculty mentor to the cross country and track and field teams.

Dr. Hema Gopalakrishnan did a fantastic job serving as Acting Chair of the department in the Fall while Dr. Molitierno was on sabbatical. After a busy semester, she was fortunate to have a sabbatical in the Spring. Dr. Gopalakrishnan attended the 50th anniversary celebration of the Ph.D. program in mathematics at the University of Wisconsin – Milwaukee. At this event, she presented the interdisciplinary case study titled, "What came first, the mutation or the antibiotic?" that was coauthored with Rosemary Danaher and Sue Deschenes. She

led a mathematical game session for K-12 teachers at the summer immersion workshop of the Mid-Hudson Math Teachers' Circle at Bard College and organized and hosted after school workshops for the Fairfield County Math Teachers' Circle at SHU.

Professor Rosemary Danaher has been quite innovative in the courses she has taught. She spent considerable time over the Christmas break as well as throughout the spring semester developing and/or modifying PowerPoint slides to address the needs of a flipped classroom for her two Business Statistics sections (MA133) as well as Modern College Math (MA101) Some of the modifications included the addition of many more questions addressing different levels of comprehension, allowing the student to gauge their level of understanding regarding the material presented. This flipped classroom design allowed her to spend much more time with individual learners who were struggling as well as provided opportunities for students to work with a classmate if desired. Feedback received from the students was very positive regarding this new format. In her Business Statistics sections, Professor Danaher developed a case study incorporating statistics as well as social justice issues utilizing the Flint Water Crisis as a basis. Students worked in groups to evaluate topics including the health risks of lead in drinking water, the role of the CDC in protecting Americans, as well as the critical role of citizen advocates in altering the outcome. All groups were required to also evaluate seven statistic questions associated with the case that incorporated concepts involving confidence intervals for proportions and means, binomial distributions as well as outliers and inliers. Every group also reported out on what they learned regarding social justice issues from this case. Student reaction to the project was very positive.

Professor Michael Ward had a productive year. He served on the Open Educational Resources Committee, and piloted the use of free, online textbooks in two of his classes, MA106 (College Algebra), and MA140 (PreCalculus). Both courses have adopted these books for the 2017/2018 year.

Coming Attractions!

As this academic year closes, we look forward to another great year ahead. With the departure of Dr. Stockton and the installation of the 3+2 engineering program at the university, the math department will be conducting a search for two new tenure-track faculty members, at least one of which will be an applied mathematician.

With the advent of the engineering program, the department is excited to be creating new courses. While on sabbatical, Dr. Gopalakrishnan created a course in Numerical Analysis. The department is also looking to add courses in topology and ring theory as well.

This coming November, the department has the honor of hosting the meeting of the Northeastern Section of the Mathematical Association of America. This conference ordinarily attracts about 200 mathematicians and students. This will bring excellent publicity to our department and university. Additionally, rather than taking students to the NES/MAA meeting like we do each year, our students will have the opportunity to present their work on their "home turf"!

We are also hopeful that our students will participate in SHU's annual Academic Festival and other academic activities. The department also plans to hold our annual Alumni Night (which will now be in the Fall instead of the Spring as in years past), a Pi Day celebration on March 14th (3/14), problem solving competitions, and Math Club activity. Stay tuned!