MATH DEPARTMENT

2014-2015 Newsletter

Sacred Heart University

WELCOME to our annual Mathematics Department Newsletter. We have had a very exciting year on many fronts. First, in conjunction with the Welch College of Business, the math department will begin offering a minor in Actuarial Science this coming Fall. We are also working with the Isabel Farrington College of Education to begin offering courses towards an M.Ed. within the next couple years.

The department is excited about many of its accomplishments this past year. Our students have participated in and presented at conferences, our Math Club has hosted some wonderful activities, our graduates have exciting plans for the future, and our faculty have had some notable accomplishments as well. 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. I hope you enjoy reading about all of this in our annual newsletter.

Graduating Seniors (L-R): Matthew Cole, Caitlin Giff, Kimberly Mata, Robert O'Neill, Jennifer Robillard, Talia Schwartz, Nicole Trommelen, Sarah Welte.

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 the COMAP (The Consortium for Mathematics and its Applications) Mathematical Contest in Modeling, a worldwide mathematical contest. The students Christopher Bennett '16, Patrick Fay '15, and Anthony Spiteri '18 received the final designation ``Successful Participant'' for their solution to *Problem A: Eradicating Ebola*. The students Stephanie Dytko '16, Dale Mack '16, and Timothy Weiss '16 received the final designation ``Successful Participant'' for their solution to *Problem B: Searching for a lost plane.*

Also, thanks to Dr. Loth, the department continues to run its monthly problem solving competition. Each month, students are challenged with an interesting mathematics problem and are invited to submit solutions. Problems reflect a broad spectrum of mathematical areas including calculus, probability, and number theory. As the overall top problem solver of the 2014-2015 Monthly Problem Solving Competition, Dale Mack '16 was invited to the U. S. National Collegiate Mathematics Championship to be held during the MathFest in Washington, D.C. on August 8, 2015. Dale Mack also participated in the same competition at the MathFest held in Portland, OR in August 2014. MathFest is the national summer meeting of the Mathematical Association of America.

Dale will not be the only student who will be participating in MathFest this summer in Washington D.C. Jennifer Robillard '15 and Nicole Trommelen '15 will also be at MathFest giving a presentation on their senior seminar topics.

In Summer 2014, students Nicole Trommelen and Jennifer Robillard gave a talk at the RLMoore Legacy Conference in Denver, CO titled "*An IBL Proofs Course: Student Perspectives, One Year Later".* Their talk can be viewed on YouTube by clicking here.

We also had several students present at the Academic Festival right here at SHU. Connor Bohl '15 presented "Laplacian Matrices of Graphs", Talia Schwartz '15 presented "Identification Numbers and Check Digit Schemes", and Nicole Trommelen presented "Topology: Generalizing Calculus". All presentations were well attended and well received.

Finally, there was some action in the Math Club. This year's math club was directed by President Kimberly Mata '15, Vice President Stephanie Dytko '16, Treasurer Nicole Trommelen '15, Secretary Jennifer Mata, and Retention Chair Jennifer Robillard '15. The highlights of the year included participation in an annual Walk for Autism in October as well as a successful Pi Day sale of pies.

Pi Mu Epsilon Inductions and Awards Night

On April 15th we had our Annual Pi Mu Epsilon Induction Ceremony and Special Awards. Dr. Joseph Fera from Lehmen College was invited as a special guest and presented "Rotating Function Graphs: From Conversation To Publication".

Inductees of Pi Mu Epsilon included Christopher Bennett, Stephanie Dytko, Victoria Jukic and Timothy Weiss. Current members of Pi Mu Epsilon are Connor Bohl, Matthew Cole, and Nicole Trommelen.

Winners of the Freshmen Award were Rachel Andriunas and Emily Jones, winners of the Sophomore Award were Victoria Jukic and Akeylah Khandwala, Christopher Bennett won the Junior Math Award, Timothy Weiss won the Rose Marie Kinik award, the Silver Medal of Excellence went to Matthew Cole, and the Gold Medal of Excellence went to Nicole Trommelen. Congratulations to everyone who was recognized!
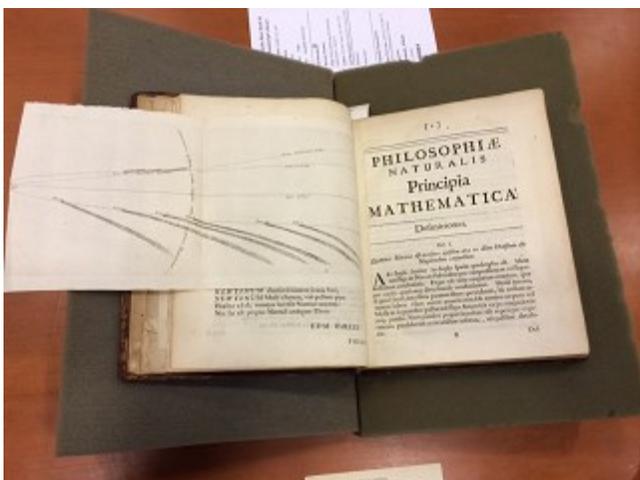

Graduating Seniors

As we say goodbye to our graduating seniors, we are excited for what the future holds for them. Connor Bohl accepted a position at The Midas Exchange. He was also accepted into the actuarial science program at Columbia and will begin studying there in Fall 2016. Matt Cole will be studying biostatistics in a graduate program at Johns Hopkins University. Caitlin Giff, Talia Schwartz, and Nicole Trommelen will be staying at SHU to complete their Masters of Arts in Teaching. Nicole just accepted an internship at Trumbull High School. Kimberly Mata plans to either attend graduate school for Sports Management at the University of New Haven or get her MBA at SHU. Malvina Reinhold will start her Masters in Mathematical Modeling and Computation, at the Technical Institute of Denmark in Copenhagen. Jennifer Robillard will be taking summer classes in conjunction with the Education program at SHU. In August, she will be attending, and hopefully presenting at, MAA MathFest in Washington, D.C. with Nicole Trommelen. In the fall, she will begin her internship at Jockey Hollow Middle School in Monroe, CT, while also continuing to take education classes towards her Masters degree. Jennifer hopes to continue taking math classes with the possible goal of earning a doctorate.

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

Additional Special Events

Once again, the department hosted its Alumni Night. Over 30 current students attended to hear how several SHU math major alums have been applying their degree in mathematics to their careers and to their daily lives. We were happy to welcome back Nick Kapoor '11, Laura Quagliata '12, Suzanne May '13, Ania Kadloff '13, Erin Puschak '14, Nichole Mangione '14, Katie Perzanowski '13, and Ashley Bua '14.

In the Fall 2014 semester, Dr. Stockton organized a trip for her MA280: History of Mathematics class to Yale's Beinecke Rare Books Library, where they got to see a first edition of Newton's *Principia* (see picture on left) gifted by the author to Yale College in 1714 and Byrne's English printing of Euclid's *Elements* with color diagrams, from 1847, among other primary sources. (See page 7 of this newsletter for a group photo and a photo of Byrne edition of Euclid's Elements, with color diagrams.)

At the university level, Dr. Molitierno invited Dr. Rick Cleary from Babson College to present the annual mathematics talk to the general university community. Dr. Cleary's talk, "Some Nonstandard Applications of Mathematics to Sports" was well received as a standing-room only crowd of over 400 students and faculty packed the University Commons! His talk covered topics such as the travelling salesmen problem in order to optimize teams travelling to various stadiums, the statistics behind streaks in sports (streaks are more common than you'd think!), and gave an interesting alternate way to determine possession in the overtime period of NFL games.

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:

Katherine Boyd '12 will be extending her teaching certificate to the state of Massachusetts as she moves up to Boston for a high school teaching job there.

Lauren DiStefano Dominick '09 will be finishing her 092 certification in July and then will be continuing on to get her 6th year certification. In other good news, Lauren got married last summer!

Michael Fenech '13 has just finished his first year teaching at Harding High School in Bridgeport. It was a rewarding and fulfilling year for him.

Nicole Gomes '09 is completing her fifth year of teaching at Fairfield Warde High School. Nicole will also be getting married this summer.

Nick Kapoor '11, MBA '14 continues to work as a financial manager in his family's software business in Shelton. He also continues to be active in the politics and government of Monroe, CT where he will again appear on the municipal ballot this upcoming November. Nick is also very excited to be returning to the SHU Math department in the Fall for his second year as an adjunct and he continues to adjunct in the SHU Government, Politics & Global Studies department teaching the introductory American government course as well as two First Year Seminars on LGBT related topics.

Robert Lycoudes '12 started as an Analyst at Goldman Sachs, headquartered in lower Manhattan, in November 2014. He is working in the Jersey City location across the Hudson.

Nichole Mangione '14 works for ICSA Software International as a Support Analyst. Her job has been great as she has been doing a lot of traveling to Canada and Florida to do trainings and presentations.

Suzanne May '13 is currently working in Market Research as a Project Director for Directive Analytics in Trumbull. She is also working towards her Masters in Mathematics at Central Connecticut State University with a specialization in statistics.

Sarah Novotny Vigliotta '08 continues her progress in the Ph.D. program at Wesleyan University. She and her husband had their second child on May 9, 2015 at 2:46pm. Their daughter, Rose Elizabeth Vigliotta, weighed 7lbs. 2oz. and was 20 inches long.

Katie Perzanowski '13 has been working for the state of CT in the Department of Energy and Environmental Protection. She also continues her work in theatre and has recently done stand up comedy at the Heartbeat Ensemble/ Carriage House Theatre in Hartford.

Marc Wilson '09 is currently finishing up his fifth year teaching middle school math in Trumbull where he is also an Educational Technology leader and instructor for his colleagues. He and his fiancée purchased a home in Newtown and adopted a dog from a rescue shelter last summer. They will be getting married this July.

Faculty Spotlight

The faculty has accomplished a lot this year. Dr. Jason Molitierno gave the talk "Writing Projects in a First Year Seminar Class" at the Joint Mathematics Meetings in San Antonio. Dr. Molitierno also continued in his role as the Section NExT coordinator for the Northeastern Section of the MAA. He was recently elected as Governor of the Northeastern Section of the MAA for a three-year term. On a more personal note, Dr. Molitierno will be getting married on July 4, 2015. He is looking forward to several members of the department attending his wedding.

Dr. Peter Loth had a very productive year. He was the advisor for two teams of students participating in the COMAP (The Consortium for Mathematics and its Applications) Mathematical Contest in Modeling, a worldwide mathematical contest. He also advised the Monthly Problem Solving Competition. Details of these can be found in the section on student accomplishments. In terms of research, Dr. Loth's research paper Z_p-modules with partial decomposition bases in $L^{\delta}_{\infty\omega}$ (with C. Jacoby) was published in the refereed periodical Houston Journal of Mathematics 40 (2014), 1007-1019. Dr. Loth also presented the research paper *Partial decomposition bases and partial subbases* at the Joint Mathematics Meetings in San Antonio, TX in January 2015. We will miss Dr. Loth as he was awarded a sabbatical for Fall 2015. Also, he accepted an invitation to be an external referee for the Ph.D. thesis ``Partial isomorphism'' of Katrin Leistner, University of Duisburg-Essen (Germany) and submitted an evaluation report on her dissertation.

Dr. Andrew Lazowski had a very fulfilling year. This past year Dr. Andrew Lazowski taught Statistics for Decision Making, Calculus 1, Calculus 2, and real analysis. In particular, two courses stood out. He had an advising section of calculus 1 in the fall that was a great class of incoming freshmen where great bonds were created. In addition, teaching real analysis to seniors and outstanding juniors is always a pleasure and certainly memorable! In fact, Dr. Lazowski was nominated for the University Teaching Award this year. On the scholarship side of things, his case study with Dr. Geffrey Stopper from biology: "Mathematics In Conversation: The Case Of The Endangered Florida Panther" has been included as a book chapter in *Science Stories You Can Count On.* He also teamed up with Dr. Jessica Samuolis from psychology and presented "Utilizing Curriculum Infusion to Impact Learning and Health Behaviors" at the Conference On The Teaching of Psychology. They hope to publish an article on this as well. On the more fun side of things, he participated in Dancing With Heart this spring. His dance partner was sophomore math major Lauren Puskar and they performed to "Blurred Lines" and "Uptown Funk". See Dr. Lazowski for a lesson on how to do the worm!

This past academic year Dr. Bernadette Boyle's paper, "The Unimodality of Pure O-Sequences of Type Three in Three Variables" was accepted by the Illinois Journal of Mathematics. She gave a talk on her research in the CUNY Graduate Seminar in New York City. She also gave a talk in the Teaching Seminar at the University of Notre Dame in IN. Dr. Boyle was awarded a University Research and Creativity Grant summer stipend to continue her research on her project "The Index of a Numerical Semigroup in Four Generators". In addition to her research, Dr. Boyle taught the Art of Thinking course for the first time this year which she enjoyed. Finally, she continues to work with

the cross country and track teams as the faulty mentor.

Professor Rosemary Danaher and Dr. Hema Gopalakrishnan hosted five problem solving sessions for middle school mathematics teachers at Sacred Heart University on behalf of the Fairfield County Math Teachers' Circle (FCMTC). The sessions were led by mathematics professors from SHU, Quinnipiac University, and Westfield State University. They were supported by a continuing grant secured by Rosemary Danaher from People's Bank. Every FCMTC session was very well received by our enthusiastic group of teachers who are eager to continue these meetings in the fall.

Professors Danaher and Gopalakrishnan embarked on an interdisciplinary pro-

ject, collaborating with Professor Suzanne Deschenes from the Biology Department. Utilizing one of the key discoveries in evolutionary biology, the Luria-Delbruck Fluctuation Experiment they created the case study, 'What Came First, the Mutation or the Antibiotic?' which was accepted for publication by the National Center for Case Study Teaching.

This fall, Dr. Stockton and colleagues published the article "Mat-Rix-Toe: Improving Writing Through a Game-Based Project in Linear Algebra" in the journal *PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies.* PRIMUS has chosen this article as one of their showcase special articles for the year so it is available for free access by clicking here.

Coming Attractions!

As this academic year closes, we look forward to another great year ahead. As mentioned earlier in this newsletter, the department will be implementing a minor in Actuarial Science this coming Fall. This will be done in conjunction with the Welch College of Business. The department is also working with the Farrington College of Education on offering M.Ed. courses within the next year ort two. At the undergraduate level, the department is excited to be offering the following electives next year: Geometry & Topology (MA 324), Graph Theory (MA 320), and Probability & Statistics II (MA 332). We also plan to take students to the

meeting of the Northeastern Section of the Mathematical Association of America this coming November. The meeting will be held at Gordon College. This will be a wonderful opportunity for students to present their research and to also participate in the annual Intercollegiate Problem Solving Competition. We are also hopeful that our students will participate in SHU's annual Academic Festival. The department also plans to hold our annual Alumni Night, a Pi Day celebration on March 14th (3/14), problem solving competitions, and Math Club activity. Stay tuned!