

VECTORS



The Newsletter of the Rowan University Mathematics Department

WHO'S NEW IN THE ROWAN UNIVERSITY MATHEMATICS DEPARTMENT

The Mathematics Department has welcomed several new 3/4-time and full-time faculty members since the last publication of *Vectors*. Meet some of the (relatively) new faculty members here!



Dr. **Helga Huntley** joined the department in September 2020. She started her mathematics journey at the University of Notre Dame, where she dabbled in topology and earned her B.S. in mathematics. During a year volunteering with a development agency in Zambia, she learned how hard it is to teach basic arithmetic to a room full of aspiring small-business women with a wealth of life experience but only rudimentary English skills and next to no exposure to mathematics. She also realized that she could combine her love for mathematics with her desire to tackle real-world problems by pursuing applied mathematics, which she did at New York University, earning a Ph.D. in mathematics with a thesis on modeling sea ice dynamics. After a postdoc fellowship at the University of Washington, she spent over a decade as research faculty at the University of Delaware, with a research focus on ocean modeling, predictability, and applied dynamical systems theory. She enjoys spending her free time outdoors hiking, biking, or camping, or indoors reading, baking, or playing board games.

Dr. **Jaree Hudson** earned her Ph.D. in mathematics in 2018 from the University of South Carolina, and her M.S. in mathematics in 2011 from the University of Oregon. She taught mathematics for

two years at Mid-South Community College (now Arkansas State University-MidSouth) between her M.S. and Ph.D. work, and for three years at Florida Atlantic University before starting at Rowan in Fall 2021. In her spare time, she enjoys reading, puzzles, and video games.



Dr. **Norman Beil** earned a B.S. in mechanical engineering, an M.S. in chemical engineering, and a Ph.D. in applied mathematics, all from the University of Virginia. His doctoral research was in modeling and computer simulation of textile mechanics. After teaching several courses at U.V.A. and at Piedmont Virginia Community College, he moved to Pennsylvania, where he taught at Millersville University and Lincoln University. In 2009, Beil received a temporary appointment in the Rowan Mathematics Department, which continued for three years. A year later he returned as a 3/4-time faculty member, while also teaching part time at The College of New Jersey. Beil is now a full-time lecturer. In his free time, he enjoys running, hiking, trivia, and cooking.



Dr. **Cass Sherman** first became interested in teaching math as a career in his junior year of high school, thanks to an inspiring AP Calculus class. After graduating, he majored in math at Drew University in Madison, NJ before joining the pure math Ph.D. program at UNC Chapel Hill. There he

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researched algebraic geometry and received his first taste of teaching success. After securing his degree and a brief postdoc, he came home to NJ, teaching first at Rutgers and then here at Rowan. Sherman says it has been a true joy teaching and learning with Rowan students.



Rebeca Lufi has had a lifelong passion for teaching mathematics. She has found many different spheres in which to teach, and is always looking for ways to improve and expand. Continuing to revise teaching techniques in

her classroom, incorporating technology to support learning, and developing math enrichment programs for elementary and middle school students has been an outgrowth of this passion for teaching. She has been teaching in higher education in the greater Philadelphia area since 2013. She has taught at Temple University, Haverford College, Immaculata University, and Community College of Philadelphia. She has been in her current role of Lecturer of Mathematics here at Rowan University since 2019.



Dr. **Benjamin Nassau** received his Ph.D. from the University of Delaware. He also has his M.S. from there, as well as a B.S. in Mathematics with a minor in Women's and Gender Studies from Muhlenberg College. He believes that math and

justice are inextricably linked, and aims to make all of his courses as inclusive and accessible as possible. His current area of passion is inquiry-based learning and other pedagogies incorporating active learning with meaningful real-life skills. When not working, he likes to tell stories, play games, and spend time with his family.



Dr. **Rade Musulin** earned his Ph.D. in mathematics in 2018 from the University of South Carolina. Before joining Rowan University in Fall 2021, he taught for three years at Florida Atlantic University in Boca Raton, FL as an Instructor of

Mathematics. In his free time, Musulin enjoys studying and playing chess.

David McGarvey, a Rowan University graduate, earned his M.B.A. from Rutgers University. He has held various positions in the industry, including supply chain management, demand management, coding, and systems administration. He loves teaching and finding ways to improve his teaching to serve the needs of his students. His current focus is on the blended hybrid delivery of instruction, combining in-person education with remote and recorded sessions for students. He is an avid reader, and has written three novels, one self-published on Amazon, one about to be published, and a third that will be published early next year. He enjoys spending time with his spouse, Dan, and his kids and grandkids. He also enjoys traveling, having been to various destinations within this country and internationally. Additionally, he enjoys chess and participated in USCF tournaments decades ago.



Shannon Miller joined the mathematics faculty in the fall of 2020. Having completed undergraduate studies in both mathematics and music at Mary Washington College, she went on to pursue the study of mathematics in graduate school at the University of Delaware. It was during this time that she discovered her passion for sharing

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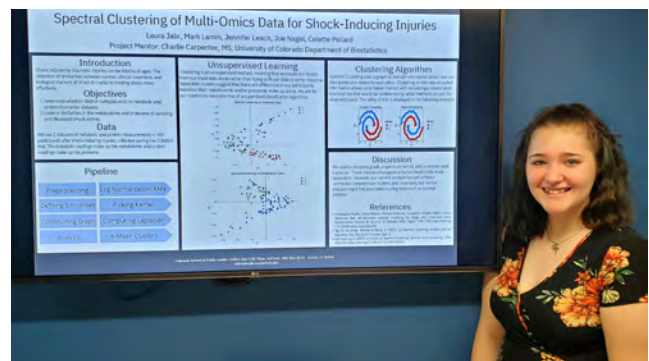
her love of mathematics with others through teaching. She has taught undergraduate mathematics at several universities. She maintains an interest in pedagogy and continues to work to improve her courses in order to lead students to greater understanding and success in their courses. She is also seeking to establish a student chapter of the Association for Women in Math at Rowan University. Apart from teaching and mathematics, she enjoys music, gardens, and traveling, especially to visit with family.

Jennifer Hoxworth earned bachelor's degrees in fine arts and mathematics, and a master's degree in mathematics from Rowan University. She has extensive experience working in higher education and loves teaching students and learning from them. In her free time, Hoxworth enjoys traveling with her family (has visited Bahamas, Belgium, Bermuda, Canada, England, Iceland, Italy, Mexico, Netherlands, and Wales), attending live concerts, riding her horse Magic, and "collecting" LEGOs. In addition, Hoxworth serves her community as a volunteer firefighter.

STUDENT SPOTLIGHT: *Jennifer Leach*

Current mathematics student, **Jennifer Leach**, shares her experience completing research!

For 6 weeks over the summer, I had the opportunity to attend the University of Colorado Denver to be a part of their Summer Institute of Biostatistics. During this program I was able to take biostatistics classes and perform research with a group of students on a biostatistics topic. The topic of research my group explored was the use of spectral clustering on multi-omics data. The dataset we worked on looked at the metabolomic and proteomic structures of patients who had undergone shock. Also, at the end of the experience we competed in a "Hackathon." For this we were in a group of about six people and we were given a dataset. Then, within 6 hours we had to: Create a research question for the dataset, clean and analyze the data, and create a presentation of our results. It was definitely a very challenging task because of the complexity of the dataset, but my group ended up winning 2nd place in the end! This opportunity allowed me to learn more about unsupervised learning techniques within the field of statistics. It also enhanced my ability to work well with others, especially people with various academic backgrounds.



Jennifer Leach's tip for students interested in applying to research programs:

If the application requires a personal statement, really focus on trying to make that good. A lot of programs use the personal statement to really get to know their applicant both personally and academically, and how well they would fit into their program. I had Dr. Babis read my personal statement multiple times to make sure it was perfect before I sent it! So, make sure that your personal statement not only shows off your academic accomplishments but who you are personally. This will really help you connect with the person reading it and increase your chances of getting accepted!

Jennifer Leach was accepted into research programs at multiple locations. If you are a current Rowan University student interested in research programs, please visit the Rowan University Mathematics Department website.

MATHEMATICS PROFESSOR ADVISES ROWAN UNIVERSITY CHESS CLUB

When not in the classroom teaching mathematics, Professor **Ira Fine** is busy advising Rowan University's Chess Club. The club has been very active this fall semester. They meet for skittles (informal chess games) on Monday and Thursday afternoons. On Thursday evenings the club runs multi week long time control tournaments which are rated by the U.S. Chess Federation. Every year the Chess Club takes part in the Rowan Thanksgiving Food Drive. They also host a Saturday tournament once or twice a year to raise money for Brain Cancer research. Last month the Chess Club raised \$330 to donate to The Ewend Brain Tumor Fund at the University of North Carolina. The club has also held single day tournaments to raise money locally for a chess player who has ALS and for a family who lost their father, a fellow chess player, to Brain Cancer.

If you are interested in joining the Chess Club, please contact Professor Ira Fine at fine@rowan.edu



Photos: Chess Club at a Saturday tournament

MATHEMATICS DEPARTMENT'S MEET AND GREET

Earlier this fall semester, the Mathematics Department held their annual new student meet and greet. Many new mathematics students came out to meet the faculty members. Pizza and other snacks were served. Faculty also showed the students some math-related games!



MATH TEAM ANNOUNCEMENTS

From the Club President

Rowan University's Math Team is a club for anyone with a love and interest in mathematics. It is open to all majors and consists of monthly meetings in which we eat pizza, discuss various mathematical topics, and, most importantly, have fun! Club meetings typically happen monthly, and we discuss mathematics topics from various mathematical backgrounds, such as algebra, calculus, statistics, and so

CURRENT OFFICERS

- Liam Busch** (President)
- Jacob Levey** (Vice President)
- Jennifer Leach** (Secretary)
- Leo Han** (Treasurer)
- Grace Huang** (SGA Senator)

much more! We also recruit and prepare students who participate in competitions such as the Putnam Compe-

dition and the Garden State Undergraduate Math Competition. On top of the monthly meetings, we also have various guest speakers come in to help prepare math majors and other STEM majors for careers and graduate school after leaving Rowan. You do not need to be excellent at math to join the Math Team. All you need is to love and see the beauty within the various topics in mathematics, along with the desire to learn! Feel free to reach out to any of the Math Team officers with any questions or information. Also, if you are interested in being a part of the Math Team e-board, please reach out, as we will be looking for a new Secretary and Treasurer starting Spring 2023!

Liam Busch
Math Team President
buschl73@rowan.edu

GUEST SPEAKERS SERIES

The Math Team hosted a series of guest speakers this fall semester.

Kevin Penderghest and **Alfred Pawid** from Buck Global, LLC, spoke about "Actuarial Science." Penderghest is a health actuary who received his credentials in 2013. He works with clients across the country, consulting with employers in a number of fields. Pawid is a senior associate in the health field who graduated from Rowan University with degrees in Mathematics and Physics. He also works with clients across the country. Together, Penderghest and Pawid shared their knowledge and experiences with Rowan students.



Kevin Penderghest



Alfred Pawid

Jared Sawyer completed a presentation on "Inspiring Math Learning in the Classroom." He has been a high school mathematics teacher for the last 17 years and has gained a vast experience by working at several private and public high schools. Sawyer is also the author of an SAT math test prep book. During his presentation, Sawyer shared his successes and failures throughout his years of teaching math. He has a wealth of knowledge and provided an insight on how to inspire all students to gain an appreciation for learning math.

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Jared Sawyer

ADJUNCT INSTRUCTORS' CORNER

The Mathematics Department is home to many talented adjunct instructors and this space is dedicated to them! Learn more about instructors Brian Reed and Walter Jacob in this issue of *Vectors*.

Brian Reed earned his Masters of Arts in Mathematics from Rowan University in 2003. His hobbies include playing doubles beach volleyball and riding motorcycles! He is pictured (below) with his wife, Teresa.



Walter Jacob, a 2008 Rowan University alumnus, went to graduate school at Temple University and worked as a software engineer in the financial industry before turning to embedded and IoT devices. He is the owner of Overkill Projects, LLC, a consulting business that specializes in bringing products from proof-of-concept through investment stages to production manufacturing, as well as the CTO of two UK-based start-ups: Stix Mindfulness, Ltd., a company that develops products to help children manage their own mental well-being, and Canairy, Ltd., a cloud service that helps bring EdgeML to IoT devices. Instructor Jacob has also been nominated by his students for Rowan's Last Lecture. On a more personal note, he just welcomed a baby daughter this month with his family! Fun fact: He is a bit like Bigfoot - there are very few still solo photos of him but someone was able to capture these!



GUEST SPEAKER SERIES, *Continued from page 5*

Jonathan Weisbrod completed his presentation titled "Make Math Your Superpower: Leveraging Your Talent for Life and Career." Weisbrod earned his Bachelor's and Master's degrees in Mathematics from Rowan University and is a doctoral candidate at New Jersey City University. He is currently an Assistant Professor of Mathematics at Rowan College at Burlington County. His presentation discussed what it means to be a mathematician and the opportunities that exist for mathematicians entering the working world.



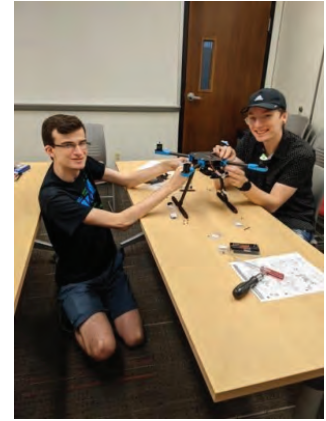
Jonathan Weisbrod

FACULTY SPOTLIGHT: *Dr. Hieu Nguyen*

Dr. **Hieu Nguyen** is instrumental in providing Rowan University mathematics students with research experience. Read below as Dr. Nguyen shares his involvement with undergraduate student research in his own words.

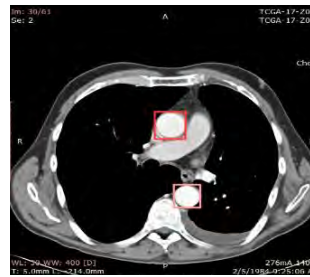
This is an exciting time to be a mathematician and to be a part of the revolution in artificial intelligence (AI) where mathematics has played a large role in its development. My goal is to share my research experience with Rowan students and help train them for careers in AI, which is why I am currently involved in two AI research projects, one in agriculture and the other in medical imaging, where my undergraduate research students are critical to each project's success.

One project aims to help blueberry farmers predict crop yield and detect plant disease by programming smart drones to autonomously fly over blueberry fields to capture photos of blueberry bushes. These photos are fed into our various deep learning models to allow the drone to make good decisions on its own during flight, count the number of blueberries on the bushes where early estimation of crop yield will help farmers to hire enough field workers for harvesting, and detect those bushes infected with a disease called blueberry scorch where early detection will mitigate its spread to neighboring bushes.



The other project seeks to develop an automated software tool to help radiologists detect and measure the size of aortic aneurysms (a swelling of the aorta) from computed tomography (CT) scans. Aneurysms are life-threatening and fatal if they rupture,

thus early detection is vital. Our end-to-end pipeline automatically processes CT scans to perform detection of the aortic regions from 2D image slices, render a 3D reconstruction of the aorta, and compute its maximum diameter.



I currently have a total of eight students working on both projects (total of 15 students over the last two years, half of whom were recruited when they were freshmen) to perform a multitude of tasks: collecting and annotating data, training and testing models, and presenting their results. The tremendous progress that we've made in both of these projects I owe to my team's hard work and creativity.

Feel free to stop by Dr. Nguyen's office (Room 228N inside the Mathematics Department, second floor of Robinson Hall) if you want to learn more about his research projects or to see the programmable drone that his team is assembling. Big THANKS to Dr. Nguyen for sharing his experience!

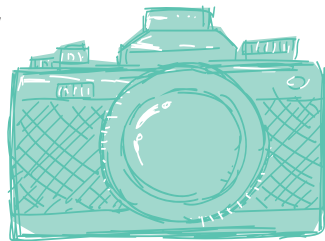
ROWAN UNIVERSITY HOMECOMING

The Mathematics Department participated in Rowan University's fairytale-themed Homecoming event. Professors **Ira Fine, Jennifer Hoxworth, Rebeca Lufi,** and **Benjamin Nassua** completed different math-related activities with the attendees. It was a fun and successful event for all!



PHOTO CREDITS

A special thanks to those who submitted photos for this issue of *Vectors*: Ira Fine, Jennifer Hoxworth, Hieu Nguyen, Walter Jacob, Alfred Pawid, Kevin Penderghest, Colette Pollard, Brian Reed, Jared Sawyer, Jonathan Weisbrod, and Rowan University.



FOLLOW THE MATHEMATICS DEPARTMENT

The Mathematics Department invites you to follow them on all their platforms!

- Facebook** <https://www.facebook.com/RowanMath>
- Instagram** <https://www.instagram.com/rowanumath/>
- Twitter** <https://mobile.twitter.com/rowanmath>
- Linkedin** <https://www.linkedin.com/company/rowan-university-mathematics/>

ALUMNUS SHOUTOUT!



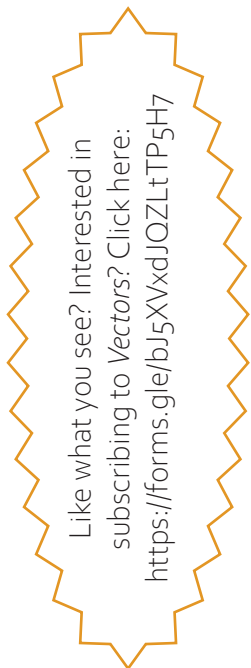
Shoutout to alumna **Hailey Lynch** who just started her Ph.D. in chemical engineering at the University of Notre Dame. Lynch graduated Magna Cum Laude from Rowan University in 2020 with a B.S. in Mathematics. Good luck to Lynch in her doctorate studies!

MESSAGE FROM THE EDITOR

Hello! Are you a student with a story or a faculty member with something to share, then please feel free to submit to *Vectors*! Adjunct instructors can submit fun facts and biography information for the "Adjunct Instructor's Corner." Alumni updates are a great way for current students and faculty to see where RU graduates are now. Have a recent accomplishment? Share it! Photos are very much appreciated too! (Just be sure they are high resolution.) Please submit your contact information, story, and photos here:

<https://forms.gle/STUGDLyR2KcepkaNA>

Thanks!
Jen Hoxworth
hoxworth@rowan.edu



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