

# A SLICE OF $\pi$

Official Newsletter of the Department of Mathematics and Statistics

## Notes from the Chair



Dr. Crista Arangala

The Elon Mathematics and Statistics faculty and students are excited to start the 2021-2022 back in the classroom with fully face-to-face classes. Students are engaged and we are eager to soon see those smiles that are hiding behind the masks.

This fall we look forward to many outdoor events, playing cornhole under the oaks, and an exploring major event under our new pop up tent.

In the spring, we will be celebrating the retirement of Professor Jan Mays who has been in the department since 2003. In 2021-2022, we are also excited to promote our new major in Data Analytics.

<https://www.elon.edu/u/news/2021/08/30/elon-college-adds-data-analytics-classical-studies-majors/>

All of our faculty continue to mentor engaging internship, research, math senior seminar, and statistics practicum experiences. With your contributions, the department continues to support incoming students in our Scholarship and Mentorship program. This year we have 3 students in the mentorship program. With many events moving into in person outdoor spaces, we look to you, our alumni, to think about ways that you can engage with our students. If you are interested in networking or doing a presentation, please let us know. As always, we look forward to updates from all our alumni. As you have professional or family updates, please share with us so that we can celebrate with you.

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# A Look Back at Teacher Licensure with Professor Jan Mays

Jan Mays started as a Lecturer in the Elon Department of Mathematics in August 2003. At that time, there was no Applied Mathematic majors, no Statistics majors, and no Data Analytics majors. Boy have we grown.

In the 2007-2008 academic year, the A.B. in Mathematics curriculum was updated and the department took this opportunity to look at how these changes impacted the Mathematics with Teacher Licensure program. Following this assessment and a deep look at National Accreditation requirements, it was determined that math licensure students would benefit from a deeper background in statistics. The department, under Dr. Ayesha Delpish's lead, had just created STS 2120: Statistics in Application and this was a great opportunity to give teacher licensure students a more concrete background in order to teach AP Stats. At this time, the department also added MTH 310: Mathematics for Secondary Teachers to the Mathematics with Teacher Licensure curriculum. MTH 310 was eventually transformed into MTH 3080: Mathematics for Middle Grades and Secondary Teachers and MTH 3090: 21st Century Technology in Mathematics. These courses provide a deeper knowledge of the secondary curriculum and aided the implementation of the edTPA requirements.

During Jan Mays' tenure, many of our teacher licensure students have received the Outstanding Mathematics Education Student Award, including Benjamin Rogers, Josselyn Geyer, Leigh Iler, Sandra Weiss, Kathryn Huffman, and Amanda Ketner. We are excited to celebrate with Jan as she plans to retire at the end of the 2021-2022 academic year.

Retirement is bittersweet for me. I am looking forward to having time to spend time with my grandchildren (and husband Charley). But I will miss interacting with all of you in the math and stats department. One of the things I have loved about my time at Elon is the support and encouragement provided for my growth as a teacher and mentor. And, of course, there are the students. I keep in touch with many of my former students and I have enjoyed hearing about their accomplishments. I will not be far away in distance or in spirit. You may even see me on campus from time to time!

JAN MAYS

If you would like to send Professor Mays a well wish for her retirement please email it to me at [tmcbane@elon.edu](mailto:tmcbane@elon.edu).



# Elon, WFU partner on research for modeling of COVID-19 dynamics

A mini-grant from the Center for Undergraduate Research in Mathematics has made it possible for Elon University and Wake Forest University to partner in conducting a year-long research project for 2021-2022 academic year on the dynamics of COVID-19.

This program is co-directed by Elon Assistant Professor of Mathematics Hwayeon Ryu and Assistant Professor of Mathematics John Gemmer from Wake Forest University.

The program is designed to not just provide students with an opportunity to conduct a research project on modeling the dynamics of a very timely topic such as COVID-19, but to help them develop the knowledge of mathematical tools they will need to conduct their work. In parallel with the research, both Gemmer and Ryu will also mentor students in the development of their “soft skills” in presenting and writing research. This will be achieved through weekly small-group meetings as well as weekly professional development meetings and seminars on academic topics throughout the academic year.

Finally, as an outreach activity, the research team will co-organize a one-day, free, student-led conference entitled the Integrating Research in Science (IRIS) in Spring 2022 to be held at Wake Forest University. This annual event was first created and has been held at WFU since 2018, except in Spring 2020 due to COVID-19. It is aimed at bringing undergraduate researchers in STEM from regional institutions.

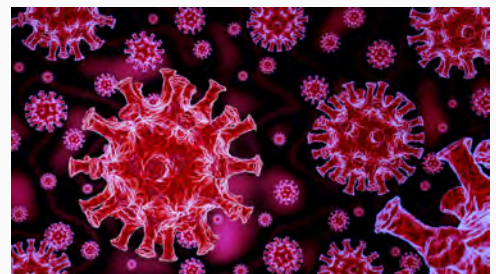
Ryu says she hopes this collaboration activity will provide a foundation for the long-term relationship between Elon and WFU so that the two institutions can take a turn to host the IRIS afterwards.



Paige Minsky and Christopher Boyette from Elon University, and Sarah Ruth Nicholls from Wake Forest University discuss their research questions.



The whole group participates in the group-building activity.



# Elon and N.C. A&T partner on joint undergraduate research experience in mathematical biology

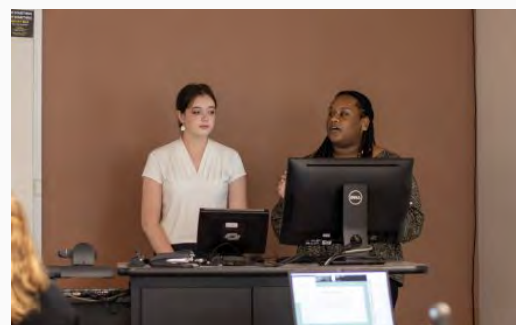


Ten students worked with Elon and N.C. A&T State University faculty members this summer exploring topics in mathematical biology culminating in a day of presentations on Elon's campus. Support from the National Science Foundation made it possible for Elon University and N.C. A&T State University to partner in providing undergraduate research experience focused on mathematical biology to students from around the country.

This was the second summer offering for the REU Program led by Elon Professor of Mathematics **Karen Yokley** and Associate Professor of Mathematics **Nicholas Luke** from N.C. A&T. This research experience, is supported by the National Science Foundation and is focused on providing opportunities for research in mathematical biology for students attending Historically Black Colleges and Universities (HBCUs) and schools with liberal arts and sciences traditions. Mostly offered remotely, the 10-week program culminated with a visit to Elon's campus by the cohort for a day of presentations by the five teams of student pairs who walked peers, mentors and family members through their findings. Cole Parker from the University of North Georgia, the summer program offered him the opportunity to dive into the realm of applied mathematics and expand his experience as a researcher. "My university has a lot of theoretical mathematics research work, but doesn't have as much in the applied field, which is mostly what I am interested in," Parker said.



Cole Parker from the University of North Georgia presents during the day of presentations at Elon.



S'Khaja Charles from N.C. A&T State University and Halley Kucirka from Haverford College present their research at Elon.

Included in the programming were opportunities to connect with alumni who are pursuing careers in mathematical biology. "The sessions with alumni had a dual intent — to show what these scholars have been able to do professionally with mathematics and statistics, and also to offer the students some insight into networking," Yokley said. "We have tried to be very intentional about getting people from different areas and with different perspectives to share their experiences with the students." This summer's program was the second of three, and Yokley said she is looking forward to the possibility of bringing students and faculty mentors together in person for the entirety of their work together. First virtually and then in the several days spent in person to conclude the program, the students built bonds with each other and their mentors, she said.

# SPOTLIGHT ON STUDENTS

*Congratulations to our 35 graduating seniors! many have lined up exciting careers or will attend graduate school*

Those attending graduate schools include: **Celcia Dong** (Chulalongkorn University, Bangkok), **Zack Fertig** (Elon University), **Mikey Golaski** (NC State), **Hannaleigh Pierce** (Georgia State University), **Samantha Polese** (Boston University) and **Tim Redgrave** (University of Notre Dame).

Those entering the workplace include: **Max Ades** (Western Carriers, New Jersey), **Isabel Buffton** (Yellowstone National Park), **Samantha Chesson** (Cotton & Company, Virginia), **Nate Coburn** (Spectrum Health, Michigan), **Will Cooper** (United States Army), **Maddie Gall** (Wake County Public Schools, North Carolina), **Sarah Gillars** (enfoTech, New Jersey), **Sam Greenberg** (Morning Consult, Washington DC), **Cara Linder** (Tresta, North Carolina), **Catherine LoGrande** (United States Air Force, Italy), **Robbie Miley** (EY), **Matthew Mitten** (Bank of America, North Carolina), **Lily Penalzoza** (PTAR, North Carolina), **Daniel Schiff** (AstraZenica, Maryland), **Abby Shutzberg** (Carrier Global, Florida), **Hailey Tucker** (RxData Science, North Carolina), **Lexi Ukins** (West Cabarrus High School, North Carolina), **Annalise Von Sprecken** (Post Graduate Internship at Reality Ministries), **Bayley Weinstein** (RTI International, North Carolina), **Jacob Wheeler** (David Weekly Homes, North Carolina)

Congratulations to **Max Ades '21**, **Cara Linder '21**, **Matthew Mitten '21**, **Lilly Penalzoza '21**, **Sarah Austin '22**, and **Sarah Katherine Loos '22** on their induction into Phi Beta Kappa.

Congratulations to **Sam Bacon '22**, **Christopher Boyette '22**, **Alexa Goldberg '22**, **Sophia Kaup '22**, **Nicole LaMont '22**, **Anna Mitchell '22** and **William Waggoner '22** on their induction into Phi Kappa Phi.

## **Congratulations to Isabelle Stimson '23 for becoming a Lumen Scholar!**

New inductees into Pi Mu Epsilon, the National Mathematics Honor Society include: **Sam Bacon**, **Eli Bier**, **Christopher Boyette**, **Josie De la Oliva**, **Ning Dong**, **Sam Eliasson**, **Annica Gaebel**, **Alexa Goldberg**, **Sophia Kaup**, **Sarah Katherine Loos**, **Kayla Mead**, **Paige Minsky**, **Matthew Mitten**, **Amy Moore**, **Julia Perline**, **Olivia Powers**, **Zoe Rein**, **Lily Sandifer-Stech**, **Reed Stasko**, **Haydn Stucker**, **Shannon Treacy**, **William Waggoner** and **Anne Williams**.

New inductees into Mu Sigma Rho, The Statistics Honor Society include: **Sarah Austin**, **Sam Chesson**, **Allison Eith**, **Annica Gaebel**, **Samuel Greenberg**, **Jessica Joblin**, **Pierce Johnson**, **Alexandre Lagarde**, **Anna Mitchell**, **Amy Moore**, **Samantha Polese**, **Maria Rossi**, **Daniel Ryan**, **Abby Shutzberg** and **Grace Simpson**.

The following awards were given at our Virtual Senior Celebration:

- ✓ Outstanding Experiential Learning Award in Statistics-**Mikey Golaski**
- ✓ Outstanding Research in Mathematics-**Sarah Gillars**
- ✓ Outstanding Academic Achievement in Statistics-**Cara Linder**
- ✓ Outstanding Academic Achievement in Mathematics-**Tim Redgrave**
- ✓ Outstanding Academic Achievement in Mathematics-**Lexi Uknis**
- ✓ Outstanding Academic Achievement in Mathematics and Statistics-**Maddie Gall**.



## *Zack Fertig '21 spends summer in Israel for internship*

"This past summer, I spent two months living in Israel as part of the Onward Israel program. The program, which is free for people of Jewish heritage, set up university students from all over the world with an apartment, internship, and educational activities for the whole summer. Everyone was working for a startup company because there are more startups per capita in Israel than in most other countries. My internship was with an especially exciting biotech company Biobeat which creates a non-invasive wireless monitoring system for patients in and out of hospitals. Their chest monitor can do the work of multiple very expensive machines for a fraction of the cost and all patients can be monitored remotely in one place as the system provides custom alerts on their interface. I worked as an IOS developer, helping them solve problems with information being sent from the devices to an app as well as building frameworks for AWS services. There was a good amount of learning things on the fly! It was an incredible cultural and professional experience, but now I'm back at Elon for my fifth (and final) year as a graduate student!"



Zack Fertig '21 (far left) pictured with his roommates

# Alumni Updates

**Hal Gartner '15** "Just started my 5th year teaching math at Cardigan Mountain School in Canaan, NH"

**Dave Chapman '75** "Still retired and herding 7 grandkids"

**Barbara Day Bass '61** "Master from UVA; retired; volunteer with local historical society; authored several books on local history."

**Kylee Gomilla '20** "I'm working at Green level High School as a Math II Teacher."

**Wally Sawyer '64** "Graduate school in Physics College of William & Mary. Engineering Management, George Washington University. 38 years National Aeronautics and Space Agency. Deputy at three NASA centers - Langley Research Center, Armstrong Flight Research Center and Kennedy Space Center."

**Angela Jeffers '20** "Since graduating from Elon, I have started a full-time position as a Statistician at Social & Scientific Systems in Durham, NC."

**Aidan Draper '19** "Still a PhD Student at Notre Dame."

**Brenden Thiry '19** "Currently, I'm still working at IQVIA as a Statistical Programmer in Raleigh."

**Angeline Sanders '18** "In May 2020, I graduated with my MS in Biostatistics from The University of North Carolina at Chapel Hill. I was lucky enough to find a job at the height of the pandemic and since June 2020, I have been working for Hackensack Meridian Health, the largest hospital organization in New Jersey, as a Research Biostatistician. I work with researchers throughout the entire network to design, analyze, and publish biomedical research studies. Every day presents a new challenge and a new learning experience."

**Mary Coolidge Ruth '66** "Prof Alexander was my freshmen math teacher at Elon in 1962 and he greatly influenced my decision to major in Math. He was my Elon advisor and with his good advice I was delighted to graduate in 4 years with no summer school. My first job after graduation was as a computer programmer. I started 6/6/66 at Aetna Life and Casualty in Hartford CT and my salary was \$6,600 per year. I had never even seen a computer before taking the job (Elon had no computers then). I was subsequently trained using Fortran and Cobol and Math Majors were popular hires in those days. During my working career I often had positions in small, mostly non profit, organizations where I often implemented initial computer use and converted manual systems from paper to digital operations. For instance, in the mid 1980s I was elected as Tax Collector in my hometown (Hebron CT) where \$6 million/year was collected manually and hand recorded in huge ledgers stored in a vault. It was my utmost pleasure (and greatest challenge!) to work with nearly all CT tax collectors as well as Reudgen & Johnson software leaders in establishing uniform Connecticut collection systems.

As for Elon...I feel that if any college or university 'gets it right' about educating during this pandemic, it will be Elon! So proud of my alma mater.

I can attest that volunteering leads to new employment directions. In the early 1990's I voluntarily organized a few Elon Greek reunions at Homecomings and, much to my surprise, ended up accepting an offer from Elon to be Director of Alumni and Parent Relations (1995-2002). To no one's surprise, that experience was the highlight of my working career."



**Abigail Garcia '11** "I just graduated this spring with my MBA from Georgetown University with a Certificate in Sustainable Business. I've been working at Georgetown since 2014 in the Division of Student Affairs and currently serve as the Associate Director for Finance and Administration."

Abigail with husband Angel and Daughter Luna (4) watching her virtual graduation ceremony



## Faculty Updates

**Mark Weaver** collaborated with Simon Higgins, Assistant Professor of Exercise Science, and researchers from UNC-Chapel Hill and Wake Forest on an R15 award from the NIH that was just awarded! The title of the proposal is “The Behavioral Determinants of Metabolic Syndrome Risk Development in Young Adults”, which will be a longitudinal observational study conducted over the next 3 years. This grant will fund one or two Research Assistant positions for interested Mathematics and Statistics students to provide collaborative statistical support for study design, data collection, and statistical analysis.

Students in **Dr. Weaver's** Statistics Practicum capstone class worked with members of the United Nations Civil Society Unit to analyze data from an international survey on misinformation about COVID-19.

**Kirstie Doehler** recently co-authored the following paper with some other Elon faculty:

Vandermaas-Peeler, M., Choplin, O., Doehler, K., Sturgill, A., Namaste, N., and Buckmaster, M. (2021).

The “Authentic” Me: New Understandings of Self and the World as a Result of Global Learning Experiences. *Teaching & Learning Inquiry* 9, 1-18.

**Kirstie Doehler and Heather Barker** presented at the USCOTS Conference in June 21:

Infusing Activities Centered Around Diversity, Equity, and Inclusion into Statistics Courses Poster Presentation, United States Conference on Teaching Statistics Virtual Conference.

**Jeff Clark**-Continues to serve as Faculty Ombudsperson, the Chair of the Mathematical Association of America's Committee on Minicourses and on the Mathematical Association of America's Committee on Virtual Programming. Dr. Clark also attended (virtual) MathFest this past August. Over the summer, he received a new left knee. He says "It works painlessly." You never know, you may see him running around campus.

**Hwayeon Ryu**, published several papers to include:

- Mathematical Biosciences, on investigating spatially localized cluster solutions in inhibitory neural networks.
  - The Journal of Theoretical Biology on investigating macrophage polarization process in micro-environment.
  - Association for Women in Mathematics on investigating the impact of combination therapy of antibiotic and phage on the immune system.
  - Mathematical Biosciences and Engineering on investigating time-delayed excitatory-inhibitory neural networks.
- She also attended and presented at the Joint Mathematics Meetings held virtually for January 6-9, 2021



**Karen Yokley** and **Nick Luke** co-directed the North Carolina A&T State University and Elon University Joint REU in Mathematical Biology.

**Heather Barker** successfully completed her PhD from NC State University. Congrats **Dr. Barker**

**Chad Awtrey** has moved to Birmingham, AL to become the Department Chair of Mathematics and Computer Science at Samford University . You can reach him at [cawtreys@samford.edu](mailto:cawtreys@samford.edu).



My first semester as a freshman, I enrolled in Dr. V's STS 220 class to fulfill a core requirement. My experience in that class actually ended up changing the course of my entire experience at Elon and my career that has followed. Dr. V inspired me to become a statistics major and always believed in me even at times when I questioned my own potential. As a Statistician in the workforce now, I reflect on the incredible support I received from the Mathematics and Statistics department at Elon. It is truly an exceptional community that extends beyond the four years I spent enrolled as a student. - Angela Jeffers '20

I am so thankful for the times that I was able to walk into the Math and Stats department at any time and have conversations with my professors. Their doors were always open to discuss their research, class topics, or give advice. - Angeline Sanders '18.



Meet Henry Weaver. Henry is the new addition to Dr. Weaver's family. (and of course the Math and Stats Family as well) Henry is an English Cream Golden Retriever and is a sweet gentle boy.



# What's going on around campus....



New Outdoor exercise facility located on Haggard Avenue



## New STEM Building

The Innovation Quad will be located between the Dalton L. McMichael Science Center and Richard W. Sankey Hall, creating a connecting point between STEM education, the sciences and the Martha and Spencer Love School of Business.

## Resident Mourning Dove Family



A mourning Dove made its nest right outside our main suite in Duke 209. We have enjoyed watching the birds hatch and grow. We even held a contest to name the babies, choosing 1 math and 1 stats name. Their names are Slopey McDerivative and Chance. Math and Stats names

Finally back in person!



## *Thank you Donors!*

Thank you so much for your donations to our department, which help us provide money for equipment, projects and departmental scholarships. We are so grateful for the following donors for the academic year 2020-2021: Abigail Garcia '11, Jamie Speiser '10, Amanda Davis '98, Amy Flower '04, Paul and Renee Armstrong, Angeline Sanders '18, Samantha Chessen '21, Crista Arangala, Daniel Rapp '13, Eleanor S. Schlechter, '17, Hannah Parker '20, Chet Deshmukh, Erin Krupa '02, Erin M. Kost '18, Gina O'Rourke '11, Helen Walton, Insuk Shim, Cynthia Blanchard '10, Janice Ferguson, Jeanette Morky '03, Jessica Kelly '09, Hal and Mary Williams '66, Marty and Laura Callinan '08, Mary C. Hall '10, Mary Macdonald '15, Melissa Gaisser '10, Sharon Medeiros '02, Brianna Long '05, Stephen and Monica McMahan, '19, Nihar Deshmukh '22, Olivia F. Lennox-Sanzone '18, Ryne VanKrevelen, Todd Lee, Tracy McBane, Ronald and Sharilyn Gomilla, Mark and Kathleen Lovin '03, Brandon and Annelise Landreth, '11, Bradley Feldman '15, Candace Rankin, Rose Lee, Michael O'Brien '16, Francis Williams '96, Ayesha and Ritson Delpish, Bethany Lake '18, Camille Kelley '19, Shashi Koppal, Paul Kantlehner '16, Bob Davis '03, Carrie Ryan '02 G'10, Morgan Ferguson '19, Kayla Ewart, Bryan Hooper '06, Allison Miller '13, Bruce Lobaugh, Chad Awtrey, Brian and Jennifer Murphy, William Reynolds '21, Shaun and Meri Lynott '03, Mara Bollenbacher '12, Jennifer Weakland '03, Xinyu Feng, Hwayeon Ryu, Benjamin Rogers '19, Karen Yokley, Nick Luke, Kelly Reagan '17, Lynne Davis '71, Hanna Noelle Griesbach '21, Lexi Uknis '21, Alexander Spitz '13, Bernice Foust and Glaxo Smith Kline Foundation.