

GRADUATION

This academic year the Mathematics Department graduated eight undergraduate students with B.S. degrees and three graduate students with M.S. degrees.

In the fall of 2024, Ms. Leesha Chaney, Ms. Lily Dodson, and Mr. John Grzegorzczuk graduated with their bachelor's degrees.

In the spring of 2025, Mr. Joshua L. Butler, Mr. Andrew Cambron, Mr. Chance Dunnington, Mr. Charles Hasting, and Mr. Parker Trivelim graduated with their bachelor's degrees and Mr. Belguutei Ariuntugs and Ms. Meredith Hall graduated with master's degrees.

In the summer of 2025, Ms. Shamima Nasrin Tumpa will graduate with her master's degree.

Congratulations, graduates! We wish you success in all of your future endeavors.

CONGRATULATIONS!

Congratulations to Mr. Belguutei Ariuntugs, Ms. Meredith Hall, and Ms. Shamima Tumpa for successfully defending their theses in the spring of 2025.

Thank you to their graduate advisors, Dr. Padmini Veerapen and Dr. Kehelwala Dewage Maduranga, who guided them toward their success.

Meredith Hall (Dr. Veerapen), *Computing 2-Cocycle Twists of Certain Algebras Using Winding Endomorphisms.*

Belguutei Ariuntugs (Dr. Maduranga), *Scalable Spatio-Temporal Prediction Using Sparse Gaussian Processes and Graph Neural Networks.*

Shamima Nasrin Tumpa (Dr. Maduranga), *Recurrent Neural Networks and their Applications.*

SCHOLARSHIP RECIPIENTS

On April 15, 2025, the College of Arts and Science's Honors Night was held to celebrate its outstanding students who have been offered awards and scholarships for their academic achievements.

Congratulations to the following recipients of Math Department awards and scholarships for the 2025-2026 Academic Year.

Dr. R. H. Moorman Memorial Award - Christopher Wolk.

Dr. S. A. Patil & Mrs. Vijayalaxmi Patil Scholarship – Clyde Haywood.

Grateful Heart Math Scholarship – Carson Alfaro, Michael Potts, and Emma Krebs.

Leonard Dunavin Mathematics Endowed Scholarship - Jeffrey Martin.

Richard P. Savage, Sr. Endowed Scholarship – Anna Call and Emma Krebs.

Stanley W. Erwin, MD Endowed Scholarship- Ava Clark, Brianna Rankin, and Camden Walker.

Stonecipher Mathematics Scholarship - Carson Alfaro, Alexa Borski, Bennet Caleb, Andrew Cambron, Isaac Essex, Clyde Haywood, Jaden Johnson, Brianna Rankin, Grant Seger, and Christopher Wolk.

FACULTY PROMOTIONS

Four of our math faculty members have earned new titles. Congratulations to Dr. Amy Chambers and Dr. Padmini Veerapen, who were each promoted from Associate Professor to Professor. Congratulations to Dr. Wendy Smith for her promotion from Senior Lecturer to Master Lecturer and Mr. Mark Rogers for his promotion from Lecturer to Senior Lecturer.

POSITIONS TO BE FILLED

One of our Senior Lecturers, Ms. Shelly Forgey, is retiring at the end of the spring 2025 semester. In the fall of 2025, Cheryl Swafford will be joining the math department as a Lecturer.

During the Spring 2025 semester, Ms. Robin Huff left the Math Office to become an advisor for the College of Engineering. Although she is missed, we are happy for her. Currently, we are searching for a new Financial Administrative Associate.

MATH EVENTS

A total of five prospective math majors attended the 2025 Spring Showcase. One attended the first weekend and four attended the second. Thank you, to everyone who helped make the event happen.

This year both the Tennessee Mathematics Teachers Association (TMTA) Annual High School Mathematics Contest and the Integration Bee were held on April 8, 2025. The TMTA Math Contest was held in the morning and the Integration Bee in the evening.

Dr. Stacy Brown, TMTA Math Contest Coordinator, provided the following recap of the contest.

“On April 8, 2025, the Tennessee Tech Mathematics department hosted the Tennessee Mathematics Teachers Association (TMTA) Annual High School Mathematics Contest. A total of 250 contestants from 16 schools

gathered in Bruner Hall to compete in this year’s contest. Each participant took a 40-question test in one of 6 categories: Algebra I, Geometry, Algebra II, Statistics, Precalculus, and Calculus. For the first time at Tennessee Tech, contestants in the Statistics, Precalculus, and Calculus categories could win a scholarship: \$500 for the 1st prize winner, \$300 for 2nd place, and \$200 for 3rd place, contingent on the student attending Tennessee Tech and majoring in Mathematics. Many thanks to all who helped with the contest in any way”.

Submitted by Dr. Stacy Brown

This year, the Integration Bee was coordinated by Dr. Sam Narimetla, who had the following to say about it.

“On April 8, 2025, Tennessee Tech’s Mathematics Department conducted the annual competition affectionately referred to as the Integration Bee. This contest is modeled after the famous Spelling Bee and the contestants are Tennessee Tech students who have had (or taking) Calculus II. The task for the participants is to solve Calculus II level integrals in a given amount of time. Those who get the correct answer advance to the next round and the process continues until three winners emerge.

About 60 students attended the pre-test at 6 PM in the Bruner Auditorium. Of them, 16 students who had the highest scores were chosen to participate in the actual contest. After four rounds, three winners emerged - Kylie Laster (first place), Drake Kavli (second), and Matthew Bartol (third). Kylie received \$125, Drake \$75, and Matthew \$50 for their accomplishments.

The organizers of the tournament wish to thank Dr. Daren Snider (Dean) and Dr. Allan Mills (Associate Dean) of Tennessee Tech’s College of Arts and Sciences for funding the prize money amount. The organizers are deeply indebted to the math department chair Dr. Michael Allen for paying from his pocket

for the T-shirts that were given to the shortlisted 16 students.

Thanks are due to Dr. Motoya Machida, Mr. Tommy Elliott, Dr. Brian O'Connor, Dr. Yung-Way Liu, and Mr. Spencer Kennon of the math department for the great work they did to make the competition a thrilling success".

Submitted by Dr. Sam Narimetla

NEW SIGNAGE FOR BRUNER HALL

During the Spring 2025 semester, Bruner Hall underwent renovations to both its front and rear entrances.

As part of these improvements, the main sign at the front entrance was replaced, and a new sign was installed above the rear entrance door.



Bruner Hall - Main Sign - in Spring 2025

Bruner Hall - Front Entrance - in Spring 2025



Bruner Hall - Rear Entrance Sign - in Spring 2025

Bruner Hall - Front Entrance - in 2007



RETIREMENT INTERVIEW



Ms. Shelly Forgey

Ms. Shelly Forgey is a Senior Lecturer in the Tennessee Tech Mathematics Department. When she announced she would retire at the end of the semester, I asked her if Dr. Brian O'Connor could interview her, to

which she agreed. The transcripts from the interview are provided below.

Dr. O'Connor: We're here with Shelly Forgey, Senior Lecturer in the Mathematics Department, who has announced her retirement at the end of this semester, after a long career in the Department. Shelly, you started here as a student. Please tell us about that.

Ms. Forgey: It was 1979, I was 17 years old, and I had just graduated from Putnam County High School as valedictorian. My first love was math, and I had always wanted to be a teacher for as long as I can remember, so naturally I majored in ... Physics! There's a story there. If anyone's interested, feel free to ask!

Dr. O'Connor: Who were some of your professors (I will let you decide if you want to mention yours truly) during your time as an undergraduate and graduate student at Tennessee Tech?

Ms. Forgey: Barbara Briggs was my Calculus 1 teacher, Dr. Khyson Swong for Calculus 2 and 3, of course, I want to mention Dr. Brian O'Connor for Differential Equations (both undergraduate DE and graduate PDE), Dr. Steve Khleif for Advanced Math for Engineers, Dr. Richard Savage Sr. for Modern Algebra (where I found out how much I didn't know about algebra!), Dr. Alice Mason for

Advanced Calculus and Topology, Reggie Mazeris, Dr. Gutek, Dr. Patil (I'm probably leaving someone out, but not intentionally). I could say so many things about these amazing teachers! They taught me well, and it was a joy to get to work with them later as an instructor in the department.

Dr. O'Connor: You spent many years teaching here at Tech in three separate stints. In fact, you are one of the few people who have been tenured twice at Tennessee Tech (and I chaired your tenure committee both times). Talk to us about that.

Ms. Forgey: I got married during the final quarter of my undergraduate study, and wasn't really sure what I would do next. I worked at my father's insurance agency for a few weeks, and Ed Dixon – who was the Math Department Chairman at the time – dropped by Dad's office to ask me if I would teach a bit for him in the fall. I was delighted to say yes! So, I had graduated in June with my Physics degree and went back to Tennessee Tech as an adjunct for the Math Department that fall. Teaching math was definitely my happy place. Dr. Dixon was hoping that would happen and reeled me into the graduate program within the year.

After receiving my M.S. in Math, I taught in Remedial and Developmental Studies until a full-time tenure-track position opened up in the Math Department. I taught for a few years and received tenure (it's all a blur, so I don't know what year). Homeschooling my kids was something I'd always wanted to do, and I was able to do that even though I was working full-time. But once all three children needed educating, I had to stay home to accomplish that. I've never regretted it, although it was difficult in some ways. I returned to Tennessee Tech when the children were old enough to manage their studies without full-time instruction, received tenure again, and had to quit because of a health issue as well as family caregiving tasks. Since that time, it's been quite off and on. I love the academic life, mathematics, the math department people, being in the classroom, and my students, but it

seems that the job takes more out of me than it used to. I don't get to see my grandkids as much as I'd like, and they are growing up so fast!

Dr. O'Connor: What courses have you taught, and what are your favorites?

Ms. Forgey: Developmental Math (when we had those on campus), College Algebra, Precalculus, Cal 1, 2, and 3, History of Math, College Geometry. Math courses are like your children – how do you pick a favorite?!

Dr. O'Connor: What are your thoughts about working with students over the years?

Ms. Forgey: I really enjoy interacting with students, both in the classroom and during office hours. I'm going to miss that. This summer I'll be attending the wedding of a couple of students who met in their very first math class at Tennessee Tech (Math 1730), which I taught. They've kept me in their circle and they graduate in May. It's a fitting way to celebrate the end of my teaching career!

Dr. O'Connor: What current faculty have you worked with, and in what capacity?

Ms. Forgey: Wendy Smith and I worked together on a number of professional development projects for area teachers for several years, along with Maggie Phelps and Holly Anthony. Tommy, Troy, Madhu, Rick, Mike, Wendy, Pam, Debra, Hank, and I all worked hard on the changes to our Math 1710 course a few years ago. Each member of the faculty has been helpful and friendly and it's been an honor to learn and grow as a teacher by watching them.

Dr. O'Connor: I know that your actual first name is "Martha", and that "Shelly" isn't exactly part of your name. Please explain how that came about.

Ms. Forgey: I was a C-section baby. Back then, the mother was completely sedated for surgery. Having had a boy the first time, she was convinced that I was another boy, so no female name had been chosen for me. Immediately after they woke her up, my father

informed her that I was a daughter, and he thought maybe they should name me “Martha Ruth.” In her druggy state, she said, “No way! We’ll name her ‘Martha Rochelle’ and call her ‘Shelly’”. And so, it was. Afterwards she could never figure out where she came up with the idea.

Dr. O’Connor: Tell us about your family.

Ms. Forgey: My husband Steve and I have three children: Stephanie, who lives with her husband Joe and their two kids in Ooltewah; Amy (who has a math degree from Tennessee Tech) lives with her husband Grant and their two children here in Cookeville; and Josh, whose wife Chelsey graduated from Tennessee Tech and teaches math at Cookeville High School, has three boys. Our seven grandchildren, five boys and two girls, range in age from 3 to 16.

Dr. O’Connor: What are you looking forward to in retirement?

Ms. Forgey:

1. Being with my children and grandchildren (and Steve can tag along, too)
2. Having no papers to grade.

Dr. O’Connor: Thank you for talking with us, and especially for your many years of service to Tennessee Tech. We wish you the best in your future endeavors.

IN REMEMBRANCE

Mr. Adedeji B. Badiru is an alumnus of Tennessee Tech’s Mathematics master’s program (1981). In this tribute, he reflects on the profound impact of the late Dr. Reginald Mazerres, a cherished member of the Mathematics Faculty, through the following encomium, titled “Dr. Reginald Mazerres (1934 – 2019): A Comprehensive Mathematical Encomium”.

“Dr. Reginald Mazerres was one of my favorite Tennessee Tech professors and a profound influence on my academic and professional journey. I took a series of Advanced Calculus courses with him during the 1979-1980

academic year while pursuing my Master's degree in Mathematics and working as a Graduate Teaching Assistant. I had previously taken Math 212 (Calculus III) with Dr. Mazerres as an engineering undergraduate in the summer of 1976. Returning to his class at the graduate level felt like a joyous reunion. Dr. Mazerres was glad to have me back, and I was thrilled to be in his lecture sphere once again.

I loved his unique style of teaching advanced and complex topics to graduate students. One of his most memorable antics was a chalkboard exam. Each student in his Advanced Calculus class was called upon to go to the board to solve an exam problem in real-time, while other students watched, occasionally gawking and smirking. Dr. Mazerres’ idea was to put his graduate students on the spot, in the presence of a sitting audience, just as they would face when defending their theses later on. This approach was as much a test for the chalkboard solver as it was for the entire class, as other students were encouraged to ask questions or offer suggestions during the problem-solving attempt. Since the Advanced Calculus class was small, typically about five students, it was possible for the class to work on four or five test problems during a session.

In his Advanced Calculus class, Dr. Mazerres introduced us to Fermat’s Last Theorem and Cantor Sets. Although he cautioned that the “set of deleted middle thirds” had no practical applications, I did not buy the caution. I doggedly believed that I could find an engineering application for Cantor Sets. For over two decades, I was inspired to pursue research on using Cantor Sets as a search technique in Artificial Intelligence applications, in an era before the present wave of artificial intelligence hype. This endeavor led to numerous journal articles, thesis reports, book chapters, and conference presentations. My interest in Cantor Sets originated from Dr. Mazerres' 1980 lecture, and I continue to cite him in discussions about my research. Although the Cantor Set Search showed promise in the early years of 1988 to 2003, no

breakthrough advancements have occurred in recent years, certainly not with the proliferation of AI applications we see nowadays. That said, I still have not totally given up on Cantor Sets. Maybe the availability of new AI-based supercomputers will offer new insights and opportunities for Cantor Set Search.

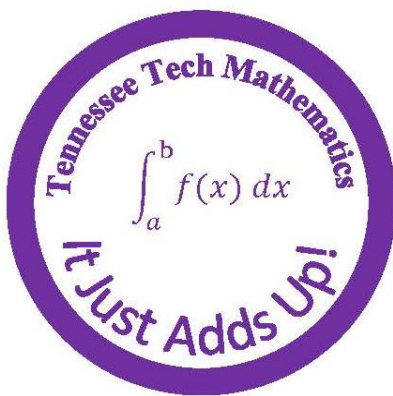
Dr. Mazerés was calmly funny in the classroom with all kinds of social commentaries. I still remember him telling our class in 1980, “If you can solve Fermat’s Last Theorem, I will petition the best math departments in the world to automatically award you a Ph.D. degree.” Innocent and naïve as I was at that time, I set out on a futile two-year struggle to solve Fermat’s Last Theorem, which had evaded a credible solution for over a century. I have since continued to follow subsequent developments in Fermat’s Last Theorem. You might say that Dr. Mazerés left a lasting impression on my intellectual curiosity about Math’s unsolved problems.

Throughout my 40-year teaching career, I won several awards, thanks to the initial teaching opportunity and experience I received as a graduate teaching assistant at Tennessee Tech University and the adaptation of Dr. Mazerés’ classroom teaching style. His legacy lives on in the countless students he inspired and the profound impact he had on my life. May his soul rest in mathematical peace. QED.”

Submitted by Adedeji B. Badiru

For those of you who are interested, some selected titles by Mr. Adedeji B. Badiru are provided below:

1. Badiru, Adedeji B. (2023), “Postulation of Cantor Set Search Technique in Generative AI Systems,” *Journal of the Nigerian Academy of Engineering, Innovative Solutions in Engineering*, Vol. 1, No. 2, **2023**, pp. 33-47.
2. Badiru, Adedeji B., "A New Computational Search Technique for AI Based on Cantor Set," *Applied Mathematics and Computation*, Vol. 55, **1993**, pp. 255-274.
3. Badiru, Adedeji B., “Intelligent Computational Search Technique Using Cantor Set Sectioning and Modal Concentration,” presentation at Partnership in Technology Forum, BWXT Y12 National Security Complex, Oak Ridge, Tennessee, February 28, **2003**.
4. Milatovic, M. and Adedeji B. Badiru, "Mode Estimating Procedure for Cantor Searching In Artificial Intelligence Systems," *Proceedings of First International Conference on Engineering Design and Automation*, Bangkok, Thailand, March **1997**.
5. Badiru, Adedeji B. and L. Gruenwald, "A New Approach to Database Search Based on Cantor Set," *Proceedings of International Conference on Computer Applications in Industry and Engineering*, Honolulu, Hawaii, December 15-17, **1993**, pp. 195-199.
6. Wei, Hong; L. Gruenwald; and Adedeji B. Badiru, "Improving Cantor Set Search for Applications in Database and Artificial Intelligence," Proceedings of the 7th Oklahoma Symposium on Artificial Intelligence, Stillwater, Oklahoma, November 18-19, **1993**, pp. 250-259.
7. Badiru, Adedeji B., "Cantor Set Modeling for Manufacturing Knowledge Representation," presented at the ORSA/TIMS Spring Conference, New Orleans, April **1987**.
8. Milatovic, Milan, "Development of Mode Estimating Technique for Cantor Search of Sorted Data in Artificial Intelligence Systems and Manufacturing Design," **M.S. Thesis**, School of Industrial Engineering, University of Oklahoma, **1996**.
9. Nakada, Masayuki, "Experimental Investigation of Alternate Search Key Distributions for Cantor Set Search Algorithm," **M.S. Thesis**, School of Industrial Engineering, University of Oklahoma, **1993**.
10. Wei, Hong, "Improving Cantor Set Search for Applications in Database and Artificial Intelligence," **M.S. Thesis** (Computer Science), University of Oklahoma, **1993** (co-chair with Dr. Le Gruenwald in Computer Science).
11. Badiru, A. B. and John Cheung (2002), **Fuzzy Engineering Expert Systems with Neural Network Applications**, John Wiley & Sons, New York, **2003**.



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