

**HOME AGAIN**

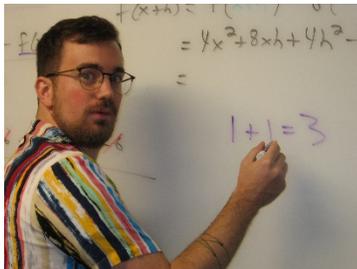
After spending two very eventful years in Foundation Hall, the Math Department has moved back to Bruner. While being relocated to the other side of campus, we have survived a devastating tornado and the effects of an equally devastating pandemic. Now we can get back to the work of teaching and learning mathematics in a comfortable, more aesthetic environment. We're still in the unboxing stage, but we'll get things put back in place eventually.

**NEW FACULTY**

This year we have been fortunate to get two one-year temps to teach in the Math Department. Both of them are graduates of Tennessee Tech, so we know they are well-prepared and fully qualified to teach our diverse student population.

**Spencer Kennon** is teaching two sections of MATH 1130, one section of MATH 1710 and one section of MATH 1720 for us this fall.

When asked about how he made it to Tennessee Tech,



Spencer sent the following reply:

“My journey with TTU started as an undergraduate student in the fall of 2010, where I quickly decided that I enjoyed mathematics enough to major in it. During those four years, I was a member of the Tech Chorale, a night manager at a local grocery store, and spent my summers teaching and coaching basketball for a sports ministry at camps across the US.

After graduating, I continued to graduate school at LSU in Baton Rouge, Louisiana. It was there where I discovered just how much I enjoy studying graph theory and topology, which are still my main interests. After graduating with my MS, I moved to Williamsburg, Virginia to teach at a high school and community college for a year before moving back to Cookeville to teach at Cookeville High School. I spent three years at CHS and as an adjunct at TTU before taking an instructor position at TTU for the current year. In my spare time, I enjoy playing bass guitar, playing basketball, cooking, and video games. I'm super grateful to have the chance to teach at Tech and am looking forward to my time here.”

**Seth Agee** is teaching three sections of MATH 1000 and one section of MATH 1130.

Seth is a recent graduate of TN Tech. We asked him to tell us a little about himself and this is his reply:



“My name is Seth Agee. I grew up in Smith County, Tennessee, and attended Gordonsville High School. I graduated from Tennessee Tech twice, first in 2019 with a bachelor's degree in mathematics and a minor in computer science, then again in 2021 with a master's degree in mathematics. My mathematical interests are in probability theory, stochastic processes, and financial mathematics.

Outside of math, I have many interests in the gym and lifting weights. My family owns a gym back home, and I have been competing in strongman now for about a

year. When I'm not at work or the gym, I tend to spend time with my friends, family, or beautiful girlfriend Heather. I am very grateful to have been given the opportunity to return to Tech as an instructor and look forward to working with everyone!"

We welcome both Spencer and Seth to the Mathematics Department and hope this will be an enjoyable and productive year for both of them.

## **MATH CLUB**

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The Math Club held officer elections in April and welcomes the new officers-- Patrick Bartol as president, Blaine Swieder as vice president, Adriana Gore as secretary, and Ryland Smith as treasurer. Patrick Bartol sent a few words to share with everyone:

In the past, the Math Club has been little more than a social group. This semester, and hopefully many more, the Math Club will take a different approach to its activities. As president, my goal and plan for the semester is for the club to be a participant in the Cookeville community by developing presentations for local schools that provide students with a new view about the field of mathematics. Mathematics in public K-12 education tends to give students the impression that math is little more than reading formulas and plugging in numbers. As a club, we want to change this perspective. Our presentation aims to achieve this goal by demonstrating unique and fascinating aspects of mathematics along with explaining the intricacy and interconnectedness of mathematics with other fields of study, such as computer science, engineering, etc. Introducing a new idea or a new way of thinking can change a student's academic path, and the Math Club hopes to be that introduction.

Submitted by Patrick Bartol

## **WHAT'S HAPPENING WITH ALUMNI**

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We recently heard from one of our alumni, **Riley Robinson ('19 B.S.)**, who gave us an update on where and what he is currently doing. Riley received his B.S. in Mathematics from TN Tech in the spring of 2019. Incidentally, he was also a student worker in the Math Department during his time spent at Tech.

On July 15, 2021, Riley hit his two-year anniversary with Dynetics. He says it has been a fulfilling two years and he doesn't think he will ever pursue any career other than programming. According to Riley, Dynetics has a very academic environment where learning is a daily necessity. On the same note, he is working on a master's degree at the University of Alabama in Huntsville studying Computer Science. He is only taking one or two courses per semester and his company is paying for the majority of his fees. So far, he has taken two semesters and he has about three or four years to go. Riley tells us that Dynetics also has its own pseudo-university where they hold around ten classes per semester with a lot of variety, from French to music production to airborne radar.

Riley says he is very proud to have graduated from Tennessee Tech and he has met numerous Tech graduates in Huntsville. He says that the TN Tech Math Department sufficiently prepared him for the work he is doing and that there are no components of his work that he has been unable to pick up with the foundational skills that he learned at Tech.

**Leeann Long ('06 M.S.)** recently reached out to let us know what she's been doing lately. Leeann began her college education at Tennessee Wesleyan University as a business major, but quickly switched to math. After receiving her B.S. degree, she pursued a master's degree in math here at Tennessee Tech. She really loved her statistics classes so when she received her master's in math, she decided to further her

education and attended the University of North Carolina at Chapel Hill, receiving her Ph.D. in biostatistics.

After receiving her Ph.D., Leeann began a teaching career at West Virginia University. In 2016, she began working at the University of Alabama at Birmingham and says she loves her job.

Recently Leeann was announced as one of 12 selected to receive the President's Award for Excellence in Teaching at the University of Alabama at Birmingham. The award honors those who have demonstrated exceptional accomplishments in teaching. Leeann stated that she is honored to have been nominated, as the nomination is made by her students and fellow faculty. The 12 faculty who received the award will be recognized during a reception later this fall.

Leeann says, "Life is short, so be nice to everybody."

Congratulations on your accomplishments Riley and Leeann. The Tennessee Tech Mathematics Department is proud to have you as alumni.

If you are an alumnus of the TN Tech Math Department and would like to share your accomplishments in our newsletter, please email our departmental administrative associate, Patsy Peavyhouse, at [ppeavyhouse@tntech.edu](mailto:ppeavyhouse@tntech.edu).

## **COOL MATH JOBS**

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What can I do with my math degree, you might be asking yourself. Well, if you really enjoy math, there are a lot of cool jobs out there that are just waiting for you. In this issue we will focus on one cool math job, a cryptanalyst.

What is a cryptanalyst, you say? A cryptanalyst deciphers decoded messages without being told the key. They crack encryption codes and turn the encrypted data back into plain data. If you like solving difficult puzzles, you may want to consider a career as a cryptanalyst.

Companies use cryptanalysts to look for security weaknesses and data leaks. Cryptanalysts are in high demand in government organizations that decipher encrypted information and by law enforcement agencies to access evidence stored in encrypted files. Employers of cryptanalysts include the FBI, NSA, DHS and the CIA. Just think, you might break the code of a notorious crime ring and save the world from unnecessary harm and hardship.

How do you become a cryptanalyst? Easy, just get a degree in math. Cryptanalysts use linear algebra, number theory, algorithms, and discrete mathematics to break codes. They also use coding languages such as Java, Python, C, or C++ to write complex algorithms. Most government agencies like the FBI and NSA have training programs for cryptanalysts that can take you from a novice to an expert in just a few years. Some employers will require you have a master's or higher degree, so you may want to think about continuing your education before applying for a job as a cryptanalyst.

The Math Department is offering a new course in the spring, MATH 4060, A Course in Cryptography. The course will be taught by Associate Professor Andrew Hetzel. Check it out. It may be just what you're looking for.

<https://www.tntech.edu/cas/pdf/math/4060-5060.pdf>

To learn more about being a cryptanalyst, watch these short videos from the FBI and NSA.

[https://www.youtube.com/watch?v=0XjsSSNy\\_Wc](https://www.youtube.com/watch?v=0XjsSSNy_Wc)

<https://www.youtube.com/watch?v=UxE5oWGIH7w>

## **HE'S BEEN EVERYWHERE!**

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Brian O'Connor, Associate Professor in the TN Tech Mathematics Department, has been everywhere, at least in the United States, that is. O'Connor has spent many

years on a quest to visit every county in the United States. There are 3143 counties or county equivalents (parishes in Louisiana, boroughs and census districts in Alaska, and independent cities, especially in Virginia). He completed his quest this summer.

O'Connor's wife decided to have a surprise party for him shortly after he returned from his final trek. It was a great party and O'Connor was totally shocked when we all began arriving at his home. You should have seen the look on his face! Congratulations on completing your goal.

Math major Madison Pearson sat down with Brian O'Connor and talked with him about his quest to visit every county in the United States.

**MP: How did you get into traveling?**

**BMOC:** It sort of unofficially started when I graduated college and my best friend and I hopped in my then new Volkswagen Beetle, which I still have 50 years later, and drove 11,000 miles around the country in a month.

About three or four years after that I bought a Rand McNally Road Atlas, and in the index in the back, they listed not only the cities and towns, but the counties too! I remembered the route we had taken around the country, so I thought, "Ok, I'll just sort of check them off," and then I remembered the trips I had taken with my parents as a kid, and included those counties as well. In addition, I recalled a train trip in the late 1960s while on tour with the Cornell University Glee Club. I looked on the route map for the train, so I'd know which counties I had gone through. I originally kept track just to see which ones I had been to, and then after a while it sort of morphed into "I wonder how many I can get to," and then morphed into "maybe I can get to them all!" Over the years, it started accumulating and I hit the 2000 county mark in 2005 out in New Mexico. Some trips I went by myself, some trips my wife or family came with me. My son has been to more than half

of the counties in the country, not because he particularly cares about it, but he's been on these trips. So, it was growing, and I got to 3000 in 2016.

This past June, I finished Alaska, and only 33 counties in Colorado were between me and completion. On previous trips, I had visited the counties in the northern and southwestern parts of the state. In fact, some of the ones in the southeastern corner of Colorado I had been through on the train trip I mentioned. I had bagged the county on the very southeast corner, Baca County, in a very interesting way: I was driving through Oklahoma out the panhandle, and the neat thing is that the county on the end of the panhandle, Cimarron County, borders four other states--Kansas, Colorado, New Mexico, and Texas--overlapping about a half of a mile of Kansas. I drove on a little dirt road and noticed a sign at the tri-point, with arrows for Colorado, Kansas, and Oklahoma. And I said, "I'm here! I got it!" and so I got that corner. So, in July, I flew to Denver, rented a car, and drove 2100 miles in a week, completing in Clear Creek County, Colorado, at Loveland Pass (elevation 11,990 feet).

**MP: What counts as visiting a county?**

**BMOC:** I am a member of the Extra Miler Club, comprised of people trying to get to all the counties. I am the 66<sup>th</sup> member to complete. There are some people in the Club that say, "I've got to take a picture of the courthouse. I've got to get out of the car. I've got to buy something." But, the prevailing attitude is, while flying over doesn't count, it's perfectly ok to drive across the county line, turn around, and come back. Because, if you weren't there ... Where were you?

**MP: Once you decided that you wanted to visit every county, how did you choose which one was next?**

**BMOC:** It depends on the time allowed. There was one time I went to a national math meeting in Texas, so I flew out a

couple days early, rented a car, drove around, got some counties, and then went to the meeting. Also, my niece is in a group called the National Puzzlers League, with crossword puzzles and word puzzles and stuff like that. For years she tried to get me to attend a meeting, and I thought if they ever had one in a place that I needed to go to... So, it was in Salt Lake City five years ago; I flew out there a couple days early, rented a car, and got some counties in Utah and surrounding states and finished off that chunk.

**MP: Did you visit all counties in the same car?**

**BMOC:** No, we've had various cars through the years. The ones later on were so far away that I'd fly out and rent a car. I'd try to plan my route in the most efficient way. In fact, one time I had an honors calculus class, and I said, "Ok, I got a little question for you." I said, "here's where I start, here's where I finish. I want to get to these counties. Find the shortest distance route to get there." Some of them were just all over the place, but one guy had a route that was about twenty miles shorter than mine, which is really impressive because I'm pretty good at doing this. I had given them the map to use, and when I looked at one of their solutions I thought, "You've got me driving on a river!" This is called the Traveling Salesman problem in mathematics.

**MP: It took you about 50 years to visit every county, correct?**

**BMOC:** The trip was in 1970, but thinking back to the train trip I took and other trips I took with my parents, there was no official start date.

**MP: Do you have a favorite trip that you've been on?**

**BMOC:** About nine years ago I realized Hawaii needed work, so I booked a tour there, and out of the goodness of her heart, my wife decided to come along, just so she could certify that I made it. Hawaii has four

or five counties depending on what book you read. The fifth county is Kalawao county, which is the former leper colony, on the very northern tip of Moloka'i Island. So, we booked a four-island tour, which got those, and then after it ended on Kauai, the farthest west main island, we had to fly back to Honolulu. And then you had to book an escorted tour over there, you couldn't just go there unescorted because, even though it is now a national historical park, there were still some people living there. So, we booked a private tour in a little ten-seater plane. I sat right behind the pilot. We were told to bring a lunch, as there are not really any facilities there. When we arrived, our tour bus was an old school bus. We saw the church where Father Damien was ministering to the people there, he's now Saint Damien. When it was time for lunch, he drove us to this picnic spot on the coast, which has to be the most gorgeous picnic spot in the world; the vegetation, the blue water on the coast, the islands, the cliffs, just gorgeous.

**MP: I think it's safe to say that you spent a lot of time in the car. What did you do while you were driving? Did you listen to music, just drive?**

**BMOC:** I sleep. No, I'm kidding. Sometimes I'll have the radio on. I got really good at finding NPR stations, and just noodle around the radio, or if my car has a CD player I'll bring classical CDs. I've done a lot of driving, and some of it was not too exciting, but you sort of have to get into the feel of it. Someone said "be where you are," and I like that.

**MP: Do you have any advice about traveling or setting goals, or any lesson that you want to pass on?**

**BMOC:** When you have a goal, you don't have to do it all at once. I met a guy a couple years ago at a national meeting of the Extra Miler Club and he was doing all 3,143 counties *that year*, and he actually did it in eight months. I don't have a job where travel

is a necessity so this is all on my own time. Some people want to go to the same place every year and get there really fast and just sit there for a week, but that's not particularly my style. I like going around and seeing stuff. But whatever goal you have, just keep at it. Perseverance pays off!



## IN MEMORIAM

Emeritus Professor of Mathematics Richard P. Savage, Sr. passed away on September 29, 2021 following a lengthy illness. Savage served on the faculty of the



Tennessee Tech Mathematics Department for 30 years until his retirement in 1992. He was known for his easy-going, soft-spoken personality. He was well-liked and highly respected by all the students who took his classes.

His son Richard Savage, Jr. also taught in the TN Tech Math Department from 1982 to 2011.

In 2009 an endowment was established for the math department to honor Emeritus Professor Savage. Savage's brother and sister-in-law gifted the Richard P. Savage, Sr. Endowment to the university to provide financial aid to math students.

Emeritus Professor Savage was also known for his Christmas tree farm that was the first and largest in Putnam County.

More about the life of Emeritus Professor Richard P. Savage, Sr. can be found in the following link to his obituary. <https://altamontpalmer.laynefuneralhome.com/tribute/details/1586/Richard-Savage/obituary.html#tribute-start>

TN Tech Health Services is offering free COVID-19 vaccinations. To make an appointment call 931-372-3320.

State of Tennessee Vaccine Finder <https://covid19.tn.gov/covid-19-vaccines/availability/>

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**Mathematics Faculty:**

|                          |          |          |  |
|--------------------------|----------|----------|--|
| Dr. Michael Allen, Chair | BRUN 219 | 372-3569 | <a href="mailto:MALLEN@tntech.edu">MALLEN@tntech.edu</a>         |
| Mr. Seth Agee            | BRUN 303 | 372-6594 | <a href="mailto:SAGEE@tntech.edu">SAGEE@tntech.edu</a>           |
| Mr. Troy Brachey         | BRUN 113 | 372-3128 | <a href="mailto:TBRACHEY@tntech.edu">TBRACHEY@tntech.edu</a>     |
| Dr. Stacy Brown          | BRUN 226 | 372-3619 | <a href="mailto:SLBROWN@tntech.edu">SLBROWN@tntech.edu</a>       |
| Dr. Amy Chambers         | BRUN 222 | 372-3690 | <a href="mailto:ACHAMBERS@tntech.edu">ACHAMBERS@tntech.edu</a>   |
| Mr. Jared Daniels        | BRUN 422 | 372-3567 | <a href="mailto:ICDANIELS@tntech.edu">ICDANIELS@tntech.edu</a>   |
| Dr. Chris Davis          | BRUN 339 | 372-3445 | <a href="mailto:CBDAVIS@tntech.edu">CBDAVIS@tntech.edu</a>       |
| Mr. Tommy Elliott        | BRUN 419 | 372-3591 | <a href="mailto:BELLIOTT@tntech.edu">BELLIOTT@tntech.edu</a>     |
| Ms. Shelly Forgey        | BRUN 111 | 372-3622 | <a href="mailto:SFORGEY@tntech.edu">SFORGEY@tntech.edu</a>       |
| Ms. Madhu Gandhi         | BRUN 423 | 372-6177 | <a href="mailto:MGANDHI@tntech.edu">MGANDHI@tntech.edu</a>       |
| Dr. Andrew Hetzel        | BRUN 223 | 372-3581 | <a href="mailto:AHETZEL@tntech.edu">AHETZEL@tntech.edu</a>       |
| Mr. Spencer Kennon       | BRUN 109 | 372-3592 | <a href="mailto:SKENNON@tntech.edu">SKENNON@tntech.edu</a>       |
| Dr. Damian Kubiak        | BRUN 420 | 372-3529 | <a href="mailto:DKUBIAK@tntech.edu">DKUBIAK@tntech.edu</a>       |
| Dr. Richard Le Borne     | BRUN 424 | 372-3582 | <a href="mailto:RLEBORNE@tntech.edu">RLEBORNE@tntech.edu</a>     |
| Dr. Yung-Way Liu         | BRUN 337 | 372-3564 | <a href="mailto:YWLIU@tntech.edu">YWLIU@tntech.edu</a>           |
| Dr. Motoya Machida       | BRUN 338 | 372-3583 | <a href="mailto:MMACHIDA@tntech.edu">MMACHIDA@tntech.edu</a>     |
| Dr. Sam Narimetla        | BRUN 112 | 372-3593 | <a href="mailto:SNARIMETLA@tntech.edu">SNARIMETLA@tntech.edu</a> |
| Dr. Brian O'Connor       | BRUN 224 | 372-3570 | <a href="mailto:BMOC@tntech.edu">BMOC@tntech.edu</a>             |
| Mr. Brents Ring          | BRUN 110 | 372-3594 | <a href="mailto:BRING@tntech.edu">BRING@tntech.edu</a>           |
| Mr. Mark Rogers          | BRUN 108 | 372-6160 | <a href="mailto:MCROGERS@tntech.edu">MCROGERS@tntech.edu</a>     |
| Dr. Alexander Shibakov   | BRUN 336 | 372-3438 | <a href="mailto:ASHIBAKOV@tntech.edu">ASHIBAKOV@tntech.edu</a>   |
| Dr. David Smith          | BRUN 421 | 372-3568 | <a href="mailto:DDSMITH@tntech.edu">DDSMITH@tntech.edu</a>       |
| Dr. Wendy Smith          | BRUN 227 | 372-3621 | <a href="mailto:WDSMITH@tntech.edu">WDSMITH@tntech.edu</a>       |
| Dr. Padmini Veerapen     | BRUN 225 | 372-3526 | <a href="mailto:PVEERAPEN@tntech.edu">PVEERAPEN@tntech.edu</a>   |

**Adjunct Faculty:**

|              |          |          |  |
|--------------|----------|----------|--|
| Dr. C.Y. Liu | BRUN 335 | 372-3011 | <a href="mailto:CLIU@tntech.edu">CLIU@tntech.edu</a> |
|--------------|----------|----------|--|

**Administrative Associate:**

|                  |          |          |  |
|------------------|----------|----------|--|
| Patsy Peavyhouse | BRUN 217 | 372-3441 | <a href="mailto:PPEAVYHOUSE@tntech.edu">PPEAVYHOUSE@tntech.edu</a> |
|------------------|----------|----------|--|

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