Mathematics and Statistics

Annual Newsletter
Highlights from the 2025–2026 Academic Year

NAU
NORTHERN ARIZONA UNIVERSITY
Department of Mathematics and Statistics



Math on Tap at Mother Road Brewing Company

From the Chair's Desk

By Dana C. Ernst

I took over as department chair in July 2025. My first year brought many challenges and opportunities for growth. As I look back on that year, I'm grateful for the colleagues and students who make this department a community.

This is the first of what I hope will be many annual newsletters. This issue celebrates the people who make our department a place to learn, discover, and connect. You'll read about student research and recognition, mathematics in the Flagstaff community, new work by our faculty, and the alumni and donors who help students take their next steps.

We are also preparing for the Mathematics, Statistics, and Data Science Research and Innovation Lab, a dedicated space for undergraduate and graduate research. Plans include collaborative work areas and computing resources where students can explore questions alongside faculty mentors and one another. I look forward to sharing more as the project develops.

Thank you to our students, faculty, staff, alumni, and friends for the work and generosity reflected in these pages.

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Mathematics in the Community

Math on Tap

By Nicholas Diaz

Last academic year, we had the idea of creating a mathematics event, much like the "...On Tap" series, but aptly naming it "Math on Tap." We wanted to hold it off campus at Mother Road Brewing Company, so we could have the opportunity to not just cater to NAU Mathematics majors, faculty, and staff, but bring these ideas and concepts of mathematics to the community. We wanted to show there is more to mathematics than calculations. Mathematics is also a philosophy, art, and the foundation to all STEM.

We weren't sure if anyone would show, and truthfully, we would have been happy if one or two people attended, but every first Wednesday of the month, math enthusiasts and math curious patrons packed Mother Road's backroom. To say we were surprised by the turn-out would be an understatement. Now in our second year, we hope to continue bringing mathematics to the community and breaking down the stigma that mathematics is something to be feared.



Dana speaking at the first Math on Tap.

Women in Math

By Madison Cox

The Women in Math club was dreamed up in an Adel office by myself (a graduate student) and two female faculty members. We noticed a need for a way to connect underrepresented groups in the department not just socially but academically as well. Every other week, we hosted members for things like movie nights, weekend hikes, game nights, plant potting, and more. A particularly meaningful event that we hosted was a panel of female faculty on motherhood and academia.

Members, including myself, left feeling inspired knowing we too could find balance in our personal and academic lives.

We also hosted a coffee shop meetup at a favorite local spot, Campus Coffee Bean. It was wonderful seeing the support of faculty and students who can't make our normal meeting times. We hope to continue supporting our local community and providing opportunities for anyone who is interested to join us and make lasting connections.

Mathematics in the Community

High School Math Day and Middle School Math Competition

By Bianca Luedeker

As the temperatures drop and the days grow shorter, one event hosted by the NAU Department of Mathematics and Statistics heats up: High School Math Day! Every fall the department brings 200 high school students to campus for a day of problem-solving and friendly competition. From Flagstaff to Prescott, the Phoenix Valley to Tuba City, students travel from across the state to represent their schools. With 10-12 schools joining the fun each year, High School Math Day proves that math is more than numbers and equations; it's a chance to think big, work together, and compete.

High School Math Day has been an NAU tradition for decades, and I know firsthand! Long before I joined the faculty at NAU, I was a participant myself, competing as a high school junior and senior in 1999 and 2000. As chair of the Contest Committee, it's especially rewarding to now be part of an event that inspired my own love of mathematical problem-solving.

The competition features three main components: a written team competition, two guest talks designed to recruit students by piquing their interest in math, and a fast-paced, quiz-show-style face-off where teams compete head-to-head to buzz in with an answer. At the end of the day, the competition culminates in an awards ceremony where trophies and medals are presented to the top teams in both the written team competition and the face-off rounds.

When spring rolls around, the department welcomes a new group of budding mathematicians to campus for our Middle School Math Competition. The day kicks off with a math carnival where students play math-themed games and earn raffle tickets for a chance to win prizes. The competition continues with an individual multiple-choice contest, a 10-person math relay race that puts teamwork and quick thinking to the test, and an exciting face-off round. At the end of the day, trophies and awards recognize outstanding student and team performances.

Bringing these events to life each year requires significant resources. From securing venues and covering school parking costs to providing trophies, medals, and raffle prizes, donations play an important role in making both competitions possible. Financial contributions and donations of raffle prizes help us keep these events free for students across Arizona. Every contribution, large or small, helps us continue this longstanding tradition of bringing students together to learn, collaborate, and celebrate math.

Student Research and Discovery

NAU Hosts SUnMaRC

By Jeff Rushall

SUnMaRC (Southwestern Undergraduate Mathematics Research Conference), a regional math conference held annually since 2004, took place at NAU during the weekend of April 17-19, 2026. About 110 students and faculty from NAU, Arizona State University, the University of Arizona, the University of New Mexico, Colorado State University, the U.S. Air Force Academy, and Western New Mexico University participated. Over 40 student presentations and a problem-solving competition highlighted the conference. In addition, 3 invited speakers - mathematician Dr. Kurt Herzinger of the US Air Force Academy, data scientist Dr. Kathryn Bryant, and mathematical demographer Dr. Hiram Beltran-Sanchez of UCLA (the latter two being NAU graduates) - gave inspiring talks on a wide range of topics. Faculty and student review comments were overwhelmingly positive, due in part to being blessed with perfect weather. The SUnMaRC organizing committee (Luke Alvarez, Matt Fazio, Ryn Huesgen, Jeff Rushall and Ian Williams) deserves a huge amount of credit for a successful weekend!



SUnMaRC at NAU, April 2026

FAMUS

By Jeff Rushall

FAMUS, the Friday Afternoon Mathematics Undergraduate Seminar, regularly met during the 2025-26 academic year, continuing a tradition that began in 2009. An average of 35 people, mainly undergraduate students, attended FAMUS each week this past year. A typical FAMUS consists of student-centered announcements, then a 25-minute fun math talk, and then a 25-minute interview of a department faculty member. FAMUS provides an opportunity for students to see neat math AND get to know department faculty AND feel a sense of belonging within the department community. FAMUS continues this fall and takes place most Fridays at 3-4 pm in Adel 164.

Student Research and Discovery

NAU's NCUWM Tradition

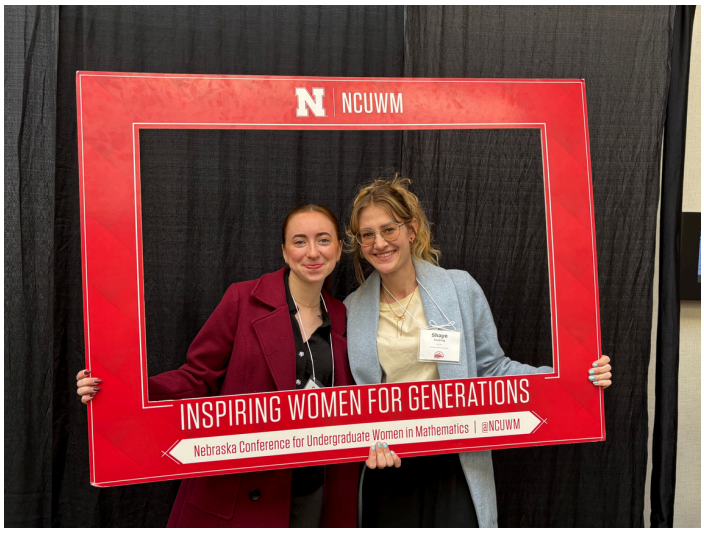
By Amy Rushall

The Nebraska Conference for Undergraduate Women/Wisdom in Mathematics (NCUWM) has become an important tradition for undergraduate women pursuing mathematics, and NAU has been part of that story almost from the beginning.

The University of Nebraska–Lincoln created NCUWM in 1999 after reflecting on a gap in its own graduate program: during the 1980s, 23 men and zero women earned PhDs in mathematics at UNL. In response, the department made a commitment to better support and mentor women mathematicians. NCUWM grew out of that commitment, offering undergraduate women a national space to build community, share research, explore graduate school and career pathways, and see themselves as part of the broader mathematics profession.

Held each year at the end of January in Lincoln, Nebraska, the conference begins on Friday afternoon and concludes around noon on Sunday. Over the course of the weekend, students present research talks and posters, enjoy a banquet dinner, hear invited mathematics talks by notable women in the field, attend career and graduate school panels, participate in themed breakout sessions, and connect with peers and invited guests through purposeful networking opportunities.

Thanks to external funding, student registration remains $50 plus travel expenses, with lodging and some meals included in the registration fee. NAU's Department of Mathematics and Statistics has supported student travel in a variety of ways over the years. In the early 2000s, faculty literally passed a hat around a department meeting, pulling cash from their wallets to help cover student travel costs. This act of generosity has become part of NCUWM legend. Today, students seek travel funding through the ASNAU student government.



Gabby Stewart (left) and Shaye Fordring (right) at NCUWM

Since the second annual conference in 2000, NAU has sent an estimated 75 students to NCUWM. The department continues to support undergraduate women's research and conference participation to this day. Through this sustained commitment, NAU has developed a strong reputation as a long-time supporter of NCUWM, undergraduate research, and women in mathematics.

Most recently, we supported two undergraduate researchers to share their work and engage in their first ever math conference. Gabriella Stewart, mentored by Jeff Rushall, presented her research talk, *Cover Pebbling Numbers of Directed Graphs*, while Shaye Fordring, mentored by Dana Ernst, presented *Avoidance in Signed Cayley Permutations*. Accompanied by faculty member Amy Rushall, the students immersed themselves in the full conference experience. Beyond the conference, they explored the University of Nebraska-Lincoln campus and enjoyed the culture and cuisine of the Lincoln area, making the trip both professionally enriching and personally memorable.

Student Research and Discovery

NAU in Portugal

By Jeff Rushall

NAU in Portugal, NAU's only study abroad opportunity for undergraduates seeking to earn mathematics credit through CIE (Center for International Education), took place for the second consecutive summer in 2026, with 11 NAU students taking one of MAT 239 (differential equations), MAT 316 (linear algebra) or MAT 497 (independent undergrad research). In addition to earning 3 credits toward graduation, the students participated in 14 sightseeing excursions to various historic and cultural landmarks in the Lisbon metropolitan area. NAU in Portugal is scheduled to take place June 6, 2027 - June 26, 2027, with the same courses being offered, as well as a new special topics course, MAT 399 ("The Mathematics of Portugal"). For more information, please contact faculty leaders Jeff Rushall (jeffrey.rushall@nau.edu) or Amy Rushall (amy.rushall@nau.edu).

Taking on the Putnam

By Misha Baltushkin

The William Lowell Putnam Mathematical Competition is the preeminent mathematics competition for undergraduate college students in the United States, Canada, and Mexico.

What began as a friendly competition between mathematics departments at colleges and universities back in 1938 has become the leading university-level mathematics examination in the world.

Each December, thousands of the brightest math students from hundreds of colleges and universities compete to win top honors. Although participants work independently on the six-hour exam's problems, there is also a team aspect to the competition.

The median score is often near 0! It's common for participants to brag about any non-zero score on their resumes. Last year, we had our largest number of participants (17), and three of them received non-zero scores:

- November Masinelli: 11
- Athena Bryant: 10
- Riley Alger: 1

Boom! In addition, last year NAU was ranked 183 out of 487 in the team competition. Congratulations to all the students who participated!

In an age when artificial intelligence is transforming the way we approach mathematics and problem-solving, cultivating human ingenuity is more important than ever. We need young minds that can think independently, reason rigorously, tackle unfamiliar challenges, and push the boundaries of what we know. Competitions like the Putnam help develop precisely these abilities. After all, the goal is not simply to produce students who can solve difficult math problems, but to nurture the next generation of thinkers who will make discoveries, advance science, and help propel humanity forward—with AI as a powerful tool along the way.

Student Research and Discovery

A Home for Student Research

The department is preparing a dedicated home for undergraduate and graduate research. The planned lab will give students space to work alongside faculty mentors and peers, pursue original questions, and prepare to share their findings.

Plans include collaborative workspaces with whiteboards, flexible seating, and technology for discussing ideas and solving problems. Computing resources will support work with large datasets and models in statistics, data science, and applied mathematics.

The goal is to help students develop research experience that prepares them for graduate study and careers while building a stronger community around discovery.

The proposed name for the research space is “Mathematics, Statistics, and Data Science Research and Innovation Lab.” Below is a draft logo.



Ways to Support the Lab and Student Research

Your philanthropic support directly empowers Lumberjacks to learn, discover, and thrive through hands-on learning, research, and academic excellence.

$100–$1,000: Helps send a student to a professional conference by covering travel or registration costs.

$1,000–$5,000: Supports undergraduate or graduate research experiences, field equipment, or student enrichment initiatives.

$5,000–$15,000: Supports the new Research and Innovation Lab, a dedicated space designed to inspire discovery, collaboration, and innovation for our students.

$15,000: Supports one Mathematics and Statistics student with a 10-week summer research experience through a Dean’s Distinguished Fellowship.

$50,000+: Establishes an endowed scholarship supporting Mathematics and Statistics students in perpetuity.

$500,000+: Creates a transformative impact through named faculty positions, lab renovations, or major programmatic enhancements.

Give online to support the lab

To learn more about the project and ways to support it, contact:

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Faculty Research and Grants

Jin Wang Delivers a Keynote in Xiamen

By Jin Wang

On May 30, 2026, I delivered a keynote speech titled "Trimmed Estimators of Multivariate Linear Regression Coefficients" at the 9th International Conference on Statistics and Data Science (SDS 2026), held in Xiamen, China. In this keynote, I addressed the sensitivity issue of the classical least squares estimators of multivariate linear regression coefficients to outlier(s) and proposed a new class of trimmed estimators. Unlike all existing trimmed estimators, which are robust only to outliers in the response variables, the proposed estimators are robust to outliers in both the response and covariate variables. Furthermore, the proposed estimators are highly efficient and computationally straightforward, making them both theoretically attractive and practically favorable.



Jin Wang at SDS 2026

Forecasting RSV Hospitalizations

Integrating social determinants of health to improve the forecasting of Respiratory Syncytial Virus (RSV) hospitalizations in Arizona and across the United States (NIH).

- Ye Chen · Role: Co-PI
- Award: $76,000

This project aims to develop a spatially informed statistical framework for forecasting RSV hospitalizations among vulnerable and historically underserved populations in Arizona and across the United States by incorporating demographic, geographic, and social determinants of health. The framework will also evaluate vaccination and other preventive strategies, support localized public health decision-making, and help reduce RSV-related health disparities, hospitalizations, and mortality.

AI and Mathematics Teacher Preparation

Reimagining Teacher Preparation and Identity: Artificial Intelligence-Augmented Mathematics Content Education for Elementary Pre-Service Teachers from the National Council of Teachers of Mathematics Early Career Research Grant (NCTM).

- Minah Kim · Role: Principal Investigator
- Award: $10,000

This project examines how generative AI can be responsibly integrated into mathematics content courses for elementary-focused pre-service teachers. It explores mathematical sense-making, perceptions of GenAI, and developing identities as future mathematics teachers.

Faculty Research and Grants

STEM Core Practices Framework

Advancing Innovation in STEM Teacher Preparation: The STEM Core Practices Framework (NSF).

• Shannon Guerrero · Co-PI with Jo'el Johanson (PI) and Ron Gray (Co-PI) in Department of STEM Education

• Amount: $396,921

This project aims to serve the national interest by strengthening undergraduate STEM teacher preparation through the development and study of the STEM Core Practices Framework, a program-level, practice-based model designed to support future mathematics and science teachers in enacting high-quality, rigorous, and responsive instruction. Anticipated outcomes include improved program coherence, strengthened faculty implementation of practice-based approaches, and highly prepared future STEM teachers ready to serve students in rural and high-need communities. The goals of this project are to develop, implement, and study instructional tools and resources that support enactment of the STEM Core Practices Framework across the NAUTeach program at Northern Arizona University, a STEM teacher education program preparing approximately 40 secondary mathematics and science teachers annually.

Mathematics Teaching Trajectories

Mathematics Teaching Trajectories (MTT): A Longitudinal Study of Mathematics Teachers' Persistence and Instructional Practice (NSF).

• Shannon Guerrero · Co-PI with math ed faculty from University of Arizona and UNC Charlotte

• Amount: $689,575 (NAU: $107,835)

The theoretical framework of this study combines two complementary perspectives that support investigation of teaching trajectories and persistence, with attention to teachers' instructional practice as a component of their professional trajectories. With regard to instructional practice, we focus particularly on practices aimed at promoting student success through research-based learning opportunities, experiences, and outcomes. Research questions address mathematics teachers' career trajectories and persistence with respect to autonomy, competence, and relatedness; how Noyce program experiences influence teachers' career trajectories; how math teachers develop and implement effective classroom practices; and how Noyce program experiences influence the development and implementation of effective classroom practices. MTT will utilize a mixed-methods research design incorporating surveys, interviews, and video of classroom instruction.

Supporting Current and Future Mathematics Teachers

Data Science for Teachers

By Jeff Hovermill

The Arizona Data Science Corps (AZDSC) is an NSF-supported partnership among NAU's Department of Mathematics and Statistics, the Arizona Department of Education, and the Coconino County Educational Service Agency. In its first year, AZDSC's summer workshop served roughly 45 teachers across three pathways.

Led by the PI team—Jeffrey Hovermill, Ye Chen, and Jaechoul Lee—the program equips educators with classroom-ready data science learning experiences and sustained professional support. Learn more about the $1.27 million NSF grant at:
azdsc-nau.github.io/AZDSC_NAU_SITE/

NAU's Noyce Program Builds a Community of Mathematics and STEM Educators

By Angie Hodge-Zickerman

What does it take to prepare the next generation of outstanding mathematics teachers? At NAU, the NSF-funded Robert Noyce Teacher Scholarship Program is doing much more than providing financial support to future mathematics and science educators. The program is helping build a community of passionate, innovative STEM teachers who are prepared to make a difference in their classrooms, schools, and communities.

Through scholarships, mentoring, professional development, and connections to a national network of mathematics and STEM educators, Noyce Scholars gain opportunities that extend well beyond their time at NAU. The program places particular emphasis on preparing teachers to work in high-need schools while helping them develop the knowledge, confidence, and professional connections needed for successful teaching careers.

One important component of the program is the Summer Bridge to Teaching experience, which helps future educators make the transition from being mathematics and science students to becoming classroom teachers. Through collaborative learning, exploration of effective instructional practices, and opportunities to connect with other educators, participants begin building the skills and professional community that will support them throughout their careers.

The learning does not stop once scholars enter the classroom! The NAU Noyce grant also offers professional development opportunities focused on a wide range of topics including engineering education, artificial intelligence (AI) in the STEM classroom, student motivation in mathematics classrooms, and effective classroom management. These experiences help educators explore new instructional approaches and create engaging learning environments where students can thrive. These professional development experiences bring together future and practicing teachers across the United States to share ideas, learn from one another, and continue growing professionally.

We are especially proud of the NAU mathematics students who have recently participated in the Noyce program. Congratulations to our most recent NAU mathematics Noyce scholars: Lauren Aragon, Macy Bodrero, Alexandra Hancock, Elizabeth Shute, Vaughn Wilmer, Sarah Moreno, Isabella Wood, Jolea Bushie, and Andrew Patrick.

These nine mathematics scholars represent the next generation of educators who are helping students discover the beauty, relevance, and possibilities of mathematics. Several are already teaching in Arizona schools, putting their mathematical knowledge and passion for teaching into practice.

Fostering Student Success

A New Chapter at the LMC

By Gina Nabours and Matt Fahy

The Lumberjack Mathematics Center (LMC) is a specialized learning space where the department delivers four of our entry-level MAT courses. The LMC leverages technology and innovative instructional strategies to engage and support students with a broad range of mathematical backgrounds. We strive to not only bolster students' mathematical knowledge, but to build their confidence in using analytical and quantitative thinking in other courses and throughout broader areas of life.

Teaching Professor Matt Fahy recently became LMC Director, taking over from Associate Teaching Professor Dr. Gina Nabours, who served in the position for seven years. During her time as Director, Dr. Nabours guided the LMC through a host of challenges, oversaw numerous course modifications, enhanced trainings for undergraduate tutors and graduate instructors, and leaves the LMC a well-oiled machine. Her tireless dedication to the LMC is greatly appreciated by the department and university.

The LMC is the recent beneficiary of a generous gift from Karen Larson and Gary Bicker in support of first year students pursuing STEM majors. This funding provided resources to develop the Peer Coach program. Peer Coaches support students in MAT 108 Algebra for Precalculus by assisting with math content and also by sharing student success strategies that are advantageous across all of their courses. This gift has also given the department the opportunity to provide financial support to a graduate student to conduct statistical analysis of LMC course data during the summer. Additionally, this funding established a Distinguished Professorship; Dr. Nabours was named the first Karen Larson and Gary Bicker Distinguished Math Professor, a title Mr. Fahy is now honored to hold.

Adapting to the changing needs of students has always been a core principle of the LMC. Mr. Fahy and a dedicated team of staff and faculty are committed to innovating to address current challenges in higher education. The LMC will continue to be a welcoming, supportive, and engaging learning environment, providing foundational mathematics knowledge and enhancing student success skills.

The Lumberjack Success Experience

By Gina Nabours and Katie Louchart

DoMS partnered with the Freshmen Intensive Transition (FIT) Programs to offer the Lumberjack Success Experience just before the Fall 2026 semester. The FIT programs help new students navigate the transition from high school to college while providing realistic exposure to the rigor of college coursework. Participants attend lectures, meet with peer mentors, form study groups, and explore opportunities and resources at NAU and in Flagstaff. The expansion of this program was made possible in part through generous support from the Arizona Public Service (APS) Foundation.

Students participating in the Lumberjack Success Experience worked with Teaching Professor Katie Louchart and Associate Teaching Professor Dr. Gina Nabours, engaging with their peers in problem-solving tasks throughout the week. Students learned what to expect in their upcoming mathematics courses and how to succeed in an active learning environment. They also met with advisors, DoMS course coordinators, and DoMS Student Success Coordinator Kiersten Gaetano to develop skills supporting their success in mathematics classes and at NAU.

Fostering Student Success

Peak Performance: Confidence before the Semester Begins

By Kiersten Gaetano

Peak Performance Mathematics Bridge Program is a free, fully virtual summer program that helps NAU students strengthen their mathematics skills and build confidence before the fall semester begins. Over the course of seven weeks, participants work through a personalized online learning platform and meet one-on-one with an assigned undergraduate Math Coach for six individualized Zoom sessions. Students use the program to prepare for the Math Placement Test, refresh foundational concepts, and build the skills needed for success in upcoming mathematics and statistics courses. With flexible scheduling and personalized support, Peak Performance helps students begin the semester feeling confident, capable, and ready to succeed.

Originally created to help incoming students prepare for the Math Placement Test, Peak Performance has evolved alongside changes in the university's placement process. While many students now receive placement through multiple measures such as high school coursework, GPA, and standardized test scores, the need for mathematical preparation and confidence-building remains as important as ever. This past summer marked an exciting expansion of the program as Peak Performance welcomed not only incoming students, but also current NAU students seeking to refresh foundational skills before beginning their next mathematics or statistics course.

The program serves as a form of "math conditioning," helping students maintain and strengthen their mathematical knowledge over the summer so they can begin the fall semester ready to succeed. At the heart of Peak Performance are the student Math Coaches, who work individually with participants through personalized Zoom sessions to answer questions, explain concepts, build study habits, and introduce students to the many resources available at NAU. Student feedback consistently highlights these mentoring relationships as one of the most valuable aspects of the program. Participants describe their coaches as patient, encouraging, and instrumental in helping them develop confidence in mathematics. As one student shared, "For the first time in my life, I felt like I could actually do math." Supported in part by funding from a 2016 Digital Learning Initiative Award, Peak Performance continues to embody the department's commitment to innovation, access, and student success. By connecting students with knowledgeable peer mentors before the semester begins, the program helps ensure that more Lumberjacks start their academic journey feeling confident, supported, and prepared to reach their goals.

Upward Bound

By Katie Louchart

The Department of Mathematics and Statistics supported over 50 high school students in the 2026 Upward Bound program this summer. Recent MS Mathematics graduate Madison Cox developed and delivered fun, interactive math lessons weekly during the UB program. The students enjoyed exploring various types of logic puzzles, card games and combinatorics, and vertex coloring and graph theory. The students practiced their math skills multiple times per week using an interactive, online math software, while being supported by Math Jacks Keegan Grau, Lizzie Greene, Dayleon Howard, and Brady Wisniewski.

Actuarial Science Is Expanding at NAU

A New BS in Actuarial Science

By Monika Keindl

We are thrilled to announce a new BS in Actuarial Science degree! This specialized program blends mathematical and statistical theory with sharp business skills to set the next generation of Lumberjacks up for incredible careers in risk analysis, finance, consulting, and insurance.

As we welcome our first cohort, we're looking to our alumni community for support. Whether through mentoring, networking, or internship opportunities, your experience can help shape the future of these aspiring actuaries and risk professionals. If your company is looking to host an intern from a pipeline of highly skilled grads, or if you just want to reconnect with the department, we would love to hear from you!

The Selina Gilbertson Actuarial Science Award

By Selina Gilbertson

As an NAU alumna, I'm grateful for the education, mentorship, and opportunities I received through the Department of Mathematics and Statistics. The department provided a strong mathematical foundation and encouraged me to pursue a career in actuarial science. Today, I'm fortunate to work as a healthcare actuary, and I wanted to give back in a way that could help future students pursue similar opportunities.

Establishing the Selina Gilbertson Actuarial Science Award has been a meaningful way to stay connected to the department. The award helps students pursuing actuarial careers offset the cost of professional exams and study materials, which can be a significant financial hurdle early in their careers. My hope is that this support allows students to focus on learning, building confidence, and taking the next step toward a rewarding profession. It's an honor to support students as they begin their own journeys, and I look forward to seeing the impact they'll have in the years ahead.

Showcasing Our Faculty

Faculty Profile: Ben Lucas

By Ben Lucas

Note from the Chair: Ben was the recipient of this year's Chair's Research and Scholarship Award.

My research focuses on data science and machine learning, which, at their core, are about finding patterns in data and using those patterns to better understand the world and make predictions. I use it as a broadly applicable tool, rather than science tied to any field. One of my favorite aspects of being a data scientist is the opportunity to collaborate with researchers from completely different backgrounds, learning about their fields while applying mathematical and computational methods to problems I might otherwise never encounter. This interdisciplinary approach has allowed me to work on projects spanning public health, homelessness prevention, environmental science, and collegiate athletics.

This past year has been particularly exciting, with several new and continuing research projects. I was part of a team awarded a $4.25 million NIH grant, where I am developing machine learning models to investigate which interventions and services are most effective for children with different autism-related needs and characteristics. I also received renewed funding for my work with the Arizona Housing Analytics Collaborative (AzHAC), where I developed a predictive model that estimates the probability of someone experiencing homelessness over different time horizons. The goal is to provide Arizona's 211 helpline operators with information that can help identify individuals at risk and connect them with preventative services before they lose their housing.

On the environmental science side, I co-authored several publications investigating carbon fluxes in Colorado's high-elevation ecosystems, using machine learning to better understand and predict how these environments exchange carbon with the atmosphere. I've also enjoyed working with NAU's Division I athletic teams to improve how they collect, process, and analyze performance data. While these projects may seem unrelated, they demonstrate what I find most rewarding about data science: the same fundamental methods can be adapted to tackle an enormous range of meaningful (and fun) problems.



Ben Lucas at Cocodona

At the end of the academic year, I traded my keyboard for a pair of running shoes and took on a rather different challenge: the Cocodona 250, a 250-mile trail race from Black Canyon City to Flagstaff. After 73 hours on my feet, I finished as the 15th-place male and 2nd Flagstaff local. One of the things I love most about running is how different it is from my research. I spend so much of my working life thinking about numbers, models, and data, but when I'm out on the trails, I can forget all of that and simply enjoy the experience of moving through the landscape. It's a welcome reminder that not everything meaningful needs to be measured or quantified.

Showcasing Our Faculty

Faculty Profile: Angie Hodge-Zickerman

By Angie Hodge-Zickerman

Dr. Angie Hodge-Zickerman, Professor of Mathematics Education at Northern Arizona University, received the 2025 Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics from the Mathematical Association of America (MAA). This national award recognizes up to three mathematicians annually for their outstanding teaching and contributions to mathematics education beyond their home institutions. Throughout her career, Dr. Hodge-Zickerman has played a leading role in advancing active learning and inquiry-based teaching, with a particular interest in helping students experience mathematics through exploration, collaboration, and meaningful problem-solving. At the heart of her work is a belief that all students deserve opportunities to engage in mathematics, make sense of challenging ideas, and develop confidence in their mathematical abilities.

In August 2026, Dr. Hodge-Zickerman was invited to deliver the James R. C. Leitzel Lecture at MAA MathFest. Her lecture, Mathematical Confidence: Not a Byproduct of Success, but the Pathway to It, discussed how confidence shapes students' willingness to engage in mathematics.

Rather than viewing confidence as something students develop only after experiencing success, she encouraged mathematics educators to think about how confidence can help students take risks, ask questions, persist through challenges, and ultimately experience success. The lecture invited participants to consider how the decisions we make as instructors, both large and small, can influence how students see themselves as mathematical thinkers.



Dr. Angie
Hodge-Zickerman

Showcasing Our Faculty

Faculty Profile: Nasriah Morrison

By Nasriah Morrison

Nasriah Morrison joined the NAU Mathematics and Statistics faculty in Fall 2026 as an Assistant Professor of Mathematics Education. Her research interests include the development of positive mathematics identities that are rooted in broad conceptions of mathematics among students belonging to historically excluded racial and ethnic groups, as well as how teachers can be supported in working toward this goal, particularly through the integration of racially expansive histories throughout mathematics curricula.

Previously, she worked as a postdoctoral fellow at Teachers College, Columbia University on several NSF projects: first, with Dr. Erica Walker on her Storytelling for Mathematics projects, which explored the use of mathematicians' digital stories in mathematics learning spaces as a means of promoting students' mathematics learning and engagement; then, with Dr. Colby Tofel-Grehl on projects investigating the use of community-centered, computer science-integrated STEM curricula as a means of fostering rightful presence.

She completed her PhD in mathematics education at Teachers College, where she also taught courses in multiculturalism and policy in mathematics education. For over a decade prior, Nasriah taught middle and high school mathematics in the New York City public school system. Nasriah holds an MA and MPhil from Teachers College and a BA from the University of California, Berkeley.



Nasriah Morrison

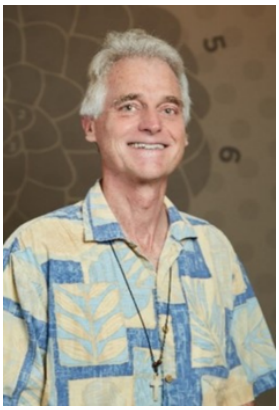
A very rusty pianist and cellist, she also enjoys most genres of live music, as well as enthusiastic discussions about Percival Everett novels and horror movies.

Celebrating Our Colleagues

Celebrating Jim Swift's Retirement

By John Neuberger

Professor James W. Swift retired from Northern Arizona University in the spring of 2026 after being a faculty member of the Department of Mathematics and Statistics for over 35 years. Jim obtained his PhD in physics from UC Berkeley in 1984. He was a postdoctoral fellow at Woods Hole Oceanographic Institute, a research fellow at King's College, Cambridge, a postdoctoral fellow at Les Houches Center for Theoretical Physics, France, a lecturer at the University of Warwick, UK, and a postdoctoral research scientist in mathematics at the University of Houston before joining NAU in 1990. Jim has published more than 30 research articles in mathematics and physics, specializing in dynamical systems. He has collaborated with NAU faculty and students in widely diverse areas of mathematics and is still active in research as a Professor Emeritus. A consistent contributor at seminars and colloquia, Jim is well known for



Jim Swift

asking frequent and insightful questions and for giving interesting and informative presentations. During his tenure at NAU, Dr. Swift was invaluable as an active resource in the department's mission to be an international leader in mathematical research.

Celebrating Bob Daugherty's Retirement

By Dana C. Ernst

Bob Daugherty's ties to NAU span three decades. He earned his MEd in 1996 and his MS in mathematics in 1998, serving as a graduate teaching assistant before becoming an instructor. From 2000 to 2006, he worked in NAU Engineering as an analyst and director of the Center for Data Insight. He returned to the Department of Mathematics and Statistics in 2010, serving as an instructor, lecturer, and teaching professor through 2025.



Bob Daugherty

In retirement, Bob continues to play the Irish wooden flute, with performances at Harrington's Tap House on Sundays from 4:30-6:30PM. He is also learning the uilleann pipes, with limited success but considerable impact on his cats, and revisiting the guitar, penny whistle, and bodhrán. Novels, exercise, and local political volunteering round out his activities. He is also enjoying a little well-earned laziness after more than 40 years of keeping that inclination in check.

Thank you, Bob, for your many years of service to NAU and our students!

Remembering Terry Crites

By Roy St.Laurent

Retired faculty member Dr. Terry (Terence Wayne) Crites passed away on February 27th, 2025 after a long struggle to recover from major surgery in June 2024.

Terry was born on Pi Day (March 14) 1959, and grew up in Piedmont, Missouri. He earned a BSEd, MEd, and PhD from the University of Missouri-Columbia, and joined the NAU faculty as an Assistant Professor of Mathematics Education in 1990. He served as Chair of the Department of Statistics from 1996 to 2001, followed by several years as Associate Dean in the College of Arts & Sciences, before returning to the faculty. In 2017 he again served as Chair (Department of Mathematics & Statistics) until his retirement from NAU in 2021.

Terry had the unenviable task of being Department Chair during the Covid epidemic and immediately thereafter. Though he never let it show, this took a toll on him.

Terry had many "outside" interests: he was active in his church, including working as a kitchen volunteer, and as a member of their handbell choir. He was a lifelong St. Louis Cardinals baseball fan.



Terry Crites

He was phenomenal at trivia – especially when it came to baseball, civil war, and pop music (1960's and on). He was a volunteer in the CASA (Court Appointed Special Advocates) program, a network of volunteer advocates who represent abused and neglected children in court. He also served on the Arizona Commission on Judicial Performance Review for a number of years.

He is survived by sons Andrew and Michael, and his ex-wife Gwen Crites.

Our Alumni Community

How NAU Shaped My Path

By Michael Butros

When I started my master's in mathematics at NAU, I thought I was signing up to get better at math. What I got was a way of thinking. Working under Dr. John Neuberger on my thesis, Nonlinear Elliptic Value Problems: A Numerical Approach, taught me how to sit with a genuinely hard problem long enough to see its structure — and how much patience real numerical work demands when the elegant closed-form answer isn't there. The rigor Dr. Neuberger expected, and the generosity he showed in getting me there, is something I still measure myself against.

The other formative piece was teaching. I was a graduate teaching assistant for the entirety of my time at NAU, which meant I was learning advanced mathematics and teaching mathematics, often in the same week. The Department of Mathematics and Statistics gave me that opportunity early, and it set the trajectory for the next 25 years of my career teaching mathematics and physics. It also planted an instinct I still lean on today: rigor matters, but so does making that rigor legible to whoever's in front of you. I don't think I'd have found that instinct as early anywhere else.

Of course, NAU wasn't just coursework and grading. Some of my closest, most enduring friendships — Dana, Katie and Jacob, and Matt — started in those years, and honestly, those relationships have outlasted a lot of the math. That combination, demanding mentorship, real teaching experience, and people who became lifelong friends, is what I think of when I think back on the department.

These days I'm Director of Education at Georgia Tech's AI Institute for Advances in Optimization



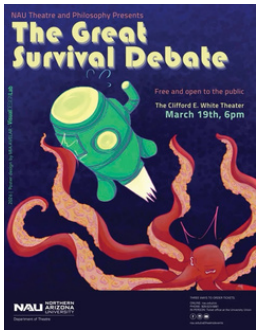
Michael Butros

(AI4OPT), building outreach and training programs that bring optimization and AI to K-12 students and teachers, and I'm considering going back to school, at Georgia Tech, to pursue a PhD in Data Science and Statistics. Different subject matter, same instincts Dr. Neuberger and my years as a GTA first sharpened. Whenever I meet a student who reminds me of who I was at NAU, I think about how much of my path traces back to a department willing to invest in a graduate student's growth — and I hope that opportunity is still there for the ones coming up now.

Great Survival Debate Champion!

By Dana C. Ernst

In March 2026, I represented mathematics in NAU's Great Survival Debate. The premise: great upheaval has occurred, and humanity must build a new civilization. Each debater had to argue that their discipline was indispensable to helping that civilization flourish. Given my broader mission of elevating the status of mathematics, I had no choice but to play ball.



2026 Great Survival Debate

Six debaters represented anthropology, history, biochemistry, mathematics, electrical engineering, and philosophy. We each had five minutes for opening arguments and two minutes for rebuttal. Having never participated in such an event, I had no idea what to expect. My goal was to have fun and give it my all.

I delivered my opening from a script I had written the night before, after spending two weeks stressing about it. It was far from perfect, but I'm proud of what I came up with. Balancing a serious argument with humor was a rewarding exercise in creativity. Here is a short excerpt:

"A mathematician's goal isn't to find x. It's to grapple with the infinite and be immersed in the process of discovery. Repeatedly engaging in this process hones the mind. It develops a mental maturity marked by clear, rigorous thinking. It teaches you how to be wrong until, through the sheer force of logic, you are finally, undeniably right. Mathematics is the gym where the human intellect lifts weights."


Dana at the Great Survival Debate

To my surprise, I emerged as the champion, winning both the judges' vote and the audience vote!

Seeing so many friends, students, and colleagues in the audience meant a great deal to me. What an awesome community we have! After a challenging first year as chair, celebrating a win for mathematics felt especially good. More importantly, I left heartened by the engagement and enthusiasm of the broader NAU community.

Thank you to everyone who helped create such a fun and entertaining event!

P.S. To my fellow debaters: apologies for the digs. I love all the disciplines!

Scholarships and Awards

Student Scholarships and Awards

Congratulations to our student honorees. We thank the donors whose generosity makes these scholarships and awards possible. Most of these scholarships and awards were given in Spring 2026.

Arthur & Catharine B Adel Scholarship in Math
Bryer Samuelson; Benjamin Owusu Acquah; Chris/Karl Reger

Carlson Diekelman Rushall Schroeder Memorial Scholarship
Moro Adu-Gyamfi

Charles E. Little Mathematics Education Scholarship
Aubrie Scalaro

Evelyn O. Bychinsky Award for Students of Promise in Mathematics
Hailey Pickner; Jamie Welsch

Fran Allegretto Memorial Mathematics Scholarship
Taiya Quinlan

J. Harvey Butchart Mathematics Scholarship
Maya Moss

Joanna Wheaton Endowed Memorial Scholarship
Brahm Luyt; Coley Christoph; Noah Verdugo

John W. Jennison and William L. Parks Mathematics Scholarship
Denise Gonzalez

Johnson-Ratliff Memorial Scholarship Award
Morgan Boyers; Calder Evans

Joseph Mutter Mathematics Scholarship
Shaye Fordring

Karan & Terence Hall Scholarship
Renae Porteous; William Lippincott

Vesto Slipher Scholarship (Mathematics Award)
Allie Moskowitz

Undergraduate Mathematics Scholastic Award
Elizabeth Shute, 2025; Andrew Patrick, 2026

Outstanding Graduate Teaching Assistant
Scott Akin

Graduate Mathematics Scholastic Award
Madison Cox

Scholarships and Awards

Fall 2025 Standard Bearer: Elizabeth Shute

By Nellie Gopaul & Shannon Guerrero

Elizabeth Shute, BSEd Mathematics, was selected as the CEFNS Standard Bearer for Fall 2025. As an undergraduate at NAU, Elizabeth was academically exceptional, admired by her peers and faculty, and deeply dedicated to mathematics education and the broader NAU community. In the classroom, Elizabeth's academic record was outstanding. As a Mathematics Education major, she has maintained a 4.0 GPA while completing rigorous upper-division mathematics courses. Her Number Theory professor, Monika Keindl, who recommended her for this honor, described Elizabeth as someone who "stands far above her peers… inquisitive, diligent, and possessing the mathematical curiosity that we all hope to encounter in our students but rarely do." Teaching Professor and Math Club advisor Tyler Brock echoed this praise, noting, "I cannot think of a better person for both roles. Elizabeth was [notable] as a future teacher of mathematics – extremely dedicated to teaching philosophy, pedagogy, and practice while simultaneously being exceptional (and exceptionally passionate) about mathematics content at the college level."

Elizabeth's excellence extended well beyond our classroom walls. She was a National Science Foundation Noyce Scholar for two years and actively represented NAU at professional events, including the Arizona Women's Symposium in Mathematics, the Western Regional Noyce Network Conference, the Math in the Mountains Conference, and the AI in STEM Education professional development series.

Her service in the Lumberjack Mathematics Center (LMC) as a Math Jack (a peer tutor) further highlighted her leadership and character. Supervisors recalled her reliability, initiative, and genuine care for student success. Math Jack supervisor Ben Jeffries praised her for engaging in pedagogy and strategy discussions that were difficult to tutor "in a way no other math jacks have," further remarking that she cared deeply about refining and constantly improving her teaching techniques. LMC Director Gina Nabours summarized her contributions succinctly, "Elizabeth has been a stellar employee who cares deeply about supporting students' understanding of mathematics."

In short, this first-generation, honors student exemplified the values of Northern Arizona University, the College of the Environment, Forestry, and Natural Sciences, and the Department of Mathematics and Statistics. She was a scholar of the highest caliber, a role model for her peers, and a dedicated future educator. It was with great pride that Elizabeth represented both the Department of Mathematics and Statistics and CEFNS as the Fall 2025 Standard Bearer.

Scholarships and Awards

Spring 2026 Standard Bearer: Andrew Patrick

By Nellie Gopaul & Shannon Guerrero

Andrew Patrick, BS Mathematics and BSEd Mathematics, was selected as the CEFNS Standard Bearer for Spring 2026. Andrew was a double major in Mathematics and Mathematics Education with a cumulative GPA of 3.84. In Fall 2025, he completed honors-level capstone and research experiences in both disciplines, demonstrating advanced mathematical reasoning alongside a sustained and thoughtful commitment to mathematics teaching. He was an exceptionally strong mathematics student and an energetic, community-minded emerging educator.

Andrew's academic accomplishments were both broad and deep. In addition to excelling in upper-division coursework, he participated in a year-long undergraduate research project with Dr. Dana Ernst during Fall 2024–Spring 2025, presented this work at the Southwestern Undergraduate Mathematics Research Conference (SUnMaRC) under the title "Architecture of braid graphs in Coxeter systems," and will be a coauthor on a paper currently in preparation. He also completed an honors capstone research project with Dr. Shannon Guerrero during Fall 2025 where he researched faculty and student engagement with a practice-based teacher education framework as part of the NAUTeach program, and presented his work in a STEM Education departmental colloquium. His engagement in sustained mathematical and mathematics education research, combined with his ability to communicate that work publicly, reflected intellectual maturity and professional promise.

What distinguished Andrew most, however, was not only what he knew, but how he invited others into mathematics. Professor Tyler Brock, who knew Andrew since his first semester at NAU, noted that Andrew understood learning is fundamentally conversational – it does not happen in isolation, but through dialogue. When Andrew understood something, he was excited to talk about it and reflect on it; when he did not understand something, he was equally eager to engage. That eagerness was not performative, it was generous – Andrew helped others enjoy learning mathematics, not by diminishing its rigor, but by making it shared. His enthusiasm was contagious - he inspires peers to be brave in asking questions about their own understanding, and he contributed to a learning community in which thinking aloud felt natural. Faculty, too, felt this – Andrew made teaching more energizing simply by being his engaged self.

Beyond the classroom, Andrew's influence was especially noted in his work with the Math Achievement Program (MAP). Sujey Ramos, Director of MAP, described Andrew as a distinguished asset to the NAU community and a cornerstone of their team during his two years working as a peer assistant. She spoke of his rare ability to neutralize mathematical apprehension, intervene with expertise, humility, and genuine kindness, and replace the friction of math-induced anxiety with calm, focused mastery. Students did not merely receive tutoring; they experienced a shift in how they saw their own potential.

Andrew's pride in NAU and in our department was seen in his regular involvement and active participation in Math Club, the Friday Afternoon Mathematics Undergraduate Seminar (FAMUS), NAUTeach programming, and undergraduate research. His sustained participation reflected the fact that he valued community and wanted to contribute meaningfully to it. He represented the Department of Mathematics & Statistics, the Honors College, and CEFNS as the Spring 2026 Standard Bearer with enthusiasm and integrity.

Faculty Awards & Promotions // Ways to Give

Faculty Awards

Chair's Awards

Teaching: Rachel Neville
Research & Scholarship: Benjamin Lucas
Service: Gina Nabours

2025 Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics

Angie Hodge-Zickerman

NAU Outstanding Graduate Coordinator of the Year Award

Jeff Hovermill

American Statistical Association Outstanding Chapter Service Award

Robert Buscaglia

Department Promotions, 2025–2026

- Tyler Brock: Associate Teaching Professor
- Christina: Teaching Professor
- Nellie Gopaul: Teaching Professor
- Jeff Hovermill: Professor
- Michele Torielli: Associate Professor with tenure
- Ian Williams: Senior Lecturer

Ways to Give

Your gift supports student scholarships, research, conference participation, and department priorities.

Math Department Fund #4159
Math Scholarship Fund #4364
Math and Stats Research Lab #0165

To give by check, include the fund number and make it payable to NAU Foundation:
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Questions about giving?
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