COSAM: THE PROVEN PATH FOR MATHEMATICS AND STATISTICS GRADUATE STUDENTS
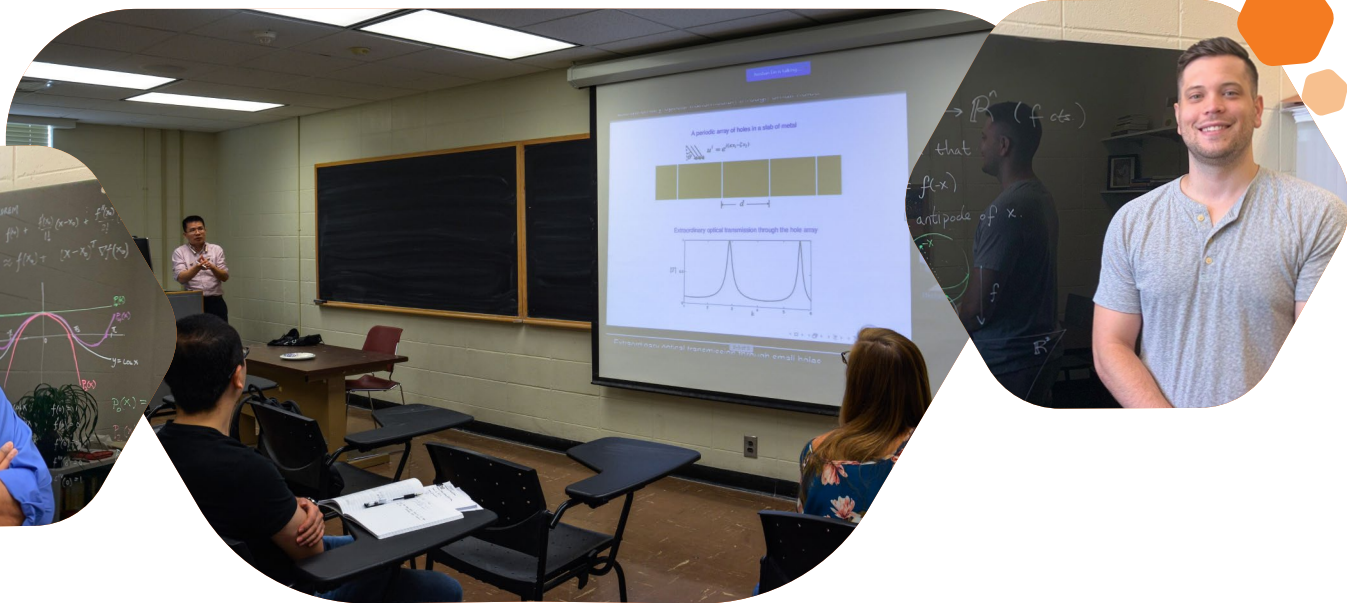

WHY SHOULD YOU APPLY TO EARN A M.S. OR A PH.D. FROM AUBURN UNIVERSITY'S DEPARTMENT OF MATHEMATICS AND STATISTICS?

1. Receive high quality training in diverse areas of mathematics and statistics.

2. Engage in cutting-edge research including interdisciplinary collaborations.

3. Benefit from financial assistance and fellowships including tuition waivers and stipends.

4. Prepare for employment in various sectors of business, government, and academia as evidenced by past excellent job placement success.

5. Engage with diverse students, staff, and faculty. COSAM is the only college on the Auburn University campus with a dedicated office for Inclusion, Equity, and Diversity.

LETTER FROM THE CHAIR

War Eagle from the Department of Mathematics and Statistics at Auburn University. The Department of Mathematics and Statistics (DMS) has 45 professors representing diverse areas of pure mathematics, applied mathematics, and statistics. Many of our faculty have obtained international recognition for their research. Since our graduate courses usually have five to 15 students, we can offer our students personal attention and close contact with faculty. Some faculty maintain applied research programs associated with several government and industrial laboratories. Currently, we have over 100 graduate students enrolled in our programs, and most of them have obtained a tuition waiver through our graduate assistant programs. Our graduate student population is multi-national and multi-cultural.

We are in the process of introducing several exciting new programs which should result in additional opportunities for our students to interact with government and industry.

Although higher education is one of the major employers of PhDs in Mathematics and Statistics, a graduate degree in these areas opens career paths in the private and public sectors. Many industries and businesses value the analytical and abstract reasoning skills of Mathematicians and Statisticians. For instance, several of our recent PhD graduates are working as data scientists in industry: aub.ie/dmsgrads

In the same way, the state and federal governments employ holders of degrees in Mathematics and Statistics to analyze data and to help make policy decisions. The mathematics classroom building (Parker Hall) has three computer labs equipped with over 50 desktop computers, providing several pieces of software and convenient internet access. Wireless internet is also available for your own device. Also, if needed, graduate students will be provided a computer for their offices as well as granted access to high-performance and parallel computing resources.

War Eagle!

Ash Abebe
Professor and Chair
Department of Mathematics and Statistics

ADMISSIONS PROCESS

The Department of Mathematics and Statistics welcomes applications from prospective students. Applications are accepted year-round. Applications for Fall admission are screened in February; admission and financial-support decisions are usually finalized in early March. To receive full consideration, applications need to be complete by January 31.

Detailed application instructions are given at https://aub.ie/prospectivedms.

The minimum admission requirements are:
• Bachelor's degree or its equivalent from an accredited college or university
• Official transcripts of all undergraduate and graduate credits
• Graduate Record Exam (GRE) General Test scores
• TOEFL scores for international applicants

Note: For cases of financial hardship, applicants may apply for an application fee waiver during the application process.

BASIRU USMAN
FOURTH YEAR PH.D. STUDENT STUDYING DATA SCIENCE.

My favorite thing about being a graduate student is realizing that every success achieved is actually one big step on a whole new road. I enjoy it because I can keep learning new things everyday starting from academic all the way to social life. There are so many mathematical theorems that I like, choosing one will not be easy. Nevertheless let me choose Hartman-Grobman Theorem, I choose it because it basically gives us a way to understand a qualitative behavior of a (sometimes very weird) dynamical system near a hyperbolic equilibrium point.
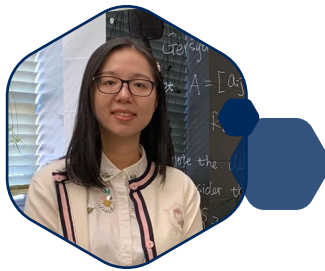
LUYINING (ELAINE) GAN
FIFTH YEAR GRADUATE STUDENT STUDYING LINEAR ALGEBRA AND MATRIX THEORY.

I like to learn new knowledge to enrich my life, not only in mathematics, but also in different cultures. Coming to Auburn University, I received help from our professors in my research and also made friends with people from all over the world. I am currently teaching calculus, linear algebra, and statistics. It is intriguing to see students that are taking my course understand the complicated concepts.

KELSEY ULMER
FINAL YEAR PH.D. STUDENT STUDYING APPLIED MATH.

What I love most about being a grad student is how much I have learned/grown and all of the amazing people I have been so blessed to meet and form such incredible friendships. Grad school really challenged me to grow as a "mathematician," and also as a person. I have learned a lot about myself and really grown into "me." As a graduate student, I have been so fortunate to meet so many brilliant professors and professionals who have truly been inspiring mentors and teachers.

GRADUATE PROGRAMS OF STUDY

The Department of Mathematics and Statistics offers programs leading to the following degrees:

- Master of Science in Mathematics (thesis)
- Master of Science in Statistics (thesis)
- Master of Applied Mathematics (non-thesis)
- Master of Probability and Statistics (non-thesis)
- Master of Data Science and Engineering - Data Science Option (non-thesis)
- Doctor of Philosophy (with concentrations in pure mathematics, applied mathematics, and statistics)

AREAS OF RESEARCH

Actuarial Mathematics

Algebra
- Representation theory of groups and Lie algebras
- Abelian groups
- Homological algebra
- Invariant theory

Analysis
- Real and complex analysis
- Harmonic analysis
- Approximation theory
- Wavelets

Applied Mathematics

Discrete Mathematics
- Graph theory
- Design theory
- Coding theory

Differential Equations
- ODEs
  nonlinear oscillators
  neural networks
  stochastic equations
  equations in Banach spaces
- PDEs
  elliptic and parabolic
  equations
  reaction-diffusion systems
  applications in climate
  modeling, biology, and fluid dynamic

Dynamical Systems
- Monotone and skew-product flows
- Complex dynamics
- Symbolic and lattice dynamics

Geometry

Linear Algebra

Numerical Analysis
- Numerical and computational linear algebra
- Numerical and computational PDEs
- Finite-element and finite-difference methods
- Applications in fluid dynamics, elasticity, chemistry, geology, and biology
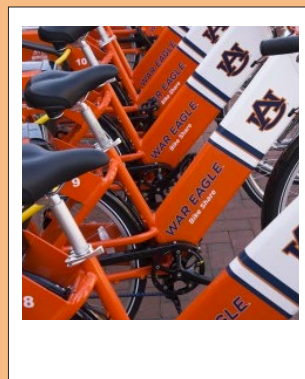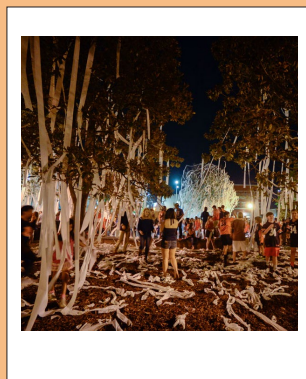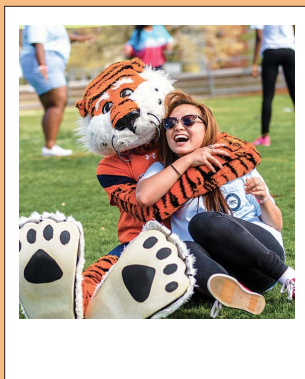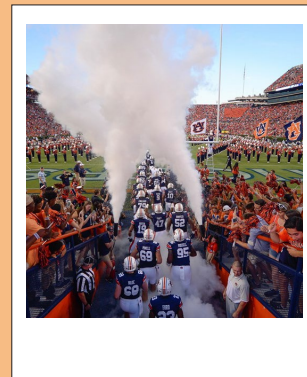
Statistics

Stochastic Analysis

Topology
- Continuum theory
- Set-theoretic topology
- Algebraic topology
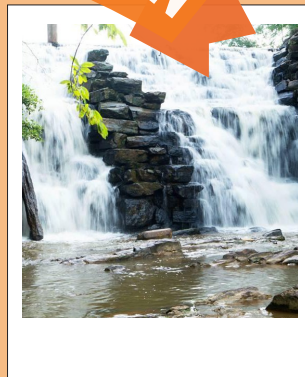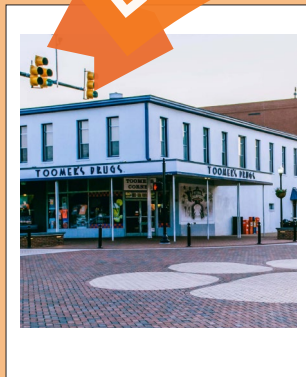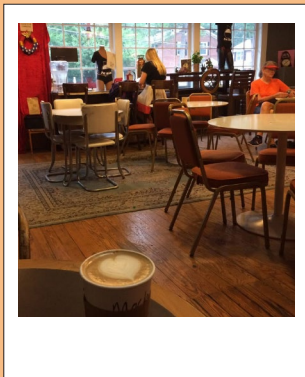
LIFE IN AUBURN

Why live in Auburn?

This vibrant college-town is a unique place. You will enjoy a smaller community filled with nature areas, restaurants, shopping and more. Additionally, the city of Opelika is just a few minutes away, and Atlanta, Birmingham and the entire Gulf Coast are within a short drive.

Residents have access to one of the largest areas of biodiversity in the entire Southeastern United States. You can relax in Auburn's Arboretum, ride 15 miles of bike trails in Chewacla State Park, meet friends at local coffee shops, enjoy dinner outside for most of the year, and see an array of amazing flora including the exclusive Auburn Azaleas.

AUBURN UNIVERSITY | COLLEGE OF SCIENCES AND MATHEMATICS

COSAM is committed to cultivating culturally competent professionals. COSAM's Office of Inclusion, Equity, and Diversity provides resources to enhance awareness and appreciation of cultural and individual diversity, promote community, and prepare students to have a global impact in STEM.