

Middle Tennessee State University

Actuarial Science Program Newsletter

Highlighting Fall 2025-Spring 2026 program achievements

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Faculty

- Dr. Abdul Khaliq
- Dr. Sooie-Hoe Loke
- Dr. Vajira Manathunga

Recognition

- SOA Center of Actuarial Excellence
- CAS Gold Level University Program
- Tennessee's nationally recognized actuarial science program

Director's Letter

Dear students, alumni, faculty, industry partners, and friends of the MTSU Actuarial Science Program,

As we prepare for the 2026-2027 academic year, I am pleased to share this newsletter highlighting the continued growth of the MTSU Actuarial Science Program. Our program remains one of the few programs worldwide recognized at a high level by both major actuarial organizations, with SOA Center of Actuarial Excellence designation and CAS Gold Level recognition. These recognitions reflect the combined work of our students, alumni, faculty, industry partners, and university leadership.

Our priorities for Fall 2026 and Spring 2027 are clear: deepen student-industry engagement, strengthen actuarial research and outreach, expand professional development opportunities through AMSA, and continue preparing students for actuarial exams, internships, graduate study, and full-time actuarial positions. We are especially proud of the growing research seminar series, industry speaker events, high school outreach, case competitions, and program visibility through our website and LinkedIn activity.

MTSU actuarial education is not confined to the classroom. Students learn actuarial mathematics, statistics, finance, programming, risk modeling, communication, professionalism, and applied problem solving through close contact with faculty, alumni, and practicing actuaries. I am grateful to everyone who gives time, mentorship, and support to our students.

I look forward to working with all of you during the 2026-2027 academic year as we continue to build Tennessee's nationally recognized actuarial science program.

Sincerely,

Vajira Manathunga, PhD, ASA
Director of the Actuarial Science Program



Website: acsi.mtsu.edu

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Program Facts

The MTSU Actuarial Science Program combines rigorous actuarial coursework, professional exam preparation, applied research, industry engagement, and student leadership through AMSA. The following facts summarize the program's foundation and current academic profile.

- 1987: The MTSU Actuarial Science program was founded by Dr. J. C. Hankins.
- 2005: The Actuarial Mathematics Student Association (AMSA) was established to connect students with professional speakers, alumni, and industry opportunities.
- 2010: MTSU launched the MSPS concentration in actuarial science, expanding graduate offerings.
- 2015: The stand-alone B.S. degree in Actuarial Science was introduced.
- 2020: MTSU Actuarial Science received the CAS University Award.
- 2023: The program received CAS Gold Level recognition.
- 2024: The program received the SOA Center of Actuarial Excellence designation.
- 2024: The program hosted internationally recognized 59th Actuarial Research Conference.

Academic Programs

Program	Purpose
B.S. in Actuarial Science	Undergraduate preparation for actuarial exams, analytics, insurance, finance, and risk-management careers.
M.S. in Actuarial and Financial Mathematics	Graduate-level actuarial and financial mathematics training.
MSPS Actuarial Science Concentration	Professional science pathway integrating actuarial coursework and applied professional preparation.
Minor in Actuarial Science	15-credit-hour option for students who want foundational knowledge in risk analysis, probability, and financial mathematics.

What makes the program distinctive: recognition from both the SOA and CAS; faculty trained in actuarial science and applied research; AMSA events that connect students with alumni, employers, and professional actuaries; research seminars, student research, internships, and career events; coursework aligned to support actuarial exam progress, VEE requirements, and applied technical skills.

Program News

SOA President-Elect Dr. Ian Duncan Visits MTSU Actuarial Science Program

A major highlight for the MTSU Actuarial Science Program was the campus visit of Dr. Ian Duncan, PhD, FSA, FIA, FCIA, FCA, CSPA, MAAA, President-Elect and Vice-Chair of the Society of Actuaries. The Society of Actuaries is the world's largest actuarial professional organization, representing more than 34,000 members across over 100 countries. Dr. Duncan is an internationally recognized expert in healthcare analytics, predictive modeling, health insurance, and the application of advanced data science methods in actuarial practice.

During his visit, Dr. Duncan delivered a special invited talk titled "Health Insurance in the Age of Big Data and AI" on Friday, April 17, 2026, at BAS South-260. His presentation explored how artificial intelligence, big data, and predictive analytics are reshaping health insurance, from risk measurement to real-time healthcare decision-making. The talk was designed for a broad audience and attracted students and faculty interested in actuarial science, healthcare, business, data analytics, and the future of artificial intelligence.

Dr. Duncan's visit provided MTSU students with a rare opportunity to engage directly with a global leader in the actuarial profession. His discussion emphasized the expanding role of actuaries in an era where technical modeling, ethical judgment, communication, and domain expertise are increasingly important. The event was followed by a reception, giving students the opportunity to meet Dr. Duncan, ask questions, and learn more about emerging opportunities in health insurance, analytics, and actuarial careers.

New Faculty Hires

The Actuarial Science Program hired two new tenure-track faculty members who are expected to join the program in Fall 2026. Their arrival will strengthen teaching capacity, student mentoring, actuarial research, and long-term program growth.

Scholarships Recognizing Student Achievement

The program recognized outstanding actuarial science students with scholarships supporting both undergraduate and graduate students who have demonstrated strong academic achievement, professional promises, and commitment to actuarial career development. During Fall 2025/Spring 2026 academic year, the program recognized four students with scholarships in support of their academic achievement, professional development, and continued progress toward actuarial careers.

Professional Engagement Beyond Campus

- **CAS Student Conference:** On November 11, 2025, MTSU students Pengyuan Qian, Gurpreeti Grewal, and Krishna K. Shrestha participated in the CAS Student Conference in Austin, Texas.
- **RMI and Actuarial Science Career Fair:** Students connected with employers and learned about internship and full-time opportunities at the October 2, 2025 career fair.
- **Mid-Tennessee CPCU All Industry Day:** Students and faculty engaged with property-casualty insurance professionals at September 23, 2025 All Industry Day hosted by Mid-Tennessee CPCU.
- **Jobs Shadow Day at SIGMA Actuarial Consulting Group:** MTSU actuarial science students visited SIGMA Actuarial Consulting Group on October 31, 2025, for Job Shadow Day, gaining hands-on exposure to property and casualty actuarial consulting and professional practice.
- **Actuarial Science Back-to-School Event:** The program opened the year with a student welcome event on Wednesday, August 27, supporting community building and student engagement.

High School Outreach

MTSU Actuarial Science High School Day was held on Saturday, April 18, 2026, from 9:00 AM to 12:00 PM. The hands-on event introduced high school students to actuarial science, risk analytics, insurance, and data-driven decision-making, while also highlighting MTSU's actuarial degree pathways and student opportunities.

CAS Case Competition

The CAS Case Competition at MTSU was held on Tuesday, April 28, 2026, from 9:00 AM to 12:00 PM in KUC 322. MTSU actuarial science students competed in teams by presenting their case study solutions to a panel of industry actuaries. In preparation for the competition, students worked with industry actuaries over a two-week period to refine their analysis and presentations. The judges provided professional feedback, selected the winning team, and were awarded a \$500 prize. The event concluded with closing remarks and a lunch for participants, judges, and guests.

Bridging Academia and Industry in the Classroom

A major program initiative is bringing practicing actuaries directly into the learning environment. Ms. Sydney McIndoo, FCAS, MAAA, Owner and Chief Actuary of CedarStone Actuarial, contributed her professional expertise by teaching ACSI 4230 in Fall 2025. This initiative strengthens the connection between coursework and actuarial practice and creates a model for future industry involvement in the classroom.

Industry Advisory Board Meeting

The MTSU Actuarial Science Program held its Industry Advisory Board meeting on March 18, 2026, bringing together industry leaders from actuarial consulting, health insurance, property and casualty insurance, benefits, and risk management. The meeting focused on board bylaws, board's role in supporting the program, reviewing the current status of the actuarial science program, and identifying initial goals for 2026–2027. The board also selected Michelle Bradley, ACAS, MAAA, ARM, CERA, CCIS as President and Dmitry Terekhov, FSA, MAAA as Vice President. This advisory board will play an important role in strengthening industry engagement, supporting student career development, and guiding the continued growth of the MTSU Actuarial Science Program.

New Course: Applications of AI and Large Language Models in Actuarial Science

The MTSU Actuarial Science Program is introducing a new graduate-level course, ACSI 6120: Applications of Artificial Intelligence and Large Language Models in Actuarial Science. This three-credit course examines how artificial intelligence, machine learning, large language models, and natural language processing are being applied to modern actuarial practice. Topics include advanced predictive modeling for pricing and reserving, as well as the use of LLMs and NLP methods to analyze claims, contracts, and other insurance-related text data. The course also emphasizes how these emerging tools can be integrated with traditional actuarial techniques while addressing important ethical, professional, and regulatory considerations.



AMSA Meetings and Student Events

Actuarial Math Student Association (AMSA) remained central to the MTSU actuarial student experience by connecting students with alumni, employers, research speakers, career-development resources, and peer networking events.

Fall 2025 Event Highlights

Date	Event	Description
August 27, 2025	Actuarial Science Back-to-School Event	A welcome event for actuarial students to reconnect, meet peers, and begin the academic year with AMSA and program faculty.
September 3, 2025	Industry Speaker: Tanner O'Grady, Reinsurance Actuarial Analyst at Aon	Tanner O'Grady, an MTSU B.S. Actuarial Science graduate with a Data Science minor, discussed his path from MTSU to WTW's pension internship and Aon's New York City reinsurance team. He is pursuing the CAS credentialing track and preparing for MAS-II.
September 10, 2025	Research Seminar: Dr. Albert Cohen, Michigan State University	Dr. Cohen presented research demonstrating how quantitative methods from finance, data analytics, and network science can be applied to evaluate performance and value in professional sports.
September 10, 2025	Resume and Cover Letter Workshop: Amy Medlin	Career Development Center advisor Amy Medlin led a focused workshop helping students strengthen application materials for internships and actuarial positions.

Date	Event	Description
September 19, 2025	AMSA Virtual Industry Talk: Mackenzie O. Carr, Aetna/CVS	Students learned about the actuarial field and career pathways from a practicing professional at Aetna/CVS.
September 24, 2025	Cigna Virtual Panel: Inside the Internship	The Cigna Group hosted a virtual panel featuring 2025 actuarial interns who shared internship experiences, lessons learned, and advice for students.
October 8, 2025	Research Seminar: Dr. Himchan Jeong, Simon Fraser University	Dr. Jeong presented Tweedie Multivariate Semi-Parametric Credibility with Exchangeable Correlation, discussing credibility premiums for multiple coverages under a Tweedie compound risk model with correlated coverages and real-world insurance data.
October 31, 2025	Job Shadow Day at SIGMA Actuarial Consulting Group	On October 31, 2025, MTSU actuarial science students participated in a Job Shadow Day at SIGMA Actuarial Consulting Group, gaining hands-on exposure to the actuarial profession and the work of property and casualty consulting actuaries. The visit gave students an opportunity to learn directly from SIGMA professionals, ask questions, and better understand how actuarial skills are applied in consulting practice. The event also helped continue connections made earlier in the semester at the Gamma Iota Sigma RMI Career Fair, providing students with valuable professional development experience.
November 7, 2025	Industry Speaker: Alex Dalrymple, Aetna	Alex Dalrymple discussed his path to Aetna/CVS, his actuarial role, Aetna internship opportunities, and the Aetna Actuarial Development Program.
November 19, 2025	Actuarial Student Research Seminar	MTSU actuarial science students presented research progress to fellow students, building communication skills and peer research engagement.
November 19, 2025	Gamma Games and Actuarial Ice Cream Social	Students gathered for games, ice cream, and informal networking with peers in actuarial science and related programs.

Spring 2026 Event Highlights

Date / Time	Event	Newsletter Description
February 16, 2026	AMSA Spring Welcome Gathering	The AMSA Spring Welcome Gathering brought actuarial science students together to reconnect, welcome the new semester, and build community within the program.
February 23, 2026	Fortitude Re Alumni Talk	On February 23, Jacob Stinson, ASA, and David Phillips, ASA, both with Fortitude Re, and alumni of MTSU actuarial science program, presented The Best Actuarial Tool for Any Job. The session focused on the software, technology, and analytical tools used by actuaries as finance and insurance work becomes more data intensive.
April 6, 2026	Research Seminar: Dr. Weihong Ni, Arcadia University	To Pool or to Pivot? Statistical Strategies for Uninsurable Flood Risk. The seminar examined flood-risk modeling, hierarchical clustering using a VaR-reduction measure, capital requirements, aggregate risk, risk pooling, and risk avoidance through relocation strategies.
April 17, 2026	Dr. Ian Duncan: Health Insurance in the Age of Big Data and AI	Dr. Ian Duncan, PhD, FSA, FIA, FCIA, FCA, CSPA, MAAA, President-Elect and Vice-Chair of the SOA, discussed how AI and big data are reshaping health insurance, risk measurement, and healthcare decision-making. The talk was designed for a general audience and was followed by a reception.
April 18, 2026	MTSU Actuarial Science High School Day	A hands-on outreach event designed to inspire the next generation of actuarial professionals and introduce students to actuarial science, insurance, risk analytics, and data-driven decision-making.
April 27, 2026	Actuarial Science Student Research Seminar	MTSU actuarial students presented research projects, shared progress, and practiced communicating technical work to an actuarial audience.
April 29, 2026	CAS Case Competition	The CAS Case Competition gave MTSU actuarial science students hands-on experience applying actuarial analysis to a real-world case and presenting their solutions to industry actuaries. Winning team received \$500 monetary gift from CAS.



Research and Industry Engagement

Research Seminar Series

The Actuarial Science Research Seminar continued to expose students to active research in actuarial science, risk management, statistics, machine learning, data science, and applied probability. The series also gave students a model for how technical ideas are presented in professional and academic settings.

Industry Speaker Series

Industry talks featured professionals from Aon, Aetna/CVS, Cigna, Fortitude Re, SIGMA Actuarial and other organizations. These sessions helped students connect classroom concepts with actuarial practice in reinsurance, health insurance, internships, development programs, analytics, and actuarial technology.

Student Research Presentations

Student research presentations were emphasized during both fall and spring events. These sessions helped students explain technical work, receive feedback, and prepare for research presentations, graduate study, internships, and professional actuarial roles.

Career and Professional Development

- The RMI and Actuarial Science Career Fair on October 2, 2025 gave students access to employers and helped them explore internship and entry-level actuarial opportunities.
- The September 10 resume and cover letter workshop with Amy Medlin helped students sharpen application materials before career-fair and internship recruiting season.
- Virtual internship panels and industry talks helped students hear directly from interns and practice actuaries about day-to-day actuarial work, exam progress, and professional communication.
- The Job Shadow Day at SIGMA gave students a meaningful opportunity to connect classroom learning with real-world actuarial consulting work.

Student Success

Student Achievement Spotlight: Kaijie Shi

Kaijie Shi passed three Society of Actuaries exams - FM, P, and SRM - and earned second place in the Munich Re Cup competition, an achievement that led to an internship opportunity with Munich Re. Kaijie also received admission to the M.S. in Biostatistics and Data Science program at Weill Cornell Graduate School of Medical Sciences at Cornell and to the M.S. in Predictive Analytics and Risk Management program at the University of Illinois Urbana-Champaign.

Undergraduate Research Achievement: Luyang Huang

Actuarial student Luyang Huang received a URECA Gold award for the upcoming summer under the mentorship of Dr. Sooi-Hoe Loke. Based on department records since 2015, this appears to be the first individual Gold-level URECA award from the Department of Mathematical Sciences. Because no Platinum awards have been recorded for the department, this represents the highest level of individual undergraduate research recognition achieved by a Mathematical Sciences student in that period.

Student Internships

During the past academic year, MTSU actuarial science students completed internships with several employers, including CedarStone Actuarial, First Acceptance, Munich Re China, Middle Tennessee Electric, and TIAA. These internship experiences provided students with valuable exposure to actuarial practice, insurance operations, risk management, data analysis, and professional workplace expectations, helping them connect classroom learning with real-world applications.

Student-Reported Actuarial Exam Passes as of Spring 2026

Student	Reported Exam Passes
Keira Cupp	P, FM
Skylar Hallingstad	P, FM
Cade Lisowe	P
Kaijie Shi	P, FM, SRM
Baohong Yang	P, FM, SRM, FAM
Seth Asmah	P, FM
Shishir Aryal	P, FM, FAM
Wendi Chen	P, FM, SRM
Abhishek Deshar	P
David Dussey	P
Krishna Shrestha	P, FM, FAM, SRM, ALTAM, MAS-I
Yunhui Xi	P, FM
Kelvin Ansah	P, FM
Skye Neal	FM

Scholarships

The Actuarial Science Program is grateful for scholarship support that recognizes actuarial students and encourages exam progress, academic achievement, leadership, and professional development.

Scholarship	Category / Amount	Recipient
Scotty M. Tucker Memorial Scholarship	Undergraduate (\$500)	Evan Alexander Zirat
Scotty M. Tucker Memorial Scholarship	Graduate (\$500)	Sharon Betty Koomson
B. L. Hong Memorial Scholarship in Actuarial Science	Undergraduate (\$500)	Keira Elizabeth Cupp
B. L. Hong Memorial Scholarship in Actuarial Science	Undergraduate (\$500)	Abigail Leigh Phegley

Faculty Scholarship

Faculty Publications

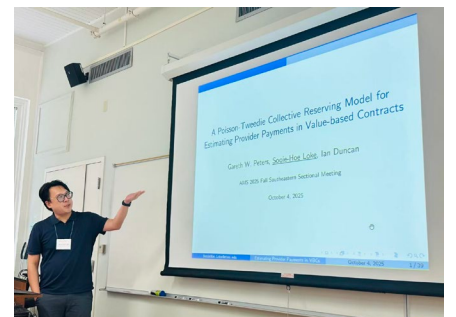
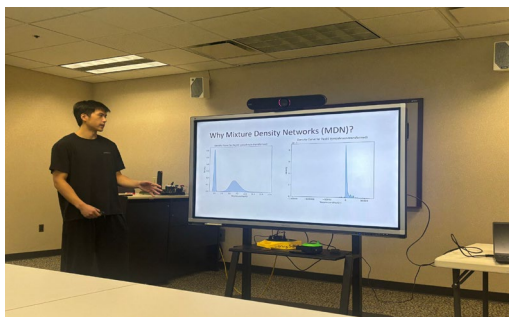
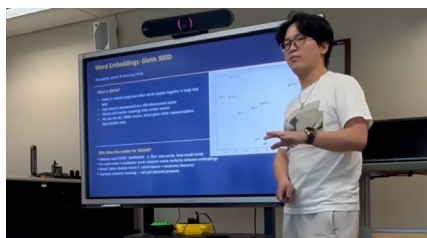
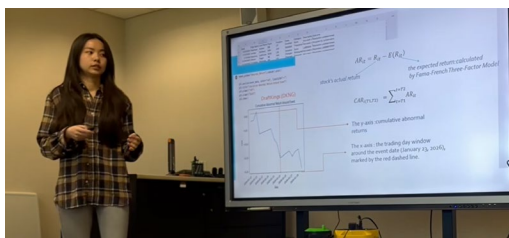
- Dr. **Sooie-Hoe Loke** co-edited a new Springer volume titled **An Invitation to Undergraduate Research in Risk Management: Actuarial Science, Mathematical Finance, and Sports Analytics**, together with Dr. Albert Cohen of Michigan State University. In addition to serving as co-editor, Dr. Loke also authored a chapter in the book. Published as part of Springer's Foundations for Undergraduate Research in Mathematics series, the volume introduces undergraduate students to accessible research topics in actuarial science, mathematical finance, and sports analytics. Each chapter is self-contained and provides the background, context, and project ideas needed for students to begin research independently or with a faculty mentor. This publication reflects Dr. Loke's strong commitment to student research and mentoring, as well as the growing research strength of the MTSU Actuarial Science Program, Tennessee's only SOA Center of Actuarial Excellence and CAS Gold Level university program.
- **Manathunga, V.A.**, Map, Measure, Govern, and Manage: Actuarial View of the Financial Services AI Risk Management Framework, *Actuarial Intelligence Bulletin* (2026)
- **Manathunga, V. A., & Doan, D. H.** (2026). Predicting Workers' Compensation Dispute Outcomes with Large Language Models. *Variance*, 19.
- Fernando, K., & **Manathunga, V.** (2026). Forward-Modeling Approaches to American Option Valuation: Additive and Multiplicative HJM Representations. *Risks*, 14(6), 123.
- Dempsey, H., Klyve, D., **Loke, S. H.**, & Nguyen, V. (2026). Transcending the Alternating Harmonic Series. *The American Mathematical Monthly*, 133(6), 560-570.
- Peters, G. W., & **Loke, S. H.** (2025). Introduction to Fixed-Income Markets and Bonds. In *An Invitation to Undergraduate Research in Risk Management: Actuarial Science, Mathematical Finance, and Sports Analytics* (pp. 143-205). Cham: Springer Nature Switzerland.
- Aldhaban, T. M., Furati, K. M., Sarumi, I. O., & **Khaliq, A. Q.** (2026). Numerical Solution of Multidimensional Time-Space Fractional Diffusion Problems with Robin Boundary Conditions. *Applied Numerical Mathematics*.
- Chen, Y., & **Khaliq, A.** (2026). Lightweight quantum recurrent neural networks for time-series and dynamical systems. *Applied Soft Computing*, 114949.
- Honain, A. H., Furati, K. M., Sarumi, I. O., & **Khaliq, A. Q.** (2026). Mittag-Leffler time differencing for fractional oscillation models with nonlinear force: AH Honain et al. *Computational and Applied Mathematics*, 45(2), 53.

Grants Received

Project	Sponsor	Investigators	Period	Amount
AI-Assisted Survivor Narrative Documentation and Risk Signal Extraction	Nashville Innovation Alliance	PI: Vajira Manathunga; Co-PIs: Joshua Phillips, Jaishree Ranganathan, Sal Barbosa	2026	\$40,000
CBAS Research & Innovation Grant	College of Basic and Applied Sciences	PI: Vajira Manathunga	2026	\$8,176
Using Large Multimodal Models to Automate Casualty Loss Assessment from NHTSA Crash Investigation Data	Casualty Actuarial Society quick-start research grant	PI: Vajira Manathunga; Co-PI: Ramchandra Rimal	2026	\$44,946

Faculty Presentations

- **Loke, S. H.**, Optimal Cancellation of Policies with Subsidies, Conference on Mathematical and Statistical Methods for Actuarial Sciences and Finance (MAF 2026), April 08-10, 2026, Spain
- **Manathunga, V. A.**, Comparative Analysis of Workers' Compensation Commission Decisions Using Large Language Models, Joint Statistical Meeting, August 2-7, 2025, Nashville



Actuarial Math Student Association

The **Actuarial Math Student Association (AMSA)** at MTSU plays an important role in building a strong actuarial student community. AMSA connects students with faculty, alumni, employers, and professional actuaries through industry talks, workshops, social events, career preparation activities, and student-led initiatives. Through AMSA, students gain opportunities to learn more about the actuarial profession, prepare for internships and full-time careers, and develop professional networks that support their success beyond the classroom. The program recognizes 2025/26 AMSA officers for their leadership and service in strengthening the actuarial student community at MTSU.

2025/26 AMSA OFFICERS

MTSU Actuarial Math Student Association



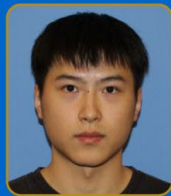
**Skylar
Hallingstad**
President



Keira Cupp
Co-President



**Krysta
Sادلowski**
Vice President



Wendi Chen
Treasurer



Ella Virgin
Secretary



Cyrus Xi
*VP, International
Student Affairs*



David Dussey
VP, Graduate Affairs



Dr. Sooi-Hoe Loke
Faculty Advisor

Thanks, and Looking Ahead

Thanks for Giving

Thank you to AMSA officers and members, actuarial faculty, the Department of Mathematical Sciences, the College of Basic and Applied Sciences, alumni, advisory board members, scholarship donors, industry partners, student volunteers, and all supporters of the MTSU Actuarial Science Program. Your contributions sustain a program that connects rigorous actuarial education with professional practice, research, outreach, and student success.

Looking Ahead

The program will continue strengthening industry engagement, research visibility, student outreach, professional preparation, and academic excellence. Key priorities include continued research seminars, alumni and industry speaker sessions, student research opportunities, high school outreach, actuarial exam preparation, scholarship support, and professional development programming through AMSA.