

Middle Tennessee State University

Actuarial Science Program Newsletter (Spring 2022)

Presented by the Actuarial Mathematics Student Association (AMSA)

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Faculty

Dr. Don Hong
Dr. Abdul Khaliq
Dr. Vajira Manathunga
Dr. Qiang Wu, ASA
Dr. Lu Xiong, ASA



Actuarial Science Website:

<https://mtsu.edu/acsi/>

AMSA Website:

www.mtsu.edu/amsa

Program Facts

- The MTSU Actuarial Science program was established in 1987. The stand-alone BS-Actuarial Science degree was approved in 2015. The concentration in actuarial science for the MS degree of Professional Sciences (MSPS) was set up in 2010, and the concentration in Actuarial & Financial Mathematics (AFM) for the MS-Math program got approved in 2018. MTSU has the only program in Tennessee that offers actuarial science coursework for both undergraduate and graduate programs.
- MTSU Actuarial Science program won the Casualty Actuarial Society (CAS) 2020 University Award. In addition, the Society of Actuaries (SOA) recognized the breadth and depth of the program by granting it the UCAP-AC level.
- As of 2021, over 50 actuarial alumni have achieved Associate or Fellow of the SOA or the CAS designations. In particular, two students achieved the ASA before graduation.
- The graduate programs for actuarial science have attracted students from schools all over the world including graduates from Auburn, Dartmouth, Notre Dame, U. Alabama, UC-Berkeley, UCLA, UIUC, U. Mississippi, UT-Knoxville, Washington University at St. Louis in the US, and students from other countries including Bangladesh, Cameroon, China, Ghana, India, Iran, Kenya, South Korea, Saudi Arabia, and Thailand, among others.
- MTSU actuarial graduates received admission offers for graduate studies from prestigious schools including Boston, Columbia, Toronto, UIUC, U Conn, FSU, Ohio State, Waterloo, etc.
- The Actuarial Math Student Association (AMSA) was established in 2005. The advisory board for the program was set up in the same year. AMSA hosts professional speakers for students regularly.
- In general, students are expected to pass at least one actuarial professional exams from the actuarial societies, and many students can receive multiple job offers before graduation.

Letter from Program Director

Time flies. We are now just about one more month to the end of the spring semester of 2022. It has been a very challenging past two years. The pandemic moved S2020 and F2020 courses online, and actuarial exams were once even cancelled or rescheduled. We have come to cherish the opportunities we have in teaching, learning, research and collaborations more, and have learned to further help and support one another. The MTSU actuarial science program has been making all efforts to train students to receive cutting-edge training and learning experience to become qualified actuaries. We are happy to see 10 more alumni achieved ASA/ACAS or above designations and recent BS degree graduates received \$60K job offers in this special period.

We are thrilled to receive the 2020 CAS University Award and would like to thank the CAS for recognizing the dedication and accomplishments of our faculty, students, distinguished alumni, the university liaisons and industrial partners of our program. The faculty in the program has made significant progress in actuarial science research. In 2021, we've received the CAS-SOA research grant to conduct predictive modeling using BERT based framework of NLP textual mining techniques. Publications have been published or accepted to appear in the top journals in the field. Undergraduate students received 2022 MTSU Research Awards. We also congratulate our undergraduate student joining the CAS team to win the 2020 Travelers Case Competition.

We are grateful for your support to make these possible.

Sincerely, Don Hong

Program News

(1) June 19, 2020 Arlington, VA – The Casualty Actuarial Society (CAS) announced that Middle Tennessee State University has been selected as a recipient of the 2020 CAS University Award, recognizing the innovative and exemplary ways it is preparing students for a career in the property and casualty insurance industry. “As the award program has evolved over the past five years, applicant schools are sharing new approaches in how they incorporate property and casualty concepts into their curriculum, research, and industry engagement. Those innovations are at the center of our evaluation process,” said Anson Lo a Fellow of the CAS who chairs the CAS University Award Program. “As schools continue to adapt and enhance their programs to prepare their students for actuarial careers, the property and casualty insurance industry will likewise be better positioned to meet the challenges of the future. It was also impressive to see several diversity and inclusion initiatives that schools have developed within their actuarial programs. I applaud this year’s winners, as well as the many other strong applicants, for their continued efforts to promote property and casualty education.” Three other schools were also recognized as 2020 winners: McMaster University, Temple University, and University of Illinois at Urbana-Champaign. Winning schools were recognized at the 2020 CAS Annual Meeting on November 8-11, 2020, and these schools will each receive a \$5,000 monetary award to further enhance their programs. Dr. Don Hong, Actuarial Science Program coordinator was invited to participate the CAS annual meeting at San Diego, CA and received the award in October, 2021. Click <https://www.casact.org/middle-tennessee-state-university-2020-winner> and <https://mtsunews.com/actuarial-science-receives-international-accolade-2020/> to see more details.



(2) The program review for BS-Actuarial Science program has been conducted in S2020 successfully. The external reviewer is Dr. Emil Valdez, Professor of Actuarial Science program at the University of Connecticut. The self-evaluation committee consists of Drs. Don Hong, Qiang Wu, Lu Xiong, Sarah K. Bleiler-Baxter, and Mr. Alex Dalrymple, president of the Actuarial Math Student Association (AMSA).

(3) Thirty four (34) and twenty six (26) undergraduate students graduated with a BS-Actuarial Science degree at Spring, Summer, and Fall graduations in 2020 and 2021, respectively.

(4) Twenty five (25) and ten (10) graduate students in actuarial science have completed internships and graduated in 2022 and 2021, respectively.

(5) Congratulations to recent graduates who recently joined G128 at Chicago, Aetna in Nashville; Towers-Watson-Willis at Atlanta, Nashville, or Memphis; AIG at Nashville; Fortitude-Re at Nashville/Brentwood, Transamerica, among others.

(6) Congratulations to Yi XU, Ziren Chen, Lin Feng, Tingting Sun, Danlei Zhu have been admitted into PhD studies with scholarships at Michigan Technology University, Iowa State University, and MTSU, respectively.

(7) Congratulations to Xingyu Chen, Zuyu Chen, Alex Dalrymple, Linmiao Deng, Maxwell Gardner, P. Klinkhajorn, Chunlan Jia, Zhongyuan Li, Lulu Liu, Devean Mangrum, Haocheng Pan, Yuwen Qian, Qiannan Shen, Di Sun, Tingting Sun, Brennan Stender, Jacob Stintson, Ran Tao, Yi Xu, Yumeng Wang, Zhiang Wang, Jiamin Zhao, Tianxiang Zheng, Danlei Zhu, who passed the actuarial exams of P, FM, IFM, STAM, SRM, or LTAM recently.

(8) Congratulations to Tanner O’Grady who got selected to the CAS team for the 2021 Travelers Case Competition and won the 1st place award.

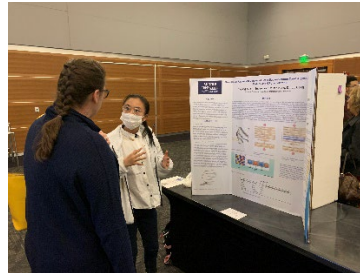
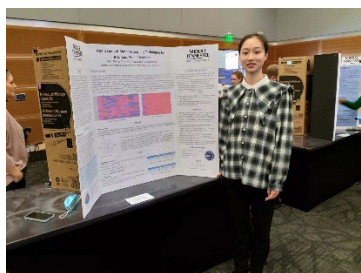
AMSA Meetings

- Mr. Jimmy Bynum, founder and CEO of Alexander & Preston, joined with us to discuss career engagement on September 02, 2020. Jimmy led an interactive discussion and provided some tips and tools on how to build genuine and meaningful business relationships.
- MTSU Actuarial Alumni, Ryan Clark and Sarah Lin hosted a virtual meeting for MTSU students on September 16, 2020, on behalf of the Southeast recruiting team for the Actuarial Executive Development Program (AEDP) at Cigna.
- Kathleen Meyer from SunLife hosted an information session virtually on Tuesday, 10/6/20. The event is entitled “*What is an Actuary? Inside the Student Actuarial Program at Sun Life*”. The speaker provided more insight and information to interested students about Actuarial roles at Sun Life.
- Dr. Lu Xiong and Dr. Vajira Manathunga hosted two virtual sessions of R tutorials for students in Actuarial Science, Mathematics on Oct 21 and 28, 2020, respectively.
- Dr. Christian Smart talked to actuarial students and discussed Cost Analytics: An Excellent Career Option for Actuarial Students on Monday, March 29, 2021. Dr. Christian Smart is a consultant for NASA and the Department of Defense. He has over 20 years of experience in the application of predictive analytics, machine learning, and risk management.
- Mr. Brent Carpenetti, ASA (MSPS 2017) joined with us on Thursday (April 29, 2021) and discussed “**Modern Actuarial Practice: Keys to Student Success**”. He is currently working as a senior actuary at Hannover Re, the third largest re-insurance company in the world. Mr. Carpenetti served as an infantry assaultman at US Marine Corps. His prior experience also includes actuarial analyst at Blue Cross Blue Shield and sales consultant at Darrell Waltrip Honda-Volvo-Subaru. Brent is the first student who achieved the ASA designation before graduation from MTSU.
- The 1st AMSA meeting for the F2021 was held on Tuesday, 9/7/2021 to discuss and elect new AMSA officers in the new academic year 2021-2022.
- On September 21, 2021, two actuaries Curtis Barker (MSPS 2019) and Johnathan Green from AIG at Nashville came to campus to talk to students in the actuarial science program.
- On September 28, 2021, Wholesale and Specialty Insurance Association (WSIA) Presentation on Excess and Surplus Lines Industry presented by Jessie Swieter Berger, Chief Operating Officer at Tennant Special Risk, LLC.
- Thanks to Andrea DuBois, Paul Dowell, Daniel Zhu, Tingting Sun, Kechen Tian, Zihan Zhang, Minyuan Zhao, Wenzhuo Gao, Yitong Meng, Xintong Cao, Pengyu Zhu, Yuqi Duan who all volunteered at the Hot Chocolate 15K/5K event on Feb 11th 2022 held in Nashville, TN.
- The AMSA held a career preparation event on March 18, 2022, Friday from 12:50-1:30 pm. Jeanette Stevens, the Career Advisor at MTSU Career Development Center gave an introduction about the services of the center available for actuarial science students and students in math programs in general.
- Two actuaries, Stephanie Passmore and Erin Behrhorst from BlueCross BlueShield of Tennessee, Chattanooga, TN gave a talk to actuarial students on March 25, 2022. They shared their experiences and introduced various actuarial-related job postings currently available at the BCBS of TN.

News from Alumni

1. Congratulations to MTSU actuarial alumni, Andrew J Kiel (BS 2005) and Donaldson M Peay (MSPS 2017) who achieved the ACAS designation in 2020 and 2021, respectively. In addition, eight (8) more alumni achieved the ASA/FSA designations from 2019-2021. They are Wenqi Chen, ASA (BS-AcSc 2014), Lauren N. Chrisman, ASA (BS 2012, MSPS 2014), Nathan P. Cohee, ASA (BS-AcSc 2015), Carson Cook, ASA (MS 2016), Joseph M. Thomas, ASA (MSPS 2017), Haocheng Wu, ASA (BS-AcSc 2017), Lu Xiong, ASA (Ph.D. 2014), and Lucas Mark, FSA (2021).
2. Congratulations to the following actuarial alumni who passed SOA Exam-LTAM in 2020-2021: Ryan R. Clark (BS 12/2018), Courtney DeClerk (MSPS 08/2019), Ying Peng (MSPS 08/2013), David Phillips (MSPS 05/2020), Brennan Stender (MSPS 05/2020), Zhenyang Wang (MSPS 08/2019), Jianxun Xu (BS 05/2019, NBU-MTSU program), Qin Zhou (MSPS 05/2016).
3. Zhenyang Wang (MSPS 2019) passed Exam-PA, Hongli Li (BS-AcSc 2017, MSPS 2018) passed exam-FAP.
4. Andy Hill has been promoted to Financial Benefits Consulting Manager at Gallagher, Houston, TX

1. Congratulations to Dr. Lu Xiong who achieved ASA designation in June 2021, a professional certificate as an Associate of the Society of Actuaries. He has received an external grant support from a healthcare technology company for developing a healthcare data integration system. Dr. Lu Xiong presented papers at the following Actuarial Research Conferences (ARC):
 - “Reducing the runtime of Least Squares Monte Carlo in Risk Management”, the 56th Actuarial Research Conference, DePaul University, Chicago, August 2021.
 - “Comparative Study of Predictive Analytics Algorithms and Tools on Property & Casualty Insurance Solvency Prediction”, the 54th Actuarial Research Conference, Indianapolis, IN, August, 2019.
2. Congratulations to Drs. Vajira Manathunga and Lu Xiong whose proposal “Open Educational Resources for Actuarial Training and Exams (FM & STAM) Preparations” got approved for funding \$3000 by MTSU CBAS Open Educational Resources Grant For Academic Year 2020 -2021. Dr. Manathunga also received the following grants:
 - "Pandemic Bond Pricing using epidemic compartment models," Sponsored by Office of Research and Sponsored Programs, Middle Tennessee State University, \$9,950.00. (January 1, 2022 - December 31, 2022).
 - "Spring 2022-only OER Mini-grants," Sponsored by OER Steering Committee at MTSU, Middle Tennessee State University, \$3,250.00. (January 15, 2022 - March 31, 2022).
3. Congratulations to Dr. Qiang Wu who has been promoted to full professor in 2020 and appointed as the director of data science graduate director in 2021. Dr. Wu received an NSF grant in 2021 for funding \$114,999 to support a collaborative research entitled “Mathematical Foundation of Learning with Information-Theoretic Criteria from Non-Gaussian Data.”
4. Drs. Don Hong, Vajira Manathunga and Lu Xiong received a research grant of \$15,000 from the CAS-SOA for a research project entitled "NLP and other AI Techniques for Applications in Actuarial Science."
5. Dr. Vajira Manathunga has posted a new article on Data Science in Actuarial Science recently: <https://www.mtsu.edu/datascience/blog/post/47/the-interplay-between-data-sciences-and-actuarial-sciences>
6. Dr. Don Hong and colleagues from Temple University, York University in Canada, and Ningbo University in China are editing a special issue on Data-Driven Modeling and Models for Predictive Analytics for the journal of Frontiers in Applied Mathematics and Statistics. Here is the link for more information: <https://www.frontiersin.org/research-topics/28207/on-data-driven-modeling-and-models-for-predictive-analytics>
7. The following research papers in actuarial science have published or been accepted to appear:
 - Lu Xiong and Don Hong (2020), *Using Monte Carlo Simulation to Predict Captive Insurance Solvency*, Proceedings of the 4th International Conference on Compute and Data Analysis, Association for Computing Machinery, New York, NY, USA, pp. 84–88.
 - Lu Xiong (2020), *Comparative Study of Predictive Analytics Algorithms and Tools on Property and Casualty Insurance Solvency Prediction*. In 2020 The 4th International Conference on Business and Information Management (ICBIM 2020). Association for Computing Machinery, New York, NY, USA, 81–88.
 - Donglin Wang, Don Hong, and Qiang Wu (2022), "Prediction of Loan Rate for Mortgage Data: Deep Learning Versus Robust Regression" *Computational Economics*, 2022. <https://doi.org/10.1007/s10614-022-10239-5>
 - Shuzhe Xu, Chuanlong Zhang, and Don Hong (2022), BERT Based Classification and Severity Prediction Models for Basic Warranty Data Study, *Insurance: Mathematics & Insurance*, accepted for publication, 2022.
 - Lu Xiong, Don Hong, and Tim Coomer (2022), A Solvency Assessment and Prediction Framework for Workers' Compensation Captive Insurance Companies, manuscript submitted to *Journal of Insurance Issues*, 2022.
 - Shuzhe Xu, Vajira Manathunga, and Don Hong (2022), Framework for BERT Based NLP Models with Applications to Warranty Policy Loss Prediction, manuscript to be submitted, 2022.
8. Dr. Don Hong and Dr. Vajira Manathunga supervised undergraduate research projects and received URECA grant for funding \$1000 each student (Jialin Zhang and Xinpeng Hua) for their projects.



Jialin Zhang (Undergraduate) and Tingting Sun (Ph.D. student) presenting their research work at 2022 Scholar Week.

AY2020-21 AMSA Officers

AY2020-21: Alex Dalrymple, MSPS student and Cuanlong Zhang, MS-Math student of Actuarial Science served as co-presidents for AMSA, Han Chen, Jonathan Burks, and Tingting Sun were other officers of the Actuarial Math Student Association.

AY2021-22: Paul Dowell, MSPS student, serves as the presidents for AMSA, Grafton Cupid, Andrea DuBois, Tingting Sun, and Danlei Zhu are current other officers of the Actuarial Math Student Association.

Actuarial Science Student Foundation

The Actuarial Student Foundation was created to support actuarial students in their actuarial career development. We appreciate for individuals and companies for contributions to this foundation. Check or money order should be payable to

MTSU Actuarial Student Foundation (#92935)

and mail it to: **Office of Development, MTSU P.O. Box 109, Murfreesboro, TN 37132.** A tax deductible statement for the contribution will be provided from MTSU Foundations Office. Please also check with your company about matching contributions. If you are interested in setting up a scholarship for actuarial students at MTSU bearing a person's or a company's name, please contact the MTSU Foundation Office for assistance. More information on MTSU Foundation and other ways you can give can be found at: <https://www.mtsu.edu/development/foundation.php> . For any questions on MTSU actuarial science program, please contact Dr. Don Hong, don.hong@mtsu.edu .

The 2024 Actuarial Research Conference will be held on MTSU Campus!

We were thrilled to be informed that the Society of Actuaries (SOA) Education and Research Section Council have selected Middle Tennessee State University as the host for the 2024 Actuarial Research Conference (2024ARC). We will make all efforts to prepare well for this important event.

Community sponsors are sincerely invited to fund and support this international event to help ensure its success. Your company logo will be placed on materials to promote the event and on the weblinks of the 2024ARC. Contact Dr. Vajira Manathunga at vajira.manathunga@mtsu.edu if you are interested in the sponsorships.

Thank you all for your support.



Ph.D. degree graduates in December 2021 under supervision of Dr. Don Hong and Dr. Abdul Khaliq.