

# MTSU Actuarial Science Program

July 24, 2018

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1. Facts about Actuaries
2. MTSU Actuarial Science Program, Faculty, and Students
3. Curriculum and Preparations for Actuarial Societies Exams
4. MTSU Actuarial Students, Alumni, and Achievements
5. Industry Connection and Advisory Board
6. Scholarships and Actuarial Student Foundation
7. International Partnership Programs

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## 1. Facts on Actuaries and Actuarial Science

**Actuarial science** is a special discipline in training students to apply mathematical skills, statistical methods, and computing techniques to manage risks and solve problems in insurance and pension programs. **Actuaries** help organizations plan for the future and protect from loss. **A career as an actuary** is better described as a “business” career with a mathematical basis rather than as a “technical” mathematical career.

**Being an actuary** requires passing a series of examinations to earn an actuarial designation through the Casualty Actuarial Society (CAS) or the Society of Actuaries (SOA). Two societies play different roles in actuarial science, Simply speaking, the CAS focuses on property & casualty (P&C) insurance business and the SOA emphasizes life and health insurance more. The actuarial designations include the *Associate* and the *Fellow* memberships of the societies. The first 3-5 exams shared by two actuarial societies are called the *preliminary exams*. **MTSU actuarial science program** offers all exam preparation courses for all preliminary exams as well as all VEE (*validation of educational experience*) courses.

**The occupation of actuary**, no matter the source, is consistently ranked as one of the best jobs in America. In almost every category, such as work environment, employment outlook, job security, growth opportunity, and salary, a career as an actuary is hard to beat. Actuaries are well compensated. Experienced Fellows have the potential to earn from \$150,000 to \$250,000 annually, and many actuaries earn more than that. According to our own ACSI graduates in the past five years, the average number for the starting salary with a Bachelor’s degree and at least one professional exam was about \$55K. Students in the ACSI program usually receive internships from Insurance companies in the summer and/or regular semesters.

On the list of **Universities & Colleges with Actuarial Programs (UCAP)** dated in July 2018, there are 226 UCAP schools over the world, MTSU is listed among the 73 schools of UCAPAdvanced Curriculum (UCAP-AC) and 65 schools offering graduate degrees in actuarial science. MTSU Actuarial Science program was nominated for the University Award given by the Casualty Actuarial Society in 2018. Currently, there are 31 schools all over the world have been selected as the Center of Actuarial Excellence (CAE). MTSU is preparing to apply for the honor by recruiting new faculty members with actuarial designations and a strong research record in actuarial science.

## 2. MTSU Actuarial Science Program

**The MTSU ACSI program** was founded over 30 years ago in the Department of Mathematical Sciences. This is a unique program in Tennessee. The concentration in Actuarial Science under the MS degree of Professional Science was set up in 2010 and a stand-alone BS in Actuarial Science degree program was approved in 2015. MTSU actuarial science program has over 120 students enrolled in the Spring semester of 2018. We expect to enroll more students in F2018.

Under **academic partnership agreements**, the program has attracted over 60 international students. Just very recently, on July 20, 2018, President McPhee visited Ningbo University in China and renewed the Joint Mathematics and Applied Mathematics Program established in the fall of 2012, for 10 more years. The partnership allows actuarial science students enrolled at Ningbo University first, then progress to Murfreesboro to finish their studies. Successful students

receive degrees from both MTSU and Ningbo University. President McPhee made comments on the joint program: "This partnership with Ningbo University is a model for effective and productive international academic cooperation. It leverages our respective strengths to provide unique opportunities for exceptional students. Other Chinese schools have partnership agreements with MTSU in actuarial science studies also include Guangxi University (GXU) and North China University of Technology (NCUT).

The **graduate program** in actuarial science studies has attracted students graduated from well-known schools including Dartmouth University, University of Alabama, University of California at Berkeley, University of California at Los Angeles, University of Illinois at Urbana Champaign, University of Notre Dame, and the University of Tennessee at Knoxville.

**MTSU alumnus** John E. Daniel, FCAS, MAAA, is now a vice president and consulting actuary in the Willis Casualty Actuarial Practice in Nashville. He serves as an advisory board member for the M.S. in Professional Science program and as the Casualty Actuarial Society (CAS) college liaison with the MTSU Actuarial Science program. Among MTSU actuarial alumni, at least 20 have achieved the Associate membership or higher from either the CAS or the SOA. Just like John Daniel, many of them are serving on the program advisory board to provide their support to the program.

**Actuarial Math Students Association (AMSA)** was formed in October 2005. Currently, there are over 120 students in the Association. Dr. Don Hong has been serving as the faculty advisor of AMSA. The AMSA hosts 3-4 meetings each semester regularly with actuary speakers from local insurance companies.

### 3. Curriculum and Actuarial Society Exams

Basic courses in MTSU ACSI program corresponding to the Society of Actuaries (SOA) professional exam curricula are listed as follows.

ACSI-4140: Introduction to Math of Actuarial Science, the exam preparation course for the Exam-P, the first exam of SOA.

ACSI-4220, Finance Math and Cooperate Finance, a course for validation of education experience credit course approved by the SOA.

ACSI-4230 and ACSI-4240, Theory of Interest and Math Finance, the exam preparation course for the Exam-FM, the second exam of SOA.

ACSI-4330 and ACSI-4340, Actuarial Math (I&II), the exam preparation course for the Exam-MLC, the life contingency or the Exam-Long Term Actuarial Mathematics (LTAM) of the SOA.

ACSI-4630 and ACSI-4640, Risk Management, Options, and Derivative, the exam preparation course for the Exam-MFE, the finance economic or the Exam-Investment and Financial Market (IFM) of the SOA.

ACSI-6010&6020, Loss Models and Credibilities, the exam preparation course for the Exam-C, or the Exam-Short Term Actuarial Mathematics of the SOA.

Other courses related to SOA exams include:

ECON-4210 and 4220: Micro and Macro Economics, the VEE credit course for economics.

State-4220/5220: Statistical Forecasting, the VEE credit course for applied statistics.

ACSI-6110: Predictive Analytics, the exam preparation course for the Exam-PA of the SOA.

### 4. Professional Exam News and Achievements from ACSI students and Alumni

- In AY2017-2018, 56 students in the program passed at least one actuarial professional exam. 17 students passed at least three exams. Ms. Yiting Dong passed all exams for the Associate Membership requirement and achieved the ASA designation from the SOA.

- So far, at least 20 MTSU actuarial graduates achieved the Associate membership or higher from the CAS or SOA.
- Graduate School admission results: Columbia, Toronto, UIUC, Boston, Australia National University, UK schools
- Job news

**Undergraduate Research:** Co-sponsored by NSF STEP-MT and BCBS of TN, (i) *Dusty Gray* finished his summer research project entitled *The Creditable Coverage Actuarial Value Test* and presented at the end summer research

presentations on July 25, 2008.

(ii) William Chance Phelps presented his research work at 2008 Scholar Week at MTSU His presentation entitled " Ruin Probabilities with dependent forces of interest"

For more information about MTSU NSF STEP-MT undergraduate research opportunities, please visit the website: [www.mtsu.edu/~stepmt](http://www.mtsu.edu/~stepmt).

## 5. Industries Connection

We are honored to have the following actuaries in Nashville area to serve on our actuarial science program **Advisory Board**:

- **Mr. Brian LePage**, ACAS, MAAA, VP and Chief Actuary from Caterpillar Insurance, Nashville, TN
- **Mr. John Daniel**, FCAS, MAAA, Chief Actuary and MTSU Alumna, The PICA Group, Brentwood, TN
- **Ms. Mary Frances Miller**, FCAS, MAAA, FCA, Select Actuarial Services, Nashville, TN
- **Edgar W. Davenport**, FCAS, MAAA, Managing Director, Willis Risk Solutions-North America, Nashville, TN.

AMSA hosted the following speakers talked to our ACSI students:

- Ms. *Vickie M. Evans*, PHR, Human Resources Director, together with an MTSU alumni from our actuarial science program, working at BPS&M, A Wells Fargo Company visited MTSU and gave a nice presentation to our actuarial students on November 16, 2005.
- Mr. *Brian P. LePage*, VP and Chief Actuary at Caterpillar Insurance, Nashville, TN visited MTSU and gave a very informative presentation to our actuarial students on February 15, 2006.
- On October 11, 2006, Mr. *Ed Davenport*, FCAS, MAAA, from Willis gave a presentation to our actuarial students about "Role of an Actuary at Willis, Insurance Company vs. Consulting Company, and Job Interview Tips."
- On November 1, 2006, Mr. *John Daniel*, FCAS, MAAA, Chief Actuary and MTSU alumnus from PICA Group presented a talk to our actuarial students about "My Actuarial Career Experience and Q & A."
- On January 25, 2007, Mr. *Brian LePage*, ACAS, MAAA, VP and Chief Actuary from Caterpillar Insurance gave a presentation to our actuarial students.
- On February 22, 2007, Ms. *Mary Frances Miller*, FCAS, MAAA, Vice President of Admissions of the Casualty Actuaries Society (CAS) and a founder and the senior consulting actuary with Select Actuarial Services presented a talk to our actuarial students.
- On March 27, 2007, Mr. *Matthew Canada*, Sr. Talent Acquisition Consultant, and Actuarial Staff from Blue Cross/Blue Shield of TN gave a presentation to our actuarial students and interviewed our actuarial student candidates for possible positions at BCBSTN.
- On March 29, 2007, Mr. *Bill Wilkins*, FCAS and VP from First Acceptance Corporation gave a presentation to our actuarial students. Together with Joe Best, VP from the 1st Acceptance, they have interviewed our actuarial student candidates for possible positions at their company on January 17 and April 24, respectively.
- On October 24, 2007, Ms. *Vickie M. Evans*, Human Resources Director, BPS&M, A Wells Fargo Company, gave a presentation to our actuarial students.
- On November 19, 2007, AMSA held a ceremony for ACSI Scholarship Awards and Outstanding Alumni Honoring. Dr. *Sidney A. McPhee*, the president of MTSU and Mr. *Ron Nichols*, Vice President of Operations from State Farm Insurance presented and gave encouraging words to ACSI students and faculty.
- January 28, 2008, the first AMSA Meeting of the Semester. Mr. *Chance Phelps* from BCBS of TN visited campus and talked to ACSI students.
- February 20, 2008, Mr. *Mark Bracher*, MAAA, FSA, Senior Manager, Trend Actuary of Blue Cross/Blue Shield of TN talked to ACSI students.
- March 2008, Mr. *Michael S. Johnson*, ASA, from AIG American General will talk to ACSI students.
- September 17, 2008, 1:00-3:00pm at KOM-206 - Speakers: *Patra F. Thomas*, *Tommy Axford*, and *Mandy Lee Bratten*, Patra F. Thomas is the Director of Business and Career Development, Tommy Axford and Mandy Lee Bratten, both

are ASA, MAAA, EA, and MTSU ACSI Alumni BPS&M, LLC, A Wells Fargo Company at Brentwood, TN.

- October 8, 2008 at KOM-206 from 1-3pm: Speaker: Mr. *Jack Bruner*, FSA, FCA, Chief Marketing officer for CVS Caremark, a Fortune 25 company.
- October 20, 2008 at KOM-206 from 1-5pm - Speaker: Mr. *Henderson*, Vice President and Chief Risk Officer, Western & Southern Financial Group, Cincinnati, OH will come to MTSU campus for entry-level positions as well as for internships interview.
- November 12 (Wednesday), 2008 at KOM-206 from 1-3pm - Speaker: Ms. *Mary Frances Miller*, FCAS, MAAA, FCA, Select Actuarial Services, Nashville, TN.
- December 4, 2008 from 1:00-3:00pm at KOM-2000 - Speaker: *Michael S. Johnson*, MAAA, FSA, AIG American General, Nashville. "End Semester Gathering".
- September 25, 2009, Ms. *Lori Badgett* and Mr. *Ben Yin* from Genworth Financial, Nashville, TN gave a presentation to MTSU ACSI students.

More activities of AMSA can be found at [www.mtsu.edu/~amsa/Calendar.htm](http://www.mtsu.edu/~amsa/Calendar.htm).

## 6. Actuarial Student Foundation

- **Dipti Natha** was among the four recipients of the Southeastern Actuarial Conference Actuarial Scholarships in 2007. This kind of scholarship was the first time to give an award to actuarial students outside of Georgia that year.
- State Farm Insurance has setup a scholarship fund for the Excellence in Actuarial Sciences. The first award of such a scholarship was given in the Fall of 2007.
- AMSA faculty advisor, Dr. Don Hong received the Casualty Actuaries of Southeast (CASE) Grant (2007-2008) to enhance MTSU ACSI Program. The CASE Scholarships are available for students who have passed actuarial professional exams. Some need-based awards will be considered to give to those who plan to take the actuarial exams.
- MTSU Actuarial Math Student Foundation was set up in 2005. We appreciate all support to our actuarial science program.

The Actuarial Student Foundation is restricted to support actuarial students in their actuarial career development. Contributions to this foundation can be sent to:

*Actuarial Math Students Foundation, Middle Tennessee State University Foundation, Box 34, Murfreesboro, TN 37132*

## 7. International Partnership Programs

Under **academic partnership agreements**, the program has attracted over 60 international students. Just very recently, on July 20, 2018, President McPhee visited Ningbo University in China and renewed the Joint Mathematics and Applied Mathematics Program established in the fall of 2012, for 10 more years. The partnership allows actuarial science students enrolled at Ningbo University first, then progress to Murfreesboro to finish their studies. Successful students receive degrees from both MTSU and Ningbo University. President McPhee made comments on the joint program: "This partnership with Ningbo University is a model for effective and productive international academic cooperation. It leverages our respective strengths to provide unique opportunities for exceptional students. Other Chinese schools have partnership agreements with MTSU in actuarial science studies also include Guangxi University (GXU) and North China University of Technology (NCUT).