

Curriculum

The ACS curriculum has a requisite of COR2100 Economics and Society and the following ten module requirements:

- STAT201 Probability Theory and Applications
- STAT203 Financial Mathematics
- STAT310 Life Contingent Risks
- STAT311 Risk Theory and Loss Models
- ACCT101/111 Financial Accounting
- FNCE101 Finance
- DSA201 Statistical Inference for Data Science
- DSA211 Statistical Learning with R
- Any two DSA3XX Electives

A new Industry Integration (II) Track is established in the ACS programme for students who are eager to pursue their professional careers in the actuarial field after graduation. The II Track ensures that ACS students in this track have a higher exposure to industry, better connections, and more practical working experience, as compared to other ACS students not in the track.

ACS students in II Track need to fulfil all ten module requirements, including DSA301 Time Series Data Analysis plus one additional Actuarial Science Work-Study Elective (ACS WSE). ACS students can only declare II Track in ACS programme if they successfully sign up for ACS WSE.

ENQUIRIES

If you want to know more about the ACS Major, please write to

Professor of Statistics (Education) KWONG Koon Shing, PhD, FSA, CERA, kskwong@smu.edu.sg

Assistant Professor of Economics (Practice) GOH Jing Rong, PhD, AFA, jrgoh@smu.edu.sg

FURTHER INFORMATION

Further information about the actuarial profession and qualification for professional credentials can be found in the following websites:

SOA, US: www.soa.org
Casualty Actuarial Society, US: www.casact.org
Actuarial Profession, UK: www.actuaries.org.uk
Institute of Actuaries of Australia: www.actuaries.asn.au
Singapore Actuarial Society: www.actuaries.org.sg

GENERAL INFORMATION

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<https://economics.smu.edu.sg/bachelor-science-economics/curriculum/multi-disciplinary-learning>



Overview

Actuarial Science applies rigorous mathematical, probabilistic, statistical, economic, and predictive models to solve important problems in the fields of insurance, banking, finance, healthcare, risk, governments, technology, and other business fields that require quantitative modeling and predictive analytics.

Risk is everywhere – from financial markets to the climate, from our health to our home. The second major in Actuarial Science (ACS) will teach you how to apply your quantitative and mathematical talent in appreciating, calculating, assessing, and managing these risks.

The ACS curriculum fulfils all the objectives listed under the Society of Actuaries' (SOA) Validation by Educational Experience (VEE) guidelines for Accounting and Finance, Economics and Mathematical Statistics. The curriculum also provides actuarial training and prepares students in pursuing the Associate of the Society of Actuaries (ASA), the Fellow of the Society of Actuaries (FSA) and the Chartered Enterprise Risk Analyst (CERA) credentials offered by the SOA.

If you have an affinity for Mathematics and Statistics, and you are passionate about using these skills to solve real world quantitative problems via computer programming and actuarial modelling, you may find a good fit in the ACS programme.

SCHOOL OF ECONOMICS

Second Major
in Actuarial
Science (ACS)



Teaching Faculty

The ACS programme involves faculty members from the School of Economics, Lee Kong Chian School of Business and School of Accountancy. The following faculty members with professional qualifications in actuarial science are teaching in the programme:

Professor of Statistics (Education) Kwong Koon Shing, PhD, FSA, CERA

Professor Kwong is the Director of the ACS programme. He has published many articles in top-ranked statistics journals. His recent research is in retirement financing. He has more than twenty years of experience in teaching actuarial science and has earned several teaching excellence awards in his career. He obtained his professional qualifications CERA and FSA in 2011 and 2013, respectively.

Professor Emeritus of Economics Tse Yiu Kuen, PhD, FSA

Professor Tse has written two popular textbooks in actuarial science: *Financial Mathematics for Actuaries* (with W.S. Chan), third edition, World Scientific, 2022, and *Nonlife Actuarial Models*, Cambridge University Press, 2009. The former is on the official reading list of the SOA Exam Financial Mathematics (FM), and the latter is in the official reading lists of the Casualty Actuarial Society (CAS) exams Modern Actuarial Statistics I (MAS-I) and MAS-II.

Assistant Professor of Economics (Practice) Goh Jing Rong, PhD, AFA

Asst. Professor Goh is a committee member of the ACS programme. He has experience in teaching both life and non-life actuarial science topics, and he also received the SMU Outstanding Adjunct Faculty Award in 2020. He has prior industry experience working in the fields of financial risk, catastrophe risk, cyber risk, climate risk and enterprise risk. He cofounded an insurtech firm which was acquired by an insurance broker in Singapore. He is a board member of a risk consultancy firm. He is also an investor and advisor to startups. He volunteers his time at the Singapore Actuarial Society and is a member of the Institute and Faculty of Actuaries.

Alumni Professional Achievements

As of March 2022, ACS alumni have been awarded 14 Fellowships and 14 Associateships from various professional actuarial organizations.

Testimonials

As with anything in life, what you can achieve as an actuarial student in SMU depends on your exposure and how much effort you are willing to put in. I was glad to have the help from dedicated professors at SMU who laid the important foundations of my actuarial education and also supported me on my path to attain fellowship. The career path as an actuary is an exciting and rewarding one, if you love a challenge – and also numbers (more importantly). The actuarial science programme in SMU is up-to-date, flexible and will equip you with the essential skills to be a well-rounded qualified actuary if you work hard towards your goals.

Eng Pingni, FSA, FSAS, CERA

*Double degree in BBM and BSc (Econ), second major in Actuarial Science, Class of 2012
Consulting Actuary, Milliman Singapore*

The ACS major is a cross discipline major which gives you a good breath of knowledge but keeps to its focus on statistical analysis. This is not only relevant to aspiring actuaries but increasingly more so to anyone as we move towards a data driven world. For those looking to carve a career in the actuarial field, the modules not only prepare you for the professional exams, but strengthen your fundamentals, as you embark in solving real world problems that are often more ambiguous and unstructured compared to the coursework you will face.

Lu Zihao

*BSc (Econ), second major in Actuarial Science, Class of 2013
Pricing Actuary, Aspen Bermuda Limited (Singapore Branch)*



If you are looking for a challenging and rewarding career ahead, SMU Actuarial Science major opens the door to this highly specialized industry. It is tailored according to the Society of Actuaries (SOA)'s curriculum, giving students a good foundation before graduation. The professors are also extremely dedicated, giving their full support and help during the preparation for the professional exams. I strongly encourage you to consider actuarial science as a second major and join our big family!

Yap Hui San, FSA

*BSc (Econ), second major in Actuarial Science, Class of 2014
Regional Actuarial Manager, DLI Asia Pacific Pte. Ltd.*

If you enjoy solving complex problems, building models and doing in-depth analysis, then actuarial science could be the right choice for you. SMU's actuarial science major has equipped me with the necessary knowledge and skills to start a career as an actuary. The core actuarial modules are designed to be closely related to the professional exam syllabus and as a result, preparation time is greatly shortened and passing rate improved greatly. The ACS major has prepared me to take up a variety of roles across life and general insurance, which is part of my rotations as a management associate. My advice to all aspiring actuaries is that they should not be afraid of the math. The true value of an actuary is to come out with the model and computers will take care of the rest.

Darius Bai Zhi Peng, FSA

*BSc (Econ), second major in Actuarial Science, Class of 2015
Actuarial Assistant Manager, DLI Asia Pacific Pte. Ltd.*

I am grateful for having the opportunity to learn from two awesome professors in the ACS major. They are patient, caring, and knowledgeable. They not only taught me actuarial knowledge and actuarial modelling, but also provided me with industry knowledge which helped me to land a job in the actuarial industry. The curriculum of ACS major is well calibrated to prepare students with both quantitative skills and business acumen to solve real-life problems that actuaries face in their day-to-day job. In addition to that, the curriculum is also well aligned with the qualification exams under Society of Actuaries.

Guo Jialiang, FSA

*BSc (Econ), second major in Actuarial Science, Class of 2017
Valuation Actuary, Zurich Financial Services Australia*

The ACS major was key in preparing me for my actuarial career. Classes are centred around understanding advanced quantitative concepts and applying them to projects with industry applications. Profs Tse and Kwong constantly encourage critical thinking, inquisitive learning and often initiate events or programmes to increase the exposure of ACS students. The ACS major's alignment with the Society of Actuaries has also been an important boost in my journey to getting credentialed. I would highly recommend this major to those who wish to pursue a career in this niche profession.

Ho Xiang Ying, FSA

*BSc (Econ), second major in Actuarial Science, Class of 2017
Senior Actuarial Analyst, Aon Centre for Innovation and Analytics (ACIA)*

If I could summarize my experience as an SMU actuarial science major, I would say the program is well-equipped, well-connected and career-preparing. With professors and teaching assistants that are passionate for the discipline along with supplementary course materials easily accessible at the library reserves, you are sure to find yourself well-equipped to tackle your actuarial modules. Having a well-connected and strong mentoring culture amongst seniors and alumni, an undergrad will never feel lost and can seek advice easily and even potentially secure an internship opportunity through networking sessions organized by the Actuarial Science Club committee. Lastly, all the above along with the confidence and soft skills that will be developed over their undergrad years, will in my opinion, adequately prepare the undergrad to take on the professional world in the actuarial industry upon graduation.

Nuris Irfan Bin Ismail

*BSc (Econ), second major in Actuarial Science, Class of 2021
Actuarial Analyst, Life & Health Pricing, Munich Re*