School of Natural Sciences and Mathematics

Actuarial Science (BS)

The Bachelor of Science Actuarial Science (AS) Program at The University of Texas at Dallas is administered through the Department of Mathematical Sciences.

Students receive a rigorous mathematical background including all the major courses taken by students majoring in mathematics or statistics. Further, ten courses devoted to finance, economics, accounting, applied statistics, information technology and actuarial science are required. All students are prepared to take three actuarial preliminary exams (Probability - P/1, Financial Mathematics - FM/2, Models in Financial Economics- MFE/3F) and achieve Validation of Educational Experience (VEE) credits in applied statistical methods, economics, and corporate finance. Students also receive rigorous instruction in preparation for a major part of the two additional actuarial preliminary exams (Models in Life Contingencies - MLC/LC and Construction and Evaluation of Actuarial Models - C/4) as well as for the two CAS Exams (Stochastic Processes/ Statistics - ST and Statistics and Probabilistic Models - S). Upon completion of this program, a student will have the knowledge and business background necessary to pursue a career as an actuary, as well as to undertake graduate study in actuarial science, statistics, mathematics, economics, or finance.

Bachelor of Science in Actuarial Science

Degree Requirements (120 semester credit hours)[1]

View an Example of Degree Requirements by Semester

Faculty

FACG> nsm-actuarial-science-bs

Professors: Larry P. Ammann, Zalman I. Balanov, Swati Biswas, Pankaj K. Choudhary, Mieczyslaw K. Dabkowski, Vladimir Dragovic, Sam Efromovich, Yulia Gel, M. Ali Hooshyar, Wieslaw Krawcewicz, Susan E. Minkoff, L. Felipe Pereira, Dmitry Rachinskiy, Viswanath Ramakrishna, Janos Turi, John Zweck

Professors Emeritus: Patrick Odell, John W. Van Ness

Clinical Professors: Natalia Humphreys, Wenyi (Roy) Lu

Associate Professors: Yan Cao, Min Chen

Assistant Professors: Mohammad Akbar, Maxim Arnold, Carlos Arreche, Bhargab Chattopadhyay, Sy Han (Steven) Chiou, Qingwen Hu, Frank Konietschke, Yifei Lou, Oleg Makarenkov, Tomoki Ohsawa, Sunyoung Shin, Anh Tran, Nathan Williams

Senior Lecturers: Mohammad Ahsan, Kelly Aman, Malgorzata Dabkowska, Rabin Dahal, Anatoly Eydelzon, Manjula Foley, Bentley T. Garrett, Farid Khafizov, Yuly Koshevnik, David L. Lewis, Changsong Li, Brady McCary, Derege Mussa, My Linh Nguyen, Jigarkumar Patel, Paul Stanford, Julie Sutton, Tristan Whalen

UT Dallas Affiliated Faculty: Hervé Abdi, Titu Andreescu, Alain Bensoussan, Stefano Leonardi, Faruck Morcos , John J. Wiorkowski, Zhenyu Xuan, Hyuntae Yoo, Michael Qiwei Zhang

I. Core Curriculum Requirements: 42 semester credit hours[2]

Communication: 6 semester credit hours

COMM 1311 Survey of Oral and Technology-based Communication

RHET 1302 Rhetoric

Mathematics: 3 semester credit hours

MATH 2417 Calculus I[3, 4, 5]

Life and Physical Sciences: 6 semester credit hours[3, 6]

PHYS 2325 Mechanics

or PHYS 2421 Honors Physics I - Mechanics and Heat[7]

or CHEM 1311 General Chemistry I

or CHEM 1315 Honors Freshman Chemistry I

PHYS 2326 Electromagnetism and Waves

or PHYS 2422 Honors Physics II - Electromagnetism and Waves[7]

or CHEM 1312 General Chemistry II

or CHEM 1316 Honors Freshman Chemistry II

Language, Philosophy and Culture: 3 semester credit hours

HUMA 1301 Exploration of the Humanities

Creative Arts: 3 semester credit hours

[ARTS 1301](#) Exploration of the Arts

American History: 6 semester credit hours

[HIST 1301](#) U.S. History Survey to Civil War

[HIST 1302](#) U.S. History Survey from Civil War

Government / Political Science (6 semester credit hours)

[GOVT 2305](#) American National Government

[GOVT 2306](#) State and Local Government

Social and Behavioral Sciences: 3 semester credit hours

[ECON 2302](#) Principles of Microeconomics[3]

Component Area Option: 6 semester credit hours

[MATH 2417](#) Calculus I[3, 4, 5]

[MATH 2419](#) Calculus II[3, 4, 5]

[PHYS 2125](#) Physics Laboratory I[3, 6]

or [CHEM 1111](#) General Chemistry I Laboratory[3, 6]

II. Major Requirements: 76-78 semester credit hours

Major Preparatory Courses: 31-33 semester credit hours beyond Core Curriculum

[ACCT 2301](#) Introductory Financial Accounting

[ACCT 2302](#) Introductory Management Accounting

[BCOM 3200](#) Introduction to Business Professional Development and Business Communication[7]

[BCOM 3310](#) Business Communication

[CS 1336](#) Programming Fundamentals

[CS 1136](#) Computer Science Laboratory

[CS 1337](#) Computer Science I

or [MATH 2370](#) Introduction to Programming with MATLAB[8]

ECON 2302 Principles of Microeconomics

MATH 2417 Calculus I[3, 4, 5]

MATH 2419 Calculus II[3, 4, 5]

MATH 2418 Linear Algebra

MATH 2420 Differential Equations with Applications

MATH 2451 Multivariable Calculus with Applications[9]

PHYS 2325 Mechanics[3, 6]

or PHYS 2421 Honors Physics I - Mechanics and Heat[3, 6, 7]

or CHEM 1311 General Chemistry I[3, 6]

or CHEM 1315 Honors Freshman Chemistry I[3, 6]

PHYS 2326 Electromagnetism and Waves[3, 6]

or PHYS 2422 Honors Physics II - Electromagnetism and Waves[3, 6, 7]

or CHEM 1312 General Chemistry II[3, 6]

or CHEM 1316 Honors Freshman Chemistry II[3, 6]

PHYS 2125 Mechanics Laboratory[3, 6]

or CHEM 1111 General Chemistry I Laboratory[3, 6]

or CHEM 1115 Honors Freshman Chemistry Laboratory I

PHYS 2126 Electromagnetism and Waves Laboratory

or CHEM 1112 General Chemistry II Laboratory

or CHEM 1116 Honors Freshman Chemistry Laboratory II

Major Core Courses: 45 semester credit hours

ACTS 4301 Principles of Actuarial Models: Life Contingencies I

ACTS 4302 Principles of Actuarial Models: Financial Economics

ACTS 4304 Construction and Evaluation of Actuarial Models

ACTS 4308 Actuarial Financial Mathematics

FIN 3320 Business Finance

MATH 3310 Theoretical Concepts of Calculus

MATH 3311 Abstract Algebra I

MATH 3379 Complex Variables

MATH 4334 Numerical Analysis

ITSS 3300 Information Technology for Business

ITSS 4301 Database Systems

STAT 3355 Data Analysis for Statisticians and Actuaries

STAT 4351 Probability

STAT 4352 Mathematical Statistics

STAT 4382 Stochastic Processes

III. Elective Requirements: 0-2 semester credit hour

Freshman students are required to take UNIV 1010.

Preparation for Actuarial Exams

Exam 1/P: STAT 4351 or ACTS 4306

Exam 2/FM: ACTS 4308, FIN 3320

Exam 3L/MLC: ACTS 4301

Exam 3F/MFE: ACTS 4302

Exam 4/C: ACTS 4304

Validation by Educational Experience (VEE) Credits

Applied Statistical Methods: STAT 3355 and STAT 4382

Corporate Finance: [FIN 3320](#)

Economics: [ECON 2301](#) and [ECON 2302](#)

Fast Track Baccalaureate/Master's Degrees

In response to the need for post-baccalaureate education, a Fast Track program is available to well-qualified UT Dallas undergraduate students. Qualified seniors may take up to 15 graduate semester credit hours that may be used to complete the baccalaureate degree and also to satisfy the requirements for the master's degree. Interested students should see the Associate Dean of Undergraduate Education (ADU) for specific requirements.

1. Incoming freshmen must enroll and complete requirements of UNIV 1010 and the corresponding school-related freshman seminar course. Students, including transfer students, who complete their core curriculum at UT Dallas must take UNIV 2020.

2. Curriculum Requirements can be fulfilled by other approved courses from accredited institutions of higher education. The courses are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at UT Dallas.

3. A required Major preparatory course that also fulfills a Core Curriculum requirement. Semester credit hours are counted in Core Curriculum.

4. Three semester credit hours of Calculus are counted to fulfill the Mathematics Core Requirement with the remaining one semester credit hour to be counted under Component Area Option Core Requirement.

5. Students may choose one of the following calculus sequences: (a) MATH 2413, MATH 2414, and MATH 2415; or (b) MATH 2417 and MATH 2419.

6. Six semester credit hours of Physics or Chemistry are counted under Science core, and one semester credit hour of Physics or Chemistry (PHYS 2125 or CHEM 1111) are counted under Component Area Option core.

7. Please consult your advisor if selecting Honors Physics or if you have taken BA 1100.

8. MATH 2370 will provide a better preparation for MATH 4334 Numerical Analysis course.

9. MATH 2451 may be taken in the Summer if offered.

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