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


Professors Emeritus: Patrick Odell, John W. Van Ness

Clinical Professors: Natalia Humphreys, Wenyi (Roy) Lu

Associate Professors: Swati Biswas, Yan Cao, Min Chen

Assistant Professors: Mohammad Akbar, Maxim Arnold, Bhargab Chattopadhyay, Qingwen Hu, Frank Konietzchke, Yifei Lou, Oleg Makarenkov, Tomoki Oshawa, Qiongxia (Joanne) Song, Anh Tran

Senior Lecturers: Mohammad Ahsan, Kelly Aman, Malgorzata Dabkowska, Rabin Dahal, Anatoly

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

**Adjunct Faculty from the Research for Mathematics of the Mexican Council and Technology:** Jose Gomez-Larranaga, Adolfo (Sanchez) Valenzuela

I. Core Curriculum Requirements: 42 semester credit hours

**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

**Life and Physical Sciences:** 6 semester credit hours

- **PHYS 2325** Mechanics
  - or **PHYS 2421** Honors Physics I - Mechanics and Heat
  - or **CHEM 1311** General Chemistry I
- **PHYS 2326** Electromagnetism and Waves
  - or **PHYS 2422** Honors Physics II - Electromagnetism and Waves
  - or **CHEM 1312** General 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

Component Area Option: 6 semester credit hours

MATH 2417  Calculus I
MATH 2419  Calculus II
PHYS 2125  Physics Laboratory

or  CHEM 1111  General Chemistry I Laboratory

II. Major Requirements: 75-77 semester credit hours

Major Preparatory Courses: 30-32 semester credit hours beyond Core Curriculum

ACCT 2301  Introductory Financial Accounting
ACCT 2302  Introductory Management Accounting
BCOM 3100  Professional Development
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

ECON 2302  Principles of Microeconomics

MATH 2417  Calculus I
MATH 2419  Calculus II
MATH 2418  Linear Algebra
MATH 2420  Differential Equations with Applications
MATH 2451  Multivariable Calculus with Applications

PHYS 2325  Mechanics

or  PHYS 2421  Honors Physics I - Mechanics and Heat

or  CHEM 1311  General Chemistry

PHYS 2326  Electromagnetism and Waves

or  PHYS 2422  Honors Physics II - Electromagnetism and Waves
or **CHEM 1312** General Chemistry II\(^3,5\)

**PHYS 2125** Mechanics Laboratory\(^3,5\)

or **CHEM 1111** General Chemistry I Laboratory\(^3,5\)

**PHYS 2126** Electromagnetism and Waves Laboratory

or **CHEM 1112** General Chemistry II Laboratory

**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: 1-3 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 five semester credit hours to be counted under Component Area Option Core Requirement.

5. 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.

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

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

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

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