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, applied statistics, insurance, and actuarial science are required. 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)\(^1\)

Faculty

- **Professors:** Larry P. Ammann, Zalman I. Balanov, Sam Efromovich, Susan E. Minkoff, Viswanath Ramakrishna
- **Clinical Professor:** Ronald D. Dearing, Natalia Humphreys
- **Associate Professor:** Mieczyslaw K. Dabkowski
- **Assistant Professor:** Bhargab Chattopadhyay
- **Senior Lecturers:** Malgorzata Dabkowska, Yuly Koshevnik

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 (\(^3\), \(^4\))
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 2301** Principles of Macroeconomics

Component Area Option: 6 semester credit hours

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

II. Major Requirements: 78 semester credit hours

Major Preparatory Courses: 33 semester credit hours beyond Core Curriculum

**ACCT 2301** Introductory Financial Accounting
**ACCT 2302** Introductory Management Accounting
BCOM 3310  Business Communication
CS 1336  Programming Fundamentals
CS 1136  Computer Science Laboratory
CS 1337  Computer Science I
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 I
PHYS 2326  Electromagnetism and Waves
or PHYS 2422  Honors Physics II - Electromagnetism and Waves
or CHEM 1312  General Chemistry II
PHYS 2125  Mechanics Laboratory
PHYS 2126  Electromagnetism and Waves Laboratory
CHEM 1111  General Chemistry I 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
FIN 3390  Introduction to Financial Modeling
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  
**STAT 3355** Data Analysis for Statisticians and Actuaries  
**STAT 4351** Probability  
**STAT 4352** Mathematical Statistics  
**STAT 4382** Stochastic Processes

### III. Elective Requirements: 1 semester credit hour

Freshman students are required to take **UNIV 1010** and **NATS 1101**.

### 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 are counted under Science core, and one semester credit hour of Physics (PHYS 2125) 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. NATS 1101 may be substituted for an appropriate elective for transfer students.