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.

Faculty

Professors: Larry P. Ammann, Michael I. Baron, Sam Efromovich, Robert Serfling

Associate Professor: Pankaj K. Choudhary

Clinical Professor: Ronald D. Dearing

Clinical Associate Professor: Natalia Humphreys

Bachelor of Science in Actuarial Science

Degree Requirements (120 semester credit hours)¹

I. Core Curriculum Requirements: 42 semester credit hours²

Communication: 6 semester credit hours

COMM 1311 Survey of Oral and Technology-based Communication

RHET 1302 Rhetoric

Mathematics: 3 semester credit hours

MATH 2417 Calculus³ ⁴

Life and Physical Sciences: 6 semester credit hours⁵

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 \(^3\) \(^4\)
**MATH 2419** Calculus II \(^3\) \(^4\)
**PHYS 2125** Physics Laboratory I \(^5\)

II. Major Requirements: 77 semester credit hours

Major Preparatory Courses: 29 semester credit hours beyond Core Curriculum
**ACCT 2301** Introductory Financial Accounting
**ACCT 2302** Introductory Management Accounting
**BCOM 3310** Business Communication
CS 1337 Computer Science I
ECON 2302 Principles of Microeconomics
MATH 2417 Calculus I\(^3, 4, 6\)
MATH 2419 Calculus II\(^3, 4, 6\)
MATH 2418 Linear Algebra
MATH 2420 Differential Equations with Applications
MATH 2451 Multivariable Calculus with Applications

PHYS 2325 Mechanics\(^5\)
  or PHYS 2421 Honors Physics I - Mechanics and Heat\(^5\)
  or CHEM 1311 General Chemistry I\(^5\)
PHYS 2326 Electromagnetism and Waves\(^5\)
  or PHYS 2422 Honors Physics II - Electromagnetism and Waves\(^5\)
  or CHEM 1312 General Chemistry II\(^5\)
PHYS 2125 Mechanics Laboratory\(^5\)
PHYS 2126 Electromagnetism and Waves Laboratory
CHEM 1111 General Chemistry I Laboratory
  or CHEM 1112 General Chemistry II Laboratory

Major Core Courses: 48 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
FIN 4300 Investment Management
MATH 3310 Theoretical Concepts of Calculus
MATH 3311 Abstract Algebra I
MATH 3379 Complex Variables
MATH 4334 Numerical Analysis
MIS 3300 Introduction to Management Information Systems

**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**, and **FIN 4300**
- **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**

1. Incoming freshmen must complete and pass UNIV 1010 Freshman Seminar 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 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.