ACTUARIAL SCIENCE AS AN UNDERGRADUATE MAJOR

Actuarial science is a discipline in which complex data sets are used to analyze risk probabilities and their associated costs. Corporations rely on actuarial risk evaluation to frame their strategic management decisions. Actuaries are employed by the insurance industry, corporations, the government and/or individuals. To become an actuary, a strong background in mathematics, statistics, economics and finance is required. Therefore, the College of Arts and Sciences' Department of Mathematics jointly offers this program with the Department of Economics in the School of Business Administration. The student also is required to complete a series of exams set by the Society of Actuaries and Casualty Actuarial Society. This major provides preparation for an advanced degree in economics, mathematics, statistics or business administration, and instills in students strong critical-thinking capabilities.

MAJOR REQUIREMENTS

To fulfill the requirements for the major in actuarial science, students must complete a minimum of 124 credits, as specified below. All required and cognate courses must be completed with a grade of C or better in each major course.

BASIC MATH REQUIREMENTS
MTH 1554 Calculus I
MTH 1555 Calculus II
MTH 2554 Multivariable Calculus
MTH 2775 Linear Algebra

PROBABILITY REQUIREMENTS
ACS 3000 Foundations of Probability and Calculus
STA 2226 Applied Probability and Statistics
STA 4227 Introduction to Mathematical Statistics

ECONOMICS REQUIREMENTS
ECN 2010 Principles of Microeconomics AND
ECN 2020 Principles of Global Macroeconomics
(or ECN 2000 Principles of Macroeconomics)
ECN 3020 Intermediate Macroeconomics or ECN 3210
Financial Markets and Economy
ECN 3030 Managerial Economics or ECN 3810
Mathematical Analysis for Economists

STATISTICS REQUIREMENTS
QMM 2410 Statistical Methods for Business II or STA 4330
Time Series I or STA 4228 Introduction to Mathematical Statistics II
Accounting and Finance Requirements
ACC 2000 Introductory Financial Accounting
FIN 3550 Finance for Actuarial Science or FIN 3220
Managerial Finance I and FIN 3720 Managerial Finance II

ACCOUNTING REQUIREMENT
ACC 2000 Introductory Financial Accounting
FIN 3550 Finance for Actuarial Science or FIN 3220
Managerial Finance I and FIN 3720 Managerial Finance II

REGRESSION REQUIREMENT
ECN 4050 Econometrics or STA 4002 Applied Linear Models I

DATABASE AND PROGRAMMING REQUIREMENTS
EGR 1400 Computer Problem Solving in Engineering and Computer Science
MIS 3130 Information and Data Management or MIS 3140
Business Database Systems
MIS 4460 Business Analytics

ADDITIONAL MATHEMATICS-STATISTICS REQUIREMENTS
APM 2559 Introduction to Differential Equations or STA 4225
Elements of Stochastic Processes or APM 4334 Applied Numerical Methods: Matrix Methods

FINANCIAL MATHEMATICS REQUIREMENT
ACS 4550 Financial Mathematics

FINANCIAL DERIVATIVES REQUIREMENT
ACS 4660 Financial Economics or FIN 4250 Financial Derivatives

COGNATE COURSES
WRT 3082 Business Writing
COM 2000 Public Speaking or COM 2403 Group Dynamics and Communication

REQUIRED ACHIEVE COURSES
SBC 1990 ACHIEVE I
SBC 2990 ACHIEVE II
ACS 3990 ACHIEVE III Actuarial Science
SKILLS AND ABILITIES
Students are taught to think analytically and to develop models appropriate to the process being analyzed. Students develop many useful skills including the ability to:
- Understand concrete and abstract concepts
- Think logically and critically
- Identify the essence of a problem
- Gather/organize/evaluate data
- Solve quantitative problems
- Manage complex projects
- Work independently and as part of a team
- Apply fundamental business principles
- Communicate by preparing and presenting facts and ideas clearly, effectively and by listening
- Make sound judgments and decisions
- Use computers (spreadsheets, statistical programs, databases, and programming)

ACTUARIAL SCIENCE ORGANIZATIONS AT OU
- SAS (Society of Actuarial Sciences)
- The Society of Actuaries (soa.org)
- The Casualty Actuarial Society (casact.org)

PROFESSIONAL ORGANIZATIONS
- Communicate by preparing and presenting facts and ideas clearly, effectively and by listening
- Make sound judgments and decisions
- Use computers (spreadsheets, statistical programs, databases, and programming)

CAREER OPPORTUNITIES
Actuaries work anywhere risk is present. Actuaries are employed by colleges and universities, banks and investment firms, public accounting firms, labor unions, rating bureaus and fraternal organizations. Since actuarial judgment is highly valued, career paths often lead to upper management and executive positions. Many resources, including the Jobs Related Almanac, have consistently rated the actuarial profession as a top-ranked career based upon factors including physical demands, job security, compensation, advancement, and stress, among other criteria.

For more information on careers please visit the Bureau of Labor Statistics at bls.gov/oco or O’Net at onetonline.org.

CAREER OUTLOOK
Starting Salary | $35,050 – $62,400
Mid-Career Salary | $61,140 – $97,110
National Growth | 5 – 33% by 2026

FOR FURTHER INFORMATION
To help choose your area of interest, plan your future career goals and monitor your progress, you can visit the Oakland Business School Undergraduate Advising and Career Services Offices.