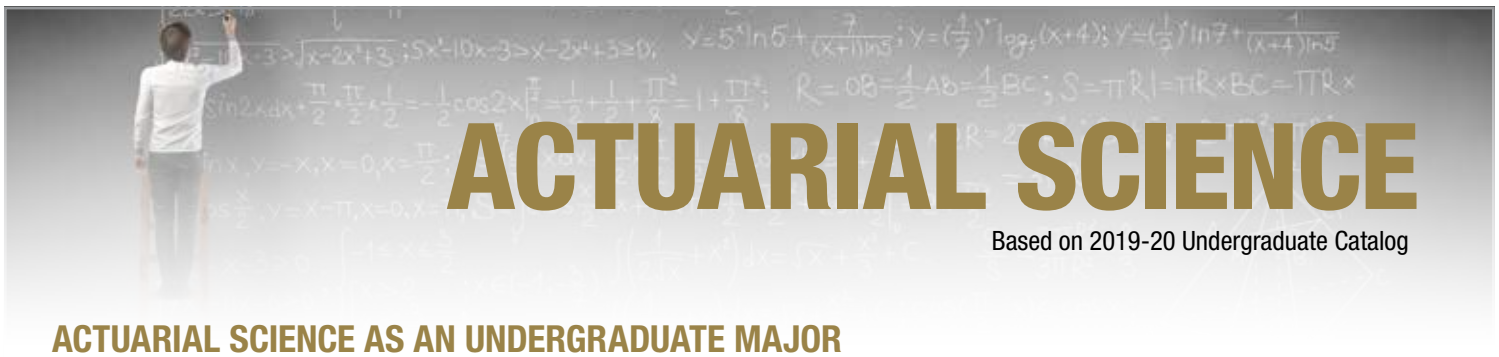

ACTUARIAL SCIENCE

Based on 2019-20 Undergraduate Catalog

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 or 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)

CAREER OPPORTUNITES

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 Choices:

- Actuary
- Cost Estimator
- Statistician
- Personal Financial Advisor
- Insurance Underwriter
- Budget Analyst
- Economist

Organizations that commonly employ actuarial science majors

- Ally Financial
- Deloitte
- WellPoint
- Blue Cross Blue Shield of Michigan
- Towers Watson

JOB OPENINGS

Access thousands of job and internship postings at Handshake **(oakland.edu/careerservices/handshake)**. Handshake also provides the latest news from OU Career Services, exclusively for OU students and alumni.

ACTUARIAL SCIENCE ORGANIZATIONS AT OU

SAS (Society of Actuarial Sciences)
For more information visit: **oakland.edu/business/orgs**.

PROFESSIONAL ORGANIZATIONS

The Society of Actuaries (soa.org)
The Casualty Actuarial Society **(casact.org)**

CAREER OUTLOOK

Starting Salary | $35,050 – $62,400
Mid-Career Salary | $61,140 – $97,110
National Growth | 5 – 33% by 2026
Data from the National Bureau of Labor and Statistics

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.

School of Business Administration Undergraduate Advising
Elliott Hall, Room 232
275 Varner Drive
(248) 370-3285 | **oakland.edu/business/advising**

College of Arts and Sciences Advising
Varner Hall, Room 221
371 Varner Drive
(248) 370-4567 | **oakland.edu/casadvising**

School of Business Administration Career Services
Elliott Hall, Room 232
275 Varner Drive | (248) 370-3215
oakland.edu/business

Career Services
Main Office
North Foundation Hall, Room 154
318 Meadow Brook Road | (248) 370-3250
oakland.edu/careerservices

Also consult: **oakland.edu/math/major** and **beanactuary.org**

DEPARTMENT OF ECONOMICS

Elliott Hall, Room 440

Director | Ronald Tracy | tracy@oakland.edu | (248) 370-3514

COLLEGE OF ARTS AND SCIENCES
Department of Mathematics
Math and Science Center, Room 368
Chief Faculty Adviser | Laszlo Liptak | liptak@oakland.edu | (248) 370-4054

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