

ACTUARIAL SCIENCE (BSB)

An actuary is a business professional who analyzes the financial consequences of risk and uncertainty. They interpret statistics to determine probabilities of accidents, sickness, death, and loss of property from theft and natural disasters. Actuaries use mathematics, statistics and financial theory to study uncertain future events, especially concerning risk management and insurance programs. Actuaries are considered the “financial architects” of the insurance world.

Actuaries are in high demand and work for insurance companies, consulting and investment firms, government, employee benefit departments of large corporations, hospitals, and banks. The field is highly competitive and requires students to pass exams that lead to professional certification by the Society of Actuaries, the Casualty Actuarial Society and other accredited international societies. This program will equip students with the skills needed to pass at least two actuarial exams, which are the industry’s standard of gauging expertise for internships and employment, prior to graduation. We have structured our program around these milestones, enabling our students to gain internships in a timely manner and to graduate into full employment.

Program Requirements	Quarter Hours
Business Core Requirements	68
Liberal Studies Requirements	72
Major Requirements	44
Open Electives	8
Total hours required	192

Learning Outcomes:

- Apply the laws of probability and statistics to problems encountered by actuaries on a daily basis.
- Explain the theory of interest and how it is the foundation for derivative securities.
- Explain contingent payment models and how they apply to mitigating financial risks through insurance contracts.
- Organize, and simulate various Life Contingency models in a manner consistent with the insurance industry practice.
- Describe life cycle effects and then explain how different groups of individuals may protect themselves from any harmful effects.
- Calculate the financial costs and benefits of insurance contracts for various individuals given different life cycle assumptions.
- Apply the laws of probability and statistics to problems encountered by actuaries on a daily basis.
- Explain the theory of interest and how it is the foundation for derivative securities.
- Explain contingent payment models and how they apply to mitigating financial risks through insurance contracts. Organize, and simulate various Life Contingency models in a manner consistent with the insurance industry practice.
- Describe life cycle effects and then explain how different groups of individuals may protect themselves from any harmful effects. Calculate the financial costs and benefits of insurance contracts for various individuals given different life cycle assumptions.

College Core Requirements

Business Core Requirements

All undergraduate students in the Driehaus College of Business complete foundational courses in the areas of accountancy, economics, finance, management, and marketing. The core curriculum also includes courses that emphasize the increasingly quantitative and technological nature of business, the importance of the entrepreneurial mindset, and how students can use their business education to address important social challenges.

Course Requirements

For a student to complete the Bachelor of Science in Business with a major in Actuarial Science, the following Business Core courses totaling at least 68.0 hours are required:

Course	Title	Quarter Hours
Business Core Courses		
ACC 101	INTRODUCTION TO ACCOUNTING I	4
ACC 102	INTRODUCTION TO ACCOUNTING II	4
BUS 101	INTRODUCTION TO DRIEHAUS: BUSINESS FUNDAMENTALS AND THE ENTREPRENEURIAL MINDSET	4
BUS 103	BUSINESS FOR SOCIAL GOOD	4
CSC 241	INTRODUCTION TO COMPUTER SCIENCE I	4
ECO 105	PRINCIPLES OF MICROECONOMICS	4
ECO 106	PRINCIPLES OF MACROECONOMICS	4
FIN 310	INTRODUCTION TO FINANCE	4
MAT 150	CALCULUS I	4
MAT 151	CALCULUS II	4
MAT 152	CALCULUS III	4
MAT 341	STATISTICAL METHODS USING SAS	4
MGT 300	PRINCIPLES OF MANAGEMENT	4
MGT 301	PRINCIPLES OF OPERATIONS MANAGEMENT	4
MKT 301	PRINCIPLES OF MARKETING	4
Business Communication		
Select one of the following:		4
MKT 276	EFFECTIVE BUSINESS COMMUNICATION	
CMNS 201	BUSINESS AND PROFESSIONAL COMMUNICATION	
Global Business Perspective		
Select one of the following:		4
ECO 316	EUROPEAN ECONOMIC HISTORY	
ECO 330	RADICAL RESPONSES TO CAPITALISM	
ECO 333	TOPICS IN GLOBAL ECONOMIES	
ECO 334	UNDERSTANDING CHINA'S ECONOMY	
ECO 360	ECONOMICS OF LOW-INCOME COUNTRIES	
ECO 361	INTERNATIONAL TRADE	
ECO 362	INTERNATIONAL MONETARY ECONOMICS	
ECO 363	ECONOMICS OF THE EUROPEAN UNION	
FIN 340	INTERNATIONAL FINANCE	
FIN 355	GLOBAL IPOs & VENTURE CAPITAL	
IB 350	INTERNATIONAL BUSINESS SEMINAR	

MGT 354	GLOBAL HUMAN RESOURCE MANAGEMENT
MGT 357	INTERNATIONAL BUSINESS
MKT 340	MARKETING ACROSS CULTURES: A CULTURAL PERSPECTIVE ON MULTICULTURAL MARKETS
MKT 358	MARKETING IN A GLOBAL ENVIRONMENT ((Marketing Honors Students Only))
MKT 360	INTERNATIONAL MARKETING
SOC 217	WORK IN A GLOBALIZED WORLD

A course taken as part of a term-long study abroad program

¹ Actuarial Science majors take CSC 241 for the BSB Business Technology requirement.

Business Ethics

All undergraduate students in the Driehaus College of Business complete a course in Business Ethics. It is recommended students take MGT 248 or PHL 248 in Philosophical Inquiry or MGT 228 or REL 228 in Religious Dimensions in the Liberal Studies Program (or University Honors Program) Requirements.

Second Majors and Minors

The addition of a second major or minor may affect the Business Core classes required for a student. Meet with an academic advisor to confirm requirements.

Math Requirements for Actuarial Science majors

- An Actuarial Science student is expected to complete the Calculus sequence in the first year of study.
- The calculus requirement can be met with one of these sequences:
 - Calculus: MAT 150, MAT 151, and MAT 152
 - Calculus for Mathematics and Science Majors: MAT 160, MAT 161, and MAT 162
 - Calculus for Life Sciences: MAT 170, MAT 171, and MAT 172
 - Summer Calculus: MAT 155 and MAT 156
- Actuarial Science students do not take Business Calculus MAT 135, MAT 136, or Business Statistics MAT 137.

Grade Minimum Requirements for Actuarial Science Major

A minimum grade of C- is required for the following: ACC 101, ACC 102, BUS 101, BUS 103, ECO 105, (<https://catalog.depaul.edu/search/?P=ECO%20105>) ECO 106, FIN 310, MAT 150, MAT 151, MAT 152, MAT 341, and any FIN course used for Global Business Perspective.

Liberal Studies Requirements

Honors program requirements can be found in the individual Colleges & Schools section of the University Catalog. Select the appropriate college or school, followed by Undergraduate Academics and scroll down.

First Year Program	Hours
Chicago Quarter	
LSP 110 DISCOVER CHICAGO or LSP 111 or EXPLORE CHICAGO	4

Focal Point		
LSP 112	FOCAL POINT SEMINAR	4
Writing		
WRD 103	COMPOSITION AND RHETORIC I ¹	4
WRD 104	COMPOSITION AND RHETORIC II ¹	4
Quantitative Reasoning		
Not Required		
Sophomore Year		
Race, Power, and Resistance		
LSP 200	SEMINAR ON RACE, POWER, AND RESISTANCE	4
Junior Year		
Experiential Learning		
Required		4
Senior Year		
Capstone		
BUS 392	SENIOR SEMINAR ¹	4

¹ Students must earn C- or better in this course.

Learning Domains

Arts and Literature (AL) (<https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/arts-and-literature/>)

- 3 Courses Required

Historical Inquiry (HI) (<https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/historical-inquiry/>)

- 2 Courses Required

Math and Computing (MC) (<https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/math-and-computing/>)

- Not Required

Philosophical Inquiry (PI) (<https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/philosophical-inquiry/>)

- 2 Courses Required¹

Religious Dimensions (RD) (<https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/religious-dimensions/>)

- 2 Courses Required¹

Scientific Inquiry (SI) (<https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/scientific-inquiry/>)

- 1 Lab Course Required

Social, Cultural, and Behavioral Inquiry (SCBI) (<https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/social-cultural-and-behavioral-inquiry/>)

- 1 Course Required

¹ PHL 248/ MGT 248 is required in PI or REL 228 / MGT 228 is required in RD.

Notes

Specified required courses within Liberal Studies may have grade minimums (e.g. C- or better). Please consult your advisor or your college and major requirements.

Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the Experiential Learning requirement.

In meeting learning domain requirements, no more than one course that is outside the student's major and is cross-listed with a course within the student's major, can be applied to count for LSP domain credit. This policy does not apply to those who are pursuing a double major or earning BFA or BM degrees.

Major Requirements

Course Requirements

In addition to FIN 310, a student majoring in Actuarial Science is required to complete the following courses totaling at least 44.0 hours:

Course	Title	Quarter Hours
Required Courses		
DSC 341	FOUNDATIONS OF DATA SCIENCE	4
FIN 251	CAREER MANAGEMENT IN ACTUARIAL SCIENCE	0
FIN 365	PRINCIPLES OF RISK & INSURANCE	4
MAT 260	MULTIVARIABLE CALCULUS I	4
MAT 262	LINEAR ALGEBRA	4
MAT 351	PROBABILITY AND STATISTICS I	4
MAT 352	PROBABILITY AND STATISTICS II	4
MAT 353	PROBABILITY AND STATISTICS III	4
MAT 361	THEORY OF INTEREST	4
MAT 368	MATHEMATICS FOR FINANCE	4
or MAT 369	ACTUARIAL SCIENCE SEMINAR	
Electives		
Select two elective courses to be chosen as a pair from the following:		8
<i>Elective Pair 1</i>		
DSC 323	DATA ANALYSIS AND REGRESSION	
DSC 324	ADVANCED DATA ANALYSIS	
<i>Elective Pair 2</i>		
MAT 356	APPLIED REGRESSION ANALYSIS	
MAT 358	APPLIED TIME SERIES AND FORECASTING	
<i>Elective Pair 3</i>		
MAT 359	SIMULATION MODELS AND MONTE CARLO METHOD	
MAT 360	GENERALIZED LINEAR MODELS	
<i>Elective Pair 4</i>		

MAT 362 LIFE CONTINGENCIES I

MAT 363 LIFE CONTINGENCIES II

Elective Pair 5

MAT 364 LOSS MODELS I

MAT 365 LOSS MODELS II

Elective Pair 6

MAT 362 LIFE CONTINGENCIES I

MAT 364 LOSS MODELS I

Career Management Course

Students are required to complete the Career Course (FIN 251) associated with the major. Students who double major may choose the Career Course (250/251) associated with either major provided that hours for graduation are satisfied. Students should take the Career Course as soon as possible.

Open Electives

Open elective credit (8.0 hours) is needed to meet the minimum graduation requirement of 192 hours.

Graduation Requirements

All Finance (FIN) courses and any course used towards the Actuarial Science major must be completed with a minimum grade of C- and with a combined GPA of 2.000 or higher.