

# ACTUARIAL SCIENCE (BS)

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.

We offer courses that will help you prepare for the actuarial exams offered by the Society of Actuaries and the Casualty Actuarial Society. These courses include Probability and Statistics I & II (P Exam), Theory of Interest (FM Exam), Mathematics for Finance (IFM Exam), Loss Models I & II (STAM Exam), Life Contingencies I & II (LTAM Exam), and Applied Regression Analysis and Applied Time Series & Forecasting (SRM Exam).

We also offer courses that will allow you to satisfy other requirements in the actuarial credentialing process.

Program Requirements	Quarter Hours
Liberal Studies Requirements	72
Major Requirements	96
Open Electives	24
<b>Total hours required</b>	<b>192</b>

## Learning Outcomes

Students will be able to:

- Describe the risk management process and explain how insurance is used to protect against risk.
- Apply the laws of probability and statistics to problems encountered by actuaries.
- Use the theory of interest to evaluate financial instruments and manage assets and liabilities.
- Analyze financial derivatives contracts and identify their risk-mitigation features.

## College Core Requirements

### Modern Language Requirements

Students who intend to graduate with the Bachelor of Arts (BA) degree will be required to demonstrate competence in a modern language equivalent to the proficiency attained from one year of college-level language study. Such competence may be demonstrated in one of several ways:

- completing the last course in the fourth-year high school sequence of any language
- completing the last course in the first-year college sequence of any language
- completing a college course beyond the first-year level in any language
- achieving a satisfactory score on any of the Modern Language placement examinations administered at DePaul
- achieving a satisfactory rating in a proficiency examination accepted by DePaul
- achieving a score of 3 or higher on the Advance Placement (AP) test for any language

- achieving a score of 5 or higher in the Language B assessment from a Standard or Higher Level International Baccalaureate (IB) program
- achieving a satisfactory score on the CLEP examination

Please note: Modern Languages courses with an E-designation are taught in English and may not be applied to the Modern Language Requirement.

For further information regarding satisfactory scores and possible credit from the DePaul placement, AP, CLEP, or IB examinations, please contact Student Records.

Students who complete an Inter-College Transfer (ICT) to the College of Science and Health will abide by the College of Science and Health Modern Language Requirement in place on the effective date of the ICT.

BA students who meet College requirements and wish to pursue further work in the language may elect the the Language for Liberal Studies Option (<https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-program-guidelines/language-for-liberal-studies-option/>) of the Liberal Studies Program. While Bachelor of Science (BS) students are not required to demonstrate competency in a modern language, the Language for Liberal Studies Option is available to them for language study at any level. Modern Languages courses with an E-designation are taught in English and may not be applied to the Language for Liberal Studies Option.

## Major Declaration Requirements

All students in the College are required to declare a major field prior to beginning their junior year. After researching College programs, the student should declare a major field by visiting Campus Connection and using the Declarations and Inter-College Transfer tool. The student will then be assigned a faculty advisor or staff advisor in the department or program and should make an appointment to see that advisor at his or her earliest convenience.

To change major fields, or to declare a minor or concentration, the student must use the Declarations and Inter-College Transfer tool described above. However, for the purpose of exploring the possibility of changing a major field, the student should consult an academic advisor in the College or an academic advisor in the Office for Academic Advising Support.

## 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
<b>Chicago Quarter</b>		
LSP 110	DISCOVER CHICAGO	4
or LSP 111	or EXPLORE CHICAGO	
<b>Focal Point</b>		
LSP 112	FOCAL POINT SEMINAR	4
<b>Writing</b>		
WRD 103	COMPOSITION AND RHETORIC I <sup>1</sup>	4
WRD 104	COMPOSITION AND RHETORIC II <sup>1</sup>	4
<b>Quantitative Reasoning</b>		
Not Required		
<b>Sophomore Year</b>		
<b>Race, Power, and Resistance</b>		

LSP 200 SEMINAR ON RACE, POWER, AND RESISTANCE

#### Junior Year

#### Experiential Learning

Required 4

#### Senior Year

#### Capstone

BUS 392 SENIOR SEMINAR <sup>1</sup> 4

<sup>1</sup> 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 Required<sup>1</sup>

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

- 2 Courses Required<sup>1</sup>

**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 (must not be an ECO course)

<sup>1</sup> PHL 248/ MGT 248 is required in PI or REL 228 / MGT 228 is required in RD

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.

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4 Regression Analysis and Applied Time Series & Forecasting (SRM Exam). We also offer courses that will allow you to satisfy other requirements in the actuarial credentialing process.

Students are advised to talk with their advisor before double majoring, because some major combinations are prohibited. No more than 50% of the credits that apply to one major may be drawn from another major.

## Major Requirements

### Course Requirements

Course	Title	Quarter Hours
<b>Core Courses</b>		
Select one of the following Calculus sequences:		12
Sequence One		
MAT 150	CALCULUS I	
MAT 151	CALCULUS II	
MAT 152	CALCULUS III	
Sequence Two		
MAT 147	CALCULUS WITH INTEGRATED PRECALCULUS I	
MAT 148	CALCULUS WITH INTEGRATED PRECALCULUS II	
MAT 149	CALCULUS WITH INTEGRATED PRECALCULUS III	
Sequence Three <sup>1</sup>		
MAT 155	SUMMER CALCULUS I	
MAT 156	SUMMER CALCULUS II	
ACC 101	INTRODUCTION TO ACCOUNTING I	4
ACC 102	INTRODUCTION TO ACCOUNTING II	4
BLW 201	LEGAL & ETHICAL ASPECTS IN THE BUSINESS ENVIRONMENT	4
BUS 392	SENIOR SEMINAR (Liberal Studies Program Capstone)	4
ECO 105	PRINCIPLES OF MICROECONOMICS	4
ECO 106	PRINCIPLES OF MACROECONOMICS	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 (Covers topics relevant to the P Exam)	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	
FIN 251	CAREER MANAGEMENT IN ACTUARIAL SCIENCE	
FIN 310	INTRODUCTION TO FINANCE	4
FIN 365	PRINCIPLES OF RISK & INSURANCE	4
<b>Data Analysis Requirements</b>		
CSC 241	INTRODUCTION TO COMPUTER SCIENCE I	4
MAT 341	STATISTICAL METHODS USING SAS	4
or MAT 348	APPLIED STATISTICAL METHODS	
<b>Actuarial Mathematics Major Electives</b>		

Select one of the following two-course sequences: 8

MAT 362 & MAT 363	LIFE CONTINGENCIES I and LIFE CONTINGENCIES II
MAT 362 & MAT 364	LIFE CONTINGENCIES I and LOSS MODELS I
MAT 364 & MAT 365	LOSS MODELS I and LOSS MODELS II

#### Actuarial Statistics Major Electives

Select three of the following: 12

MAT 350	BAYESIAN STATISTICS
MAT 355	STOCHASTIC PROCESSES
MAT 356	APPLIED REGRESSION ANALYSIS
MAT 358	APPLIED TIME SERIES AND FORECASTING
MAT 359	SIMULATION MODELS AND MONTE CARLO METHOD
MAT 360	GENERALIZED LINEAR MODELS
DSC 323	DATA ANALYSIS AND REGRESSION
DSC 324	ADVANCED DATA ANALYSIS
DSC 341	FOUNDATIONS OF DATA SCIENCE

<sup>1</sup> This Calculus sequence is offered only during the summer, in two 6-credit hour courses. Students successfully completing MAT 131, MAT 147, MAT 150 or MAT 160 should enroll in MAT 155; students who successfully complete MAT 148, MAT 151 or MAT 161 should enroll in MAT 156. Students who successfully complete MAT 155 may enroll in either MAT 151 or MAT 156.

## Open Electives

Open elective credit also is required to meet the minimum graduation requirement of 192 hours.