# Mathematics — Actuarial Science

## Freshman Year

### Fall Semester
- Math 1371 Calculus I (placement into course, or pre-req)
- Phys 1301W Intro Physics I ($\& Math 1371$)
- Econ 1101 Microeconomics*
- CSE 1001 1st Yr Experience
- Liberal Education course or Writ 1301

### Spring Semester
- Math 1372 Calculus II (1371)
- Phys 1302W Intro Physics II (1301, $\& Math 1372$)
- Econ 1102 Macroeconomics*
- Liberal Education course or Writ 1301

## Sophomore Year

### Fall Semester
- Math 2373 Lin Alg/Diff Eq (1372)
- CSci 1113 Intro to C/C++ (Math 1371)
- Acct 2050 Intro to Fin Report* (sophomore status)
- Math 4065 Theory of Interest (1372)
- Insurance course I (choose from Ins 4100, 4200)

### Spring Semester
- Math 2374 Multivariable Calc (1372)
- Math 5283W Seq. Series, & Found ($\& 2373$ or $\& 2374$)
- Stat 3021 Intro Prob & Stat (Math 1272)
- Math 4xxx or 5xxx Elective
- Open Elective

## Junior Year

### Fall Semester
- Math 4242 Applied Lin Alg (2373)
- Math 5651/Stat 5101 (2373, 2374)
- Fina 3001 Finance Fund* (Acct 2050)
- Open Elective+ (If needed to reach 120 credits)

### Spring Semester
- Math 5652 Stochastic Processes (5651 or Stat 5101)
- Stat 3032 Regression/Corr. Data (3011 or 3021)
- UD Math Abstract or Theoretical Algebra
- Liberal Education course

## Senior Year

### Fall Semester
- Math 5067 Actuarial Math I (4065, 5651)
- Math 4xxx or 5xxx Elective
- Stat 5102 Into to Stat Learning* (5101 or Math 5651)
- Open Elective (If needed to reach 120 credits)

### Spring Semester
- Math 5068 Actuarial Math II (5067)
- Liberal Education course
- Open Elective (If needed to reach 120 credits)

+ Math 4067W recommended but not required

## About This Plan

- This plan is not a contract. Curriculum can change. The APAS is the official method for tracking completion of University degree requirements.
- Shaded courses are only offered in the indicated semester.
- Course pre-requisites and co-requisites (designated by $\&$) are listed below the course number and title. Upper Division (UD) requires admission to the major prior to enrollment.
- Grade of B- is needed in above courses marked by (\*) for VEE purposes, not for degree completion.
- Students can take either the CSE-only or University-wide versions of the math course (Math 1371/1271, 1372/1272, 2373/2243, 2374/2263).

## Applying to your Major

Students who have completed the required courses for admission to this major (double-boxed and one with dashed outline on plan) and have a 3.2 UM-TC technical GPA at the end of the fall semester will be guaranteed admission. All other students who have completed the required courses will be considered for admission on a space-available basis. Admission following the spring semester is only based on space availability. The major application database is available at z.umn.edu/csemajorapp.

## Total Credits Needed for Degree: 120
Mathematics

POSSIBLE POSITIONS

- **Actuary:** Deals with the financial impact of risk and uncertainty. Actuaries mathematically evaluate the likelihood of events and quantify the contingent outcomes in order to minimize losses.
- **Auditor:** Examine and analyze accounting records to determine financial status of establishment and prepare financial reports concerning operating procedures.
- **Database administrator:** Works with database software to develop/implement ways to manage and store data.
- **Financial analyst:** Provides guidance to businesses and individuals making investment decisions and assess the performance of stocks, bonds, commodities, and other types of investments.
- **Market/survey researcher:** Gathers information and statistical data to help companies understand what types of products people want, who will buy them, and at what price.
- **Personal financial advisor:** Manages and assesses the financial needs of individuals and assists them with investments, tax laws, and insurance decisions.
- **Statistician:** Applies mathematical and statistical knowledge to the design of surveys and experiments.
- **Supply chain analyst:** Apply quantitative skills to answer critical strategic business questions and support operational initiatives. Translate high-level business problems into more specific questions which can be answered by data driven analysis.

**Some of these positions may require an advanced degree.**

INDUSTRIES

- Agriculture
- Banking
- Biostatistics
- Business
- Clinical trials
- Computer information
- Consulting
- Ecology/environmental research
- Education
- Financial services
- Government
- Insurance
- Management
- Manufacturing
- Pharmaceuticals
- Product reliability
- Public health
- Research
- Sports
- Statistics
- Technology

EMPLOYERS

- Allianz Life
- Allstate Insurance
- Ameriprise Financial
- Cognizant Technology Solutions
- Deloitte
- Epic Systems
- Fast Enterprises, LLC
- Google
- IBM
- Meditech
- Microsoft Corporation
- Northwestern Mutual
- PricewaterhouseCoopers
- Securian Financial Group
- Target Corporation
- The Travelers Companies, Inc
- Towers Watson
- US Bank
- UnitedHealth Group/Optum
- Wells Fargo

CSE Career Outcomes

**Average Starting Salary:**

$61,675*

**Post-graduation Outcomes:**

Grad School: 29.3%
Emploed: 68.5%
Other: 2.2%

*Salary and Career Outcomes gathered from the 2016-2017 CSE Graduation Survey
Post-graduation outcomes reflect the percentage of students who were employed full-time in their field or were enrolled in a graduate program.

More Information

Career Center: cse.umn.edu/career
Salary Information: z.umn.edu/csesselary
More Information on Undergraduate Majors: cse.umn.edu/majors

Please visit the Career Center to continue exploring this major.

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Post-graduation outcomes reflect the percentage of students who were employed full-time in their field or were enrolled in a graduate program.