## Mathematics

### Freshman Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1371 Calculus I (placement into course, or pre-req)</td>
<td>Math 1372 Calculus II (1371)</td>
</tr>
<tr>
<td>Phys 1301W Intro Physics I &amp; (Math 1371)</td>
<td>Math 2373 Lin Alg/Diff Eq (1372)</td>
</tr>
<tr>
<td>CSE 1001 1st Yr Experience</td>
<td>Phys 1302W Intro Physics II (1301, &amp;Math 1372)</td>
</tr>
<tr>
<td>Liberal Education course or Writ 1301</td>
<td>Liberal Education course or Writ 1301</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>Liberal Education course</td>
</tr>
</tbody>
</table>

### Sophomore Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phys 2503 Physics III (1302, Math 1372)</td>
<td>Math 2374 Multivariable Calc (1372)</td>
</tr>
<tr>
<td>CSci Requirement</td>
<td>Liberal Education course</td>
</tr>
<tr>
<td>Open Elective (If needed to reach 120 credits)</td>
<td>Open Elective (If needed to reach 120 credits)</td>
</tr>
</tbody>
</table>

### Junior Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>UD Math Algebra or Analysis</td>
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</tr>
<tr>
<td>Technical Elective</td>
<td>Technical Elective</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>Open Elective (If needed to reach 120 credits)</td>
</tr>
</tbody>
</table>

### Senior Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>UD Math Elective</td>
<td>UD Math Elective</td>
</tr>
<tr>
<td>Open Elective (If needed to reach 120 credits)</td>
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</tr>
</tbody>
</table>

### 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.
- 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

## Department Contact Information

- Website: [www.math.umn.edu/undergrad/](http://www.math.umn.edu/undergrad/)
- Main Office Phone: 612-625-4848
- Main Office: 115 Vincent Hall
- Director of Undergraduate Studies: Bryan Mosher
- Email: mosher@math.umn.edu
- Departmental Advising: ugrad@math.umn.edu

### University Degree Requirements

All students must complete the following Writing & Liberal Education requirements, as noted on their APAS report. See link for full Core & Theme names: [z.umn.edu/liberaleducation](http://z.umn.edu/liberaleducation)

#### Writing Requirements:

- **University Writing:**
  - Writ 1301/1401 or equivalent

#### Writing Intensive (WI):

- Two: 1xxx or 2xxx level **
- One: 3/4/5xxx level (in major)*
- One: 3/4/5xxx level (any dept.)

Requirements with an (*) will be fulfilled by taking courses at UM-TC required for this major.
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%**

**Employed: 68.5%**

**Other: 2.2%**

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

More Information

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

Please visit the Career Center to continue exploring this major.

*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.