# Computer Science

## 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>Science</td>
</tr>
<tr>
<td>CSE 1001 1st Yr Experience</td>
<td>CSci 1133 Intro Comp/Prog (Math 1371)</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>3/4</td>
</tr>
</tbody>
</table>

- *Some courses may require additional pre-requisites.

## Sophomore Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>Stat 3021 Intro Prob &amp; Statistics (Math 1372)</td>
<td>CSci 2021 Machine Arch &amp; Org (1933 or 1913 or consent)</td>
</tr>
<tr>
<td>CSci 2011 Discrete Structures (Math 1371)</td>
<td>CSci 2033 Elem Comp Lin Alg (1113/1133, Math 1371)</td>
</tr>
<tr>
<td>CSci 1933 Intro Alg &amp; Data (1133)</td>
<td>CSci 2041 Adv Prog Principles (1933 or 1913, 2011)</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>3/4</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>3/4</td>
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</tbody>
</table>

## Junior Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 3081W Prog Des &amp; Dev (UD, 2021, 2041)</td>
<td>CSci 4061 Intro Oper Sys (UD, 2021 or EE 2361)</td>
</tr>
<tr>
<td>CSci 4041 Algs &amp; Data Str (1933 or 1913, 2011)</td>
<td>UD CSci Required Track</td>
</tr>
<tr>
<td>UD Math Oriented Req</td>
<td>UD CSci Required Track</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>Open Elective (If needed to reach 120 credits)</td>
</tr>
<tr>
<td>3/4</td>
<td>3/4</td>
</tr>
</tbody>
</table>

## Senior Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>UD CSci Selected Track</td>
<td>UD CSci Elective</td>
</tr>
<tr>
<td>UD CSci Elective</td>
<td>Open Elective (If needed to reach 120 credits)</td>
</tr>
<tr>
<td>Open Elective (If needed to reach 120 credits)</td>
<td>3/4</td>
</tr>
<tr>
<td>3/4</td>
<td>3/4</td>
</tr>
</tbody>
</table>

## Total Credits Needed for Degree: 120

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### 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 courses (Math 1371/1271, 1372/1272).
- CSci 1103 and 1113 are accepted substitutions for CSci 1133 (not recommended). Students who have taken CSci 1103 or 1113 should take CSci 1913 in place of 1933.

### Applying to your Major
Students who have completed the required courses for admission to this major (indicated with double boxes 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.

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### Department Contact Information
- Website: www.cs.umn.edu/undergraduate/index.php
- Main Phone & Office: 612-625-4002; 4-192 Keller
- Director of Undergraduate Studies: Nick Hopper; cscidugs@umn.edu
- Departmental Advisors: Kevin Allen & Kelly Thomas; csciug@umn.edu
- Office Hours: z.umn.edu/csciadvisor or csci.appointments.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

#### 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.
Computer Science

POSSIBLE POSITIONS

- **Application developer**: Design software or customize software for client use with the aim of optimizing operational efficiency.
- **Computer programmer**: Write and test code that allows computer applications and software programs to function and turn program designs created by software developers into instructions a computer can follow.
- **Computer support specialist**: Provides technical assistance to computer system users in person, via phone or from remote location. They provide assistance concerning the use of computer hardware and software.
- **Database administrator (DBAs)**: Use specialized software to store and organize data, such as financial information and customer shipping records. Ensure that data are available to users and are secure from unauthorized access.
- **Information security analyst**: Plan and carry out security measures to protect an organization’s computer networks and systems. Their responsibilities are continually expanding as the number of cyberattacks increases.
- **Software developer**: Develop computer program and applications that allow people to do specific tasks on a computer or another device. Others develop the underlying systems that run the devices or that control networks.
- **Web developer/engineer**: Design, create, and modify Web sites. Analyze user needs to implement Web site content, graphics, performance, and capacity. May integrate Web sites with other computer applications.

**INDUSTRIES**

- Aerospace
- Automotive manufacturing
- Communication
- Computer-aided design
- Consulting
- Digital communications
- Electrical hardware
- Environmental agencies
- Factory automation
- Federal safety agencies
- Finance
- Hardware design
- Healthcare
- High speed computing
- Industrial/food products
- Information management
- Insurance
- Manufacturing
- Medical technology
- Product development
- Software development
- Systems consulting
- Technology
- Telecommunications

**EMPLOYERS**

- Amazon
- Apple, Inc.
- Best Buy
- Cognizant Technology Solutions
- Cray
- Epic Systems
- Facebook
- Fast Enterprises
- General Dynamics Mission Systems
- Google
- IBM
- Infinite Campus
- Medtronic
- Microsoft
- National Instruments
- Open Systems International
- Target Corporation
- Thomson Reuters
- TripAdvisor
- Unisys
- UnitedHealth Group/Optum
- Wells Fargo

**CSE Career Outcomes**

Average Starting Salary: $73,854*

Post-graduation Outcomes:*

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

*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/csesalary
More Information on Undergraduate Majors: cse.umn.edu/majors

Please visit the Career Center to continue exploring this major.

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