# 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 (Math 1371)</td>
<td>Science †</td>
</tr>
<tr>
<td>Liberal Education course or Writ 1301</td>
<td>CSci 1133 Intro Comp/Prog††† (Math 1371)</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>Liberal Education course or Writ 1301</td>
</tr>
<tr>
<td>CSE 1001: 1st Yr Experience</td>
<td>1</td>
</tr>
</tbody>
</table>

† Select from Phys 1302W, Chem 1061/65 or 1062/66, ESci2201, Psy 3011, or Gcd 3022

## Sophomore Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<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 (1113/133, Math 1371)</td>
</tr>
<tr>
<td>CSci 1933 Intro Alg &amp; Data+++ (1153)</td>
<td>CSci 2041 Adv Prog Principles (1933 or 1913, 2011 )</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>Liberal Education course</td>
</tr>
</tbody>
</table>

†††† Consult UD Advisor before course selection: Choices include Csci 4011, 5302, 5304, 5403, 5421, 5471, 5481, 5525, and all Math 4000-5000 level courses EXCEPT Math 4005, 4065, 4113, 4116, 4118, 5067, 5088, 5075, and 5076. The upper division math oriented requirement does not also count for an upper division CSci track elective.

## Junior Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSci 3081W Prog Design &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>Open Elective (If needed to reach 120 credits)</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>UD CSci Required Track</td>
</tr>
</tbody>
</table>

†††† Students who have taken CSci 1113 or 1103 should take CSci 1913 instead of CSci 1133; not recommended

## Senior Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>UD CSci Selected Track (can be taken in Junior Year)</td>
<td>UD CSci electives* (can be taken in Junior Year)</td>
</tr>
<tr>
<td>UD CSci Selected Track (can be taken in Junior Year)</td>
<td>Open Elective (If needed to reach 120 credits)</td>
</tr>
<tr>
<td>UD CSci electives* (can be taken in Junior Year)</td>
<td>Open Elective (If needed to reach 120 credits)</td>
</tr>
<tr>
<td>Open Elective (If needed to reach 120 credits)</td>
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</tr>
</tbody>
</table>

††††† Upper division math oriented requirement must total 23 credits. 11 of the 23 credits must be from CSci prefixed courses.

## About This Plan
- This plan is not a contract. Curriculum can change.
- 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.
- Students can take either the CSE-only or University-wide versions of the math course (Math 1371/1271, 1372/1272).
- Double boxed courses, along with one of two courses with a dashed outline are required for application to this major.
- Liberal Education and Writing requirements with an (*) will be fulfilled by taking courses required for this major at UM-TC.

## Applying to your Major
- 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

## 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; hoppernj@umn.edu
- Dept Advisors: Luc Nelson & Kelly Thomas advisor@cs.umn.edu
- Office Hours: ugrad.cs.umn.edu/contact or csci.appointments.umn.edu

## University Degree Requirements

### 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.)

### Liberal Education

<table>
<thead>
<tr>
<th>CORES</th>
<th>THEMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bio</td>
<td>CSci</td>
</tr>
<tr>
<td>Phy*</td>
<td>DSJ</td>
</tr>
<tr>
<td>Hist</td>
<td>Env</td>
</tr>
<tr>
<td>SoES</td>
<td>GP</td>
</tr>
<tr>
<td>Ltr</td>
<td>AH</td>
</tr>
<tr>
<td>Mth*</td>
<td>TS</td>
</tr>
</tbody>
</table>

** Total Credits Needed for Degree: 120 **
What can I do with a major in computer science?

Computer scientists come up with new ways of improving computers. They often work on a more abstract level than other computer professionals. Computer programmers write detailed instructions that a computer must follow in order to accomplish a task. They also conceive, design, and test logical structures for solving problems by computer. Advanced computing technologies and sophisticated new languages and programming tools have redefined the role of a programmer and elevated much of the programming work done today. Computer systems analysts plan and develop methods for computerizing business and scientific tasks or improving computer systems already in use. Network specialists schedule, arrange and supervise the installation and maintenance of integrated computer systems and frequently give the expert knowledge necessary to analyze customer needs.

**Employers (sample listing)**

Amazon  
Alliant Tech Systems  
3M  
Target Corporation  
Accenture  
Best Buy  
Securian Financial Group  
Apple Inc.  
Epic  
Medtronic  
General Mills  
C. H. Robinson  
Merck & Co.  
Google  
Mayo Clinic  
Ecolab Incorporated  
Caterpillar Incorporated  
Eaton Corporation  
Open Systems International  
IBM  
Microsoft Corporation  
Dell Compellent  
Thomson Reuters  
Honeywell

**Industries (sample listing)**

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

**Positions (sample listing)**

**Computer Programmer:** Writes, tests, and maintains the instructions that computers must follow to land airplanes, sell products online, build machines, share information, and more.

**Computer Systems Analyst:** Creates new computer systems and improves existing technology and business processes. Computer systems analysts start by deciding what hardware and software will be needed, and then develop or adapt software to meet those needs.

**Computer Support Specialist:** Answers questions or resolves computer problems for clients in person, via telephone or from a remote location. Computer support specialists may provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems.

**Database Administrator:** Organizes, tracks, and stores information for businesses and other organizations. Database administrators also design and coordinate database security systems.

**High School Teacher:** Prepares students for the work world or college.

**Network Systems and Data Communications Analyst/Specialist:** Plans, designs, builds, maintains, and tests networks and other data communications systems.

*Some positions may require an advanced degree.*

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