### Computer Science

#### Freshman Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1371 Calculus I <em>(placement into course or pre-req)</em></td>
<td>Math 1372 Calculus II <em>(1371)</em></td>
</tr>
<tr>
<td>Phys 1301W Intro Physics I <em>(Math 1371)</em></td>
<td>Science <em>select from Phys 1302W, Chem 1301/151, ESci 2201, Psy 301, or GCD 3022</em></td>
</tr>
<tr>
<td>CSE 1001 1st Yr Experience</td>
<td>CSci 1133 Intro Comp/Prog <em>(Math 1371)</em></td>
</tr>
<tr>
<td>Liberal Education course or Writ 1301</td>
<td>Liberal Education course or Writ 1301</td>
</tr>
</tbody>
</table>

#### 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 <em>(Math 1372)</em></td>
<td>CSci 2101 Machine Arch &amp; Org <em>(1933 or 1913 or consent)</em></td>
</tr>
<tr>
<td>CSci 2011 Discrete Structures <em>(Math 1371)</em></td>
<td>CSci 2033 Elem Comp Lin Alg <em>(1113/1111, Math 1371)</em></td>
</tr>
<tr>
<td>CSci 1933 Intro Alg &amp; Data <em>(1113)</em></td>
<td>CSci 2041 Adv Prog Principles <em>(1915 or 1913, 2015)</em></td>
</tr>
</tbody>
</table>

#### Total Credits Needed for Degree: 120

### 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 1371/1372, 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.

### Department Contact Information

- Main Phone & Office: 612-625-4002; 4-192 Keller
- Director of Undergraduate Studies: Nick Hopper; hoppernj@umn.edu
- Departmental Advisors: Kevin Allen & Kelly Thomas; csciug@umn.edu
- Office Hours: ugrad.cs.umn.edu/contact 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.

**Liberal Education**

- CORES: Bio, Phy*, Hist, SocS, Ltr, AH, Mth*
- THEMES: 4 of 5: Civ, DSJ, Env, GP, TS

*Some courses may require additional pre-requisites.*
What can I do with a major in... Computer Science?

ACTIVITIES COMPUTER SCIENCE MAJORS DO:
Computer and information technology impacts many areas of our daily lives from downloading a song to driving a car. Because many of our daily tasks involve the use of technology, computer scientists can be found in nearly all professional sectors, including big technology firms, government agencies, startups, nonprofits, and local businesses, both large and small. Computer science majors possess a broad variety of skills that make them valuable to all businesses and there is an increasing need for industry to have knowledgeable computer professionals.

At the heart of the computer scientist is a passion to benefit society by solving problems through computer and information technology. They conceive, design, and test logical structures for solving problems by computer and find ways to do so by designing applications and writing software to make computers do new things or accomplish tasks more efficiently. This may include, creating applications for mobile devices, writing web-based applications to power e-commerce and social networking sites, developing large enterprise systems for financial institutions, creating control software for robots, programming the next blockbuster video game, or identifying genes for the next biotech breakthrough. All of these advancements may involve writing detailed instructions that list the order of steps a computer must follow to accomplish a necessary function, developing methods for computerizing business and scientific tasks, maximizing efficiency of computer systems already in use, or enhancing or building immersive systems so people are better able to socialize and interact with technology. Computer scientists often work on a more abstract level than other computer professionals. Positions are not limited to traditional technology fields either. More and more computer science is becoming necessary in every job category, while the computer technology industry is emerging as a new creative field.

INDUSTRIES COMPUTER SCIENCE MAJORS WORK IN (SAMPLE LISTING):

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

EMPLOYERS WHO HIRE COMPUTER SCIENCE MAJORS (SAMPLE LISTING):

- Amazon
- Alliant Tech Systems
- 3M
- Thomson Reuters
- Target Corporation
- Accenture
- Best Buy
- Honeywell
- Securian Financial Group
- Apple Inc.
- Epic
- Dell Compellent
- Medtronic
- General Mills
- C. H. Robinson
- UnitedHealth Group/Optum
- Merck & Co.
- Google
- Mayo Clinic
- Microsoft Corporation
- Intel Corporation
- Unisys
- IBM
- Wells Fargo
- Ameriprise
- Land O’ Lakes
- SuperValu
- Transition Networks

TYPES OF POSITIONS FOR COMPUTER SCIENCE MAJORS (SAMPLE LISTING):

- **Computer programmer:** Write and test code that allows computer applications and software programs to function properly. They turn the program designs created by software developers and engineers into instructions that a computer can follow.

- **Computer systems analyst:** Study an organization’s current computer systems and procedures and design information systems solutions to help the organization operate more efficiently and effectively. They bring business and information technology (IT) together by understanding the needs and limitations of both.