

# Computer Science

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## Department Information

- **Department Location:**  
Quentin Burdick Building
- **Department Phone:**  
701-231-8568
- **Department Web Site:**  
[www.ndsu.edu/cs/](http://www.ndsu.edu/cs/) (<http://www.ndsu.edu/cs/>)
- **Credential Offered:**  
B.S.; B.A.
- **Plan Of Study Sample:**  
[bulletin.ndsu.edu/programs-study/undergraduate/computer-science/](http://bulletin.ndsu.edu/programs-study/undergraduate/computer-science/) (<http://bulletin.ndsu.edu/programs-study/undergraduate/computer-science/>)

## Major Requirements

### Major: Computer Science

**Degree Type:** B.S.

**Minimum Degree Credits to Graduate:** 120

### University Degree Requirements

1. Satisfactory completion of all requirements of the curriculum in which one is enrolled.
2. Earn a minimum total of 120 credits in approved coursework. Some academic programs exceed this minimum.
3. Satisfactory completion of the general education requirements as specified by the university.
4. A minimum institutional GPA of 2.00 based on work taken at NDSU.
5. At least 36 credits presented for graduation must be in courses numbered 300 or higher.
6. Transfer Students: Must earn a minimum of 60 credits from a baccalaureate-degree granting or professional institution.
  - a. Of these 60, at least 36 must be NDSU resident credits as defined in #7.
  - b. Within the 36 resident credits, a minimum of 15 must be in courses numbered 300 or higher and 15 credits in the major field of study.
7. At least 36 credits must be NDSU resident credits. Resident credits include credits registered and paid for at NDSU.

For complete information, please refer to the Degree and Graduation Requirements (<http://catalog.ndsu.edu/academic-policies/undergraduate-policies/degree-and-graduation/>) section of this Bulletin.

### University General Education Requirements

Code	Title	Credits
<b>Communication (C)</b>		<b>12</b>
ENGL 110	College Composition I	
ENGL 120	College Composition II	
COMM 110	Fundamentals of Public Speaking	
Upper Division Writing <sup>†</sup>		
<b>Quantitative Reasoning (R) <sup>†</sup></b>		<b>3</b>
<b>Science and Technology (S) <sup>†</sup></b>		<b>10</b>
<b>Humanities and Fine Arts (A) <sup>†</sup></b>		<b>6</b>
<b>Social and Behavioral Sciences (B) <sup>†</sup></b>		<b>6</b>
<b>Wellness (W) <sup>†</sup></b>		<b>2</b>
<b>Cultural Diversity (D) <sup>*†</sup></b>		
<b>Global Perspectives (G) <sup>*†</sup></b>		
<b>Total Credits</b>		<b>39</b>

\* May be satisfied by completing courses in another General Education category.

† General education courses may be used to satisfy requirements for both general education and the major, minor, and program emphases, where applicable. Students should carefully review major requirements to determine if specific courses can also satisfy these general education categories.

- A list of university approved general education courses and administrative policies are available here (<http://catalog.ndsu.edu/academic-policies/undergraduate-policies/general-education/#genedcoursestext>).

## Major Requirements

A Grade of 'C' or better is required for all CSCI prefix courses.

Code	Title	Credits
<b>B.S. Computer Science Core Requirements</b>		
CSCI 160	Computer Science I	4
CSCI 161	Computer Science II	4
CSCI 213	Modern Software Development	3
CSCI 222	Discrete Mathematics	3
CSCI 313	Software Development with Frameworks	3
CSCI 336	Theoretical Computer Science	3
CSCI 366	Database Systems	3
CSCI 372	Comparative Programming Languages	3
CSCI 374	Computer Organization and Architecture	3
CSCI 445	Software Projects Capstone <sup>1</sup>	3
CSCI 455	Networking and Parallel Computation	3
CSCI 467	Algorithm Analysis	3
CSCI 474	Operating Systems Concepts	3
CSCI 489	Social Implications of Computers <sup>1</sup>	3
MATH 165	Calculus I (May satisfy general education category R)	4
MATH 166	Calculus II	4
STAT 367	Probability	3
STAT 368	Statistics	3
<b>Track: Select one track from the four listed below</b>		<b>12</b>
<b>Total Credits</b>		<b>70</b>

## STANDARD TRACK

Code	Title	Credits
Select one of the following:		3
MATH 129	Basic Linear Algebra	
CSCI 277	Introduction to UNIX	
Computer Science Electives:		9
Select 3 didactic courses from any 300-400 level CSCI prefix courses that are not part of the core requirement.		
<b>Total Credits</b>		<b>12</b>

## CYBERSECURITY TRACK

Code	Title	Credits
CSCI 277	Introduction to UNIX	3
Cybersecurity Electives:		9
Select 3 cybersecurity electives from CSCI 401-410		
or		
CSCI 469	Network Security	
CSCI 473	Foundations of the Digital Enterprise	
<b>Total Credits</b>		<b>12</b>

**DATA SCIENCE TRACK**

Code	Title	Credits
MATH 129	Basic Linear Algebra	3
Data Science Electives:		9
Select 3 data science electives from CSCI 420-428		
or		
CSCI 436	Intelligent Agents	
CSCI 450	Cloud Computing	
CSCI 479	Introduction to Data Mining	
GEOG 455	Introduction to Geographic Information Systems	
<b>Total Credits</b>		<b>12</b>

**SOFTWARE ENGINEERING TRACK**

Code	Title	Credits
Select one of the following:		3
MATH 129	Basic Linear Algebra	
CSCI 277	Introduction to UNIX	
Software Engineering Electives:		9
Select 3 software engineering electives from CSCI 411-419 that are not part of the core requirements		
or		
CSCI 450	Cloud Computing	
CSCI 473	Foundations of the Digital Enterprise	
CSCI 488	Human-Computer Interaction	
<b>Total Credits</b>		<b>12</b>

<sup>1</sup> Department Capstone: CSCI 445 Software Projects Capstone (typically taken during the last spring semester prior to degree completion) & CSCI 489 Social Implications of Computers (typically taken during the last fall semester prior to degree completion)

**Major Requirements****Major: Computer Science**

**Degree Type: B.A.**

**Minimum Degree Credits to Graduate: 120**

**University Degree Requirements**

1. Satisfactory completion of all requirements of the curriculum in which one is enrolled.
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<b>Global Perspectives (G) <sup>**†</sup></b>	
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† General education courses may be used to satisfy requirements for both general education and the major, minor, and program emphases, where applicable. Students should carefully review major requirements to determine if specific courses can also satisfy these general education categories.

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A Grade of 'C' or better is required for all CSCI prefix courses.

Code	Title	Credits
<b>B.A. Computer Science Core Requirements</b>		
CSCI 114 or TL 116	Computer Applications (May satisfy general education category S) Business Software Applications	3
CSCI 159	Computer Science Problem Solving	3
CSCI 160	Computer Science I	4
CSCI 161	Computer Science II	4
CSCI 213	Modern Software Development	3
CSCI 222	Discrete Mathematics	3
CSCI 313	Software Development with Frameworks	3
CSCI 366	Database Systems	3
CSCI 371	Web Scripting Languages	3
CSCI 445	Software Projects Capstone <sup>1</sup>	3
CSCI 488	Human-Computer Interaction	3
CSCI 489	Social Implications of Computers <sup>1</sup>	3
<b>Related Courses</b>		
COMM 260	Introduction to Web Design	3
COMM 261	Introduction to Web Development	3
MATH 146 or MATH 165	Applied Calculus I (May satisfy general education category R) Calculus I	4
STAT 330	Introductory Statistics	3
STAT 331	Regression Analysis	2
<b>Other Courses: Select these seven credits from the following areas:</b>		<b>7</b>
Science (cannot be courses with the CSCI prefix)		
Engineering (cannot be ENGR 311 or ENGR 312)		
Math (a course with a number higher than MATH 147, but not MATH 165)		
Statistics (cannot be STAT 330 or STAT 331)		
<b>Proficiency at the second year level in a modern foreign language.</b>		
<b>Total Credits</b>		<b>60</b>

<sup>1</sup> CSCI 445 Software Projects Capstone & CSCI 489 Social Implications of Computers form the department capstone. CSCI 445 is typically taken during the last spring semester and CSCI 489 is typically taken during the last fall semester prior to degree completion.

## Minor Requirements

### Minor: Computer Science

Required Credits: 17

#### Minor Requirements

Code	Title	Credits
<b>Required Courses</b>		
CSCI 213	Modern Software Development	3
Choose one of the following two sequences:		7-8
CSCI 160 & CSCI 161	Computer Science I and Computer Science II	
CSCI 227 & CSCI 161	Computing Fundamentals I and Computer Science II	
Additional Electives: Select 6 or 7 credits to reach minor minimum (at least 3 credits must be CSCI 300-400 level).		6-7
<b>Total Credits</b>		<b>17</b>

#### Minor Requirements and Notes

- A minimum of 8 credits must be taken at NDSU.
- A grade of 'C' or better is required in all courses applied to the computer science minor.