

Computer Science

Department Information

- **Department Location:**
Quentin Burdick Building
- **Department Phone:**
701-231-8568
- **Department Web Site:**
www.ndsu.edu/cs/ (<http://www.ndsu.edu/cs/>)
- **Credential Offered:**
B.S.; B.A.
- **Plan Of Study Sample:**
catalog.ndsu.edu/programs-study/undergraduate/computer-science/ (<http://catalog.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/past-bulletin-archive/2021-22/academic-policies/undergraduate-policies/degree-and-graduation/>) section of this Bulletin.

University General Education Requirements

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

- * 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/past-bulletin-archive/2021-22/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.S. Computer Science Core Requirements | | |
| 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 ¹ | 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 ¹ | 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 |
| Track: Select one track from the four listed below | | 12 |
| Total Credits | | 70 |

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. | | |
| Total Credits | | 12 |

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 | |
| Total Credits | | 12 |

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 | |
| Total Credits | | 12 |

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 | |
| Total Credits | | 12 |

¹ 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

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1. Satisfactory completion of all requirements of the curriculum in which one is enrolled.
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| Wellness (W) [†] | 2 |
| Cultural Diversity (D) ^{**†} | |
| Global Perspectives (G) ^{**†} | |
| Total Credits | 39 |

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Major Requirements

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

| Code | Title | Credits |
|--|--|-----------|
| B.A. Computer Science Core Requirements | | |
| 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 ¹ | 3 |
| CSCI 488 | Human-Computer Interaction | 3 |
| CSCI 489 | Social Implications of Computers ¹ | 3 |
| Related Courses | | |
| 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 |
| Other Courses: Select these seven credits from the following areas: | | 7 |
| 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) | | |
| Proficiency at the second year level in a modern foreign language. | | |
| Total Credits | | 60 |

¹ 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 |
|---|---|-----------|
| Required Courses | | |
| 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 |
| Total Credits | | 17 |

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.