Computer Science

Department Information

- **Department Web Site:**
  www.ndsu.edu/cs/ (http://www.ndsu.edu/cs/)
- **Credential Offered:**
  B.S.; B.A.; Minor
- **Sample Program Guide:**
  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 30 credits must be NDSU resident credits. Resident credits include credits registered and paid for at NDSU.
6. At least 36 credits presented for graduation must be in courses numbered 300 or higher.
7. Students presenting transfer credit must meet the NDSU residence credits and the minimum upper level credit. Of the 30 credits earned in residence, a minimum of 15 semester credits must be in courses numbered 300 or above, and 15 semester credits must be in the student's curricula for their declared major.

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
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/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
CSCI 403	Defensive Network Security	
CSCI 404	Ethical Hacking	
CSCI 405	Principles of Cybersecurity	
CSCI 408	Malware Detection, Analysis and Threat Mechanisms	
CSCI 409	Cybersecurity Law and Policy	
CSCI 410	Computer Crime and Forensics	
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
CSCI 420	Introduction to Data Science in Python	
CSCI 422	Fundamentals of Data Engineering	
CSCI 425	Machine Learning	
CSCI 426	Introduction to Artificial Intelligence	
CSCI 428	Artificial Intelligence, Ethics, and the Environment	
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
CSCI 411	Secure Software Development	
CSCI 412	Mobile Software Engineering	
CSCI 413	Principles of Software Engineering	
CSCI 416	Software Architecture and Design	
CSCI 419	Software Testing and Debugging	
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)