

Computer Science

Department Information

- **Department Location:**
Quentin Burdick Building
- **Department Phone:**
701-231-8568
- **Department Web Site:**
www.ndsu.edu/cs/
- **Degrees Offered:**
B.S.; B.A.
- **Plan Of Study Sample:**
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 specific 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 number 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 residence 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. Residence credits include credits registered and paid for at NDSU.

For complete information, please refer to the Degree and Graduation Requirements (<http://bulletin.ndsu.edu/past-bulletin-archive/2018-19/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://bulletin.ndsu.edu/past-bulletin-archive/2018-19/academic-policies/undergraduate-policies/general-education/#genedcoursestext>).

College Requirements

Code	Title	Credits
Bachelor of Arts (BA) Degree – An additional 12 credits Humanities and Social Sciences and proficiency at the second year level in a modern foreign language.*		12
Bachelor of Science (BS) Degree – An additional 6 credits in Humanities or Social Sciences *		6

- * Humanities and Social Sciences may be fulfilled by any course having the following prefix: ADHM, ANTH, ARCH, ART, CJ, CLAS, COMM, ECON, ENGL, FREN, GEOG, GERM, HDFS, HIST, LA, LANG, MUSC, PHIL, POLS, PSYC, RELS, SOC, SPAN, THEA, WGS, or any course from the approved list of general education courses in humanities and social sciences (general education categories A and B). These credits must come from outside the department of the student's major.

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 189	Skills for Academic Success ¹	1
CSCI 213	Modern Software Development	3
CSCI 222	Discrete Mathematics	3
CSCI 313	Software Development for Games	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 415	Networking and Distributed Systems	3
CSCI 445	Software Projects Capstone ²	3
CSCI 467	Algorithm Analysis	3
CSCI 474	Operating Systems Concepts	3
CSCI 489	Social Implications of Computers ²	3
ENGL 321 or ENGL 324	Writing in the Technical Professions (May satisfy general education category C) Writing in the Sciences	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
Computer Science Electives: Select 3 courses from the list below.		9

Note: Students seeking recognition of cyber-security skills should follow the cyber-security section below.

CSCI 345	Topics on Personal Computers
CSCI 371	Web Scripting Languages
CSCI 413	Principles of Software Engineering
CSCI 418	Simulation Models
CSCI 426	Introduction to Artificial Intelligence
CSCI 428	Computational Techniques for Environmental Sustainability
CSCI 450	Cloud Computing
CSCI 453	Linear Programming and Network Flows
CSCI 454	Operations Research
CSCI 458	Computer Graphics
CSCI 459	Foundations of Computer Networks
CSCI 462	Mobile and Wireless Networks

CSCI 469	Network Security
CSCI 473	Foundations of the Digital Enterprise
CSCI 476	Computer Forensics
CSCI 477	Object-Oriented Systems
CSCI 479	Introduction to Data Mining
CSCI 488	Human-Computer Interaction
CSCI 491	Seminar (Cyber-Security Focus)
CSCI 499	Special Topics
MIS 412	Computer Crime, Forensics, and Investigation
MIS 415	Managing Information Technology Security

Total Credits

71

Cyber-security

Cyber-security is optional - students interested in pursuing recognition of their achievement in cyber-security core concepts should take the B.S. Core Requirements as indicated above, as well as the additional courses listed here. This sequence satisfies the Computer Science elective courses required for the B.S. degree.

Code	Title	Credits
CSCI 491	Seminar (Cyber-Security Focus)	3
MIS 415	Managing Information Technology Security	3
One of the following:		3
CSCI 473	Foundations of the Digital Enterprise	
CSCI 345	Topics on Personal Computers (Cyber-Security Focus)	
CSCI 499	Special Topics (Cyber-Security Focus)	
MIS 412	Computer Crime, Forensics, and Investigation	

Total Credits

9

¹ CSCI 189 is only required for first-time, first-year students--A first-time, first-year student is defined as a student who has not yet completed a college course as a college student. Students that are not first-time, first-year students that either transfer into the university or change their major are not required to take CSCI 189.

² Together, 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), form the department capstone.

Link to view program description and 4-year Plan of Study (<http://bulletin.ndsu.edu/past-bulletin-archive/2018-19/programs-study/undergraduate/computer-science>)

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Degree Type: B.A.

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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.

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* Humanities and Social Sciences may be fulfilled by any course having the following prefix: ADHM, ANTH, ARCH, ART, CJ, CLAS, COMM, ECON, ENGL, FREN, GEOG, GERM, HDFS, HIST, LA, LANG, MUSC, PHIL, POLS, PSYC, RELS, SOC, SPAN, THEA, WGS, or any course from the approved list of general education courses in humanities and social sciences (general education categories A and B). These credits must come from outside the department of the student's major.

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	Microcomputer Packages (May satisfy general education category S)	3
or MIS 116	Business Use of Computers	
CSCI 159	Computer Science Problem Solving	3
CSCI 160	Computer Science I	4
CSCI 161	Computer Science II	4
CSCI 189	Skills for Academic Success ¹	1
CSCI 213	Modern Software Development	3
CSCI 222	Discrete Mathematics	3
CSCI 313	Software Development for Games	3
CSCI 366	Database Systems	3
CSCI 371	Web Scripting Languages	3
CSCI 445	Software Projects Capstone ²	3
CSCI 488	Human-Computer Interaction	3
CSCI 489	Social Implications of Computers ²	3

Related Courses

COMM 260	Introduction to Web Design	3
COMM 261	Introduction to Web Development	3
ENGL 321 or ENGL 324	Writing in the Technical Professions (May satisfy general education category C) Writing in the Sciences	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)		
Total Credits		64

¹ CSCI 189 is only required for first-time, first-year students—A first-time, first-year student is defined as a student who has not yet completed a college course as a college student. Students that are not first-time, first-year students that either transfer into the university or change their major are not required to take CSCI 189.

² 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

Computer Science Minor

Minor Requirements

Required Credits: 17

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 7-8 credits (at least 3 credits must be CSCI 300-400 level).		7-8
Total Credits		17-19

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.