

# Computer Science and Physics

## Department Information

- **Department Web Site:**  
www.ndsu.edu/cs/ (<http://www.ndsu.edu/cs/>)
- **Credential Offered:**  
B.S.; B.A.
- **Sample Program Guide:**  
[catalog.ndsu.edu/programs-study/undergraduate/computer-science-physics/](http://catalog.ndsu.edu/programs-study/undergraduate/computer-science-physics/) (<http://catalog.ndsu.edu/programs-study/undergraduate/computer-science-physics/>)

## Major Requirements

### Major: Computer Science & Physics

**Degree Type:** B.A. or B.S.

**Minimum Degree Credits to Graduate:** 122

### 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/past-bulletin-archive/2023-24/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>

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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/2023-24/academic-policies/undergraduate-policies/general-education/#genedcoursestext>).

## Major Requirements

A grade of 'C' or better is required for all CSCI, PHYS, and AST prefix courses.

Code	Title	Credits
<b>Computer Science Major Requirements</b>		
CSCI 160	Computer Science I	4
CSCI 161	Computer Science II	4
CSCI 189	Skills for Academic Success <sup>1</sup>	1
CSCI 213	Modern Software Development	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 467	Algorithm Analysis	3
CSCI 474	Operating Systems Concepts	3
CSCI Electives	CSCI 313 and/or any 400-level CSCI course that is not already used.	6
<b>Physics Major Requirements:</b>		
PHYS 171	Introductory Projects in Physics	1
PHYS 251 & 251L	University Physics I and University Physics I Laboratory (May satisfy general education category S)	5
PHYS 252 & 252L	University Physics II and University Physics II Laboratory (May satisfy general education category S)	5
PHYS 350	Modern Physics	3
PHYS 360	Modern Physics II	3
PHYS 361	Electromagnetic Theory (or PHY 370: Electromagnetic Theory at MSUM)	3
PHYS 370	Introduction to Computational Physics	3
PHYS 355	Classical Mechanics (or PHY 330: Intermediate Mechanics at MSUM)	3
PHYS 462	Thermal and Statistical Physics	3
PHYS 485	Quantum Mechanics I	3
PHYS 486	Quantum Mechanics II	3
Physics Electives: Select from the following:		6
PHYS 215	Research For Undergraduates	
PHYS 411	Optics for Scientists & Engineers	
PHYS 413	Lasers for Scientists and Engineers	
PHYS 415	Elements of Photonics	
PHYS 481	Materials Physics	
PHYS 488	Senior Project I (If not used to satisfy project requirement)	
PHYS 489	Senior Project II (If not used to satisfy project requirement)	
MSUM AST	Astronomy courses (300/400-level) with departmental permission.	
<b>Related Required Courses</b>		
MATH 129 or MATH 329	Basic Linear Algebra Intermediate Linear Algebra	3
MATH 165	Calculus I (May satisfy general education category R)	4
MATH 166	Calculus II	4
MATH 265	Calculus III	4
MATH 266	Introduction to Differential Equations	3
MATH 270	Introduction to Abstract Mathematics	3
CSCI 445	Software Projects Capstone	3

or PHYS 488  
& PHYS 489

Senior Project I  
and Senior Project II

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**Total Credits****101**

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.

**Program Notes**

- Except for courses offered only as pass/fail grading, no course may be taken Pass/Fail.