The Bachelor of Science in Computer Science focuses on the fundamentals of program design, software development, computer organization, systems and networks, theories of computation, principles of languages, and advanced algorithms and data. The bachelor’s degree in computer science is also offered with a concentration in cyber operations.

**Program Requirements**

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified and complete any additional courses needed beyond specific college and major requirements to satisfy graduation credit requirements.

**University-Wide Requirements**

All undergraduate students are required to complete the University-Wide Requirements [here](http://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements).

**NUpath Requirements**

All undergraduate students are required to complete the NUpath Requirements [here](http://catalog.northeastern.edu/undergraduate/university-academics/nupath).

**Computer Science Major Requirements**

**Computer Science Overview**

- CS 1200: Computer Science/Information Science Overview 1
- CS 1210: Computer Science/Information Science Overview 2: Co-op Preparation

**Computer Science Fundamental Courses**

A grade of C– or higher is required in computer science fundamental courses:

- CS 1800: Discrete Structures and Seminar for CS 1800
- CS 1801: Recitation for CS 1800
- CS 2500: Fundamentals of Computer Science 1 and Lab for CS 2500
- CS 2510: Fundamentals of Computer Science 2 and Lab for CS 2510
- CS 2800: Logic and Computation and Lab for CS 2800
- CS 2801: Computer Science/Information Science 2

**Computer Science Required Courses**

- CS 3500: Object-Oriented Design
- CS 3650: Computer Systems
- CS 3700: Networks and Distributed Systems
- CS 3800: Theory of Computation
- CS 4400: Programming Languages
- CS 4500: Software Development
- CS 4800: Algorithms and Data

**Computer Science Senior Seminar**

- THTR 1170: The Eloquent Presenter

**Computer Science Capstone**

Complete one of the following:

- CS 4100: Artificial Intelligence
- CS 4150: Game Artificial Intelligence
- CS 4410: Compilers
- CS 4550: Web Development
- CS 4650: High Performance Computing
- CS 4750: Secure Wireless Ad Hoc Robots on Mission (SWARM) 1
- CS 4760: Secure Wireless Ad Hoc Robots on Mission (SWARM) 2
- CS 4900: Honors Senior Seminar
- CS 4991: Research
- IS 4900: Information Science Senior Project
- IS 4991: Research
- CS 4100: Artificial Intelligence
- CS 4300: Computer Graphics
- CS 4410: Compilers
- CS 4550: Web Development
- CS 4650: High Performance Computing
- CS 4750: Secure Wireless Ad Hoc Robots on Mission (SWARM) 1
- CS 4760: Secure Wireless Ad Hoc Robots on Mission (SWARM) 2
- CS 4900: Honors Senior Seminar
- CS 4991: Research
- IS 4900: Information Science Senior Project
- IS 4991: Research

**Supporting Courses**

**Mathematics Courses**

- MATH 1341: Calculus 1 for Science and Engineering (a grade of C– or higher is required)
- MATH 1342: Calculus 2 for Science and Engineering (a grade of C– or higher is required)
- MATH 2331: Linear Algebra
- MATH 3081: Probability and Statistics

**Computing and Social Issues**

Complete one of the following:

- ANTH 3418: Wired/Unwired: Cybercultures and Technopolitics
- IA 5240: Cyberlaw: Privacy, Ethics, and Digital Rights
- INSH 2102: Bostonography: The City through Data, Texts, Maps, and Networks
- PHIL 1145: Technology and Human Values
- SOCL 1280: The 21st-Century Workplace
- SOCL 3485: Environment, Technology, and Society
- SOCL 4528: Computers and Society

**Electrical Engineering**

- EEE 2160: Embedded Design: Enabling Robotics

**Science Requirement**

Complete two courses for one of the following science categories:

**Biology**

- BIOL 1111: General Biology 1
- BIOL 1112: General Biology 2

Then complete one of the following:
BIOL 1113  General Biology 2  and BIOL 1114  and Lab for BIOL 1113  
BIOL 2301  Genetics and Molecular Biology  and BIOL 2302  and Lab for BIOL 2301  

Chemistry  
CHEM 1211  General Chemistry 1  and CHEM 1212  and Lab for CHEM 1211  
and CHEM 1213  and Recitation for CHEM 1211  
CHEM 1214  General Chemistry 2  and CHEM 1215  and Lab for CHEM 1214  
and CHEM 1216  and Recitation for CHEM 1214  

Geology/Environmental Science (Option 1)  
ENVR 1200  Dynamic Earth  and ENVR 1201  and Lab for ENVR 1200  
ENVR 1202  History of Earth and Life  and ENVR 1203  and Interpreting Earth History  

Geology/Environmental Science (Option 2)  
ENVR 1200  Dynamic Earth  and ENVR 1201  and Lab for ENVR 1200  
Then complete one of the following:  
ENVR 2310  Earth Materials  and ENVR 2311  and Lab for ENVR 2310  
and ENVR 2340  Earth Landforms and Processes  and ENVR 2341  and Lab for ENVR 2340  
ENVR 3300  Geographic Information Systems  and ENVR 3301  and Lab for ENVR 3300  
ENVR 4106  Coastal Processes  and ENVR 4107  and Lab for ENVR 4106  
ENVR 4500  Applied Hydrogeology  and ENVR 4501  and Lab for ENVR 4500  
ENVR 5244  Sedimentation  and ENVR 5245  and Lab for ENVR 5244  

Geology/Environmental Science (Option 3)  
ENVR 1202  History of Earth and Life  and ENVR 1203  and Interpreting Earth History  
ENVR 5242  Ancient Marine Life  and ENVR 5243  and Lab for ENVR 5242  

Physics  
Complete one of the following sequences:  
Sequence A  
PHYS 1145  and PHYS 1146  and Lab for PHYS 1145  
PHYS 1147  and PHYS 1148  and Lab for PHYS 1147  
Sequence B  
PHYS 1151  and PHYS 1152  and Lab for PHYS 1151  
and Interactive Learning Seminar for PHYS 1151  
PHYS 1155  and PHYS 1156  and Lab for PHYS 1155  
and Interactive Learning Seminar for PHYS 1155  
Sequence C  
PHYS 1161  and Lab for PHYS 1161  
and Recitation for PHYS 1161  

PHYS 1165  and PHYS 1166  and Lab for PHYS 1165  
and PHYS 1167  and Recitation for PHYS 1165  

Computer Science Writing Requirement  
College Writing  
ENGW 1111  First-Year Writing  4  

Advanced Writing in the Disciplines  
ENGW 3302  Advanced Writing in the Technical Professions  4  
or ENGW 3315  Interdisciplinary Advanced Writing in the Disciplines  

Required General Electives  
Complete eight general electives.  32  

Major GPA Requirement  
Minimum 2.000 GPA required in all CS and IS courses  

Computer Science Credit Requirements  
Complete 60 semester hours in the major. Acceptable courses for this requirement include all CS courses (except CS 5010) and IS 2000 and higher (except IS 4900).  

NUpath Requirements Satisfied  
• Engaging with the Natural and Designed World  
• Conducting Formal and Quantitative Reasoning  
• Analyzing and Using Data  
• Writing in the First Year  
• Advanced Writing in the Disciplines  
• Writing-Intensive in the Major  
• Demonstrating Thought and Action in a Capstone  

Integrating Knowledge and Skills Through Experience is satisfied through co-op.  

Program Requirement  
135 total semester hours required  

Plan of Study  
Sample Patterns:  
Four Years, Two Co-ops in Spring/Summer 1  

Year 1  
Fall  Hours  Spring  Hours  Summer 1  Hours  Summer 2  Hours  
CS 1200  1  CS 2510  5  CS 3500  4  Elective  4  
and CS 2511  
CS 1800  5  CS 2800  4  Elective  4  MATH 1342  4  
and CS 1802  and CS 2801  
CS 2500  5  MATH 1341  4  
and CS 2501  
ENGW 1111  4  Elective  4  
Elective  4  

Year 2  
Fall  Hours  Spring  Hours  Summer 1  Hours  Summer 2  Hours  
CS 4800  4  Co-op  Co-op  MATH 3081  4  
CS 3650  4  Elective  4  
Elective  4  

2  Computer Science, BSCS  

32
<table>
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<td><strong>Fall</strong></td>
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<td>CS 3800</td>
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<td>Science elective with lab</td>
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<td>THTR 1170</td>
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<td>Computing and social issues</td>
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<td><strong>Total Hours:</strong></td>
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**Five Years, Three Co-ops in Spring/Summer 1**

| **Year 1** | | | | | |
| **Fall** | **Hours** | **Spring** | **Hours** | **Summer 1** | **Hours** | **Summer 2** | **Hours** |
| CS 1200  | 1 | CS 2510 and CS 2511 | 5 | Vacation | 0 | Vacation | 0 | 18 |
| CS 1800  | 5 | CS 2800 and CS 2801 | 5 | CS 2500 and CS 2501 | 5 | Elective | 4 | 19 |
| ENGW 1111 | 4 | Elective | 4 | | | | | 18 |
| Elective | 4 | | | | | | | 18 |
| **Year 2** | | | | | |
| **Fall** | **Hours** | **Spring** | **Hours** | **Summer 1** | **Hours** | **Summer 2** | **Hours** |
| CS 3500  | 4 | Co-op | 0 | Co-op | 0 | Vacation | 0 | 14 |
| CS 4800  | 4 | | | | | | | 4 |
| CS 1210  | 1 | | | | | | | 1 |
| **Year 3** | | | | | |
| **Fall** | **Hours** | **Spring** | **Hours** | **Summer 1** | **Hours** | **Summer 2** | **Hours** |
| CS 3800  | 4 | Co-op | 0 | Co-op | 0 | MATH 2331 | 4 | 8 |
| CS 3650  | 4 | | | | | | | 4 |
| MATH 1342 | 4 | | | | | | | 4 |
| **Year 4** | | | | | |
| **Fall** | **Hours** | **Spring** | **Hours** | **Summer 1** | **Hours** | **Summer 2** | **Hours** |
| CS 3700  | 4 | Co-op | 0 | Co-op | 0 | Elective | 4 | 18 |
| MATH 3081 | 4 | | | | | | | 4 |
| ENGW 3302 | 4 | | | | | | | 4 |
| Science elective with lab | | | | | | | | 5 |
| **Total Hours:** | **17** | **4** | **0** | **0** | **0** | **0** | **8** |

| **Year 5** | | | | | |
| **Fall** | **Hours** | **Spring** | **Hours** | **Summer 1** | **Hours** | **Summer 2** | **Hours** |
| CS 4400  | 4 | CS 4500 | 4 | CS 4400 | 4 | CS 4500 | 4 | 16 |
| EECE 2160 | 4 | Computing and social issues | 4 | | | | | 4 |
| CS undergraduate elective | | | | | | | | 4 |
| CS undergraduate elective | | | | | | | | 4 |
| **Total Hours:** | **16** | **16** | | | | | | 32 |

Total Hours: 137