

# Computer Science and Linguistics, BS

The computer science and linguistics combined major provides students with extensive background in the formal structures of natural (human) languages, as well as methods and applications of linguistic and psycholinguistic analyses of human language data. This is combined with an emphasis in computer science on artificial intelligence and natural language processing techniques. The major provides excellent preparation for work or more advanced degrees focusing on computational linguistics, natural language processing, speech perception, spoken language interfaces, artificial intelligence, and a wide array of related fields.

## 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.

## Universitywide Requirements

All undergraduate students are required to complete the Universitywide Requirements (<http://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements/>).

## NUpath Requirements

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

## Computer Science Courses

Code	Title	Hours
<b>Computer Science Overview</b>		
CS 1200	First Year Seminar	1
CS 1210	Professional Development for Khoury Co-op	1
<b>Computer Science Fundamental Courses</b>		
CS 1800 and CS 1802	Discrete Structures and Seminar for CS 1800	5
CS 2500 and CS 2501	Fundamentals of Computer Science 1 and Lab for CS 2500	5
CS 2510 and CS 2511	Fundamentals of Computer Science 2 and Lab for CS 2510	5
<b>Computer Science Required Courses</b>		
CS 3000	Algorithms and Data	4
CS 3500 and CS 3501	Object-Oriented Design and Lab for CS 3500	5
CS 3800	Theory of Computation (Integrative course)	4
CS 4100	Artificial Intelligence (Integrative course)	4
CS 4120	Natural Language Processing (Integrative course)	4
CS 4400	Programming Languages (Integrative course)	4
CS 4500 or CS 4530	Software Development Fundamentals of Software Engineering	4
<b>Khoury Elective Courses</b>		

With adviser approval, directed study, project study, and appropriate graduate-level courses may also be taken as upper-division electives.

Complete 4 credits of CS, CY, DS, or IS courses that are not already required. Choose courses within the following range:	4
CS 2500 or higher, except CS 5010	
CY 2000 or higher, except CY 4930	
DS 2500 or higher, except DS 4900	
IS 2000 or higher, except IS 4900	

## Linguistics Requirements

Code	Title	Hours
<b>Linguistics Foundations</b>		
LING 1150	Introduction to Language and Linguistics	4
LING 2350	Linguistic Analysis (Integrative course)	4
LING 3412	Language and Culture	4
<b>Linguistic Structure</b>		
Complete three of the following:		12
LING 3420	Phonetics	
LING 3422	Phonology	
LING 3424	Morphology	
LING 3450	Syntax	
LING 3452	Semantics	
<b>Psychology Requirements</b>		
PSYC 1101	Foundations of Psychology	4
PSYC 2320	Statistics in Psychological Research	4
PSYC 3464	Psychology of Language	4
<b>Laboratory/Directed Study</b>		
Complete one of the following:		4
LING 4891	Research Seminar in Linguistics	
LING 4991	Directed Study Research	
PSYC 4610	Laboratory in Psycholinguistics	
<b>Seminar Requirement</b>		
LING 4654 or PSYC 4658	Seminar in Linguistics Seminar in Psycholinguistics	4
<b>Linguistics Elective</b>		
Complete one LING course, not counted elsewhere, numbered 3000-4799, or one of the following:		4
DEAF 2700	ASL Linguistics	
PSYC 3466	Cognition	
PSYC 4522	Psychology of Reading	
PSYC 4524	Cognitive Development	
PSYC 4610	Laboratory in Psycholinguistics	
PSYC 4658	Seminar in Psycholinguistics	
PSYC 4660	Seminar in Cognition	
PSYC 4674	Seminar in Cognitive Neuroscience	
With prior approval, directed study research, independent study, and Honors Project courses can also be counted:		
LING 4891	Research Seminar in Linguistics	
LING 4970	Junior/Senior Honors Project 1	

LING 4971	Junior/Senior Honors Project 2
LING 4991	Directed Study Research
PSYC 4991	Directed Study Research

### Supporting Courses

Code	Title	Hours
<b>Mathematics Requirement</b>		
MATH 1341	Calculus 1 for Science and Engineering	4
<b>Computing and Social Issues</b>		
Complete one of the following:		4
AFAM 2600	Issues in Race, Science, and Technology	
CY 4170	The Law, Ethics, and Policy of Data and Digital Technologies	
CY 5240	Cyberlaw: Privacy, Ethics, and Digital Rights	
HIST 2220	History of Technology	
ENGL 2150	Literature and Digital Diversity	
INSH 2102	Bostonography: The City through Data, Texts, Maps, and Networks	
IS 1300 or PHIL 1300	Knowledge in a Digital World	
PHIL 1145	Technology and Human Values	
SOCL 1280	The Twenty-First-Century Workplace	
SOCL 2485	Environment, Technology, and Society	
SOCL 4528	Computers and Society	

### Computer Science Writing Requirement

Code	Title	Hours
<b>College Writing</b>		
ENGW 1111	First-Year Writing	4
<b>Advanced Writing in the Disciplines</b>		
ENGW 3302	Advanced Writing in the Technical Professions	4
or ENGW 3307	Advanced Writing in the Sciences	
or ENGW 3315	Interdisciplinary Advanced Writing in the Disciplines	

### Required General Electives

Code	Title	Hours
Complete 20 credits of general electives		20

### Khoury College GPA Requirement

Minimum 2.000 GPA required in all CS, CY, DS, and IS courses

### NUpath Requirements Satisfied

- Engaging with the Natural and Designed World
- Interpreting Culture
- Conducting Formal and Quantitative Reasoning
- Understanding Societies and Institutions
- Analyzing and Using Data
- Engaging Difference and Diversity
- 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

133 total semester hours required

### Plan of Study

#### Sample Plan of Study:

#### Four Years, One Co-op in Summer 2/Fall

Year 1				
Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
CS 1200	1 CS 2510 and CS 2511	5 Vacation	Vacation	
CS 1800 and CS 1802	5 LING 2350	4		
CS 2500 and CS 2501	5 PSYC 1101	4		
ENGW 1111	4 Elective	4		
LING 1150	4			
19		17	0	0
Year 2				
Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
CS 3500 and CS 3501	5 CS 1210	1 Elective	4 Co-op	
LING 3412	4 CS 3000	4 Elective	4	
MATH 1341	4 CS 3800	4		
PSYC 3464	4 Linguistic structure	4		
	PSYC 2320	4		
17		17	8	0
Year 3				
Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
Co-op	CS 4120	4 Elective	4 Vacation	
	CS 4400	4 Elective	4	
	ENGW 3302	4		
	Linguistic structure	4		
0		16	8	0
Year 4				
Fall	Hours Spring	Hours		
CS 4500 or 4530	4 CS 4100	4		
LING 4654 or PSYC 4658	4 Khoury elective	4		
Computing and social issues	4 LING elective	4		
Linguistic structure	4 LING lab (or directed study)	4		
16		16		

Total Hours: 134