

Data Science and Linguistics, BS

The data science and linguistics combined major provides students with extensive background in the formal structures of natural (human) languages and in the collection, manipulation, storage, retrieval, and computational analysis of data in its various forms. The program teaches the methods and applications of linguistic and psycholinguistic analyses of human language data combined with skills in big data analysis, data science, and data analytics. The major provides excellent preparation for work or more advanced degrees focusing on computational linguistics, natural language processing, machine learning, 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.

University-Wide Requirements

All undergraduate students are required to complete the University-Wide 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
Computer Science Overview		
CS 1200	First Year Seminar	1
CS 1210	Professional Development for Khoury Co-op	1
Computer Science Foundations		
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
Computer Science Required Courses		
CS 3200	Database Design	4
CS 3500	Object-Oriented Design	4
Data Science Foundations		
DS 3000	Foundations of Data Science	4
DS 4200	Information Presentation and Visualization	4
DS 4300	Large-Scale Information Storage and Retrieval	4
DS 4400	Machine Learning and Data Mining 1	4
DS 4900	Data Science Senior Project	4
Presentation Requirement		
THTR 1170	The Eloquent Presenter	1
Khoury Elective Course		

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

Complete four credits of CS, CY, DS, or IS classes that are not already required. Choose courses within the following ranges: 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
Linguistics Foundations		
LING 1150	Introduction to Language and Linguistics	4
LING 2350	Linguistic Analysis	4
LING 3412	Language and Culture	4
Linguistic Structure		
Complete three of the following:		12
LING 3420	Phonetics	
LING 3422	Phonology	
LING 3424	Morphology	
LING 3450	Syntax	
LING 3452	Semantics	
Psychology Requirements		
PSYC 1101	Foundations of Psychology	4
PSYC 2320	Statistics in Psychological Research	4
PSYC 3464	Psychology of Language	4
Laboratory/Directed Study		
Complete one of the following:		4
LING 4891	Research Seminar in Linguistics	
LING 4991	Directed Study Research	
PSYC 4610	Laboratory in Psycholinguistics	
Seminar Requirement		
LING 4654 or PSYC 4658	Seminar in Linguistics or Seminar in Psycholinguistics	4
Linguistics Elective		
Complete one LING course, not counted elsewhere, numbered 3000–4799, or one of the following:		4
DEAF 2700	ASL Linguistics	
PSYC 3466	Cognition	
PSYC 4520	Language and the Brain	
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
Mathematics Requirement		
A grade of C- or better is required:		
MATH 1341	Calculus 1 for Science and Engineering	4

Integrative Requirement

Code	Title	Hours
Integrative Course		
CS 4120	Natural Language Processing	4

Computer Science Writing Requirement

Code	Title	Hours
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

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

Program Requirement

133 total semester hours required

Plan of Study

Sample Patterns:

Four Years, Two Co-ops 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 CS 3500	4 Elective	4
CS 1800 and CS 1802	5 LING 2350	4 PSYC 1101	4 Elective	4
CS 2500 and CS 2501	5 CS 3200	4		
LING 1150	4 MATH 1341	4		
ENGW 1111	4			
				8
Year 2				
Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
LING 3412	4 CS 1210	1 PSYC 2320	4 Co-op	
DS 3000	4 DS 4200	4 Elective	4	
PSYC 3464	4 Linguistic structure	4		

Linguistic structure	4 LING elective	4		
Elective		4		
		16	17	8
				0

Year 3

Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
Co-op	CS 4120	4 ENGW 3302	4 Co-op	
		DS 4300	4 Elective	4
		DS 4400	4	
		THTR 1170	1	
		Linguistic structure	4	
		0	17	8
				0

Year 4

Fall	Hours Spring	Hours	
Co-op	DS 4900	4	
		Khoury elective	4
		LING lab (or directed study)	4
		LING seminar	4
		0	16

Total Hours: 134

Five Years, Three Co-ops 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	0 Vacation	0
CS 2500 and CS 2501	5 CS 3200	4		
CS 1800 and CS 1802	5 LING 2350	4		
LING 1150	4 PSYC 1101	4		
ENGW 1111	4			
		19	17	0
				0

Year 2

Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
CS 3500	4 CS 1210	1 Vacation	0 Co-op	0
MATH 1341	4 DS 3000	4		
LING 3412	4 PSYC 2320	4		
PSYC 3464	4 Linguistic structure	4		
		Elective	4	
		16	17	0
				0

Year 3

Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
Co-op	0 Linguistic structure	4 Elective	4 Co-op	0
		DS 4300	4 Elective	4
		DS 4200	4	
		ENGW 3302	4	

	THTR 1170	1		
	0	17	8	0
Year 4				
Fall	Hours Spring	Hours Summer 1	Hours Summer 2	Hours
Co-op	0 DS 4400	4 Elective	4 Co-op	0
	CS 4120	4 Elective	4	
	Linguistic structure	4		
	LING lab (or directed study)	4		
	0	16	8	0
Year 5				
Fall	Hours Spring	Hours		
Co-op	0 DS 4900	4		
	LING seminar	4		
	LING elective	4		
	Khoury elective	4		
	0	16		

Total Hours: 134