

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.

Universitywide Requirements

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

NUPath Requirements

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

Data Science Requirements

Code	Title	Hours
Computer Science Overview		
Must be taken in alignment with your home college:		
CS 1200 or LING 1000	First Year Seminar Linguistics at Northeastern	1
CS 1210 or EESC 2000	Professional Development for Khoury Co-op Professional Development for Co-op	1
Programming Sequence Pathways		
Choose one of two options:		12
<i>Computer Science Option</i>		
CS 2500 and CS 2501	Fundamentals of Computer Science 1 and Lab for CS 2500	
CS 2510 and CS 2511	Fundamentals of Computer Science 2 and Lab for CS 2510	
CS 3500 and CS 3501	Object-Oriented Design and Lab for CS 3500	
<i>Data Science Option</i>		
DS 2000 and DS 2001	Programming with Data and Data Science Programming Practicum	
DS 2500 and DS 2501	Intermediate Programming with Data and Lab for DS 2500	
DS 3500	Advanced Programming with Data	
Computer Science Required Courses		
CS 1800 and CS 1802	Discrete Structures and Seminar for CS 1800	5
CS 3200	Introduction to Databases	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 4420	Machine Learning and Data Mining 2	4
Khoury Elective Course		

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

Complete four semester hours 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 four of the following:		16
LING 3420	Phonetics	
LING 3422	Phonology	
LING 3424	Morphology	
LING 3450	Syntax	
LING 3452	Semantics	
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 Seminar in Psycholinguistics	4
Linguistics Electives		
Complete two courses not used to fulfill other degree requirements from the following options:		8
DEAF 2700	ASL Linguistics	
LING 3000 to LING 4999 ¹		

¹ Please visit the Linguistics Courses page (<https://catalog.northeastern.edu/course-descriptions/ling/>) within this catalog to review the list of courses in the LING 3000 - LING 4999 range.

Supporting Courses

Code	Title	Hours
Mathematics Requirement		
MATH 1341	Calculus 1 for Science and Engineering	4
PSYC 1101	Foundations of Psychology	4
PSYC 2320	Statistics in Psychological Research	4

Integrative Requirement

Code	Title	Hours
Integrative Course		
CS 4120	Natural Language Processing	4

Data 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 3307	Advanced Writing in the Sciences
or ENGW 3315	Interdisciplinary Advanced Writing in the Disciplines

Required General Electives

Code	Title	Hours
	Complete 16 semester hours of general electives.	16

Khoury College GPA Requirement

Minimum cumulative 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 Differences 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

130 total semester hours required

Plan of Study

Sample Plan of Study:

Four Years, Two Co-ops in Summer 2/Fall

Year 1								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
CS 1200		1 DS 2500 and DS 2501		5 LING Elective		4 Elective		4
CS 1800 and CS 1802		5 LING 2350		4 PSYC 1101		4 Elective		4
DS 2000 and DS 2001		4 MATH 1341		4				
ENGW 1111		4 LING Elective		4				
LING 1150		4						
		18		17		8		8
Year 2								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
CS 3200		4 CS 1210		1 Khoury Elective		4 Co-op		
DS 3000		4 DS 3500		4 Elective		4		
LING 3412		4 DS 4200		4				
LING Structure		4 PSYC 2320		4				
		LING Structure		4				
		16		17		8		0
Year 3								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
Co-op		CS 4120		4 ENGW 3302		4 Co-op		
		DS 4300		4 Elective		4		
		DS 4400		4				
		LING Structure		4				
		0		16		8		0

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Year 4			
Fall	Hours	Spring	Hours
Co-op		DS 4420	4
		LING Lab (or directed study)	4
		LING Seminar	4
		LING Structure	4
	0		16

Total Hours: 132