Data Science and Psychology, BS

The data science and psychology combined major offers an integrative curriculum in the study of mind, brain, and behavior and in the collection, manipulation, storage, retrieval, and computational analysis of data in its various forms, including numeric, textual, image, and video data from small to large volumes. The study of psychology draws upon empirical research with both humans and animals to investigate and seek explanations for the behavior and mental life of individuals and develop assessment tools and treatment options for addressing clinical problems. In this program, students have an opportunity to augment such knowledge with skills in big data analysis, data science, and data analytics.

Program Requirements

- Concentrations and course offerings may vary by campus and/or by program modality. Please consult with your advisor or admissions coach for the course availability each term at your campus or within your program modality.
- Certain options within the program may be *required* at certain campuses or for certain program modalities. Please consult with your advisor or admissions coach for requirements at your campus or for your program modality.

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	First Year Seminar	1
or INSC 1000	Science at Northeastern	
or PSYC 1000	Psychology at Northeastern	
CS 1210	Professional Development for Khoury Co-op	1
or EESC 2000	Professional Development for Co-op	
Programming Sequence Pathways		
Choose one of two options:		12
Computer Science Option		
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	
Data Science Option		
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		
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		

Computer Science Writing Requirements

Code	Title	Hours
College Writing		
ENGW 1111	First-Year Writing	4
or ENGW 1102	First-Year Writing for Multilingual Writers	
Advanced Writing in the Disciplines		
Complete one of the following:		4
ENGW 3302	Advanced Writing in the Technical Professions	
ENGW 3307	Advanced Writing in the Sciences	
ENGW 3315	Interdisciplinary Advanced Writing in the Disciplines	

Psychology Requirements

Code	Title	Hours
Foundations of Psychology		
PSYC 1101	Foundations of Psychology	4
Statistics in Psychological Research		
PSYC 2320	Statistics in Psychological Research	4
Mathematics Foundations		
MATH 1341	Calculus 1 for Science and Engineering	4
Personality/Social Basis of Behavior		
Complete two of the following:		8
PSYC 3400	Personality	
PSYC 3402	Social Psychology	
PSYC 3404	Developmental Psychology	
PSYC 3406	Clinical Psychology and Mental Health	
Cognitive/Biological Basis of Behavior		
Complete two of the following:		8
PSYC 3450	Learning and Motivation	
or PSYC 3451	Learning Principles and Behavior Analysis	
PSYC 3452	Sensation and Perception	
PSYC 3458	Biological Psychology	
PSYC 3464	Psychology of Language	
PSYC 3466	Cognition	
Psychology Laboratory		
Complete one of the following:		4
PSYC 4600	Laboratory in Research Design	
PSYC 4604	Laboratory in Learning and Motivation	
PSYC 4606	Laboratory in Biological Psychology	

PSYC 4610	Laboratory in Psycholinguistics	
PSYC 4612	Laboratory in Cognition	
PSYC 4614	Laboratory in Social Psychology	
PSYC 4616	Laboratory in Personality	
PSYC 4622	Laboratory in Sensation and Perception	
PSYC 4624	Laboratory in Affective Science	
PSYC 4626	Laboratory in Life-Span Emotional Development	
PSYC 4628	Laboratory in Developmental Psychology	
Psychology Seminar		
Complete one of the following:		4
PSYC 4656	Seminar in Biological Psychology	
PSYC 4658	Seminar in Psycholinguistics	
PSYC 4660	Seminar in Cognition	
PSYC 4662	Seminar in Personality	
PSYC 4664	Seminar in Social Psychology	
PSYC 4666	Seminar in Clinical Psychology	
PSYC 4668	Seminar in Sensation and Perception	
PSYC 4674	Seminar in Cognitive Neuroscience	
PSYC 4676	Seminar in Developmental Psychology	
Psychology Electives		
Complete two of the following:		8
PSYC 2370 to PSYC 5999		

Integrative Requirement

Code	Title	Hours
Integrative Course		
Complete one of the following:		4
IS 4300	Human Computer Interaction	
PSYC 4540	Quantitative Topics in Psychology and Behavioral Neuroscience	

Required General Electives

Code	Title	Hours
Complete 28 semester hours of general electives.		28

Khoury College GPA Requirement

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

Psychology GPA Requirement

Minimum 2.000 GPA required in all PSYC courses

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

130 total semester hours required

Plan of Study
Sample Plan of Study:
Four Years, Two Co-ops Summer 2/Fall

Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1200	1	DS 2500 and DS 2501	5	PYSC elective	4	General elective	4
CS 1800 and CS 1802	5	PSYC 2320	4	General elective	4	General elective	4
DS 2000 and DS 2001	4	Personality/social basis of behavior 1	4				
ENGW 1111	4	General elective	4				
PSYC 1101	4						
	18		**17**		**8**		**8**

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 3200	4	CS 1210	1	PSYC elective	4	Co-op	0
DS 3000	4	DS 3500	4	General elective	4		
MATH 1341	4	DS 4200	4				
Cognitive/biological basis of behavior 1	4	Cognitive/biological basis of behavior 2	4				
		Personality/social basis of behavior 2	4				
	16		**17**		**8**		**0**

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op	0	DS 4300	4	ENGW 3302, 3307, or 3315	4	Co-op	0
		DS 4400	4	General elective	4		
		PSYC laboratory	4				
		PSYC seminar	4				
	0		**16**		**8**		**0**

Year 4

Fall	Hours	Spring	Hours
Co-op	0	DS 4420	4
		Integrative requirement	4
		Khoury elective	4
		General elective	4
	0		**16**

Total Hours: 132

Four Years, Two Co-ops Spring/Summer 1

Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1200	1	DS 2500 and DS 2501	5	PYSC elective	4	General elective	4
CS 1800 and CS 1802	5	PSYC 2320	4	General elective	4	General elective	4
DS 2000 and DS 2001	4	Personality/social basis of behavior 1	4				
ENGW 1111	4	General elective	4				
PSYC 1101	4						
	18		**17**		**8**		**8**

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1210	1	Co-op	0	Co-op	0	Elective	4
CS 3200	4					Elective	4
DS 3000	4						
MATH 1341	4						
Cognitive/biological basis of behavior 1	4						
	17		**0**		**0**		**8**

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
DS 3500	4	Co-op	0	Co-op	0	ENGW 3302, 3307, or 3315	4
DS 4200	4					General elective	4
Cognitive/biological basis of behavior 2	4						
Personality/social basis of behavior 2	4						
	16		**0**		**0**		**8**

Year 4

Fall	Hours	Spring	Hours
DS 4300	4	DS 4420	4
DS 4400	4	Integrative requirement	4
PSYC laboratory	4	Khoury elective	4
PSYC seminar	4	PSYC elective	4
	16		**16**

Total Hours: 132