

# Data Science and Psychology, BS

The psychology and data science 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

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/>).

## Data Science Requirements

Code	Title	Hours
<b>Computer Science Overview</b>		
CS 1200 or INSC 1000 or PSYC 1000	First Year Seminar Science at Northeastern Psychology at Northeastern	1
CS 1210 or EESC 2000	Professional Development for Khoury Co-op Professional Development for Co-op	1
<b>Programming Sequence Pathways</b>		
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	
<b>Computer Science Required Courses</b>		
CS 1800 and CS 1802	Discrete Structures and Seminar for CS 1800	5
CS 3200	Database Design	4
<b>Data Science Foundations</b>		
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 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

## Computer Science Writing Requirements

Code	Title	Hours
<b>College Writing</b>		
ENGW 1111 or ENGW 1102	First-Year Writing First-Year Writing for Multilingual Writers	4
<b>Advanced Writing in the Disciplines</b>		
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
<b>Foundations of Psychology</b>		
PSYC 1101	Foundations of Psychology	4
<b>Statistics in Psychological Research</b>		
PSYC 2320	Statistics in Psychological Research	4
<b>Mathematics Foundations</b>		
MATH 1341	Calculus 1 for Science and Engineering	4
<b>Personality/Social Basis of Behavior</b>		
Complete two of the following:		8
PSYC 3400	Personality	
PSYC 3402	Social Psychology	
PSYC 3404	Developmental Psychology	
PSYC 3406	Clinical Psychology and Mental Health	
<b>Cognitive/Biological Basis of Behavior</b>		
Complete two of the following:		8
PSYC 3450 or PSYC 3451	Learning and Motivation Learning Principles and Behavior Analysis	
PSYC 3452	Sensation and Perception	
PSYC 3458	Biological Psychology	
PSYC 3464	Psychology of Language	
PSYC 3466	Cognition	
<b>Psychology Laboratory</b>		
Complete one of the following:		4
PSYC 4600	Laboratory in Research Design	
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	
<b>Psychology Seminar</b>		
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: PSYC 2370 to PSYC 5999	8
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**Integrative Requirement**

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

**Required General Electives**

Code	Title	Hours
Complete 28 credits of general electives.		28

**Khoury College GPA Requirement**

Minimum 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**

Year 1		Year 2		Year 3		Year 4	
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1200		1 CS 2510 and CS 2511		5 CS 3500 and CS 3501		5 General elective	4
CS 1800 and CS 1802		5 PSYC 2320		4 General elective		4 General elective	4
CS 2500 and CS 2501		5 Personality/social basis of behavior 1		4			
ENGW 1111		4 General elective		4			
PSYC 1101		4					
		19		17		9	8

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<b>Year 2</b>							
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>	<b>Summer 1</b>	<b>Hours</b>	<b>Summer 2</b>	<b>Hours</b>
CS 3200		4 CS 1210		1 PSYC elective		4 Co-op	
DS 3000		4 DS 4200		4 General elective		4	
MATH 1341		4 Cognitive/biological basis of behavior 2		4			
Cognitive/biological basis of behavior 1		4 Personality/social basis of behavior 2		4			
		General elective		4			
		16			17		
						8	0
<b>Year 3</b>							
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>	<b>Summer 1</b>	<b>Hours</b>	<b>Summer 2</b>	<b>Hours</b>
Co-op		DS 4300		4 ENGW 3302		4 Co-op	
		DS 4400		4 PSYC elective		4	
		PSYC laboratory		4			
		General elective		4			
		0			16		
						8	0
<b>Year 4</b>							
<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>				
Co-op		DS 4420		4			
		Integrative requirement		4			
		Khoury elective		4			
		PSYC seminar		4			
		0			16		

Total Hours: 134