Data Science and Philosophy, BS

Overview

The data science and philosophy combined major offers an opportunity to obtain a fluency in formal logic, including logical proofs and the ability to represent arguments clearly and evaluate them for cogency. Students will find that logic plays a fundamental role in computer science as they experience an in-depth programming foundation. Students study 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 philosophy curriculum also focuses on oral and written communication, as well as ethical and social issues related to data storage, usage, manipulation, and presentation.

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 Courses

Code	Title	Hours
Computer Science Overview		
Must be taken in alignment with your home college:		
CS 1200	First Year Seminar	1
or PHIL 1000	Philosophy at Northeastern	
CS 1210	Professional Development for Khoury Co-op	1
or EESH 2000	Professional Development for Co-op	
Programming Sequence Pathways		
Complete one of the following 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	Database 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 4420	Machine Learning and Data Mining 2	4
or DS 4440	Practical Neural Networks	
Khoury Elective Courses		

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

Complete 4 SH 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	

Philosophy Requirements

Code	Title	Hours
PHIL 1115	Introduction to Logic	4
PHIL 1145	Technology and Human Values	4
PHIL 2325	Ancient Philosophy and Political Thought	4
or POLS 2325	Ancient Philosophy and Political Thought	
or PHIL 2330	Modern Philosophy	
PHIL 4515	Advanced Logic	4
Philosophy Electives		
Complete four additional PHIL courses, at least one of which is 4000 or above.		16

Integrative Requirement

Code	Title	Hours
PHIL 3050	Information and Uncertainty	4
or PHIL 1300	Knowledge in a Digital World	
or PHIL 2001	Ethics and Evolutionary Games	
PHIL 5005	Information Ethics	4
or PHIL 4050	Values and Sociotechnical Algorithmic Systems	
or PHIL 5010	AI Ethics	

Supporting Courses

Code	Title	Hours
Mathematics Requirement		
MATH 1341	Calculus 1 for Science and Engineering	4
Statistics Foundation		
ECON 2350	Statistics for Economists	4

Writing Requirement

Code	Title	Hours
College Writing		
ENGW 1111	First-Year Writing	4
Advanced Writing in the Disciplines		
Complete one of the following:		4
ENGW 3302	Advanced Writing in the Technical Professions	
ENGW 3309	Advanced Writing in the Humanities	
ENGW 3315	Interdisciplinary Advanced Writing in the Disciplines	

Required General Electives

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

NUpath Requirements Satisfied

- Engaging with the Natural and Designed World
- Exploring Creative Expression and Innovation
- Conducting Formal and Quantitative Reasoning
- Analyzing and Using Data
- Understanding Societies and Institutions

- Employing Ethical Reasoning
- 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.

Khoury College GPA Requirement

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

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
CS 1200 or PHIL 1000	1	CS 3200	4	MATH 1341	4	Elective	4
CS 1800 and CS 1802	5	DS 2500 and DS 2501	5	PHIL elective 1	4	Elective	4
DS 2000 and DS 2001	4	PHIL 1145	4				
ENGW 1111	4	PHIL 2325, 2330, or POLS 2325	4				
PHIL 1115	4						
	18		**17**		**8**		**8**

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
DS 3000	4	CS 1210 or EESH 2000	1	ECON 2350	4	Co-op	0
DS 3500	4	DS 4200	4	Elective	4		
PHIL 4515	4	PHIL 5005, 5010, or 4050	4				
Elective	4	PHIL elective 2	4				
		PHIL elective 3	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	4	Co-op	0
		DS 4400	4	Elective	4		
		PHIL 3050	4				
		Elective	4				
	0		**16**		**8**		**0**

Year 4

Fall	Hours	Spring	Hours
Co-op	0	DS 4420 or 4440	4
		Khoury elective	4
		PHIL elective 4	4
		Elective	4
	0		**16**

Total Hours: 132