Data Science and Philosophy, BS (Boston)

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 Requirements

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	
Computer Science Required Courses		
All students can take a self-assessment to attempt to place out of CS 2000 and CS 2001. Students who place out of CS 2000 and CS 2001 will instead substitute 4-5 semester hours of CS, CY, or DS coursework at the 3000 level or higher not otherwise required in the degree.		
CS 1800 and CS 1802	Discrete Structures and Seminar for CS 1800	5
CS 2000 and CS 2001	Introduction to Program Design and Implementation and Lab for CS 2000	5
CS 3200	Introduction to Databases	4
Programming Sequence Pathways		
Complete one of the following options:		9
Computer Science Option		
CS 2100 and CS 2101	Program Design and Implementation 1 and Lab for CS 2100	
CS 3100 and CS 3101	Program Design and Implementation 2 and Lab for CS 3100	
Data Science Option		
DS 2500 and DS 2501	Intermediate Programming with Data and Lab for DS 2500	
DS 3500	Advanced Programming with Data	
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 Approved Electives

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

Complete 4 semester hours from within the following options:		4
CS 2500 or higher, except CS 5010		
CY 2000 or higher, except CY 4930		
DS 2500 or higher, except DS 4900		
MKTG 4606	Digital, Analytics, Technology, and Automation Research Practicum	

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 Deductive Logic	4
or PHIL 4516	Advanced Inductive Logic	
Philosophy Electives		
Complete two additional PHIL courses, one of which must be 3000 level or above:		8
Critical Philosophy Elective		
Complete 4 semester hours from the following:		4
AFCS 1101	Introduction to African American and Africana Studies	
PHIL 1104	Goddesses, Witches, Saints, and Sinners: Women and Religion	
PHIL 1271	Sex in Judaism, Christianity, and Islam	
PHIL 2155	Human Rights	
PHIL 2410	Possession, Sacrifice, and Divination in African Diasporic Religions	
PHIL 2492	Indigenous Philosophy	
PHIL 2619	Race and Religion in Film	
PHIL 3512	Religion, Race, and Politics	
PHIL 3822	Philosophy of Race and Racism	

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	Artificial Intelligence and Society	
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
- Interpreting Culture

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

Program Requirement

130 total semester hours required

Plan of Study
Sample Plans of Study
FOUR YEARS, TWO CO-OPS IN SUMMER SECOND HALF/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	General Elective	4
CS 1800 and CS 1802	5	DS 2500 and DS 2501	5	PHIL Elective 1	4	General Elective	4
CS 2000 and CS 2001	5	PHIL 1145	4				
ENGW 1111	4	PHIL 2325, 2330, or POLS 2325	4				
PHIL 1115	4						
	19		**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	General Elective	4		
PHIL 4515	4	PHIL 5005, 5010, or 4050	4				
General 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, 3309, or 3315	4	Co-op	0
		DS 4400	4	General Elective	4		
		PHIL 3050	4				

	Hours		Hours		Hours		Hours
		General 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
		General Elective	4
	0		**16**

Total Hours: 133

FOUR YEARS, TWO CO-OPS IN SPRING/SUMMER FIRST HALF

Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1200 or PHIL 1000	1	CS 3200	4	MATH 1341	4	General Elective	4
CS 1800 and CS 1802	5	DS 2500 and DS 2501	5	PHIL Elective 1	4	General Elective	4
CS 2000 and CS 2001	5	PHIL 1145	4				
ENGW 1111	4	PHIL 2325, 2330, or POLS 2325	4				
PHIL 1115	4						
	19		**17**		**8**		**8**

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1210	1	Co-op	0	Co-op	0	General Elective	4
DS 3000	4					General Elective	4
DS 3500	4						
PHIL 4515	4						
ECON 2350	4						
	17		**0**		**0**		**8**

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
DS 4200	4	Co-op	0	Co-op	0	ENGW 3302, 3309, or 3315	4
PHIL 5005	4					General Elective	4
PHIL Elective 2	4						
PHIL Elective 3	4						
	16		**0**		**0**		**8**

Year 4

Fall	Hours	Spring	Hours
DS 4300	4	DS 4420 or 4440	4
DS 4400	4	Khoury Elective	4
PHIL 3050	4	PHIL Elective 4	4
General Elective	4	General Elective	4
	16		**16**

Total Hours: 133