

Cybersecurity, BS (Boston)

The Bachelor of Science in Cybersecurity teaches students the conceptual and practical skills that will enable them to contribute to ensuring the reliability and security of cyberspace. The program will provide students with the fundamental knowledge of computer science that forms the technical foundation of the field, with an essential focus on experiential learning through laboratory exercises in the security-related courses, as well as through the co-op program. The program's holistic view of cybersecurity gives it a strong interdisciplinary focus, teaching students how social behavior, policy, and legal rules can affect cybersecurity and the tools of information technology.

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/>).

Cybersecurity Major Requirements

Code	Title	Hours
Computer Science Overview		
CS 1200	First Year Seminar	1
CS 1210	Professional Development for Khoury Co-op	1
Computer Science Fundamental 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 2100 and CS 2101	Program Design and Implementation 1 and Lab for CS 2100	5
Computer Science Required Courses		
CS 3000	Algorithms and Data	4
CS 3100 and CS 3101	Program Design and Implementation 2 and Lab for CS 3100	5
CS 3650	Computer Systems	4
CS 3800	Theory of Computation	4
CS 4700 or CS 4730	Network Fundamentals Distributed Systems	4
Presentation Requirement		
Complete one of the following:		4
COMM 1112	Public Speaking	
COMM 1113	Business and Professional Speaking	
COMM 1210	Persuasion and Rhetoric	
COMM 1511	Communication and Storytelling	
THTR 1125	Improvisation	
THTR 1130	Introduction to Acting	
THTR 1180	Dynamic Presence: Theatre Training for Effective Interpersonal Interactions	
THTR 2345	Acting for the Camera	
Cybersecurity Required Courses		
CY 2550	Foundations of Cybersecurity	4
CY 3740	Systems Security	4

CY 4740	Network Security	4
CY 4770	Foundations of Cryptography	4
or CY 4775	Applied Cryptography	
CY 4930	Cybersecurity Capstone	4

Cybersecurity and Social Issues Elective List

Complete one of the following:		4
COMM 2551	Free Speech in Cyberspace	
CRIM 2340	Corporate Security: Securing the Private Sector	
CRIM 4040	Crime Prevention	
LPSC 1101	Introduction to Law	
LPSC 2301	Introduction to Law, Policy, and Society	
LPSC 3303	Topics in Law and Public Policy	
POLS 2390	Science, Technology, and Public Policy	
POLS 3307	Public Policy and Administration	
POLS 3324	Law and Society	
POLS 3406	International Law	
POLS 3420	U.S. National Security Policy	
POLS 3423	Terrorism and Counterterrorism	

Concentration or Electives Option

A concentration is not required. Students may complete electives in lieu of a concentration.

- Cyber Operations (p. 3)
- Electives (p. 3) Option (p. 3)

Supporting Courses

Code	Title	Hours
Electrical Engineering Required Course		
EECE 2310 and EECE 2311	Introduction to Digital Design and Computer Architecture and Lab for EECE 2310	5
Mathematics Courses		
MATH 1341	Calculus 1 for Science and Engineering	4
MATH 1342	Calculus 2 for Science and Engineering	4
MATH 3081	Probability and Statistics	4

Writing Requirements

Code	Title	Hours
College Writing		
ENGW 1111	First-Year Writing	4
Advanced Writing in the Disciplines		
ENGW 3302 or ENGW 3315	Advanced Writing in the Technical Professions Interdisciplinary Advanced Writing in the Disciplines	4

Required General Electives

Code	Title	Hours
Complete 24 semester hours of general electives.		24

Khoury College GPA Requirement

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

Cybersecurity Credit Requirement

Complete 83 semester hours in the major.

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

134 semester hours required

CONCENTRATION IN CYBER OPERATIONS

Code	Title	Hours
Cyber Operations Required Courses		
CY 4760	Security of Wireless and Mobile Systems	4
CY 5210	Information System Forensics	4
CY 5240	Cyberlaw: Privacy, Ethics, and Digital Rights	4
Electives		
Complete two of the following:		8
CS 4530 or CS 4500	Fundamentals of Software Engineering Software Development	
CY 5200	Security Risk Management and Assessment	
EECE 3324	Computer Architecture and Organization	
EECE 4534	Microprocessor-Based Design	

ELECTIVES OPTION

Code	Title	Hours
Law Requirement		
CY 4170 or CY 5240	The Law, Ethics, and Policy of Data and Digital Technologies Cyberlaw: Privacy, Ethics, and Digital Rights	4

Cybersecurity Electives

If courses require prerequisites, those should be taken using general electives.

Complete four courses from the following:		16
COMM 2551	Free Speech in Cyberspace	
CRIM 2340	Corporate Security: Securing the Private Sector	
CRIM 4040	Crime Prevention	
CS 2800	Logic and Computation	
CS 4400	Programming Languages	
CS 4500 or CS 4530	Software Development Fundamentals of Software Engineering	
CS 4700	Network Fundamentals	
CS 4730	Distributed Systems	
CY 4100	AI Security and Privacy	
CY 4770	Foundations of Cryptography	
CY 4775	Applied Cryptography	
CY 4760	Security of Wireless and Mobile Systems	
CY 5200	Security Risk Management and Assessment	
CY 5210	Information System Forensics	
DS 4300	Large-Scale Information Storage and Retrieval	
DS 4400	Machine Learning and Data Mining 1	
EECE 3324	Computer Architecture and Organization	
EECE 4534 and EECE 4535	Microprocessor-Based Design and Lab for EECE 4534	
LPSC 1101	Introduction to Law	
LPSC 2301	Introduction to Law, Policy, and Society	

LPSC 3303	Topics in Law and Public Policy
MATH 3527	Number Theory 1
MISM 2301	Introduction to Information Systems and Digital Technologies
POLS 2390	Science, Technology, and Public Policy
POLS 3307	Public Policy and Administration
POLS 3324	Law and Society
POLS 3406	International Law
POLS 3420	U.S. National Security Policy
POLS 3423	Terrorism and Counterterrorism

Plan of Study

Sample Plan 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		1 CS 2100 and CS 2101		5 MATH 1342		4 General Elective	4
CS 1800 and CS 1802		5 MATH 1341		4 CS 3100 and CS 3101		5 General Elective	4
CS 2000 and CS 2001		5 Presentation Requirement		4			
ENGW 1111		4 General Elective		4			
General Elective		4					
	19		17		9		8
Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 3000		4 CS 1210		1 MATH 3081		4 Co-op	0
CS 3650		4 CS 4700 or 4730		4 General Elective		4	
CY 2550		4 CY 3740		4			
Cybersecurity Elective		4 Cybersecurity Elective		4			
		General Elective		4			
	16		17		8		0
Year 3							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		0 CS 3800		4 ENGW 3302		4 Co-op	0
		CY 4740		4 EECE 2310 and EECE 2311		5	
		CY 5240 or 4170		4			
		Cybersecurity Elective		4			
	0		16		9		0
Year 4							
Fall	Hours	Spring	Hours				
Co-op		0 CY 4770 or 4775		4			
		CY 4930		4			
		Cyber and Social Issues		4			
		Cybersecurity elective		4			
	0		16				

Total Hours: 135