

Computer Science and Public Health, BS (Boston)

The computer science and public health combined major offers students a strong foundation and experiential education integrating studies in public health and computer science. The program covers the social determinants of health, biostatistics and epidemiology, health communication, and health education and program planning. This degree focuses on the fundamentals of program design, software development, and advanced algorithms and data.

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/>).

Computer Science Requirements

Code	Title	Hours
Computer Science Foundations		
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 3200	Introduction to Databases	4
Khoury Approved Electives		
With advisor approval, a directed study, research, project study, or appropriate graduate-level course may also be taken as a computer science elective.		
Complete 8 semester hours from the following:		8
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	

Supporting Courses

Code	Title	Hours
Introduction to College		
Complete one of the following based on home college:		1
CS 1200	First Year Seminar	
HSCI 1000	College: An Introduction	
Ethics		
Complete one of the following:		4
BIOL 2329	Bioethics	
PHIL 1165	Moral and Social Problems in Healthcare	
Mathematics		

MATH 1341	Calculus 1 for Science and Engineering	4
or MATH 1241	Calculus 1	

Statistics

Complete one of the following: 4-5

ECON 2350	Statistics for Economists	
ENVR 2500 and ENVR 2501 and ENVR 2502	Biostatistics and Lab for ENVR 2500 and Recitation for ENVR 2500	
MATH 3081	Probability and Statistics	
PHTH 2210	Foundations of Biostatistics	
PSYC 2320	Statistics in Psychological Research	

Professional Development

Complete one of the following based on home college: 1

CS 1210	Professional Development for Khoury Co-op	
HSCI 2000	Professional Development for Bouvé Co-op	

Public Health Requirements

Code	Title	Hours
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Public Health Core

PHTH 1260	The American Healthcare System	4
or PHTH 1261	Comparative Healthcare Systems	
PHTH 2300	Communication Skills for the Health Professions	4
or PHTH 2301	Communication Skills for the Health Professions—Global	
PHTH 2350	Community and Public Health	4
or PHTH 2351	Community and Public Health - Global	
PHTH 2515	Healthcare Policy and Administration	4
PHTH 4120	Global Perspectives on Discrimination and Health	4
PHTH 4202	Principles of Epidemiology in Medicine and Public Health	4
PHTH 4540	Health Education and Program Planning	4

Science Requirement**Psychology**

PSYC 1101	Foundations of Psychology	4
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Biology

Complete one of the following options: 8-10

Option 1

BIOL 1141	Microbes and Society	
or BIOL 1143	Biology and Society	
BIOL 1147	The Human Organism	

Option 2

BIOL 1111 and BIOL 1112	General Biology 1 and Lab for BIOL 1111	
BIOL 1113 and BIOL 1114	General Biology 2 and Lab for BIOL 1113	

Public Health Social Science Requirement—Introductory Course

Complete one of the following: 4

ANTH 1101	Peoples and Cultures	
COMM 1225	Communication Theory	
ECON 1115 and ECON 1125	Principles of Macroeconomics and Recitation for ECON 1115	
ECON 1116 and ECON 1126	Principles of Microeconomics and Recitation for ECON 1116	
ENGL 1300	Introduction to Health and Humanities	
HUSV 1101	Social Change and Human Services	
INTL 1101	Globalization and International Affairs	
PHIL 1101	Introduction to Philosophy	

POLS 1160	International Relations
SOCL 1101	Introduction to Sociology
Public Health Social Science Requirement—Upper-Level Course	
Complete one of the following:	
<i>Society and Behavior</i>	
ANTH 3441	Medical Anthropology
COMM 3201	Health Communication
COMM 4102	Health Communication Campaigns
CRIM 3040	Psychology of Crime
HLTH 5280	The (in)Visibility of (dis)Ability in Society
PHTH 5222	Health Advocacy
PSYC 3402	Social Psychology
PSYC 3404	Developmental Psychology
PSYC 3450	Learning and Motivation
SOCL 3241	Violence and Society
SOCL 3441	Sociology of Health and Illness
SOCL 4520	Race, Class, and Gender
<i>Globalization and Global Health</i>	
AFCS 3424	Epidemiology of Pandemic Diseases and Health Disparities in the African Diaspora
ECON 3404	International Food Policy
INTL 3200	Cities in a Global Context
or INTL 3201	Cities in a Global Context (Abroad)
INTL 3400	International Conflict and Negotiation
POLS 3487	Politics of Developing Nations
<i>Environmental Health and Climate Change</i>	
COMM 3500	Environmental Issues, Communication, and the Media
ECON 3423	Environmental Economics
INTL 5100	Climate and Development
or PPUA 5100	Climate and Development
PPUA 5238	Climate Change and Global Urbanization
<i>Law, Policy, and Human Rights</i>	
ECON 3424	Law and Economics
PHIL 5001	Global Justice
PHIL 5002	Ethics and Public Policy
POLS 3307	Public Policy and Administration
<i>Healthcare Administration and Management</i>	
ECON 3413	Health Economics and Healthcare Policy
MGMT 3340	Healthcare Management, Innovation, and Design
ORGB 3201	Organizational Behavior
PHTH 4511	Healthcare Management
PHTH 5232	Evaluating Healthcare Quality
PHTH 5234	Economic Perspectives on Health Policy

Writing Requirement

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		
ENGW 3302	Advanced Writing in the Technical Professions	4
or ENGW 3306	Advanced Writing in the Health Professions	
or ENGW 3315	Interdisciplinary Advanced Writing in the Disciplines	

Integrative Requirement

Code	Title	Hours
CS 2484	Principles of Human-Computer Interaction	4

Capstone

Code	Title	Hours
CS 4530	Fundamentals of Software Engineering	4
or CS 4535	Professional Practicum Capstone	

Required General Electives

Code	Title	Hours
Complete 20 semester hours of general electives.		20

Optional Co-op

Students can choose to complete one or two six-month co-op experiences, or none at all, during their course of study. Students must consult with their advisor regarding the 1 –semester-hour prerequisite course for co-op.

Public Health Major Requirement

A grade of C or higher is required for the public health core, science requirement, statistics, and public health social science requirement. Students who take College: An Introduction (HSCI 1000) and Professional Development for Bouvé Co-op (HSCI 2000) must achieve a C or higher.

Khoury College GPA Requirement

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

NUpath Requirements Satisfied

- Engaging with the Natural and Designed World
- Exploring Creative Expression and Innovation
- Interpreting Culture
- Conducting Formal and Quantitative Reasoning
- Understanding Societies and Institutions
- Analyzing and Using Data
- Employing Ethical Reasoning
- Engaging Differences and Diversity
- 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

132 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 HSCI 1000		1 ENGW 1111		4 PHTH 2350		4 Vacation	
CS 2000 and CS 2001		5 CS 2100 and CS 2101		5 CS 3100 and CS 3101		5	
CS 1800 and CS 1802		5 PSYC 1101		4			
PHTH 1260		4 BIOL course		4-5			
BIOL course		4-5					
19-20		17-18		9		0	

Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
MATH 1341 or 1241		4 CS 1210 or HSCI 2000		1 General elective		4 Co-op	0
CS 3000	4	CS 3200	4	PHTH 2515	4		
PHTH 2300	4	PH social science course—introductory	4				
General elective	4	Statistics course	4-5				
		Khoury elective	4				
		16	17-18			8	0
Year 3							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op	0	PHTH 4202	4	PHTH 4540	4	Co-op	0
ENGW 3306, 3302, or 3315 ¹	4	Khoury elective	4	General elective	4		
		Ethics	4				
		CS 2484	4				
		4	16			8	0
Year 4							
Fall	Hours	Spring	Hours				
Co-op	0	PHTH 4120	4				
General elective ¹	4	CS 4530 or 4535	4				
		PH social science course—upper	3-4				
		General elective	4				
		4	15-16				
Total Hours: 133-137							

¹ Students may fulfill one course during each co-op or take two courses instead of vacation.

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 HSCI 1000		1 ENGW 1111		4 PHTH 2350		4 Vacation	
CS 1800 and CS 1802		5 CS 2100 and CS 2101		5 CS 3100 and CS 3101		5	
CS 2000 and CS 2001		5 PSYC 1101		4			
PHTH 1260		4 BIOL course		4-5			
BIOL course		4-5					
19-20		17-18		9		0	
Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1210 or HSCI 2000		1 Co-op		0 Co-op		0 General elective	4
MATH 1341 or 1241		4 General elective ¹		4		PHTH 2515	4
PHTH 2300		4					
CS 3000		4					
Statistics course		4-5					
17-18		4		0		8	
Year 3							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 3200		4 Co-op		0 Co-op		0 General elective	4
Ethics		4 ENGW 3302, 3306, or 3315 ¹		4		PHTH 4540	4
PH social science course— introductory		4					

CS 2484	4				
	16		4	0	8
Year 4					
Fall	Hours	Spring	Hours		
PHTH 4202	4	PHTH 4120	4		
CS 4530 or 4535	4	PH social science course— upper	3-4		
Khoury elective	4	Khoury elective	4		
General elective	4	General elective	4		
	16		15-16		
Total Hours: 133-137					