Computer Science and Music with Concentration in Music Technology, BS

The computer science and music combined major with concentration in music technology focuses on the creative application of sound and music technologies to a broad range of artistic, social, and industrial purposes. An emphasis is maintained throughout on imaginative exploration, collaboration across disciplines, and real-world experience. It is designed to give students a firm foundation in music and computing for digital audio technologies. This program is recommended for students with a strong background in music prior to entering Northeastern.

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/).

Computer Science Courses

Code	Title	Hours
Computer Science Overview		
CS 1200	First Year Seminar	1
or MUSC 1000	Music at Northeastern	
CS 1210	Professional Development for Khoury Co-op	1
or EEAM 2000	Professional Development for Co-op	
Computer Science Fundamental Courses		
CS 1800 and CS 1802	Discrete Structures and Seminar for CS 1800	5
CS 2500 and CS 2501	Fundamentals of Computer Science 1 and Lab for CS 2500	5
CS 2510 and CS 2511	Fundamentals of Computer Science 2 and Lab for CS 2510	5
Computer Science Required Courses		
CS 3000	Algorithms and Data	4
CS 3200	Database Design	4
CS 3500 and CS 3501	Object-Oriented Design and Lab for CS 3500	5
CS 4500	Software Development	4
or CS 4530	Fundamentals of Software Engineering	
IS 4300	Human Computer Interaction (Integrative)	4
Khoury Elective		
With advisor approval, directed study, research, project study, and appropriate graduate-level courses may also be taken as upper-division electives.		
Complete 8 credits of CS, CY, DS or IS classes that are not already required. Choose courses within the following ranges:		8
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		

Music Courses

Code	Title	Hours
Music Theory and Composition		
MUSC 1201	Music Theory 1	4

MUSC 1202	Music Theory 2	4
Complete one of the following:		4
MUSC 2111	Algebra and Geometry of Music	
MUSC 3300	Music Perception and Cognition (Music Perception and Cognition)	
MUSC 3541	Music Analysis Seminar	
Music in Context		
MUSC 1002 and MUSC 1003	Music in Everyday Life and Lab for MUSC 1002	4
Contemporary / Popular Music		
Complete one of the following:		4
MUSC 2101	Black Popular Music	
MUSC 2150	Making a Musical: Analysis, Craft, and Creation	
MUSC 2310	Popular Music Since 1945	
MUSC 2311	Topics in American Music	
MUSC 2317	Punk Rock	
MUSC 2320	40,000 Years of Music Technology	
MUSC 2340	Divas, DJs, and Double Standards	
MUSC 2351	Music, Sound, and the Screen	
MUSC 2380	The World of Choral Music	
MUSC 3352	Sounding Human	
MUSC 3353	Music and the Racial Imagination	
MUSC 3354	Sound and the Sacred	
MUSC 3560	Topics in Music since 1900	
MUSI 3360	Global Music Industries in Context	
MUSI 3401	Hip Hop in the Music Industry	
Music Technology		
MUSC 2350	Acoustics and Psychoacoustics of Music	4
MUST 1220	Introduction to Music Technology	4
MUST 2102	Composing with Digital Technologies	4
MUST 2431	Computer Music Fundamentals	4
Music Industry		
Complete one of the following:		4
MUSI 1230	Introduction to Music Industry	
MUSI 2331	Music Recording 2	
Music Technology Electives		
Complete two of the following:		8
MUSC 4510	Music and the Brain Research	
MUST 3540	Special Topics in Music Technology	
MUST 3601	Digital Audio Signal Processing	
MUST 3602	Electronics for Music	
MUST 3603	Embedded Audio Programming	
MUST 4610	Composition for Electronic Instruments	
Music Technology Capstone		
MUST 4611	Music Technology Capstone/Senior Recital	4

Foundations of Psychology

Code	Title	Hours
PSYC 1101	Foundations of Psychology	4

Computing and Social Issues

Code	Title	Hours
Complete one of the following:		4
AFAM 2600	Issues in Race, Science, and Technology	
CY 4170	The Law, Ethics, and Policy of Data and Digital Technologies	

CY 5240	Cyberlaw: Privacy, Ethics, and Digital Rights
ENGL 2150	Literature and Digital Diversity
HIST 2220	History of Technology
INSH 2102	Bostonography: The City through Data, Texts, Maps, and Networks
IS 1300	Knowledge in a Digital World
or PHIL 1300	Knowledge in a Digital World
PHIL 1145	Technology and Human Values
SOCL 1280	The Twenty-First-Century Workplace
SOCL 2485	Environment, Technology, and Society
SOCL 4528	Computers and Society

Computer Science Writing Requirement

Code	Title	Hours
College Writing		
ENGW 1111	First-Year Writing	4
Advanced Writing in the Disciplines		
ENGW 3302	Advanced Writing in the Technical Professions	4
or ENGW 3314	Advanced Writing in the Arts, Media, and Design	
or ENGW 3315	Interdisciplinary Advanced Writing in the Disciplines	

Required General Electives

Code	Title	Hours
Complete 20 credits of general electives.		20

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
- 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, and IS courses

Music Technology Grade Requirement

Students must maintain at least a 2.667 GPA (B- average) in the requirements of the music half of the combined major and also complete all required music courses with grades of at least C. Students who fail to meet the above standards will be placed on departmental probation; those who remain on probation for two consecutive semesters will be dropped from the major.

Program Requirement

133 total semester hours required

Plan of Study
Sample Plan of Study:
Four Years, Two Co-ops in Spring/Summer 1

Year 1

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1200	1	CS 2510 and CS 2511	5	CS 3200	4	Vacation	0

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1800 and CS 1802	5	MUSC 1202 (*)	4	CS 3500 and CS 3501	5		
CS 2500 and CS 2501	5	MUSC 2350	4				
ENGW 1111	4	MUST 1220 (*)	4				
MUSC 1201 (*)	4						
	19		17		9		0

Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1210	1	Co-op		Co-op		ENGW 3302	4
CS 3000	4					Elective	4
MUSC 1002 and MUSC 1003	4						
MUST 2431	4						
Khoury elective	4						
	17		0		0		8

Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
MUSC 2111, MUSC 3541 or MUSC 3300	4	Co-op	0	Co-op	0	PSYC 1101	4
MUSC 2111, MUSC 3541 or MUSC 3300	4					Elective	4
Contemporary music requirement (*)	4						
Music technology elective (*)	4						
	16		0		0		8

Year 4

Fall	Hours	Spring	Hours	Summer 1	Hours
CS 4500	4	MUST 4611 (*)	4	Elective	4
IS 4300	4	Computing and social issues	4	Elective	4
MUST 2102	4	Music industry elective	4		
Khoury elective	4	Music technology elective	4		
	16		16		8

Total Hours: 134

* Indicates course must be taken in the term listed.