

# 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

- Concentrations and course offerings may vary by campus and/or by program modality. Please consult with your advisor or admissions coach for the course availability each term at your campus or within your program modality.
- Certain options within the program may be *required* at certain campuses or for certain program modalities. Please consult with your advisor or admissions coach for requirements at your campus or for your program modality.

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 Courses

Code	Title	Hours
<b>Computer Science Overview</b>		
Must be taken in alignment with your home college:		
CS 1200 or MUSC 1000	First Year Seminar Music at Northeastern	1
CS 1210 or EEAM 2000	Professional Development for Khoury Co-op Professional Development for Co-op	1
<b>Computer Science Fundamental Courses</b>		
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
<b>Computer Science Required Courses</b>		
CS 3000	Algorithms and Data	4
CS 3200	Introduction to Databases	4
CS 3500 and CS 3501	Object-Oriented Design and Lab for CS 3500	5
CS 4500 or CS 4530	Software Development Fundamentals of Software Engineering	4
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 semester hours of CS, CY, DS or IS classes that are not already required. Choose courses within the following ranges:

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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
<b>Music Theory Placement</b>		
All students must take a music theory placement exam. Students who successfully complete a music theory placement exam may substitute a general elective for the MUSC 1119 requirement. Students who do not place into MUSC 1201 must first take the following course:		
MUSC 1119	Fundamentals of Western Music Theory	4
<b>Music Theory and Composition</b>		
MUSC 1201	Music Theory 1	4
MUSC 1202	Music Theory 2	4
Complete one of the following:		
MUSC 2111	Algebra and Geometry of Music	4
MUSC 3300	Music Perception and Cognition (Music Perception and Cognition)	4
MUSC 3541	Music Analysis Seminar	4
<b>Music in Context</b>		
Select one of the following for four semester hours:		
MUSC 1001	Music in Everyday Life	4
MUSC 1002 and MUSC 1003	Music in Everyday Life and Lab for MUSC 1002	4
<b>Contemporary / Popular Music</b>		
Complete one of the following:		
MUSC 2101	Black Popular Music	4
MUSC 2150	Making a Musical: Analysis, Craft, and Creation	4
MUSC 2310	Popular Music Since 1945	4
MUSC 2311	Topics in American Music	4
MUSC 2317	Punk Rock	4
MUSC 2320	40,000 Years of Music Technology	4
MUSC 2336	The Festival Experience	4
MUSC 2340	Divas, DJs, and Double Standards	4
MUSC 2351	Music, Sound, and the Screen	4
MUSC 2380	The World of Choral Music	4
MUSC 3352	Sounding Human	4
MUSC 3353	Music and the Racial Imagination	4
MUSC 3354	Sound and the Sacred	4
MUSI 3360	Global Music Industries in Context	4
MUSI 3401	Hip Hop in the Music Industry	4
<b>Music Technology</b>		
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
<b>Music Industry</b>		
Complete one of the following:		
MUSI 1230	Introduction to Music Industry	4
MUSI 2331	Music Production and Recording 2	4
<b>Music Technology Electives</b>		
Complete two of the following:		

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MUSC 4510	Music and the Brain Research	
MUST 3300	Musical Interactions in Extended Reality	
MUST 3601	Digital Audio Signal Processing	
MUST 3602	Electronics for Music	
MUST 3603	Embedded Audio Programming	
MUST 3973	Special Topics in Music Technology	
MUST 4610	Composition for Electronic Instruments	
MUST 5973	Special Topics in Music Technology	

**Music Technology Capstone**

MUST 4611	Music Technology Capstone	4
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**Foundations of Psychology**

Code	Title	Hours
PSYC 1101	Foundations of Psychology	4

**Computing and Social Issues**

Code	Title	Hours
Complete one of the following:		
AFCS 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	
HIST 2220	History of Technology	
INSH 2102	Bostonography: The City through Data, Texts, Maps, and Networks	
IS 1300 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	Technology and Society	

**Computer Science Writing Requirement**

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

**Required General Electives**

Code	Title	Hours
Complete 16 semester hours of general electives.		16

**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 cumulative 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 (MUSC, MUSI, and MUST courses) 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	Hours
CS 1200		1 CS 2510 and CS 2511		5 CS 3500 and CS 3501		5 Elective		4
CS 1800 and CS 1802	5	MUSC 1202 <sup>1</sup>	4	PSYC 1101	4	Elective	4	4
CS 2500 and CS 2501	5	MUSC 2350	4					
ENGW 1111	4	MUST 1220 <sup>1</sup>	4					
MUSC 1201 <sup>1</sup>	4							
	<b>19</b>		<b>17</b>			<b>9</b>		<b>8</b>
Year 2								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
CS 1210	1	Co-op	0	Co-op	0	ENGW 3302, 3314, or 3315	4	4
CS 3000	4					Elective	4	4
CS 3200	4							
MUSC 1001 or 1002 <i>and</i> 1003	4							
MUST 2431	4							
	<b>17</b>		<b>0</b>		<b>0</b>			<b>8</b>
Year 3								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
MUSC 2111, 3541, or 3300	4	Co-op	0	Co-op	0	Elective	4	4
Contemporary music requirement <sup>1</sup>	4					Elective	4	4
Khoury Elective	4							
Music technology elective <sup>1</sup>	4							
	<b>16</b>		<b>0</b>		<b>0</b>			<b>8</b>
Year 4								
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours	Hours
CS 4500 or 4530	4	IS 4300	4					
MUST 2102	4	MUST 4611 <sup>1</sup>	4					
Computing and Social Issues	4	Music industry elective	4					
Khoury elective	4	Music technology elective	4					
	<b>16</b>		<b>16</b>					

**Total Hours: 134**

<sup>1</sup> Indicates course must be taken in the term listed.