

# Computer Science and Music, BS (Boston)

The computer science and music combined major exposes students to a wide range of musical repertoires, theoretical approaches, and research strategies. The program engages students in the study of how music works and the many contexts in which it is created and received. Students will be exposed to the fundamentals of program design and software development. It is designed to give students a firm foundation in music and computing.

## 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 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>		
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
<b>Computer Science Required Courses</b>		
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
CS 4530 or CS 4535	Fundamentals of Software Engineering Professional Practicum Capstone	4
<b>Khoury Approved Electives</b>		
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 from within the following options:		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	

## Music Courses

Code	Title	Hours
<b>Music Theory Placement</b>		
All students can take a music theory placement exam to place out of MUSC 1119. Students who place out of MUSC 1119 will substitute it with a general elective course.		
MUSC 1119	Fundamentals of Western Music Theory	4
<b>Music Theory</b>		
MUSC 1201	Music Theory 1	4
<i>Music Theory Elective</i>		
Complete one of the following:		4
MUSC 1202	Music Theory 2	
MUSC 1204	Analyzing Popular Genres	
MUSC 2111	Algebra and Geometry of Music	
MUSC 2208	Jazz Improvisation	
MUSC 2350	Acoustics and Psychoacoustics of Music	
MUSC 3300	Music Perception and Cognition (Music Perception and Cognition)	
<b>Music in Context</b>		
MUSC 1001	Music in Everyday Life	4
or MUSC 1002 and MUSC 1003	Music in Everyday Life and Lab for MUSC 1002	
Complete one course each from three of the four distinct Music in Context categories. No more than one may be at the 1000 level. At least one course must be at the 3000 level or higher.		12
<i>Contemporary/Popular Music</i>		
Complete one of the following:		
MUSC 1112	Jazz	
MUSC 1113	Film Music	
MUSC 1141	Wired for Sound	
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 2336	The Festival Experience	
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 3360	Ethnography and the Arts	
MUSI 3360	Global Music Industries in Context	
MUSI 3401	Hip Hop in the Music Industry	
<i>Creative</i>		
Complete one of the following 4-semester-hour courses or complete four 1-semester-hour ensembles and/or lessons from the list below:		
MUSC 1301	Introduction to Music Composition	
MUSC 1901	Music Lessons 1	
MUSC 1902	Music Lessons 2	
MUSC 1904	Chorus	
MUSC 1905	Concert Band	
MUSC 1906	Orchestra	
MUSC 1907	Wind Ensemble	
MUSC 1911	Jazz Ensemble	

MUSC 1912	Rock Ensemble
MUSC 1913	Blues/Rock Ensemble
MUSC 1914	Pop Music Performance
MUSC 1915	Chamber Ensemble
MUSC 1917	Jazz Choir and Combo
MUSC 1918	World Music Ensemble
MUSC 1919	Fusion Ensemble
MUSC 1920	Pep Band
MUSC 1922	Open Microphone Performance Workshop
MUSC 2150	Making a Musical: Analysis, Craft, and Creation
MUSC 2208	Jazz Improvisation
MUSC 2209	Conducting
MUSC 2210	Introduction to Songwriting
MUSC 2425	Arranging and Orchestration for Film, Media, and the Concert Stage
MUSC 3342	Critical Listening for Producers
MUST 1220	Introduction to Music Technology
MUST 2320	Sound Design

#### *Global Music/Ethnomusicology*

Complete one of the following:

MUSC 1128	Music of Africa
MUSC 1137	Topics in Diverse Musical Cultures
MUSC 2101	Black Popular Music
MUSC 2313	Topics in Global Music Cultures
MUSC 2316	History of the Music Industry
MUSC 2330	Musical Communities of Boston
MUSC 2331	Topics in Musical Communities
MUSC 3353	Music and the Racial Imagination
MUSC 3354	Sound and the Sacred
MUSC 3355	Music, Noise, Silence
MUSC 3360	Ethnography and the Arts
MUSI 3210	Music Tourism
MUSI 3351	Music and Social Justice
MUSI 3360	Global Music Industries in Context
MUSI 3401	Hip Hop in the Music Industry

#### *Western Art Music*

Complete one of the following:

MUSC 1100	Topics in Western Music
MUSC 2105	Songs That Made History
MUSC 2312	Topics in Western Art Music
MUSC 2320	40,000 Years of Music Technology
MUSC 2340	Divas, DJs, and Double Standards
MUSC 2380	The World of Choral Music
MUSC 3352	Sounding Human

#### **Music Electives**

Complete two additional courses in music (MUSC, MUSI, or MUST). At least one must be at the 2000 level or higher.

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#### **Music Capstone**

Complete one of the following:

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MUSC 4651	Music Research Capstone
MUSI 4601	Seminar in Music Industry (available as long as prerequisites have been met)
MUST 4611	Music Technology Capstone (available as long as prerequisites have been met)

If a computer science capstone is taken, complete one additional course in music (MUSC, MUSI, or MUST) at the 2000 level or higher.

**Integrative Course**

Code	Title	Hours
Complete one of the following:		4
CS 2484	Principles of Human-Computer Interaction	
MUSC 2320	40,000 Years of Music Technology	
MUSC 3352	Sounding Human	
MUST 2431	Computer Music Fundamentals	

**Supporting Courses**

Code	Title	Hours
<b>Psychology Requirement</b>		
PSYC 1101	Foundations of Psychology	4
<b>Mathematics Requirement</b>		
MATH 1341	Calculus 1 for Science and Engineering	4
<b>Computing and Social Issues</b>		
Complete one of the following:		4
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	
DS 1300	Knowledge in a Digital World	
or PHIL 1300	Knowledge in a Digital World	
HIST 2220	History of Technology	
INSH 2102	Bostonography: The City through Data, Texts, Maps, and Networks	
JRNL 3700	Data Storytelling	
PHIL 1145	Technology and Human Values	
SOCL 1280	The Twenty-First-Century Workplace	
SOCL 2485	Environment, Technology, and Society	
SOCL 4528	Technology and Society	

**Writing Requirement**

Code	Title	Hours
<b>College Writing</b>		
ENGW 1111	First-Year Writing	4
<b>Advanced Writing in the Disciplines</b>		
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 24 semester hours of general electives.		24

**NUpath Requirements Satisfied**

- Advanced Writing in the Disciplines
- Analyzing and Using Data
- Conducting Formal and Quantitative Reasoning
- Demonstrating Thought and Action in a Capstone
- Engaging with the Natural and Designed World
- Understanding Societies and Institutions
- Writing in the First Year
- Writing-Intensive in the Major

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 Major Grade Requirement

Students must maintain at least a 2.667 GPA (B– average) in the requirements of the music half of the combined major. 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

129 total semester hours required

## Plan of Study

### Sample Plans of Study

#### 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 MUSC 1000		1 MUSC 1002 and MUSC 1003		4 CS 3200		4 General Elective	4
CS 1800 and CS 1802	5	CS 2100 and CS 2101	5	CS 3100 and CS 3101	5		
CS 2000 and CS 2001	5	MATH 1341	4				
ENGW 1111	4	MUSC 1201	4				
MUSC 1119 <sup>1</sup>	4	EEAM 2000 (For CAMD students)	1				
	19		18		9		4

##### Year 2

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 1210 (For Khoury students)	1	Co-op	0	Co-op	0	PSYC 1101	4
CS 3000	4					General Elective	4
Music in context elective 1	4						
Music in context elective 2	4						
Music theory elective	4						
	17		0		0		8

##### Year 3

Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Music in context elective 3	4	Co-op	0	Co-op	0	ENGW 3302, 3314, or 3315	4
CS 2484	4					General Elective	4
Khoury elective 1	4						
General Elective	4						
	16		0		0		8

##### Year 4

Fall	Hours	Spring	Hours
CS 4530 or 4535	4	MUSC 4651	4
Khoury elective 2	4	Computing and social issues	4
Music elective 1	4	Music elective 2	4
General Elective	4	General Elective	4
	16		16

**Total Hours: 131**

<sup>1</sup> Students who place out of Fundamentals of Western Music Theory (MUSC 1119) should take a General Elective instead.

**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 MUSC 1000		1 MUSC 1002 and MUSC 1003		4 CS 3200		4 General Elective	4
CS 1800 and CS 1802		5 CS 2100 and CS 2101		5 CS 3100 and CS 3101		5	
CS 2000 and CS 2001		5 MATH 1341		4			
ENGW 1111		4 MUSC 1201		4			
MUSC 1119 <sup>1</sup>		4 EEAM 2000 (For CAMD students)		1			
	19		18		9		4
Year 2							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
CS 3000		4 CS 1210 (For Khoury students)		1 PSYC 1101		4 Co-op	0
Music in context elective 1		4 CS 2484		4 General Elective		4	
Music in context elective 2		4 Music in context elective 3		4			
Music theory elective		4 General Elective		4			
		Khoury elective 1		4			
	16		17		8		0
Year 3							
Fall	Hours	Spring	Hours	Summer 1	Hours	Summer 2	Hours
Co-op		0 CS 4530 or 4535		4 ENGW 3302, 3314, or 3315		4 Co-op	0
		Khoury elective 2		4 General Elective		4	
		Music elective 1		4			
		General Elective		4			
	0		16		8		0
Year 4							
Fall	Hours	Spring	Hours				
Co-op		0 MUSC 4651		4			
		Computing and social issues		4			
		Music elective 2		4			
		General Elective		4			
	0		16				

**Total Hours: 131**<sup>1</sup> Students who place out of Fundamentals of Western Music Theory (MUSC 1119) should take a General Elective instead.