MUSIC AND SONIC ARTS

Cascade Campus
Morriarty Arts and Humanities Building (MAHB)
971-722-5338 or 971-722-5430
pcc.edu/programs/music-and-sonic-arts/

CAREER AND PROGRAM DESCRIPTION
The Music & Sonic Arts program at PCC’s Cascade Campus seeks students interested in contemporary, commercial music and students excited to explore the limits of what is technologically and artistically possible through the creation of new sounds, new instruments, and new methods of performance and composition.

In an environment that combines music, art, science, coding, and design, students develop tools that prepare them for leadership in artistic, technical, educational, entrepreneurial and research efforts.

In addition, students learn to value the contributions of people of diverse backgrounds and to imagine the important roles of music and technology in the advancement of equity and the creation of economically and culturally vibrant communities.

The Music and Sonic Arts program is located at the Cascade Campus. PCC offers stackable degree options in Music & Sonic Arts: a less than one-year Music & Sonic Arts Career Pathway Certificate as well as a two-year AAS Degree in Music & Sonic Arts. Additionally, PCC offers a certificate in Creative Coding & Immersive Technologies.

DEGREES AND CERTIFICATES OFFERED
ASSOCIATE OF APPLIED SCIENCE DEGREE
Music & Sonic Arts

LESS THAN ONE-YEAR: CAREER PATHWAY CERTIFICATE
Creative Coding & Immersive Technologies
Music & Sonic Arts

Academic Prerequisites
• None

Academic Requirements
• The following professional music courses will be required of all program students. All sequential courses must be taken and passed in sequence.

Non-Academic Prerequisites
• None

Non-Academic Requirements
• None

MUSIC & SONIC ARTS AAS DEGREE
Minimum 92 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of sixteen credits of General Education. Some courses specified within the program may be used as General Education. In addition to required courses in the program of study, students must satisfy MTH 58/65 competency. Students should consult with program advisors for course planning.

COURSE OF STUDY
The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term
MUC 101 Contemporary Music Theory I 3
MUC 120A Sight Singing and Ear Training I 1
MUC 130A Rhythm Training I 1
MUC 140A Group Piano I 2
MUC 223 Recording Technology I: Analog Fundamentals 3
MUS 216 or MUS 217 Introduction to the History of Hip Hop Music* or History of Electronic Music 4

Second Term
MUC 102 Contemporary Music Theory II 3
MUC 120B Sight Singing and Ear Training II 1
MUC 130B Rhythm Training II 1
MUC 140B Group Piano II 2
MUC 224 Recording Technology II: Signal Processing & Tracking 3
MUS 171 Music Technology: Record and Mix 3

Third Term
MUC 103 Contemporary Music Theory III 3
MUC 120C Sight Singing and Ear Training III 1
MUC 130C Rhythm Training III 1
MUC 140C Group Piano III 2
MUC 225 Recording Technology III: Running a Studio 3
MUS 172 Music Technology: Record, Remix and DJ 3

MUSIC & SONIC ARTS Ensemble Electives 2
Music and Sonic Arts Specialty Electives 4

Fourth Term
MUC 200A Composing and Arranging I: Principles and Techniques 3
MUC 201 Analog Modular Synthesis 3
MUC 270 Audio Programming I: Introduction to Max/MSP 4

Music and Sonic Arts Ensemble Electives 2
Music and Sonic Arts Specialty Electives 4

Fifth Term
MUC 200B Composing and Arranging II: Electronic Music Composition 3
Music and Sonic Arts Ensemble Electives 2
Music and Sonic Arts Music Electives 3
Music and Sonic Arts Specialty Electives 2
General Education 6

Sixth Term
MUC 200C Composition and Arranging III: Electronic Media Composition 3
Music and Sonic Arts Ensemble Electives 2
Music and Sonic Arts Music Electives 4
Music and Sonic Arts Specialty Electives 3
General Education 4

Total Credits 92

* Could be used as General Education.

MUSIC & SONIC ARTS ENSEMBLE ELECTIVES

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>MUC 115</td>
<td>Contemporary Singing I</td>
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<td>MUC 144</td>
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<td>MUC 144B</td>
<td>Contemporary Singing II</td>
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1
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MUS 220D
MUS 220C
MUS 220B
MUS 220A
MUS 216
MUS 217
MUS 220A
MUS 220B
MUS 220C
MUS 220D

MUC 131
MUC 272
MUC 273
MUC 274
MUC 275
MUC 276
MUC 277
MUC 278
MUC 282
MUC 111
MUC 112
MUC 113
MUC 131
MUC 216
MUC 217
MUC 220A
MUC 220B
MUC 220C
MUC 220D

MUC 154A
MUC 154B
MUC 154C
MUC 154D
MUC 154E
MUC 154F
MUC 154G
MUC 154H
MUC 154I
MUC 154J
MUC 154K
MUC 154L
MUC 154M
MUC 154N
MUC 154O
MUC 154P
MUC 154Q
MUC 154R
MUC 154S
MUC 154T
MUC 154U
MUC 154V
MUC 154W
MUC 154X
MUC 154Y
MUC 154Z

MUC 144A
MUC 144B
MUC 144C
MUC 144D
MUC 144E
MUC 144F
MUC 144G
MUC 144H
MUC 144I
MUC 144J
MUC 144K
MUC 144L
MUC 144M
MUC 144N
MUC 144O
MUC 144P
MUC 144Q
MUC 144R
MUC 144S
MUC 144T
MUC 144U
MUC 144V
MUC 144W
MUC 144X
MUC 144Y
MUC 144Z

MUC 131
MUC 272
MUC 273
MUC 274
MUC 275
MUC 276
MUC 277
MUC 278
MUC 282
MUC 111
MUC 112
MUC 113
MUC 131
MUC 216
MUC 217
MUC 220A
MUC 220B
MUC 220C
MUC 220D

MUC 274
MUC 275
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MUC 278
MUC 282
MUC 111
MUC 112
MUC 113
MUC 131
MUC 216
MUC 217
MUC 220A
MUC 220B
MUC 220C
MUC 220D

ART 101
ART 102
ART 103
ART 115
ART 116
ART 117
ART 119
ART 131A
ART 131B
ART 131C
ART 140A
ART 140B
ART 140C
ART 142A
ART 142B
ART 142C
ART 143A
ART 294C
ART 181A
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ART 181C
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ART 205
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ART 212
ART 213
ART 214
ART 215
ART 216
ART 217
ART 231A
ART 231B
ART 231C
ART 237A
ART 237B
ART 237C
ART 240A
ART 240B
ART 240C
ART 248A
ART 248B
MUSIC AND SONIC ARTS

ART 248C  Ceramic I
ART 253A  Ceramics I
ART 253B  Ceramics I
ART 253C  Ceramics I
ART 256A  Ceramics II
ART 256B  Ceramics II
ART 256C  Ceramics II
ART 270A  Printmaking I
ART 270B  Printmaking I
ART 270C  Printmaking I
ART 271A  Printmaking II
ART 271B  Printmaking II
ART 271C  Printmaking II
ART 277A  Life Painting
ART 277B  Life Painting
ART 277C  Life Painting
ART 279A  Experiment Media
ART 279B  Experiment Media
ART 279C  Experiment Media
ART 281A  Painting II
ART 281B  Painting II
ART 281C  Painting II
ART 284A  Water Media I
ART 290A  Sculpture: Plaster/Clay
ART 290B  Sculpture: Plaster/Clay
ART 290C  Sculpture: Plaster/Clay
ART 291A  Sculpture: Carving
ART 291B  Sculpture: Carving
ART 291C  Sculpture: Carving
ART 292A  Sculpture: Mixed Media
ART 292B  Sculpture: Mixed Media
ART 292C  Sculpture: Mixed Media
ART 293A  Figure Sculpture
ART 293B  Figure Sculpture
ART 293C  Figure Sculpture
ART 294A  Sculpture: Metals
ART 294B  Sculpture: Metals
CIS 122  Introduction to Programming Logic
CIS 133J  Java Programming I
CS 133U  C Programming
CIS 133W  JavaScript for Web Developers
CIS 135M  Mobile Application Programming for Android
CIS 135T  Introduction to Programming Logic
CIS 233J  Java Programming II
CS 233G  Game Programming
CIS 233W  JavaScript for Web Developers II
MM 110  Introduction to Multimdia
MM 120  Multimedia Design
MM 130  Multimedia Graphic Video and Audio Production
MM 140  Multimedia Authoring I
MM 142  Introduction to Augmented Reality
MM 220  Multimedia Design II
MM 232  3D Modeling and Animation
MM 233  3D Character Modeling and Animation
MM 234  Digital Video Editing and Production
MM 236  Video Compression and Streaming on the Internet
MM 237  Video Compositing and Effects
MM 239  Digital Video Edit/Post Production II
MM 246  Post-Production Sound for Video
MM 247  Field Sound for Video
MM 253  Intermediate Modeling and Texturing
MM 254  Character Rigging and Animation
MM 258  Video Compositing and Editing II
MM 260  Video Production I
MM 261  Video Production II
MM 262  Video Production III
MUC 236  Studio Recording Technology IV
MUC 237  Studio Recording Technology V
MUC 238  Studio Recording Technology VI
TA 101  Theatre Appreciation
TA 111  Fundamentals of Technical Theatre
TA 112  Introduction to Scenic Design
TA 113  Introduction to Stage Lighting
TA 116  Stagecraft
TA 141  Fundamentals of Acting Techniques
TA 142  Fundamentals of Acting Techniques
TA 143  Fundamentals of Acting Techniques
TA 144  Improvisational Theatre
TA 145  Acting for the Camera
TA 147  1
TA 148  1
TA 180A  Theater Rehearsal and Performance
TA 180B  Theater Rehearsal and Performance
TA 180C  Theater Rehearsal and Performance
TA 180D  Theater Rehearsal and Performance
TA 190A  Projects in Theatre 1A
TA 190B  Projects in Theatre 1B
TA 190C  Projects in Theatre
TA 227  Stage Make-up
TA 241  Intermediate Acting Technique
TA 244  Advanced Improvisation
TA 250A  Technical Theatre Production
TA 250B  Technical Theatre Production
TA 250C  Technical Theatre Production
TA 253A  Theatre Rehearsal and Performance
TA 253B  Theatre Rehearsal and Performance
TA 253C  Theatre Rehearsal and Performance
TA 261  Introduction to Costuming
TA 274  1

LESS THAN ONE-YEAR: CAREER PATHWAY CERTIFICATE
Creative Coding & Immersive Technologies (p. 3)
Music & Sonic Arts (p. 4)

CREATIVE CODING & IMMERSIVE TECHNOLOGIES: CAREER PATHWAY
Minimum 24 credits. Students must meet certificate requirements.
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CREATIVE CODING & IMMERSIVE TECHNOLOGIES COURSES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MUC 270</td>
<td>Audio Programming I: Introduction to Max/ MSP</td>
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<tr>
<td>MUC 271</td>
<td>Audio Programming II: Intermediate Max/ MSP</td>
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<tr>
<td>MUC 272</td>
<td>Creative Coding I</td>
<td>4</td>
</tr>
<tr>
<td>MUC 273</td>
<td>Programming Interactive Video</td>
<td>4</td>
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<tr>
<td>MUC 274</td>
<td>Microcontrollers for Artists</td>
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<tr>
<td>MUC 275</td>
<td>Creative Coding Capstone</td>
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Total Credits 24

MUSIC & SONIC ARTS HISTORY ELECTIVES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>MUC 126</td>
<td>Sound for Picture</td>
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<tr>
<td>MUC 127</td>
<td>Sound for Picture: Sound Design</td>
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<td>MUC 144</td>
<td>Contemporary Singing I</td>
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<td>MUC 144B</td>
<td>Contemporary Singing II</td>
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<td>MUC 144C</td>
<td>Contemporary Singing III</td>
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<tr>
<td>MUC 154A</td>
<td>Band Performance Workshop</td>
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<tr>
<td>MUC 154B</td>
<td>Band Performance Workshop</td>
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<tr>
<td>MUC 154C</td>
<td>Band Performance Workshop III</td>
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<tr>
<td>MUC 166</td>
<td>Songwriting and Music Publishing</td>
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<tr>
<td>MUC 170A</td>
<td>Intro to Ableton I: Art of Beat Making</td>
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<tr>
<td>MUC 170B</td>
<td>Intro to Ableton II: Analyze, Deconstruct, Rebuild</td>
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<tr>
<td>MUC 170C</td>
<td>Intro to Ableton III: Record, Produce, Perform</td>
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<tr>
<td>MUC 181</td>
<td>Music as a Career</td>
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<tr>
<td>MUC 202A</td>
<td>Ensemble I: Intro to Ensemble</td>
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<tr>
<td>MUC 202B</td>
<td>Ensemble II: Jazz Ensemble</td>
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<tr>
<td>MUC 202C</td>
<td>Ensemble III: Multimedia Ensemble</td>
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<tr>
<td>MUC 218</td>
<td>Digital Arts &amp; Equity</td>
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<td>MUC 225</td>
<td>Recording Technology III: Running a Studio</td>
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<td>MUC 233</td>
<td>Math in the Arts</td>
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<td>MUC 250</td>
<td>AI &amp; Machine Learning in the Arts</td>
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<tr>
<td>MUC 271</td>
<td>Audio Programming II: Intermediate Max/ MSP</td>
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<tr>
<td>MUC 272</td>
<td>Creative Coding I</td>
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<tr>
<td>MUC 273</td>
<td>Programming Interactive Video</td>
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<tr>
<td>MUC 274</td>
<td>Microcontrollers for Artists</td>
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<tr>
<td>MUC 275</td>
<td>Creative Coding Capstone</td>
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<tr>
<td>MUC 276</td>
<td>Microcontrollers II</td>
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<tr>
<td>MUC 278</td>
<td>Generative Art on the Web</td>
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<td>MUC 282</td>
<td>Creative Coding II</td>
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<tr>
<td>MUS 111</td>
<td>Music Theory I (part one)</td>
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<tr>
<td>MUS 112</td>
<td>Music Theory I (part two)</td>
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<tr>
<td>MUS 113</td>
<td>Music Theory I (part three)</td>
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<tr>
<td>MUS 131</td>
<td>Class Voice</td>
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<tr>
<td>MUS 216</td>
<td>Introduction to the History of Hip Hop Music</td>
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<tr>
<td>MUS 217</td>
<td>History of Electronic Music</td>
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<tr>
<td>MUS 220A</td>
<td>Concert Choir I</td>
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<tr>
<td>MUS 220B</td>
<td>Chorus</td>
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<td>MUS 220C</td>
<td>Chorus</td>
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<td>MUS 220D</td>
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<td>MUS 220F</td>
<td>Chorus</td>
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MUSIC & SONIC ARTS: CAREER PATHWAY CERTIFICATE

Minimum 43 credits. Students must meet certificate requirements.

COURSE OF STUDY

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>MUC 101</td>
<td>Contemporary Music Theory I</td>
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<tr>
<td>MUC 120A</td>
<td>Sight Singing and Ear Training I</td>
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<tr>
<td>MUC 130A</td>
<td>Rhythm Training I</td>
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<tr>
<td>MUC 140A</td>
<td>Group Piano I</td>
<td>2</td>
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<tr>
<td>MUC 223</td>
<td>Recording Technology I: Analog Fundamentals</td>
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<tr>
<td>MUS 170C</td>
<td>Music Technology: Beats and Basics</td>
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Music and Sonic Arts History Elective 3

Second Term

<table>
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<tbody>
<tr>
<td>MUC 102</td>
<td>Contemporary Music Theory II</td>
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<tr>
<td>MUC 120B</td>
<td>Sight Singing and Ear Training II</td>
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<tr>
<td>MUC 130B</td>
<td>Rhythm Training II</td>
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<tr>
<td>MUC 140B</td>
<td>Group Piano II</td>
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</tr>
<tr>
<td>MUC 224</td>
<td>Recording Technology II: Signal Processing &amp; Tracking</td>
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<tr>
<td>MUS 171C</td>
<td>Music Technology: Record and Mix</td>
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Third Term

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<tr>
<td>MUC 103</td>
<td>Contemporary Music Theory III</td>
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<tr>
<td>MUC 120C</td>
<td>Sight Singing and Ear Training III</td>
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<td>MUC 130C</td>
<td>Rhythm Training III</td>
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<tr>
<td>MUC 140C</td>
<td>Group Piano III</td>
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<tr>
<td>MUC 225</td>
<td>Recording Technology III: Running a Studio</td>
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<tr>
<td>MUS 172C</td>
<td>Music Technology: Record, Remix and DJ</td>
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Music and Sonic Arts Music Electives 1

Total Credits 43

MUSIC & SONIC ARTS HISTORY ELECTIVES

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<tr>
<td>MUS 205</td>
<td>Introduction to Jazz History *</td>
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<tr>
<td>MUS 206</td>
<td>Introduction to the History of Rock Music *</td>
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<tr>
<td>MUS 207</td>
<td>Introduction to the History of Folk Music</td>
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MUSIC & SONIC ARTS MUSIC ELECTIVES

Students may select from among the following courses to make up the number of credits required for the certificate. It is possible to concentrate on music writing or performance.
MUC 102. Contemporary Music Theory II. 3 Credits. Covers music theory as exhibited in contemporary musical styles such as jazz, blues, rock, hip hop, funk, electronic dance music, folk, etc. Includes harmonic function, 12-bar blues, non-chord tones, asymmetrical meter, modes, and applied (secondary dominant-functioning) chords. Includes basic music analysis focusing on diatonic and chromatic harmonies, lead sheet notation, and Roman numerals. Includes written composition. This is the second course in a three-course sequence. Prerequisite: MUC 101 or instructor permission. Audit available.

MUC 103. Contemporary Music Theory III. 3 Credits. Covers music theory as exhibited in contemporary musical styles such as jazz, blues, rock, hip hop, funk, electronic dance music, folk, etc. Includes chromatic chords, chords extensions, the Nashville Number System, and song forms. Includes music analysis focusing on structure, chromatic harmonies and alterations. Includes written composition that stresses craft and execution. This is the third course in a three-course sequence. Prerequisite: MUC 101 or instructor permission. Audit available.

MUC 120A. Sight Singing and Ear Training I. 1 Credit. Introduces the skills needed to sing notation at sight and to identify and notate aural examples. Includes meter, rhythm, intervals, the major scale, solfeggio and simple diatonic melodies. This is the first course in a three-course sequence. Recommended: concurrent enrollment in MUC 101, MUC 120A, and MUC 140A. Audit available.

MUC 120B. Sight Singing and Ear Training II. 1 Credit. Continues development of skills to sing notation at sight and to identify and notate aural examples. Includes the major and minor scales, solfeggio, triads, and simple diatonic melodies with combined rhythms. This is the second course in a three-course sequence. Prerequisite: MUC 120A or instructor approval. Audit available.

MUC 120C. Sight Singing and Ear Training III. 1 Credit. Continues development of skills to sing notation at sight and to identify and notate aural examples. Includes solfeggio, seventh chords, chromatic melodies, two-part rhythmic and melodic notation, and chord progressions. This is the third course in a three-course sequence. Prerequisite: MUC 120B or instructor permission. Audit available.

MUC 126. Sound for Picture. 4 Credits. Covers sound as exhibited in modern film and television productions of all genres. Includes sound design, foley walking, ADR recording, on-set recording, and soundtrack/score recording. Includes mixing, editing, and software skills training. This course is also offered as MM 126; a student who enrolls in this course a second time under either designator will be subject to the course repeat policy. Recommended: MUC 223. Audit available.

MUC 127. Sound for Picture: Sound Design. 4 Credits. Includes post-production dialog clean up, automated dialog replacement (ADR), foley, sound effects cues, environmental sounds, action cues, and score services. Covers advanced digital audio recording (DAW), editing, and mixing techniques on various industry standard DAW software workstations. Prerequisite: MM 126 or MUC 126. Audit available.

MUC 130A. Rhythm Training I. 1 Credit. Covers basic rhythmic theory, notation, and reading skills as well as rhythmic characteristics of different styles and genres. Includes simple and compound meter, dotted notes, basic usage of tuplets, swing rhythm, basic time signatures, and sight reading skills. This is the first course in a three-course sequence. Recommended: concurrent enrollment in MUC 101, MUC 120A, and MUC 140A. Audit available.

MUC 130B. Rhythm Training II. 1 Credit. Covers intermediate-level rhythmic theory, notation, and reading skills as well as specific rhythmic characteristics of different styles and genres from around the world. Includes odd meter, dotted notes, intermediate-level use of tuplets, regular and irregular metric phrasing, and sight reading skills. This is the second course in a three-course sequence. Prerequisite: MUC 130A or instructor permission. Audit available.

MUC 130C. Rhythm Training III. 1 Credit. Covers advanced-level rhythmic theory, notation, and reading skills as well as rhythmic theory from around the world. Includes the history of clave rhythm, polyrhythm, and polymeter, advanced-level usage of tuplets, advanced-level time signatures, and improved sight reading skills. This is the third course in a three-course sequence. Prerequisite: MUC 130B or instructor permission. Audit available.

MUC 140A. Group Piano I. 2 Credits. Introduces basic piano technique with correct observance of pitch, clef, meter, phrasing, and interpretation in a contemporary style. This is the first course in a three-course sequence. Recommended: concurrent enrollment in MUC 101, MUC 120A, and MUC 130A. Audit available.
MUC 208B. Composing and Arranging II: Electronic Music Composition. 3 Credits.
Covers sonic and compositional aspects of music technology. Includes the study of electronic music in the classical and popular music realms, and composition projects with the goal of creating a portfolio of original works. This is the second course in a three-course sequence. Prerequisite: MUC 200A. Audit available.

MUC 200C. Composition and Arranging III: Electronic Media Composition. 3 Credits.
Covers advanced electronic music composition. Includes intermediate to advanced applications in sequencing and scoring software; recording techniques as applied to film and multimedia; and the development of a portfolio of original works. This is the third course in a three-course sequence. Prerequisite: MUC 200B. Audit available.

MUC 201. Analog Modular Synthesis. 3 Credits.
Introduces theories and techniques for electronic music creation with analog and modular synthesizers. Prerequisites: (WR 115 and RD 115) or IRW 115 and MTH 20 or equivalent placement or instructor permission. Audit available.

MUC 202A. Ensemble I: Intro to Ensemble. 2 Credits.
Involves selection, rehearsals, and performances of twentieth and twenty-first century repertoire. Includes important works of the last century from a performance perspective and a deeper understanding of current trends in contemporary music. Develops skills in improvisation, analysis and interpretation, and communication skills between members. Open to performers of any instrument or voice type. Audit available.

MUC 202B. Ensemble II: Jazz Ensemble. 2 Credits.
Introduces a solid grounding in the style, performance, and theory of jazz in the 20th century. Covers a variety of jazz styles including but not limited to Latin, blues, ballads, rock and roll, and intersections with classical music traditions. Covers improvisation and techniques for performing in both small and large group settings. Audit available.

MUC 202C. Ensemble III: Multimedia Ensemble. 2 Credits.
Creates an experience of a progressive, flexible multimedia ensemble beyond the boundaries of a traditional ensemble class. Incorporates elements of other genres of artistic expression: dance, visual art, poetry, MIDI, and video. Involves collaboration with student composers for the purpose of premiering new works. Audit available.

MUC 218. Digital Arts & Equity. 4 Credits.
Covers the profound social, cultural, and economic influence of digital art creations, with particular attention to social justice and equity for people who have historically been oppressed. Recommended: Enrollment in a digital arts or related program: Music & Sonic Arts; Multimedia; or Creative Coding & Immersive Technologies. Prerequisites: (WR 115 and RD 115) or IRW 115 and MTH 20 or equivalent placement. Audit available.

MUC 223. Recording Technology I: Analog Fundamentals. 3 Credits.
Covers fundamental skills in audio engineering. Includes theory and practical application of current recording technology, with a focus on analog workflows. Introduces fundamental acoustics, microphone placement, multi-track recording, mix-down, and signal processing. Focuses on recording acoustic and electro-acoustic ensembles. This is the first course in a three-course sequence. Audit available.

MUC 224. Recording Technology II: Signal Processing & Tracking. 3 Credits.
Expands on the skills learned and practiced in MUC 223. Covers fundamentals of audio signal processing, stereo microphone techniques, tracking methodologies, and recording to magnetic tape recorders. Includes one completed recording. This is the second course in a three-course series. Prerequisite: MUC 223. Audit available.

MUC 225. Recording Technology III: Running a Studio. 3 Credits.
Presents specialized skills used in audio engineering and recording studio management. Explores running a mock business and running a recording studio within both management and engineering roles. Includes working on a digital audio recording and an experience with a hybrid digital/analog recording desk. Provides an opportunity to engineer and manage two recordings of peers’ music. This is the third course in a three-course series. Prerequisite: MUC 224. Audit available.

MUC 233. Math in the Arts. 4 Credits.
Covers mathematical concepts as they are used in visual, sonic, generative, interactive, and computational arts. Audit available.

MUC 236. Studio Recording Technology IV. 3 Credits.
Covers intermediate to advanced skills in audio engineering including a mixture of theory and practical application of current recording technology. Focuses on technology as a tool for creativity. Includes digital audio, mixing on DAWs, signal routing, time correction, troubleshooting, session organizing and professional skills. This is the fourth course in a six-course sequence. Prerequisites: MUC 225. Audit available.

MUC 237. Studio Recording Technology V. 3 Credits.
Covers intermediate to advanced skills in audio engineering including a mixture of theory and practical application of current recording technology. Focuses on technology as a tool for creativity. Includes digital audio, DAW anatomy, signal routing, DAW tracking, critical listening, and pitch correction. This is the fifth course in a six-course sequence. Prerequisite: MUC 236. Audit available.

MUC 238. Studio Recording Technology VI. 3 Credits.
Covers advanced skills in audio engineering including a mixture of theory and practical application of current recording technology. Incorporates technology as an artistic tool to overcome creative barriers. Includes session management, critical listening, mixing, professional skills, and projects. This is the sixth course in a six-course sequence. Prerequisite: MUC 237. Audit available.

MUC 250. AI & Machine Learning in the Arts I. 4 Credits.
Covers theories and frameworks related to computational or artificial creativity and approaches to endowing machines with creative behaviors. Involves examination of artificial intelligence (AI) and machine learning (ML) in connection with a comprehensive range of arts and creative enterprises such as musical composition and interpretation, sound design, video game creation, drawing, painting, image generation, writing, storytelling, poetry, and design-related tasks. Recommended: MUC 272. Prerequisite: (WR 115 and RD 115) or IRW 115 and MTH 20 or equivalent placement. Audit available.

MUC 270. Audio Programming I: Introduction to Max/MSP. 4 Credits.
Introduces visual programming language Max/MSP and the practice of creative coding for music and sound design. Recommended: basic familiarity with computers and digital audio workstations. Prerequisites: Placement into WR 90, RD 90 and MTH 20 or higher.

MUC 271. Audio Programming II: Intermediate Max/MSP. 4 Credits.
Introduces intermediate experience with the visual programming language Max/MSP and the practice of creative coding for music and sound design. Prerequisite: MUC 270.

MUC 272. Creative Coding I. 4 Credits.
Introduces industry-standard computer programming languages for creative purposes, such as immersive experiences and installations, generative graphics and sound, and interactive applications and environments. Prerequisite: (WR 115 and RD 115) or IRW 115 and MTH 20 or equivalent placement. Audit available.

MUC 273. Programming Interactive Video. 4 Credits.
Introduces live video processing, analysis, and programming. Uses Jitter and other tools to generate and process live interactive video experiences.

MUC 274. Microcontrollers for Artists. 4 Credits.
Introduces a variety of sensor and motion-tracking technologies and their application in the arts. Includes the design of new physical user interfaces for musicians, dancers, public spaces, galleries and commercial installations. Prerequisites: (WR 115 and RD 115) or IRW 115 and MTH 20 or equivalent placement. Audit available.

MUC 275. Creative Coding Capstone. 4 Credits.
Combines the skills gained in all five specialization courses in the creative coding curriculum in order to produce a single project. Culminates in a unique, large scale audiovisual project which takes the form of an audiovisual musical instrument, product prototype, new media event or installation/experience and will include original design and programming of all project elements. Prerequisites: MUC 270, MUC 271, MUC 272, MUC 273 and MUC 274, and (WR 115 and RD 115) or IRW 115 and MTH 20 or equivalent placement. Audit available.

MUC 277. Microcontrollers II. 4 Credits.
Provides intermediate-level experience with electronics, sensor hardware, and programming microcontrollers for applications in the arts and creative industries. Introduces user interface design concepts and physical fabrication techniques for artistic and commercial purposes. Prerequisite: MUC 274. Audit available.

MUC 278. Generative Art on the Web. 4 Credits.
Covers the foundational skills in web development (JavaScript, HTML, and CSS), through the use of high-level (easy-to-use) libraries for creating, ripping, modifying and deploying interactive art on the internet. Prerequisites: (WR 115 and RD 115) or IRW 115 and MTH 20 or equivalent placement. Audit available.
MUC 280A. Cooperative Education: Vocational Music. 1-3 Credit. Develops individual music performance, writing or recording skills in a department approved work setting. Department permission required. Corequisite: MUS 280B. Audit available.

MUC 282. Creative Coding II. 4 Credits. Provides intermediate-level computer programming for creative purposes, such as immersive experiences and installations, generative graphics and sound, and interactive applications and environments. Prerequisite: MUC 272. Audit available.