COURSES ARE SUBJECT TO REVISION AND FINAL APPROVAL.

MICROBIOLOGY AND PUBLIC HEALTH

895*. Seminar
Fall, Spring. 1(1-0) May reenroll for a maximum of 6 credits.
R: Graduate students

899*. Master's Thesis Research
Fall, Spring, Summer. 1 to 12 credits.
May reenroll for a maximum of 24 credits.
R: graduate students

899*. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 12 credits.
May reenroll for a maximum of 30 credits.
R: graduate students

MILITARY SCIENCE

101. Leadership: The Military Profession
Fall, Spring, Summer. 1(1-1)
Analysis of military profession from several academic perspectives. Technical, ethical, and personal ramifications of officership. Introduction to military leadership. Lab introduces military skills.

102. Leadership: Land Navigation
Fall, Spring. 1(1-1)
Military topographic and special maps: intersection, resection, modified resection, and polar coordinates. Tactical operations overlays. Preview of small unit leader's role in the Army. Lab: use of lenisomat compass.

201. Leadership Assessment Program, the Military Leader
Fall, Spring, Summer. 1(1-1)
Individual leadership development using standardized assessment technology. Administration, personal relations, and decision making. Military writing and professional obligations. Lab includes rappelling and marksmanship.

202. Leadership: First Aid/Traning
Fall, Spring, Summer. 1(1-1)
Emergency first aid including casualty evaluation, lifesaving measures, CPR, and environmental injury prevention. Leader's role in implementing Army Physical Fitness Program. Individual and group fitness programs. Lab: hands-on leadership training.

301. Leadership: Command and Control Communication
Fall, Spring, Summer. 3(3-2)
P: MS 202
Wire and radio communications for tactical operations. Encryption/decryption, use of codes, and electronic warfare. Theories and models of behavioral sciences for leadership. Lab emphasizes communication skills.

302. Leadership: Small Unit Tactics
Fall, Spring, Summer. 3(3-2)
P: MS 301
Military topographic and special maps: intersection, resection, modified resection, and polar coordinates. Tactical operations overlays. Preview of small unit leader's role in the Army. Lab: use of lenisomat compass.

401. Leadership: Management
Fall, Spring, Summer. 3(2-3)
P: MS 302
Army training personnel administration and logistics systems, and the leader's role as a trainer and effective manager. Oral and written communication. Leadership assessment and development. Lab: practical experience in unit administration.

402. Military Law, Ethics and Professionalism
Spring, Summer. 3(2-3)
P: MS 401

490. Independent Study in Military Science
Fall, Spring, Summer. 1 to 4 credits.
R: Open only to juniors and seniors. Approval of department. Individual research in areas related to military science.

MUSIC

112*. Chamber Music
Fall, Spring. 1(1-2) May reenroll for a maximum of 10 credits.
R: Audition required.
Rehearsal and performance of chamber music literature.

114*. Marching Band
Fall. 1(0-9) May reenroll for a maximum of 8 credits.
R: Audition required.
Rehearsal and performance of marching band literature at football games.

115*. Spartan Brass Spring. 1(0-2) May reenroll for a maximum of 8 credits.
R: Audition required.
Rehearsal and performance of brass literature at basketball and hockey games.

116. Campus Band
Fall, Spring. 1(0-3) May reenroll for a maximum of 10 credits.
Rehearsal and performance of band literature from baroque period to the present.

117*. Concert Band
Fall, Spring. 1(0-3) May reenroll for a maximum of 10 credits.
R: Audition required.
Rehearsal and performance of wind literature from various historical periods and styles.

118*. Wind Symphony
Fall, Spring. 1(0-5) May reenroll for a maximum of 10 credits.
R: Audition required.
Rehearsal and performance of broad range of wind literature from various periods and styles.

120*. Symphony Orchestra
Fall, Spring. 1(0-5) May reenroll for a maximum of 10 credits.
R: Audition required.
Rehearsal and performance of symphonic and operatic repertoire.

121*. Chamber Orchestra
Fall, Spring. 1(0-4) May reenroll for a maximum of 10 credits.
R: Audition required.
Rehearsal and performance of representative works of baroque, classic, and contemporary composers.

124*. Choral Union
Fall, Spring. 1(0-2) May reenroll for a maximum of 10 credits.
R: Audition required.
University and community chorus. One evening rehearsal per week, culminating in performance of a major work with orchestra.

125. Glee Club, Men and Women
Fall, Spring. 1(0-3) May reenroll for a maximum of 10 credits.
Rehearsal and performance of chamber music literature.

126*. State Singers
Fall, Spring. 1(0-4) May reenroll for a maximum of 10 credits.
R: Audition required.
Mixed choir performing music from all periods.

127*. University Chorale
Fall, Spring. 1(0-4) May reenroll for a maximum of 10 credits.
R: Audition required.
Mixed chamber choir for experienced singers performing representative literature from all periods.

129*. Percussion Ensemble
Fall, Spring. 1(0-5) May reenroll for a maximum of 10 credits.
R: Audition required.
Rehearsal and performance of representative works for percussion and mallet ensembles.

130*. Jazz Band
Fall, Spring. 1(0-4) May reenroll for a maximum of 10 credits.
R: Audition required.
Rehearsal and performance in large jazz ensemble. Literature from classic bands of Ellington and Basie to contemporary composers.
131*: Jazz Combo
Fall, Spring. 1(1-2) May reenroll for a maximum of 10 credits. R: Audition required. Rehearsal and performance in small jazz ensembles. Literature from all historical periods of jazz. QA: MUS 156

135*: Music in Elementary Education
Fall, Spring. 3(2-2) R: ALL ELEMENTARY EDUCATION AND CHILD DEVELOPMENT MAJORS A study of the aural elements of music. How elementary pupils and classroom teachers perceive, sort, and classify musical sounds as encountered in selected genre and styles of musical art. QP: MUS 156

141*: Class Instruction in Piano I
Fall, Spring. 1(1-1) R: Open only to students in School of Music. Use of the piano as a teaching tool. QP: NOTATION QA: MUS 142G

142*: Class Instruction in Piano II
Spring. 1(1-1) R: MUS 141. R: Open only to students in School of Music. Use of the piano as a teaching tool. QP: MUS 141G QA: MUS 142G MUS 143G

143*: Class Instruction in Voice I: Music Majors
Fall. 1(1-1) C: MUS 151 R: Open only to students in School of Music with an emphasis in voice. Italian lyric diction. Rules of pronunciation. Performance of English language songs in class. QA: MUS 141F

144*: Class Instruction in Voice II: Music Majors
Spring. 1(1-1) P: MUS 143. C: MUS 151 R: Open only to students in School of Music with an emphasis in voice. Italian lyric diction. Rules of pronunciation. Performance of Italian language songs in class. QA: MUS 141F QA: MUS 142G MUS 143F

145*: Class Instruction in Voice I
Fall. 1(1-1) R: Not open to students in School of Music with an emphasis in voice. Rules of pronunciation. Vocal techniques. QA: MUS 141F

146*: Class Instruction in Voice II
Spring. 1(1-1) P: MUS 145. R: Not open to students in School of Music with an emphasis in voice. Vocal techniques and exploration of vocal literature. QA: MUS 141F QA: MUS 142G MUS 143F

147*: Class Instruction in Elementary Piano I
Fall, Spring. 2(2-1) R: Not open to students in School of Music. Basic notation, performance, improvisation, and transposition. Repertoire includes folksongs, simple classics, and blues. QA: MUS 147

148*: Class Instruction in Elementary Piano II
Fall, Spring. 2(2-1) P: MUS 147. R: Not open to students in School of Music. Basic notation, performance, improvisation, and transposition. Repertoire includes folksongs, simple classics, and blues. QA: MUS 147 QA: MUS 148

149*: Keyboard Skills
Fall, Spring. 1(0-2) May reenroll for a maximum of 4 credits. R: Open only to students in School of Music. Sight-reading, transposing, figured bass, keyboard harmony, and accompanying instrumentalists and vocalists. QA: MUS 156

150*: Piano
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits. R: Open only to students in School of Music. Audition required. Private instruction in piano. QA: MUS 150A

150B*: Pipe Organ
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Open only to students in School of Music. Audition required. Private instruction in pipe organ. QA: MUS 150B

150C*: Harp
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Open only to students in School of Music. Audition required. Private instruction in harp. QA: MUS 150C

151*: Voice
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 12 credits. R: Open only to students in School of Music and students in Music secondary teaching minor. Audition required. Private instruction in voice. QA: MUS 151

152A*: Violin
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in violin. QA: MUS 152A

152B*: Viola
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in viola. QA: MUS 152B

152C*: Cello
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in cello. QA: MUS 152C

152D*: Double Bass
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in double bass. QA: MUS 152D

153A*: Flute
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in flute. QA: MUS 153A

153B*: Oboe
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in oboe. QA: MUS 153B

153C*: Clarinet
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in clarinet. QA: MUS 153C

153D*: Saxophone
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in saxophone. QA: MUS 153D

153E*: Bassoon
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in bassoon. QA: MUS 153E

154A*: Trumpet
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in trumpet. QA: MUS 154A

154B*: Horn
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in horn. QA: MUS 154B

154C*: Trombone
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in trombone. QA: MUS 154C

154D*: Euphonium
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in euphonium. QA: MUS 154D

154E*: Tuba
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in tuba. QA: MUS 154E

155*: Percussion Instruments
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 16 credits. R: Audition required. Private instruction in percussion instruments. QA: MUS 155

160*: Class Instruction in Guitar
Fall. 1(1-0) R: Open only to students in Music Therapy and to other students in School of Music with a teacher certification option. Chording, strumming and finger picking techniques. Accompanying and song leading with guitar. Reading of notation and tablature. Classical and popular styles. QA: MUS 141J

161*: Class Instruction in Stringed Instruments
Spring. 2(2-2) R: Open only to students in Music Therapy and to other students in School of Music with a teacher certification option. Techniques for playing and teaching stringed instruments. QA: MUS 141A MUS 142A

Courses with an asterisk (*) have not been approved by the University Committee on Curriculum.
162. **Class Instruction in Flute and Saxophone**
Spring, Fall (2-0)  
R: Open only to students in School of Music with a teacher certification option.  
Techniques for playing and teaching flute and saxophone.  
QA: MUS 143D MUS 141D

163. **Class Instruction in Clarinet**
Fall (1-0-2)  
R: Open only to students in School of Music with a teacher certification option.  
Techniques for playing and teaching clarinet.  
QA: MUS 143A

164. **Class Instruction in Double Reed Instruments**
Spring (1-0-2)  
R: Open only to students in School of Music with a teacher certification option.  
Techniques for playing and teaching oboe and bassoon.  
QA: MUS 142D MUS 141E

165. **Class Instruction in Trombone**
Fall (1-0-2)  
R: Open only to students in School of Music with a teacher certification option.  
Techniques for playing and teaching trombone and horn.  
QA: MUS 141C MUS 142B

166. **Class Instruction in Percussion Instruments**
Fall (2-1-2)  
R: Open only to students in School of Music and to other students in School of Music with a teacher certification option.  
Techniques for playing and teaching percussion instruments.  
QA: MUS 141B MUS 143C

190. **Fundamentals of Music**
Fall (2-2-1)  
Conceptual and notational presentation of the basic components of musical structure. No previous familiarity with music is assumed.  
QA: MUS 180

181. **Musicianship I**
Spring (3-3-1)  
P: MUS 180.  
Hierarchical musical structure through species counterpoint and figured bass. Linear and vertical aspects of tonality.  
QA: MUS 180 QA: MUS 181 MUS 182

182. **Ear Training and Sight Singing I**
Fall (1-1-1)  
Diction, melody singing using solfège (movable do) syllables, intervals to octave, error detection, quarter note values in rhythm, part singing.  
QA: MUS 183

183. **Ear Training and Sight Singing II**
Spring (1-1-1)  
P: MUS 182.  
Diction, singing melodies in major and minor keys. Simple modulation, chromatic alteration, error detection, rhythm, triads and components, part singing.  
QA: MUS 183 QA: MUS 184 MUS 185

200. **Basic Keyboard Tuning: Theory and Practice I**
Fall (2-2-0)  
P: MUS 181, MUS 182 or concurrently.  
R: Not open to freshmen.  
Acoustics of intervals. Historical development of music scales and tuning systems. Classical and modern methods of keyboard tuning.  
QA: MUS 185 QA: MUS 208

209. **Basic Keyboard Tuning: Theory and Practice II**
Spring (2-2-0)  
P: MUS 208. R: Not open to freshmen.  
Acoustics of intervals. Historical development of music scales and tuning systems. Classical and modern methods of keyboard tuning.  
QA: MUS 208 QA: MUS 210

211. **History of Western Music to 1750**
Fall (3-0)  
P: MUS 181. R: Not open to freshmen.  
Open only to students in School of Music.  
Music from ancient Greece through the Baroque. Literature and theory of plainsong, instrumental and vocal traditions, and vocal polyphony before 1750 in sociopolitical context.  
QA: MUS 182 QA: MUS 224

212. **History of Western Music Since 1750**
Spring (3-0)  
P: MUS 211. R: Not open to freshmen.  
Open only to students in School of Music.  
Literature of the cultivated tradition and its theory in sociopolitical context.  
QA: MUS 224 QA: MUS 225 MUS 226

230. **Beginning Jazz Improvisation I**
Fall (2-2-0)  
P: MUS 181. R: Not open to freshmen.  
Keys, modes, chord progressions as improvisational tools. Blues forms in basic keys. Aural transcription of recorded solos.  
QA: MUS 182 QA: MUS 231

231. **Beginning Jazz Improvisation II**
Spring (2-2-0)  
P: MUS 230. R: Not open to freshmen.  
Performance of complex tunes using I-V-I progressions in all major and minor keys. Transcription of recorded jazz solos.  
QA: MUS 231 QA: MUS 232

241. **Advanced Class Instruction in Piano I**
Fall (1-1-1)  
P: MUS 142. R: Not open to freshmen.  
Open only to students in School of Music with an emphasis in piano.  
Use of the piano as a teaching tool in school music.  
QA: MUS 143G QA: MUS 241

242. **Advanced Class Instruction in Piano II**
Spring (1-1-1)  
P: MUS 241. R: Not open to freshmen.  
Open only to students in School of Music with an emphasis in piano.  
Use of the piano as a teaching tool in school music.  
QA: MUS 241 QA: MUS 242

245. **Music in Special Education**
Fall (2-2-0)  
P: CEP 460 R: Sophomore or above education  
Method of using music experiences in the educational, social, emotional and physical development of students with special needs.  
QA: MUS 135 QA: MUS 245

246. **German Diction for Singers**
Fall (1-1-1)  
P: Music 161. R: Open only to students in School of Music.  
German lyric diction. Rules of pronunciation. Performance of German art songs in class.  
QA: MUS 151 QA: MUS 251

249. **French Diction for Singers**
Spring (1-1-1)  
P: MUS 151. R: Open only to students in School of Music.  
QA: MUS 252

260. **Introduction to School Music**
Fall, Spring (2-2-1)  
R: Sophomores and above. Arts and Letters and College of Education. Music Education major, secondary education maj. w/music minor.  
School music, study and discussion of historical foundations, current trends, and teaching responsibilities at all curricular levels.  
QA: MUS 250

270. **Music Therapy: Foundations and Principles**
Fall (3-0)  
R: Not open to freshmen.  
History, philosophy and scope of the practice of music therapy. Use of music in treating people with special needs. Field trips required.

271. **Music Therapy: Instrumental, Vocal and Movement Techniques**
Spring (3-3-0)  
P: MUS 270. R: Not open to freshmen.  
Creative and expressive techniques involving percussion instruments, autoharp, handchimes, song leading, creative movement, folk dance.  
QA: MUS 450

280. **Musicianship II**
Fall (3-3-1)  
P: MUS 181.  
Techniques of diatonic modulation and soprano harmonization. Choral conducting.  
QA: MUS 182 QA: MUS 280

281. **Musicianship III**
Spring (3-3-1)  
P: MUS 280.  
Research base for formal categorization. Large-scale principles of musical organization. Chromatic substitution and chords derived from voice-leading.  
QA: MUS 280 QA: MUS 281 MUS 282

282. **Advanced Ear Training and Sight Singing**
Fall (1-1-1)  
P: MUS 183.  
Diction including recognition of triads, functions, cadences, seventh-chord harmonies, chord components. Two-and four-part diction and singing.  
QA: MUS 185 QA: MUS 283

283. **Advanced Ear Training and Sight Singing II**
Spring (1-1-1)  
P: MUS 282.  
Recognition of harmonic functions in major keys, minor keys, and modulations. Diction in two-and four-part textures including augmented-sixth chords and nonharmonic tones.  
QA: MUS 283 QA: MUS 284 MUS 285

290. **Independent Study**
Fall, Spring, Summer. 1 to 3 credits. May enroll for a maximum of 9 credits.  
R: Approval of the School Committee on Curriculum.
Courses are subject to revision and final approval.

**MUSIC**

308*. Advanced Keyboard Tuning: Theory and Practice I
Fall, 2(2-2)
P: MUS 209. R: Not open to freshmen and sophomores.
QP: MUS 210 QA: MUS 308

309*. Advanced Keyboard Tuning: Theory and Practice II
Spring, 3(2-2)
P: MUS 308. R: Not open to freshmen and sophomores.
QP: MUS 309 QA: MUS 310

330*. Advanced Jazz Improvisation I
Fall, 2(2-2)
P: MUS 331. R: Not open to freshmen and sophomores.
Secondary dominants, borrowed chords, and tri-tone substitution. Transcription of recorded jazz solos.
QP: MUS 333 QA: MUS 331

331*. Advanced Jazz Improvisation II
Spring, 2(2-2)
P: MUS 330. R: Not open to freshmen and sophomores.
Pentatonic scale relationships within II-V-I progressions. Aleatoric approaches to improvisation. Non-traditional chord progressions. Transcription of recorded jazz solos.
QP: MUS 331 QA: MUS 332 MUS 333

335*. Ensemble Conducting I
Fall, 2(2-2)
P: MUS 181 R: Not open to freshmen and sophomores Arts and Letters and College of Education, Music, Secondary Education majors with Music minor, Theatre
Introduction to conducting and rehearsal techniques.
QA: MUS 335

336*. Ensemble Conducting II
Spring, 2(2-2)
Advanced conducting and rehearsal techniques as applied to music literature from each of the stylistic periods.
QP: MUS 335 QA: MUS 336

337*. Conducting for Music Performance Majors
Fall, Spring, 1(1-1)
R: Open only to Music Performance majors.
Beat patterns, clefs, and transpositions of string, wind, and percussion instruments. Score reading and analysis. Rehearsal techniques.
QA: MUS 438

339*. Instructional Techniques and Management Skills for Teaching School Music
Spring, 3(2-2) Interdisciplinary with the Department(s) of Teacher Education.
P: MUS 260 R: Junior level and above
Music Education Music Education minors
Techniques for developing instructional and management skills for teaching school music. Campus and off-campus clinical experiences are required.
QP: MUS 350 QA: MUS 350

340*. Methods and Literature for Voice
Fall, 3(3-0)
P: Four semesters of MUS 151. R: Open only to majors in School of Music.
Methods of teaching voice. Literature for both private lessons and classroom.
QP: MUS 151 QA: MUS 347

341*. String Pedagogy
Spring, 2(2-1)
R: Open only to majors in School of Music.
Principles, techniques, and materials for teaching stringed instruments.
QA: MUS 349

346*. Keyboard Methods and Literature I
Fall, 2(2-0)
P: Four semesters of MUS 150A. R: Open only to majors in School of Music.
Beginning and intermediate methods and literature for teaching piano. Observation and teaching of beginning piano students.
QA: MUS 347

347*. Keyboard Methods and Literature II
Spring, 2(2-0)
P: MUS 346. R: Open only to majors in School of Music.
Intermediate and advanced methods and literature for teaching piano. Observation and teaching of piano students.
QA: MUS 348 QA: MUS 349

348*. Piano Accompaniment
Fall, Spring, 1(0-3)
May reenroll for a maximum of 3 credits.
P: MUS 149. R: Not open to freshmen. Open only to students in School of Music.
Accompaniment of instrumental and vocal soloists.
QA: MUS 357

349*. Piano Performance
Fall, Spring, 1(1-0) May reenroll for a maximum of 10 credits.
C: MUS 150A or MUS 350A R: Open only to students in School of Music.
Critique and analysis of individual performances in a group setting.

350A*. Piano
Fall, Spring, 2 to 3 credits.
R: MUS 150A R: Open only to majors in School of Music, approval of school.
Private instruction in piano.
QP: MUS 150A QA: MUS 350A

350B*. Pipe Organ
Fall, Spring, 1 to 3 credits.
R: MUS 150B R: Open only to majors in School of Music, approval of school.
Private instruction in pipe organ.
QP: MUS 150B QA: MUS 350B

350C*. Harp
Fall, Spring, 1 to 3 credits.
R: MUS 150C R: Open only to majors in School of Music, approval of school.
Private instruction in harp.
QP: MUS 150C QA: MUS 350C

351*. Voice
Fall, Spring, 1 to 3 credits.
R: MUS 151. R: Open only to majors in School of Music and to students in Music secondary teaching minor, approval of school.
Private instruction in voice.
QP: MUS 151 QA: MUS 351

352A*. Violin
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 152A R: Open only to majors in School of Music, approval of school.
Private instruction in violin.
QP: MUS 152A QA: MUS 352A

352B*. Viola
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 152B R: Open only to majors in School of Music, approval of school.
Private instruction in viola.
QP: MUS 152B QA: MUS 352B

353C*. Cello
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 153C. R: Open only to majors in School of Music, approval of school.
Private instruction in cello.
QP: MUS 153C QA: MUS 353C

353D*. Double Bass
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 153D. R: Open only to majors in School of Music, approval of school.
Private instruction in double bass.
QP: MUS 153D QA: MUS 353D

353A*. Flute
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 153A. R: Open only to majors in School of Music, approval of school.
Private instruction in flute.
QP: MUS 153A QA: MUS 353A

353B*. Oboe
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 153B. R: Open only to majors in School of Music, approval of school.
Private instruction in oboe.
QP: MUS 153B QA: MUS 353B

353C*. Clarinet
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 153C. R: Open only to majors in School of Music, approval of school.
Private instruction in clarinet.
QP: MUS 153C QA: MUS 353C

353D*. Saxophone
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 153D. R: Open only to majors in School of Music, approval of school.
Private instruction in saxophone.
QP: MUS 153D QA: MUS 353D

353E*. Bassoon
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 153E. R: Open only to majors in School of Music, approval of school.
Private instruction in bassoon.
QP: MUS 153E QA: MUS 353E

354A*. Trumpet
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 154A. R: Open only to majors in School of Music, approval of school.
Private instruction in trumpet.
QP: MUS 154A QA: MUS 354A

354B*. Horn
Fall, Spring, 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 154B. R: Open only to majors in School of Music, approval of school.
Private instruction in horn.
QP: MUS 154B QA: MUS 354B

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MUSIC

354C*. Trombone
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 154C. R: Open only to majors in School of Music, approval of school.
Private instruction in trombone.
QP: MUS 154C QA: MUS 354C

354D*. Euphonium
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 154D. R: Open only to majors in School of Music, approval of school.
Private instruction in euphonium.
QP: MUS 154D QA: MUS 354D

354E*. Tuba
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 154E. R: Open only to majors in School of Music, approval of school.
Private instruction in tuba.
QP: MUS 154E QA: MUS 354E

355P. Percussion
Fall, Spring. 1 to 4 credits. May reenroll for a maximum of 24 credits.
P: MUS 155. R: Open only to majors in School of Music, approval of school.
Private instruction in percussion.
QP: MUS 155 QA: MUS 355

371P. Music Therapy: Behavior Measurement and Assessment
Fall, Spring. 3 credits.
P: MUS 270. R: Open only to Music Therapy majors.
QA: MUS 400

371W. Music Therapy: Treatment Planning and Case Management
Spring. 3 credits.
P: MUS 370 R: Open only to Music Therapy majors.

380P. Musical Styles and Forms
Fall. 3 credits.
P: MUS 281. R: Open only to majors in School of Music.
Form in pre-20th century Western music. Stylized analysis of representative medieval, renaissance, baroque, and 18th and 19th century compositions.
QP: MUS 282 QA: MUS 380

381P. 20th Century Music Theory
Spring. 3 credits.
P: MUS 380.
Western art music and jazz. Stylistic and formal analysis of representative compositions and jazz improvisations. Post-tonal theory. Jazz nomenclature and harmonic practice.
QP: MUS 381 QA: MUS 282 MUS 283

408P. Piano Technology I
Fall. 3 credits.
P: MUS 309. R: Open only to majors in School of Music.
Restoring the original tone of old pianos. Repairing or replacing all worn parts. Advanced concert tuning and tone regulation.
QP: MUS 310 QA: MUS 408

409P. Piano Technology II
Spring. 3 credits.
P: MUS 408. R: Open only to majors in School of Music.
Restoring the original tone of old pianos. Repairing or replacing all worn parts. Advanced concert tuning and tone regulation.
QP: MUS 408 QA: MUS 409 MUS 410

412P. History of Oratorio
Spring of even-numbered years. 2 credits.
P: MUS 211. R: Open only to majors in School of Music.
History and literature of oratorio since 1600.
QP: MUS 226 QA: MUS 412

413P. Keyboard Literature to Mid-19th Century
Fall of even-numbered years. 2 credits.
P: MUS 281. R: Open only to majors in School of Music.
Keyboard styles and works of representative composers such as Bach, Couperin, Mozart, Haydn and Beethoven.
QP: MUS 182 QA: MUS 415C

414W. Keyboard Literature since the Mid-19th Century
Spring of odd-numbered years. 2 credits.
P: MUS 413. R: Open only to majors in School of Music.
Keyboard styles and works of representative composers such as Schumann, Chopin, Ives and Prokofiev.
QP: MUS 282 QA: MUS 416C MUS 417C

415P. Art Song Literature: German
Fall of odd-numbered years. 2 credits.
P: MUS 181. R: Open only to majors in School of Music.
Standard art song repertoire with emphasis on German Lieder. Performance of art songs in class.
QP: MUS 182 QA: MUS 415E

416P. Art Song Literature: European and American
Spring of odd-numbered years. 2 credits.
P: MUS 181. R: Open only to majors in School of Music.
Standard art song repertoire with emphasis on Italian, French, and 20th century art songs. Performance of art songs in class.
QP: MUS 182 QA: MUS 416E

420P. Music of the Eighteenth Century
Fall.
P: MUS 212 R: Not open to freshmen or sophomores. Music only
Music of late baroque and classical traditions: styles, genres, forms, theories, aesthetics, performance practices, instruments and masterworks in social/political context. Aural and score analysis of representative works.
QP: MUS 182 QA: MUS 417A

421P. Nineteenth-Century European-American Music Literature
Spring.
P: MUS 212 R: Not open to freshmen or sophomores. Music only
Music of late baroque and Classical traditions: styles, genres, forms, theories, aesthetics, performance practices, instruments and masterworks in social/political context. Aural and score analysis of representative works.
QP: MUS 182 QA: MUS 415B

428P. Twentieth-Century European and American Music Literature
Spring.
P: MUS 212 R: Not open to freshmen and sophomores. Music only
Music of late baroque and classical traditions: styles, genres, forms, theories, aesthetics, performance practices, instruments and masterworks in social/political context. Aural and score analysis of representative works.
QP: MUS 182 QA: MUS 416B

423P. History of Opera
Fall of odd-numbered years. 2 credits.
P: MUS 212. R: Open only to majors in School of Music.
Musical, cultural, and social significance of opera since 1600.
QP: MUS 226 QA: MUS 411

427P. Music of Asia, the Pacific, and the Near East
Fall.
P: MUS 212 R: Open only to majors in School of Music.
Music in the cultures of the Asian continent and Pacific islands. Techniques of ethnomusicology, listening and analysis.
QP: MUS 226

428P. Music of Africa, Europe, and the Americas
Spring.
P: MUS 212. R: Open only to majors in School of Music.
Music in the cultures of Africa, Europe, and the Americas with emphasis on folk and vernacular traditions. Techniques of ethnomusicology, listening and analysis.
QP: MUS 226

435P. Opera Theatre
Fall, Spring. 1 to 2 credits. May reenroll for a maximum of 2 credits.
P: Audition required.
Rehearsal and performance of complete operas and operetta excerpts.
QA: MUS 496

440P. Electronic and Computer Music Literature
Fall.
P: MUS 281. R: Not open to freshmen and sophomores. Music literature composed with tape recorders, synthesizers and computers.
QP: MUS 392 QA: MUS 439

441P. Introduction to Computer Music
Fall.
P: MUS 281. R: Not open to freshmen.
QP: MUS 392 QA: MUS 440

448P. Independent Projects in Computer Music
Fall, Spring. 1 to 2 credits. May reenroll for a maximum of 2 credits.
Independent composition or research in computer music. Assigned use of computer music studios.
QP: MUS 441 QA: MUS 442

449P. Advanced Keyboard Methods and Literature I
Fall.
P: MUS 374. R: Open only to majors in School of Music.
Advanced piano literature for private lessons and classrooms.
QA: MUS 462

457P. Teaching Instrumental Music in the Elementary School
Spring.
P: MUS 260 MUS 339 MUS 425 MUS 426 R: Senior level and above Music Education Education majors.
Techniques for developing instrumental music programs in grades 4-8. Topics include curriculum, pedagogy, materials, and administration. Clinical experiences in the schools required.
QP: MUS 380 QA: TE 320

Courses are subject to revision and final approval.
Courses are subject to revision and final approval.

MUSIC

458*. Teaching Instrumental Music in the Secondary School
Spring. 3(2-2) Interdisciplinary with the Department(s) of Teacher Education.
P: MUS 260, MUS 339 R: Senior level and above; Music Education Minor Techniques for developing choral music programs in grades 7-12. Topics include curriculum, pedagogy, materials, and administration. Clinical experiences in schools required.
QP: MUS 250 QA: TE 335

460*. Computers in School Music
Fall. 2/2-1
R: Not open to Freshman and Sophomores
Arts and Letters Education minors
College of Education Music Education minors
Techniques and principles of computer assistance in instruction of music in school programs. Emphasis on appropriate software and hardware for teaching and management.
QP: MUS 431

461*. Marching Band Methods
Spring. 2/2-0
R: Not open to Freshman and Sophomores
Arts and Letters Music Education secondary education minors
Complete administration of the public school marching band. Technical and philosophical characteristics.
QP: MUS 490

462*. Suzuki Methods and Materials
Spring. 2/2-0
R: Open only to majors in School of Music.
Beginning levels of Suzuki violin pedagogy.

463*. Methods and Materials of Elementary Music I
Fall. Spring. 2/2-0
P: MUS 135 or waiver R: Junior level and above Education, Family and Child Ecology
Comprehensive and practical understanding of how children learn music from early childhood to grade three.
QP: MUS 135

464*. Methods and Materials of Elementary Music II
Spring. 2/2-0
P: MUS 463 R: Junior level and above Education, Family and Child Ecology
A comprehensive and practical understanding of how children in grades 4-6 learn music.
QP: MUS 135 QA: MUS 345

465*. Music in Early Childhood
Fall. Spring. 2/2-0
P: Music 260 R: Not open to freshmen and sophomores
Arts and Letters, College of Education
Music Education minors
Experience in planning music learning activities and teaching strategies for children of ages three to six.
QP: MUS 293

466*. Literature for Teaching General Music
Spring. 2/2-1
P: TE 401 and 402 R: Seniors, Arts and Letters, Music Education, Fine Arts minors (College of ED)
Musical materials for listening and performance in general music classes, K-8, composed music from various styles, folk music, and music of diverse cultures.
QP: TE 321 TE 335E TE 366 MUS 345 QA: MUS 494

477*. Psychology of Music: Research Applications
Spring. 2/2-0 Interdisciplinary with the Department(s) of Psychology.
P: MUS 476 R: Not open to freshmen or sophomores
Experimental research proposal writing, research projects using human subjects, applying selected statistical procedures on the results.
QP: PSY 496 QA: PSY 487

480*. Counterpoint
Fall, Spring. 2/2-0
P: MUS 381 R: Open only to majors in School of Music.
Creative and analytical work with two- and three-part counterpoint in the style of J.S. Bach.
QP: MUS 365 MUS 367 MUS 368

483*. Composition
Fall, Spring. 2/2-0 May reenroll for a maximum of 12 credits.
P: MUS 281 R: Open only to majors in School of Music.
Private instruction in music composition.
QP: MUS 282 QA: MUS 483

494*. Instrumentation and Basic Orchestration
Fall. 2/2-0
P: MUS 351 R: Open only to majors in School of Music.
Four families of orchestral instruments: strings, woodwinds, brass, and percussion. Acoustics, notation, range, articulation, dynamics, technique, and timbre for individual instruments and orchestral sections.
QP: MUS 355 QA: MUS 383

495*. Advanced Orchestration
Fall. 2/2-0
P: MUS 494 R: Open only to majors in School of Music.
Transcription techniques. Orchestral devices and styles. Additional percussion material, harp, and auxiliary instruments.
QP: MUS 383 QA: MUS 384 MUS 385

499*. Independent Study
Fall, Spring, Summer. 1 to 3 credits.
May reenroll for a maximum of 9 credits.
R: Approval of the School
Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.
QP: MUS 499

491*. Special Topics in Music
Fall, Spring, Summer. 1 to 4 credits.
May reenroll for a maximum of 10 credits.
R: Approval of the School
Special topics supplementing regular course offerings proposed by faculty on a group study basis.
QP: MUS 499

503*. Medieval Music
Fall, Spring. 2/2-0
P: MUS 830 recommended.
Investigation of various developments in European music to 1400. Some attention given to Gregorian chant as well as to various types of ecclesiastical monophony, but greater stress is laid on the forms and styles of polyphonic music.
QP: MUS 824 MUS 225 MUS 824 QA: MUS 915

Courses with an asterisk (*) have not been approved by the University Committee on Curriculum.

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Descriptions of Courses

Courses are subject to revision and final approval.

MUSIC

836* Renaissance Music
Spring. (3-3) P: MUS 830 recommended.
Investigation of developments in European music from 1400 to 1600, tracing developments in both sacred and secular music.
Q: MUS 824 MUS 226 MUS 824 QA: MUS 916 MUS 415A

837* Seventeenth-Century Music
Fall. (3-3) P: MUS 830 recommended.
Instrumental and vocal music in Europe from 1600 to 1700, tracing development of genres and of national styles.
Q: MUS 824 MUS 226 MUS 824 QA: MUS 917 MUS 415A

845* Minor Instrument Study: Voke
1400 to 1600, tracing instrumental and vocal program.
Q: MUS 847

846* Minor Instrument Study: Brass
R: Music Audition required.
Secondary instrument study in flute, clarinet, oboe, bassoon and saxophone.
Q: MUS 846

847* Minor Instrument Study: Brass
Fall, Spring. (1-1) May reenroll for a maximum of 8 credits.
R: Music Audition required.
Secondary instrument study for students enrolled in the brass specialist program.
Q: MUS 847

848* Minor Instrument Study: Woodwind
Fall, Spring. (1-1) May reenroll for a maximum of 8 credits.
R: Music Audition required.
Secondary instrument study in flute, clarinet, oboe, bassoon and saxophone.
Q: MUS 848

850A* Piano
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in piano.
Q: MUS 850A

850B* Organ
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in pipe organ.
Q: MUS 850B

850C* Harp
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in harp.
Q: MUS 850C

851* Voice
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in voice.
Q: MUS 850D

852A* Violin
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in violin.
Q: MUS 850K

852B* Viola
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in viola.
Q: MUS 850F

852C* Cello
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in cello.
Q: MUS 850G

852D* Double Bass
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in double bass.
Q: MUS 850H

853A* Flute
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in flute.
Q: MUS 850I

853B* Oboe
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in oboe.
Q: MUS 850J

853C* Clarinet
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in clarinet.
Q: MUS 850K

853D* Saxophone
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in saxophone.
Q: MUS 850L

853E* Bassoon
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in bassoon.
Q: MUS 850M

854A* Trumpet
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in trumpet.
Q: MUS 850N

854B* Horn
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in horn.
Q: MUS 850O

854C* Trombone
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in trombone.
Q: MUS 850P

854D* Euphonium
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in euphonium.
Q: MUS 850Q

854E* Tuba
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 18 credits.
R: Music Audition required.
Private instruction in tuba.
Q: MUS 850R

855* Percussion
Fall. (1-1) May reenroll for a maximum of 18 credits.
R: Music Audition required.
Coached percussion techniques.
Q: MUS 850S

858* Seminar in Band Conducting
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 36 credits.
R: Music Audition required.
Advanced conducting techniques, including core repertoire examination and execution with emphasis on score analysis and preparation.
Q: MUS 858A

858B* Seminar in Orchestral Conducting
Fall, Spring. (3-3) P: May reenroll for a maximum of 36 credits.
R: Music Audition required.
Advanced conducting techniques for the advanced orchestral repertoire of all periods and styles (string orchestra, chamber orchestra, symphony orchestra).
Q: MUS 858B

858C* Seminar in Choral Conducting
Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 36 credits.
R: Music Audition required.
Advanced conducting techniques applicable to choral and instrumental music of all periods.
Q: MUS 853C

859* Choral Techniques and Materials
Spring of even-numbered years. (3-0)
May reenroll for a maximum of 15 credits.
Advanced development of choral proficiency. Demonstration of choral techniques, conducting by students, examination and evaluation of new materials. Variable content.
Q: MUS 852

860* Seminar in History & Philosophy of Music Education
Spring of even-numbered years. (2-0)
R: Arts & Letters or College of Education
Prepares the major philosophies that influence American music education and traces the rise of music curricula and studies from Ancient Greece to the present.
Q: MUS 808

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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
<th>Credits</th>
<th>Term(s)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>861*</td>
<td>Seminar in Psychology of Music Education</td>
<td>Development of skills in writing composition exercises after the models of instrumental polyphony of the eighteenth century, principally Palestrina and Victoria.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Arts &amp; Letters or College of Education; Psychological foundations of music teaching and learning.</td>
</tr>
<tr>
<td>862*</td>
<td>Seminar in Music Curriculum Development</td>
<td>EXPLORES WORKSHOP METHODS AND MATERIALS FOR TEACHING IN Elementary Music Education, CURRICULUM DEVELOPMENT AND ALL ITS COMPONENTS, AND CURRICULAR MODELS.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Arts &amp; Letters or College of Education; The process of curriculum development and all its components, and curricular models.</td>
</tr>
<tr>
<td>863*</td>
<td>Seminar in Music Education Methodology</td>
<td>INVESTIGATION OF HOW PIECES OF MUSIC FROM THE COMMON-PRACTICE PERIOD ARE PUT TOGETHER INTO VARIOUS STRUCTURAL UNITS THROUGH THE INTERPLAY OF MELODY, HARMONY, RHYTHM, AND TIMBRE.</td>
<td>3(3-0)</td>
<td>Spring 2(2-0)</td>
<td>R: Music; Development of skills in writing composition exercises after the models of instrumental polyphony of the eighteenth and twentieth centuries.</td>
</tr>
<tr>
<td>864*</td>
<td>Research in Music Education</td>
<td>THE THOUGHT, WORKS AND INFLUENCES OF THE AUSTRIAN COMPOSER Heinrich Schenker. Techniques of linear analysis and the role of large-vowel-leading musical structure are compared to earlier theories of root progression.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; The thought, works and influences of the Austrian Theorist Heinrich Schenker. Techniques of linear analysis and the role of large-vowel-leading musical structure are compared to earlier theories of root progression.</td>
</tr>
<tr>
<td>865*</td>
<td>Advanced Methods and Materials in Secondary Music Education</td>
<td>DETAILED ANALYSIS OF CHORAL, ORCHESTRAL, AND BAND MUSIC REPertoire AS A MEANS OF ENHANCING INTERPRETATION AND PERFORMANCE.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; Detailed analysis of choral, orchestral, and band music repertoire as a means of enhancing interpretation and performance.</td>
</tr>
<tr>
<td>866*</td>
<td>Advanced Methods and Materials</td>
<td>HISTORY OF MUSIC THEORY.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; Survey of principal Western theories of music from Pythagoras to the present. Focus on ideas that contributed to the development of modern musical thought and their place in Western intellectual history.</td>
</tr>
<tr>
<td>867*</td>
<td>Current Studies in Music Therapy</td>
<td>COMPOSITION OF MUSIC FOR PERFORMANCE.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; Advanced guided projects in creative writing of music.</td>
</tr>
<tr>
<td>868*</td>
<td>Education, Training and Administration in Music Therapy</td>
<td>SEMINAR IN COMPOSITION.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; Study of contemporary music with emphasis on compositional procedures.</td>
</tr>
<tr>
<td>869*</td>
<td>Contrapuntal Techniques I</td>
<td>COMPOSITION WITH COMPUTERS.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; Current applications of microcomputer technology in musical composition.</td>
</tr>
<tr>
<td>870*</td>
<td>Contrapuntal Techniques II</td>
<td>COMPOSITION WITH COMPUTERS.</td>
<td>3(3-0)</td>
<td>Summer 2(2-0)</td>
<td>R: Music; Advanced guided projects in creative writing of music.</td>
</tr>
<tr>
<td>871*</td>
<td>Contemporal Techniques II</td>
<td>COMPOSITION WITH COMPUTERS.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; Current applications of microcomputer technology in musical composition.</td>
</tr>
<tr>
<td>872*</td>
<td>Tonal Forms</td>
<td>COMPOSITION WITH COMPUTERS.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; Advanced guided projects in creative writing of music.</td>
</tr>
<tr>
<td>873*</td>
<td>Early Twentieth-Century Techniques</td>
<td>COMPOSITION WITH COMPUTERS.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; Advanced guided projects in creative writing of music.</td>
</tr>
<tr>
<td>874*</td>
<td>Schenkerian Analysis</td>
<td>COMPOSITION WITH COMPUTERS.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; Advanced guided projects in creative writing of music.</td>
</tr>
<tr>
<td>875*</td>
<td>Problems in Analysis</td>
<td>COMPOSITION WITH COMPUTERS.</td>
<td>3(3-0)</td>
<td>Fall 2(2-0)</td>
<td>R: Music; Advanced guided projects in creative writing of music.</td>
</tr>
</tbody>
</table>

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### Courses

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>950A*</td>
<td>Piano</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in piano. QA: MUS 950A</td>
</tr>
<tr>
<td>950B*</td>
<td>Organ</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in organ. QA: MUS 950B</td>
</tr>
<tr>
<td>950C*</td>
<td>Harp</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in harp. QA: MUS 950C</td>
</tr>
<tr>
<td>951*</td>
<td>Voice</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in voice. QA: MUS 950D</td>
</tr>
<tr>
<td>952A*</td>
<td>Violin</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in violin. QA: MUS 950E</td>
</tr>
<tr>
<td>952B*</td>
<td>Viola</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in viola. QA: MUS 950F</td>
</tr>
<tr>
<td>952C*</td>
<td>Cello</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in cello. QA: MUS 950G</td>
</tr>
<tr>
<td>953A*</td>
<td>Double Bass</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in double bass. QA: MUS 950H</td>
</tr>
<tr>
<td>953B*</td>
<td>Flute</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in flute. QA: MUS 950I</td>
</tr>
<tr>
<td>953C*</td>
<td>Clarinet</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in clarinet. QA: MUS 950K</td>
</tr>
<tr>
<td>953D*</td>
<td>Saxophone</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in saxophone. QA: MUS 950L</td>
</tr>
<tr>
<td>953E*</td>
<td>Bassoon</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in bassoon. QA: MUS 950M</td>
</tr>
<tr>
<td>954A*</td>
<td>Trumpet</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in trumpet. QA: MUS 950N</td>
</tr>
<tr>
<td>954B*</td>
<td>Horn</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in horn. QA: MUS 950Q</td>
</tr>
<tr>
<td>954C*</td>
<td>Trombone</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in trombone. QA: MUS 950P</td>
</tr>
<tr>
<td>954D*</td>
<td>Euphonium</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in euphonium. QA: MUS 950Q</td>
</tr>
<tr>
<td>954E*</td>
<td>Tuba</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in tuba. QA: MUS 950R</td>
</tr>
<tr>
<td>955*</td>
<td>Percussion</td>
<td>Fall, Spring. 1 to 3 credits. May reenroll for a maximum of 24 credits.</td>
<td>Private instruction in percussion. QA: MUS 950S</td>
</tr>
<tr>
<td>956*</td>
<td>Seminar in Measurement of Musical Behavior</td>
<td>Spring of odd-numbered years. 2(2-0)</td>
<td>Spring of odd-numbered years. 2(2-0)</td>
</tr>
<tr>
<td>960*</td>
<td>Seminar in Music Teacher Education</td>
<td>Fall of odd-numbered years. 2(2-0)</td>
<td>R: College of Education or Arts &amp; Letters</td>
</tr>
<tr>
<td>961*</td>
<td>Seminar in Aesthetics in Music Education</td>
<td>Fall of even-numbered years. 2(2-0)</td>
<td>R: College of Education or Arts &amp; Letters</td>
</tr>
<tr>
<td>962*</td>
<td>Seminar in Administration of Music Programs</td>
<td>Fall of even-numbered years. 2(2-0)</td>
<td>R: College of Education or Arts &amp; Letters</td>
</tr>
<tr>
<td>963*</td>
<td>Composition</td>
<td>Fall, Spring. 3(2-0)</td>
<td>Advanced guided projects in creative writing of music. QA: MUS 954</td>
</tr>
</tbody>
</table>

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### Descriptions of Courses

Courses are subject to revision and final approval.
990*. Doctoral Independent Study
Fall, Spring, Summer. 1 to 10 credits. May enroll for a maximum of 40 credits.
R: Approval of the School
Special project, directed reading, and research arranged by an individual doctoral candidate and a faculty member in areas supplementing the regular course offerings.

991*. Special Topics
Fall, Spring, Summer. 1 to 10 credits. May enroll for a maximum of 50 credits.
R: Approval of the School
Special topics supplementing regular course offerings proposed by faculty on a group study basis for doctoral candidates.

992A*. Seminar in Musicology
Spring. 3(0-0). May enroll for a maximum of 18 credits.
P: MUS 830 recommended
Study in various areas of musicology, such as early notations, music editing, or historical performance practices.
QF: MUS 824 QA: MUS 924

999*. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 60 credits. May enroll for a maximum of 20 credits.
R: Approval of the School
QA: MUS 899

NATURAL SCIENCE

NSC 201*. Science Problem Solving Seminar I
Fall. 2(0-0).
P: Division of MTH 102 or MTH 116 or MTI 122 concurrently. R: Approval of college.
Problem solving principles and strategies used in the disciplines of science and mathematics. Activities reflecting the types of problems encountered.
QF: NSC 201

202*. Science Problem Solving Seminar II
Spring. 2(0-0).
P: NSC 201. R: Approval of college.
Continuation of NSC 201.
QA: NSC 202

203*. Draw Laboratory Directed Studies
Fall, Spring. 1 to 2 credits. May enroll for a maximum of 8 credits.
P: NSC 202. R: Open only to Draw Laboratory students.
Using topics related to a faculty member's ongoing research, students explore the relationship between science and technology and social issues.
QA: NSC 203

401*. Science Laboratories for Secondary Schools
Fall. 4(4-4).
R: Open only to seniors in the College of Natural Science with a teacher certification option. Laboratory equipment, supplies, demonstrations, exercises, and safety. Care of living organisms. Disposal of biological and chemical wastes. Field trips required.

499*. Research
Fall, Spring, Summer. 1 to 4 credits. May enroll for a maximum of 5 credits.
P: Open only to juniors and seniors in the College of Natural Science with a teacher certification option.
Research in faculty laboratories. Oral and written presentations.

800*. Problems in Biological or Physical Science for Teachers
Fall, Spring, Summer. 3 to 8 credits. May enroll for a maximum of 8 credits.
P: Secondary teachers not in degree program
Supervised investigation into problems in Biological or Physical Science.
QA: BS 800 PHS 890

802*. Essentials of Electron Microscopy
Fall, Spring. 2(3-0).
Principles of operation and uses of transmission and scanning electron microscopy. Related electron beam instruments. Specimen preparation and analytical methods.
QA: NSC 802

810*. Transmission Electron Microscopy Laboratory
Fall, Spring. Summer. 3(1-4).
P: NSC 806. R: approval of department.
Use of transmission microscopy and preparative equipment. Preparation techniques for specimens, photographic and darkroom use, and interpretation of micrographs.
QF: NSC 802 QA: NSC 810

820*. Scanning Electron Microscopy; Energy Dispersive X-ray Microanalysis
Fall, Spring. 3(1-4).
P: NSC 802 or concurrently. R: approval of department.
QF: NSC 802 QA: NSC 840

825*. Special Problems in Electron Microscopy
Fall, Spring, Summer. 1 to 3 credits. May enroll for a maximum of 40 credits.
P: NSC 802; NSC 810 or NSC 820. R: Approval of department. R: Open to Master's degree candidates or postbaccalaureate Natural Science Physical Science.
Use of electron microscopy techniques for selected research topics.
QF: NSC 806 AND NSC 810RNSC 820 QA: NSC 801

850*. Cell and Molecular Biology
Summer. 2(4).
P: Secondary certification in biology; 3 years teaching experience; C: NSC 851 R: Master's candidates or postbaccalaureate Natural Science Biological Science.
Interdisciplinary seminar in Division of Science Education. Molecular basis of structure and function of cells. Protein structure and function, cell physiology, metabolic energy and transmission of genetic information.
QA: NSC 850

851*. Cell and Molecular Biology Laboratory
Summer. 3(3).
P: Secondary certification in biology; 3 years teaching experience; C: NSC 851 R: Master's candidates or postbaccalaureate Natural Science Biological Science.
Generative laboratory exercises appropriate for secondary students.
QA: NSC 851

852*. Interdisciplinary Seminar in Biological Science
Fall, Spring. 1(4).
P: Approval of Division of Science Education. R: Master's Candidates or postbaccalaureate Natural Science Biological Science.
Interrelationships of biological science and technology. Role of society in regulation of research and technological innovations.
QA: NSC 852

855*. Environmental and Behavioral Biology
Summer. 2(-).
P: Secondary certification in biology; 3 years teaching experience; C: NSC 856 R: Master's candidates or postbaccalaureate Natural Science Biological Science.
Biotic and abiotic features of lakes, streams, forest ecosystems, and microbial ecosystems.
QA: NSC 855

856*. Environmental and Behavioral Biology Laboratory
Summer. 3(-).
P: Secondary certification in biology; 3 years teaching experience; C: NSC 855 R: Master's candidates or postbaccalaureate Natural Science Biological Science.
Laboratory and field examinations of lake, stream and forest ecosystems.
QA: NSC 856

859*. Problem Solving Techniques in Physical Science
Summer. 3(-).
P: Secondary certification in chemistry or physics or earth science. R: Master's candidates or postbaccalaureate Natural Science Physical Science.
Measurement and analysis of chemical, physical, and geological phenomena.

861*. Chemistry for Teachers
Summer. 2(-).
P: NSC 860 R: Master's candidates or postbaccalaureate Natural Science Physical Science.
Intensive lecture and laboratory study of basic chemistry from a modern viewpoint.

862*. Physics for Teachers
Summer. 2(-).
P: NSC 865 R: Secondary certification in Physical Sciences. R: Open only to Master's degree or postbaccalaureate students in Physical Science.
Intensive lecture and laboratory study of basic physics from a modern viewpoint.

863*. Earth Science for Teachers
Summer. 2(-).
P: NSC 860 R: Secondary certification in chemistry, physics, earth science. R: Open only to Master's degree or postbaccalaureate students in Physical Science.
Intensive lecture and laboratory study of basic earth sciences from a modern viewpoint.

864*. Interdisciplinary Seminar in Physical Science
Summer. 2(-).
P: NSC 861 and 862 and 863 R: Master's degree candidates or postbaccalaureate Natural Science Physical Science.
Interrelationships of the physical sciences. The role of society in regulation of science to technology transfer.

889*. Research for Inservice Teachers
Fall, Spring, Summer. 1 to 8 credits. May enroll for a maximum of 10 credits.
P: Open only to inservice K-12 teachers with baccalaureate degree.
Research in faculty laboratories. Oral and written presentations.