Minor in Music Technology

The Minor in Music Technology is a program of study in the creative application of computer technologies to the following: sound editing, processing, and synthesis techniques, programming designs for computer-based musical instruments, development of human-computer interfaces for musical performance, and electronic music composition. The minor establishes a foundation in these areas through a core of three courses, with electives that provide:

- broadening of musical study through courses in music theory, history, literature, and performance
- advanced study in music technology
- coordination with foundation studies in computer programming and software engineering
- augmentation of study in computer programming and engineering to strengthen interdisciplinary learning outcomes for these majors

Students do not need to declare a particular elective track, but are encouraged to select a combination of electives to meet one of the above goals.

The minor is fulfilled by earning 15 credits as follows:

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1. 8 credits: Music Technology Core

Music 246 Introduction to Music Technology, Cr. 2
Music 346 MIDI and Digital Audio Techniques, Cr. 3
Music 446 Electronic Music Synthesis, Cr. 3.

2. 7 credits: Technology and *Music electives:

Com S 107. Applied Computer Programming	** Music 101. Fundamentals of Music
Com S 207. Programming I	Music 102. Introduction to Music Listening
Com S 208. Programming II	** Music 105. Basic Musicianship
Com S 227. Intro. to Object-oriented Programming	Music 118. Applied Music: Non-majors
Com S 228. Introduction to Data Structures	*** Music 120: Intro. Music Literature & Styles
Com S 229. Advanced Programming Techniques	Music 221. Introduction to Music Theory
Com S 309. Software Development Practices	Music 222. Introduction to Aural Theory
Cpr E 329. Software Project Management	Music 231. Materials of Music I
E E 201. Electric Circuits	Music 232. Aural Theory I
E E 224. Signals and Systems I	*** Music 302. Advanced Music Listening
E E 324. Signals and Systems II	Music 304. History of Rock 'n' Roll
E E 424. Introduction to Digital Signal Processing	Music 318. Applied Music: Non-majors
M E 451. Engineering Acoustics	Music 337. Materials of Music III
Phys 198. Physics of Music	Music 338. Aural Theory III
S E 319. Software Constr. and User Interfaces	Music 383. History of Music I
	Music 384. History of Music II
	Music 472. History of American Music
	Music 490I. Independent Study (Electronic Music)
	Music 593I. Workshops (Music and Technology)

* Music majors seeking this minor may not count in the fifteen credits music courses comprising the minor other than 246, 346, 446, 490I, and 593I. A Bachelor of Music major may not count Phys 198 in this minor.
** only one of Music 101 and 105 may be counted in the minor, *** only one of 120 and 304 may be counted in the minor

3. At least six of the fifteen credits must be taken at Iowa State University in courses numbered 300 or above with a grade of C or higher. The minor must include at least nine credits that are not used to meet any other department, college, or university requirement.

Interdisciplinary Objectives of Advanced Elective Courses

Music technology is an interdisciplinary field that changes rapidly with new technological developments. This minor includes advanced elective courses in computer programming, engineering, and music to provide an interdisciplinary track for advanced students who have the prerequisites and who will use electives to establish *a bridge to their major*, particularly between technical sub-disciplines. For example, mechanical engineering majors may wish to develop technologies for music that require more programming experience than provided by their major. Computer engineering majors may support their goals for music technologies with a more advanced understanding of engineering acoustics. Computer programming majors may have goals to create musical applications closely tied with digital signal processing. Students may therefore select elective courses that form a particular track for future applications of this minor.

Advanced electives in music theory, history, literature, and performance are included for non-music majors who are qualified for study at higher levels. These provide contact with more advanced musical concepts and skills that would be incorporated in software and interface design for music.

The Minor in Music Technology may also be used as an autonomous program of study to complement a major without being configured to meet specific interdisciplinary goals. In such a case, it is expected that electives would be satisfied through non-majors courses in computer programming, software engineering, and music.

Music Majors

A special case of a major in music (Bachelor of Arts or Bachelor of Music) earning this minor is treated as follows:

> No music courses other than those in music technology core (246, 346, 446), independent study (490I), and workshops (593I) may be counted in the minor. A major in music therefore will obtain a minor that has a minimal overlap with the major, the supporting courses being taken from non-majors courses in computer science and software engineering, or as qualified from related courses in computer science and engineering.

> Note: because Phys 198 is require in the major, it may not be counted by music majors as an elective in a music technology minor.