MUSIC TECHNOLOGY, M.S.

About The Program：

Over the past several decades, music technology has become a major factor in virtually every area of the music industry. Music technology fuses musical skill and technological knowledge that enables one trained in these areas to create works and/or pursue employment or graduate education in an extremely wide variety of areas. Some of these include music composition, editing and publishing, equipment installation, performance, production, recording and editing, software and hardware development, and systems design, as well as numerous audio fields such as the recording and editing of concerts, events, films and television, and games, among others.

Career Options: Students are prepared for employment in numerous facets of the music industry, higher education teaching in music technology, or pursuit of further graduate education in music and/or technology. The U.S. Bureau of Labor Statistics Occupational Outlook Handbook shows continued strong demand for positions in the computer and computer music industry.

Prerequisites for Admission:

- Bachelor's Degree in Discipline/Related Discipline: Completion of an undergraduate degree in music or its equivalent.

Areas of Specialization:

The program offers advanced study in music and music technology whereby students are encouraged to develop diverse abilities in the field, while allowing them also to focus on an area of expertise of their interest.

Requirements of Programs:

- **Total Credit Hours:**

  Number of Credits Required Beyond the Baccalaureate: 31

- **Language Examination:**

  A language examination is not required for the M.S. in Music Technology.

- **Additional Requirements:**

  Diagnostic Examinations:
  Diagnostic examinations in Aural Theory, Written Theory, and Music History are **required** for **all** entering master's students. The exceptions are students in Jazz Studies and Music Therapy who have their examinations arranged within their respective departments. In addition, Keyboard students take an additional two-hour examination in Keyboard Literature. As stated in the *Boyer College Graduate Handbook*, master's "students may not take final qualifying

examinations nor perform graduation recitals until all diagnostic examinations have been successfully completed."

The exams may be taken in one day or split over three days, or the exams can be taken online for a fee. Preparations are provided upon registration. Visit the Boyer College of Music and Dance website for the graduate music examination schedule. To register for the diagnostic examinations, complete Boyer College's registration form.

Please note that registration for a student's first term of study is completed in consultation with the Associate Dean for Student Affairs. Please re-read the admission letter, especially the "Special Notes" section on page 2, regarding any entrance deficiencies. If any remedial coursework is required, it must be completed by the end of the first year of study. It is also best for students to complete MUST 8701 Research in Music, which is required of all students except those in Jazz Studies, Music Education, and Music Therapy in the first year of study.

A. Graduate Diagnostic Examination in Aural Theory

The examination lasts approximately 40 minutes and consists of a written portion in which students are asked to:

1. Dictate a chord progression that modulates and contains chromatic harmony by writing out the bass line and identifying chords by Roman numerals and inversions.

2. Complete a two-part melodic dictation that modulates and contains chromatic pitches.

B. Graduate Diagnostic Examination in Written Theory

The examination lasts one and one-half hours and is in two parts:

1. Harmonic analysis of two chorales: one that uses diatonic harmony, and one that uses chromatic harmony.

2. Analysis of the form, motives, and phrase structures of the first movement of a Classical-era piano sonata.

C. Graduate Diagnostic Examination in Music History

The examination lasts one hour and contains objective questions in a multiple choice and/or true/false format. It covers composers, forms, instruments, musical works, styles, and terms from 1450 to the present. Sample questions are:

1. The basso continuo came into use in about which year?
   (a) 1500 (b) 1600 (c) 1650 (d) 1700

2. Who composed *Das Lied von der Erde* (The Song of the Earth)?
   (a) Mahler (b) Bruckner (c) Brahms (d) Schumann

3. Which of the following instruments would not be found in the score of a symphony by Haydn?
   (a) horn (b) oboe (c) timpani (d) trombone (e) trumpet

D. Conditions for Exemption from Diagnostic Examinations

The requirement to take the Diagnostic Examination in any area is waived only for graduates of the Boyer College of Music and Dance who:

- matriculate and enroll in the term immediately following completion of all undergraduate degree requirements; and
- received grades of "B-" or better in every undergraduate course taken in each individual examination area to be waived.

- **Culminating Events**:

  Evidence of student learning is assessed through a combination of course-embedded assessments and projects, written examinations, and a capstone final project that demonstrates the application of integrated music technology.

Required Courses

Year 1

Fall

Advanced Audio Production – Advanced Audio Production will focus on advanced skills of audio production, based on skills learned in Sound Editing (MUST 4714). Work will be done on the most common Digital Audio Workstation, Pro Tools, but is applicable to all DAWs.

Digital Signal Processing for Music – An investigation of Digital Signal Processing for Music. This course employs lectures, demonstrations, and interactive software to enable students to understand the ways sound is represented by digital signals, and how to transform those signals through mathematical operations.

Research in Music – Survey of primary reference tools, monumental editions and collected works, periodicals, histories, theoretical treatises, iconography, organology, and other bibliographic materials. Term paper written under supervision.

Spring

Hearing Music: Acoustics and Psychoacoustics of Music – A seminar on the psychoacoustics of music, based partly on Perry Cook's collection of essays: "Music, Cognition and Computerized Sound." This course employs lectures and demonstrations to enable students to understand the physics of sound and the perceptual characteristics of the Human Auditory System. Taken together, acoustics and

psychoacoustics provide the student with an understanding of why music has the qualities it has, and how sound makers can utilize that knowledge to be more successful in their chosen fields.

Seminar in Audio Software Design – Students will learn advanced mathematical and programming techniques for digital audio signal processing and software design. Topics covered will include spectral audio programming, algorithmic synthesis, compiling, MIDI, OSC, mobile applications, live processing, and software architecture.

Electives (3 Credits Worth)

In Music, Music Studies, or Music Education

Year 2

Fall

New Music Seminar – Seminar in the use of electronic devices such as cellphones, tablets, and laptop computers for music creation and performance. For students enrolled in the 4+1 option in Music Technology.

Seminar in Physical Computing and Electronic Instrument Design – Students will learn the advanced concepts needed for physical computing and electronic instrument design, including basic circuitry and programming. Topics covered will include direct digital synthesis, audio input and output, MIDI, sensors, microcontrollers, and real-time control.

Electives (3 Credits Worth)

Spring

Non-Didactic Courses

Project – Under departmental approval and faculty supervision, the student will design and implement a substantial project in music technology. The project will include a written paper with supporting documentation and appropriate bibliographic references that explain the project in detail. The project and paper will require that the student demonstrate an ability to integrate and synthesize advanced technological knowledge and skills in the conceptualization and creation of the final outcome, such as a piece of software, hardware, media project, or multimedia product. Students projects will be showcased and discussed by each student as a capstone event, open to the public. Project proposals are due to the Program Director 4 weeks prior to registration.

Courses:

Click HERE for more information on the courses below.

- Advanced Audio Production
- Digital Signal Processing for Music

- Research in Music
- Seminar in Audio Software Design
- Seminar in Physical Computing and Electronic Instrument Design
- Hearing Music: Acoustics and Psychoacoustics of Music
- New Music Seminar