

# SCHOOL OF MUSIC

The School of Music offers degree programs in music technology at the bachelors, masters, and doctoral levels; a wide range of performance ensembles serving students from all majors on campus; and a series of general education courses about music and music technology, most of which carry the humanities attribute.

The School's bachelors, masters, and doctoral degrees in music technology approach this emerging, interdisciplinary field from scientific, engineering, and creative perspectives. In these programs, students develop their fundamental skills in the analysis, creation, and performance of music; their knowledge of the theory and application behind areas such as acoustics, cognition, signal processing, and interaction design; their ability to use state-of-the-art technologies to create and perform music; their experience in designing and implementing next-generation music technology tools; and their capacity to conduct research studies that expand our knowledge of how humans and machines engage with music. The School also offers a general minor and music technology minor program.

Students across campus participate in the School of Music's vocal and instrumental ensemble courses, including marching, concert, and symphonic bands, jazz ensembles and combos, symphony and chamber orchestras, multiple choirs, and a rock / pop ensemble. Some ensembles require an audition while others are open to all who wish to enroll.

The School also offers general education courses, many of which fulfill the humanities requirement for undergraduates. These courses do not generally have prerequisites or require any prior experience in music.

Much of the research in the School of Music is focused in the Center for Music Technology, which aims to transform the ways we create and experience music through next generation technology for composition, performance, consumption, and education. Research areas in the Center include robotic musicianship, music informatics, brain music, and computational and cognitive musicology.

## Minors

- Minor in Music (General)
- Minor in Music Technology

## Bachelor's Degree

- Bachelor of Science in Music Technology
- Bachelor of Science in Computational Media

## Master's Degree

- Master of Science in Music Technology

## Doctoral Degree

- Doctor of Philosophy with a Major in Music Technology

### MUSI 2010. Fundamentals of Musicianship I. 3 Credit Hours.

First semester of integrated sequence in music theory, aural training, music technology, and music literature.

### MUSI 2011. Fundamentals of Musicianship II. 3 Credit Hours.

Second semester of integrated sequence in music theory, aural training, music technology, and music literature.

### MUSI 2012. Fundamentals of Musicianship III. 3 Credit Hours.

The third semester of integrated sequence in music theory, aural training, music technology, and music literature; focused on advanced theory, history, and technology topics.

### MUSI 2013. Fundamentals of Musicianship IV. 3 Credit Hours.

The fourth semester of integrated sequence in music theory, aural training, music technology, and music literature; focused on comprehensive and innovative music discussions.

### MUSI 2015. Laptop Orchestra. 3 Credit Hours.

Analysis, rehearsal, creation, and performance of music for laptop orchestra.

### MUSI 2525. Introduction Audio Technology I. 3 Credit Hours.

Critical understanding of, and hands-on experience with the fundamentals of analog audio technology. Topics include signals and systems, electro-acoustics, sound effects, synthesis and music protocols.

### MUSI 2526. Introduction to Audio Technology II. 3 Credit Hours.

Critical understanding of, and hands-on experience with the fundamentals of digital audio technology. Topics include sampling, quantization, digital effects, music information retrieval and audio coding.

### MUSI 2698. Undergraduate Research Assistantship. 1-12 Credit Hours.

Independent research conducted under the guidance of a faculty member.

### MUSI 2699. Undergraduate Research. 1-12 Credit Hours.

Independent research conducted under the guidance of a faculty member.

### MUSI 2700. Introduction to Music Theory. 3 Credit Hours.

Introduction to music theory including basic notation, scales, key signatures, triads, roman numeral analysis, and voice leading in four-part harmony.

### MUSI 3018. Marching Band. 2 Credit Hours.

This course will prepare various traditional and contemporary music for scheduled performances throughout the semester in support various athletic events and School of Music concerts.

### MUSI 3019. Pep Band. 1 Credit Hour.

This course will prepare a variety of traditional and contemporary music for scheduled performances throughout the semester in support of various athletic events and School of Music concerts.

### MUSI 3121. Concert Band. 1 Credit Hour.

An advanced instrumental ensemble performing traditional and contemporary wind literature. Offered to all students with woodwind, brass, or percussion experience. Audition required.

### MUSI 3131. Symphonic Band. 1 Credit Hour.

An advanced instrumental ensemble performing traditional and contemporary wind literature. Offered to all students with woodwind, brass, or percussion experience. Audition required.

### MUSI 3231. Chamber Choir. 1 Credit Hour.

An auditioned mixed ensemble focused upon the rehearsal, study and performance of choral music. Repertoire varies from various style eras and genres.

### MUSI 3241. Chorale. 1 Credit Hour.

A non-auditioned mixed ensemble focused upon the rehearsal, study and performance of choral music. Repertoire varies from various style eras and genres.

**MUSI 3251. Glee Club. 1 Credit Hour.**

A non-auditioned male ensemble focused upon the rehearsal, study and performance of choral music. Repertoire varies from various style eras and genres.

**MUSI 3261. Treble Choir. 1 Credit Hour.**

A non-auditioned TREBLE ensemble focused upon the rehearsal, study and performance of choral music. Repertoire varies from various style eras and genres.

**MUSI 3311. Jazz Ensemble. 1 Credit Hour.**

Jazz Ensemble explores music from the 1920's to the present, focusing on ensemble playing and improvisation.

**MUSI 3321. Jazz Combo. 1 Credit Hour.**

Jazz Combos explore small group jazz focusing on ensemble playing and improvisation.

**MUSI 3411. Chamber Ensemble. 1 Credit Hour.**

An advanced ensemble performing traditional and contemporary chamber ensemble literature. Audition and permit required.

**MUSI 3450. Survey of Music Technology. 3 Credit Hours.**

Creative practices and technical pursuits in the inherently interdisciplinary world of music technology. Hands-on projects which explore key concepts, essential tools, and creative techniques.

**MUSI 3511. Percussion Ensemble. 1 Credit Hour.**

An advanced instrumental ensemble performing traditional and contemporary percussion literature. Offered to all students with percussion experience. Audition required.

**MUSI 3531. New Music Ensemble. 1 Credit Hour.**

An advanced instrumental chamber ensemble that performs new and contemporary literature often using technology. Offered to all students with advanced performing experience. Audition required.

**MUSI 3541. Electronic Percussion Ensemble. 1 Credit Hour.**

An advanced instrumental ensemble performing percussion literature using student designed and built instruments, interfaces and software, as well as commercially available controllers. Offered to all students with percussion experience. Audition required.

**MUSI 3551. Rock and Pop Ensemble. 1 Credit Hour.**

A contemporary popular music ensemble performing historical and current popular music. Offered to all students with advanced performing experience. Audition required.

**MUSI 3611. Symphony Orchestra. 1 Credit Hour.**

An advanced instrumental ensemble performing traditional and contemporary literature. Offered to all students with string, woodwind, brass, or percussion experience. Audition required.

**MUSI 3621. Musicians & their Music. 3 Credit Hours.**

An historical survey of music, including analytical listening and cultural context. No prior experience needed.

**MUSI 3630. The History of Jazz, the Roots and Evolution of an American Musical Art Form. 3 Credit Hours.**

The history of the American musical art form, Jazz, from its roots within African American work songs through fusion and new directions in jazz.

**MUSI 3770. Project Studio: Technology. 4 Credit Hours.**

Thematic project in music technology driven by a foundational research question.

**MUSI 3771. Project Studio:Analysis. 4 Credit Hours.**

Thematic project connecting music theory, musicology, performance practice and musicianship through intensive study of a single musical genre or composer.

**MUSI 3801. Special Topics. 1 Credit Hour.**

Special ad hoc courses or projects not included in regular course offerings.

**MUSI 3802. Special Topics. 2 Credit Hours.**

Special ad hoc courses or projects not included in regular course offerings.

**MUSI 3803. Special Topics. 3 Credit Hours.**

Special ad hoc courses or projects not included in regular course offerings.

**MUSI 4450. Integrating Music Into Multimedia. 3 Credit Hours.**

Techniques for effectively utilizing music and audio in the context of digital multimedia.

**MUSI 4455. Streaming Media. 3 Credit Hours.**

To familiarize students with tools and techniques for the creation, production, distribution, and aesthetic analysis of audio, video, and live events for Internet and Internet2 dissemination.

**MUSI 4456. Music Technology History and Repertoire. 3 Credit Hours.**

Overview of the history, aesthetics, and technology of electronic and computer music over the past century through selected readings, musical analysis, and individual research projects. Credit will not be awarded for both MUSI 4456 and MUSI 6003.

**MUSI 4457. Computational Music and Audio Analysis. 3 Credit Hours.**

The course will survey fundamental techniques in the fast-growing area of Music Information Retrieval (MIR). Credit will not be awarded for both MUSI 4457 and MUSI 6201.

**MUSI 4458. Computer Music Composition. 3 Credit Hours.**

Realization of individual composition projects in music technology and consideration of related theory, aesthetics, and repertoire. Credit will not be awarded for both MUSI 4458 and MUSI 6304.

**MUSI 4459. Digital Signal Processing for Music. 3 Credit Hours.**

This course will cover elements of digital audio signal processing, such as spectra, digital filters, Fourier analysis and their application to music synthesis and analysis. Credit will not be awarded for both MUSI 4459 and MUSI 6202.

**MUSI 4630. Music Recording and Mixing. 3 Credit Hours.**

Overview of concepts, techniques, hardware, and software used in audio production, as well as aesthetic concerns and considerations.

**MUSI 4650. Music and Sound Design. 3 Credit Hours.**

An investigation of principles and practice of audio and music design, in both contemporary digital and traditional analog systems.

**MUSI 4670. Music Interface Design. 3 Credit Hours.**

Theory and practice of designing and prototyping new forms of music interfaces, including percussion, haptic, and augmented traditional constructs.

**MUSI 4677. Music Perception and Cognition. 3 Credit Hours.**

The course will examine how humans process musical sound, covering the basics of the human auditory system and the experience of musical sound. Credit will not be awarded for both MUSI 4677 and MUSI 6001.

**MUSI 4698. Undergraduate Research Assistantship. 1-12 Credit Hours.**

Independent research conducted under the guidance of a faculty member.

**MUSI 4699. Undergraduate Research. 1-12 Credit Hours.**

Independent research conducted under the guidance of a faculty member.

**MUSI 4705. Music Technology Capstone I. 4 Credit Hours.**

Students will implement their broad theoretical and practical knowledge and understanding of music technology in a hands-on project, culminating in public presentation.

**MUSI 4706. Music Technology Capstone II. 4 Credit Hours.**

Students will implement their broad theoretical and practical knowledge and understanding of music technology in a hands on project, culminating in a public and industry presentation.

**MUSI 4801. Special Topics. 1 Credit Hour.**

Special ad hoc courses or projects not included in regular course offerings.

**MUSI 4802. Special Topics. 2 Credit Hours.**

Special ad hoc courses or projects not included in regular course offerings.

**MUSI 4803. Special Topics. 3 Credit Hours.**

Special ad hoc courses or projects not included in regular course offerings.

**MUSI 4813. Special Topics. 3 Credit Hours.**

Special ad hoc courses or projects not included in regular course offerings.

**MUSI 4823. Special Topics. 3 Credit Hours.**

Special ad hoc courses or projects included in regular course offerings.

**MUSI 4833. Special Topics. 3 Credit Hours.**

Special ad hoc courses or projects not included in regular course offerings.

**MUSI 4843. Special Topics. 3 Credit Hours.**

Special Topics in MUSI.

**MUSI 6001. Music Perception and Cognition. 3 Credit Hours.**

This course examines how humans process musical sound, including topics such as the auditory system, psychacoustics, music cognition, and psychology.

**MUSI 6002. Computer Supported Interactive Music. 3 Credit Hours.**

Theoretical and practical issues in computer supported interactive music. The course involves readings, class discussions, student presentations, and the design of a final project.

**MUSI 6003. Music Technology History and Repertoire. 3 Credit Hours.**

Overview of the history, aesthetics, and technology of electronic and computer music over the past century through selected readings, musical analysis, and individual research projects.

**MUSI 6004. Technology Ensemble. 3 Credit Hours.**

Practice and performance of original and repertoire works in live audio settings using commercial and propriety technology.

**MUSI 6005. Music Ensemble for Graduate Students. 1 Credit Hour.**

The graduate level of any music ensemble.

**MUSI 6103. Music Recording and Mixing. 3 Credit Hours.**

Overview of concepts, techniques, hardware, and software used in audio production as well as aesthetic concerns and considerations.

**MUSI 6104. Integrating Music into Multimedia. 3 Credit Hours.**

To familiarize students with the tools and techniques for effectively utilizing music and audio in the context of digital multimedia and the internet.

**MUSI 6105. Digital Media Production and Mastering. 3 Credit Hours.**

Tools and techniques for effectively mastering, optimizing, finalizing, and producing digital media for multimedia and the Internet.

**MUSI 6106. Audio Software Engineering. 3 Credit Hours.**

Introduction to software engineering for audio-related software projects, covering the main aspects of music software production with a focus on music processing, audio plugin interfaces, and real-time systems.

**MUSI 6201. Computational Music and Audio Analysis. 3 Credit Hours.**

This class addresses theory and techniques of Music Information Retrieval (MIR). Topics include computational analysis of audio signals, symbolic representations, and pattern recognition techniques. Credit will not be awarded for both MUSI 6201 and MUSI 4457.

**MUSI 6202. Digital Signal Processing for Music Analysis and Synthesis. 3 Credit Hours.**

Research in music, as well as music production and composition increasingly relies on sophisticated digital signal processing techniques. This course will review fundamental elements of digital audio signal processing, such as sinusoids, spectra, digital filters, and Fourier analysis and their application to the fundamental music analysis problems of modeling and synthesis. The course will focus particularly on the algorithmic implementation sound transformation and synthesis techniques through intensive programming assignments in Matlab and CSound.

**MUSI 6203. Project Studio in Music Technology. 3 Credit Hours.**

Discussion, design and development of computer music applications and performance controllers.

**MUSI 6301. Music Interface Design. 3 Credit Hours.**

Theory and practice of designing and prototyping new forms of music interfaces including percussion, haptic, and augmented traditional constructs.

**MUSI 6304. Computer Music Composition. 3 Credit Hours.**

Realization of individual composition projects in music technology and consideration of related theory, aesthetics, and repertoire. Credit will not be awarded for both MUSI 6304 and MUSI 4458.

**MUSI 7000. Master's Thesis. 1-21 Credit Hours.**

Advisor guided thesis writing.

**MUSI 7100. Music Technology Research Laboratory. 1-21 Credit Hours.**

Advisor guided research and creative work in music technology. Investigation of novel technological and artistic concepts. Design and develop new hardware, software, and musical artifacts.

**MUSI 7998. Preparation for Qualifying Paper. 1-21 Credit Hours.**

Preparation of qualifying paper for Ph.D. in Music Technology.

**MUSI 7999. Preparation for Qualifying Examination. 1-21 Credit Hours.**

Preparation for qualifying examinations for Ph.D. in Music Technology.

**MUSI 8001. Research Methods. 3 Credit Hours.**

Theoretical and practical issues in music technology research including design patterns, data sets, quantitative and qualitative evaluation standards, proper citation, and print and oral presentation.

**MUSI 8002. Apprentice Teaching. 3 Credit Hours.**

Pedagogical approaches to music technology, focusing on hands-on teaching experience.

**MUSI 8801. Special Topics. 1 Credit Hour.**

Topics of current interest.

**MUSI 8802. Special Topics. 2 Credit Hours.**

Topics of current interest.

**MUSI 8803. Special Topics. 3 Credit Hours.**

Topics of current interest.

**MUSI 8804. Special Topics. 4 Credit Hours.**

Topics of current interest.

**MUSI 8805. Special Topics. 5 Credit Hours.**

Topics of current interest.

**MUSI 8901. Special Problems. 1-21 Credit Hours.**

individualized study with an advisor.

**MUSI 8902. Special Problems. 1-21 Credit Hours.**

Individualized study with an advisor.

**MUSI 8903. Special Problems. 1-21 Credit Hours.**

individualized study with an advisor.

**MUSI 8997. Teaching Assistantship. 1-21 Credit Hours.**

Independent research conducted under the guidance of a faculty member.

**MUSI 8998. Research Assistantship. 1-21 Credit Hours.**

Independent research conducted under the guidance of a faculty member.

**MUSI 9000. Doctoral Thesis. 1-21 Credit Hours.**