

MUSIC ENGINEERING (MUE)

MUE 13. Music Engineering Forum. 1 Credit Hour.

A weekly forum for all undergraduate Music Engineering Technology. Presentations include faculty lectures, guest lectures by industry professionals, as well as dissemination of information pertaining to audio studios and laboratories.

MUE Majors Only.

Components: FOR.

Grading: CNC.

Typically Offered: Fall & Spring.

MUE 160. Audio Recording Workshop. 3 Credit Hours.

Assisting recording and sound reinforcement engineers in the assigned performance ensemble in both rehearsal and performance. Students also perform in a studio ensemble where they act as both recording engineer and musician.

Requisite: Plan of MUE or MEC.

Components: LAB.

Grading: GRD.

Typically Offered: Spring.

MUE 161. Audio Mixing Workshop. 3 Credit Hours.

Students are responsible for the audio needs of an assigned ensemble in both rehearsal and performance. Lectures address audio equipment and practices. Students also perform in a studio ensemble where they act as the recording engineer and musician. Open to MUE majors only.

Prerequisite: MUE 160. Requisite: Plan of MUE or MEC.

Components: LEC.

Grading: GRD.

Typically Offered: Spring.

MUE 220. Introduction to Music Recording. 3 Credit Hours.

An overview study of the theory and practice of music recording, with emphasis on modern recording studio practices. Topics include physics of sound, psychoacoustics, studio design, microphones, loudspeakers, consoles, signal processing, digital audio, MIDI, and synchronization.

Requisite: Must have a plan of MUE or MEC or EAN.

Components: LEC.

Grading: GRD.

Typically Offered: Fall.

MUE 251. Electronic Production Techniques. 3 Credit Hours.

Introduction to MIDI technology and computer based tools for music production.

Prerequisite: MUE 220 or MMI 220 or MUE 520 or MMI 520.

Components: LEC.

Grading: GRD.

Typically Offered: Fall.

MUE 361. Acoustics. 3 Credit Hours.

A study of the theoretical principles of acoustics. Principle topics include basic properties, acoustical phenomena, superposition, Fourier Theorem, symmetry, vibrating strings and columns, and musical instruments; a study of architectural acoustics such as growth and decay, absorption coefficients, normal modes, diffusion, isolation, and mass law; design applications such as structural techniques and materials, live end-dead end, room geometry, tuning, TDS and other measurement techniques.

Requisite: Plan of MUE & MEC only.

Components: LEC.

Grading: GRD.

Typically Offered: Fall.

MUE 401. Audio Electronics. 3 Credit Hours.

An introductory course in audio electronics theory and professional audio applications such as recording studio equipment and audio effects design. Coursework includes basic electronic components and theories, passive filtering, transformers, operational amplifiers, vacuum tubes, non-linear elements including diodes and JFETs, graphic, parametric and shelving equalizers, compressors, limiters, gates, microphone preamps, analog effects including reverb, flanging, and chorusing. Students will design custom audio circuits and use computer simulations to understand theory of operation.

Requisite: Plan of MUE or MEC.

Components: LEC.

Grading: GRD.

Typically Offered: Spring.

MUE 410. Music Engineering Capstone Project. 3 Credit Hours.

Students in MUE 410 propose and execute a project that represents the Culmination of their learning experiences in the Music Engineering Program. Students meet as a group with a faculty member of record each week to discuss project topics and assess progress. The course concludes with a public Presentation of the final project.

Components: THI.

Grading: GRD.

Typically Offered: Fall & Spring.

MUE 436. Audio for Visual and Interactive Media. 3 Credit Hours.

Basic audio for video and film postproduction, including the study of time code, synchronization, electronic editing, sound design, immersive audio, equipment interfacing, and future developments.

Prerequisite: MUE 201 or MUE 220.

Components: LEC.

Grading: GRD.

Typically Offered: Spring.

MUE 460. Recital Recording and Sound Reinforcement (Recording Services). 1 Credit Hour.

Practical experience in live concert recording, editing and mastering, and sound reinforcement, under supervision of professional on-campus engineers.

Requisite: MUEE_BS Plan Code Only. Permission of Instructor for other Plan Codes.

Components: PRA.

Grading: GRD.

Typically Offered: Fall & Spring.

MUE 465. Internship in Music Engineering. 1-3 Credit Hours.

Practical experience in the music engineering industry such as work in a recording studio, broadcast company, hardware or software manufacturer, under professional supervision.

Requisite: Plan of MUE or MEC.

Components: PRA.

Grading: GRD.

Typically Offered: Fall & Spring.

MUE 493. Special Projects in Music Engineering Technology. 1-3 Credit Hours.

Advanced individual instruction pertaining to faculty member's area expertise and student's area of interest. This course includes a culminating project.

Requisite: Frost School of Music only.

Components: IND.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 494. Special Topics in Music Engineering Technology. 1-3 Credit Hours.

Advanced group/classroom instruction pertaining to faculty member's expertise and students' areas of interest.

Components: SEM.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 501. Transducer Theory. 3 Credit Hours.

Course covers the fundamentals of electromagnetism and audio transducer theory including loudspeaker and microphone systems. Classical electro-acoustical analysis of transducers including acoustic suspension, bass-reflex, transmission line, electrostatic and horn loudspeakers, dynamic, ribbon and condenser pressure, and pressure-gradient microphones. Students use computer-aided design programs and Thiele-Small parameterization to model loudspeakers and measure loudspeaker responses. Open to MUE and EAN Majors only.

Requisite: MUE or EAN And Prerequisite: PHY 221 And ECE 201.

Components: LEC.

Grading: GRD.

Typically Offered: Spring.

MUE 502. Digital Audio Theory. 3 Credit Hours.

A study of the theory and practice of digital audio topics including discrete time sampling, quantization, dithering, PCM, A/D and D/A conversion, digital filtering, oversampling, frequency transformation, spectral processing, and analog-to-digital transformations.

Requisite: MUE and EAN majors only.

Components: LEC.

Grading: GRD.

Typically Offered: Fall.

MUE 503. Audio Software Development I. 3 Credit Hours.

Theory, design and development of audio signal processing techniques. Topics include DSP architectures, systems design, algorithm development, and applications. DSP development tools used to write, debug, and test programs including time-domain based effects.

Prerequisite: MUE 502.

Components: LEC.

Grading: GRD.

Typically Offered: Spring.

MUE 504. Audio Software Development II. 3 Credit Hours.

Theory, design, and development of computer audio synthesizers and analyzers. Students implement software synthesizers including analog and physical modeling, wave-table, wave-shaping, and FM designs. Classical and modern theories of timbre and time-frequency analysis are included.

Requisite: Plan of MUE and EAN Prerequisite: MUE 502 or ECE 436.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 505. Current Trends in Music Engineering I. 3 Credit Hours.

Current technologies, skills, and techniques employed in a specific aspect of the audio technology and/or music technology fields.

CRS: MAU & EAN & MMI 504.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 506. Current Trends in Music Engineering II. 3 Credit Hours.

MUE 506 addresses current technologies, skills, and techniques employed in a specific aspect of the audio technology and/or music technology fields.

Components: LEC.

Grading: GRD.

Typically Offered: Spring.

MUE 508. Current Trends in Music Engineering III. 3 Credit Hours.

MUE 508 addresses current technologies, skills, and techniques employed in a specific aspect of the audio technology and/or music technology fields.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 510. Computational Psychoacoustics. 3 Credit Hours.

This course deals with the fundamentals of audition in human biological systems, including auditory sensory transduction, cochlear processes, neural pathways, cortical organization, and auditory illusions, with specific applications to perceptual data reduction techniques and auditory displays.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 511. Current Trends in Music Engineering IV. 3 Credit Hours.

MUE 511 addresses current technologies, skills, and techniques employed in a specific aspect of the audio technology and/or music technology fields.

Components: LEC.

Grading: GRD.

Typically Offered: Spring.

MUE 520. Audio Technology for Musicians. 3 Credit Hours.

Introduction and overview of audio technology with emphasis on music recording, production equipment, and techniques. Topics include microphones, loudspeakers, mixing consoles, interconnection, amplifiers, digital processing, time code, and surround sound. Open to non-MUE majors.

Requisite: Frost School of Music only.

Components: LEC.

Grading: GRD.

Typically Offered: Fall.

MUE 521. Timbral Ear Training. 3 Credit Hours.

Students in this course will accomplish four primary goals: 1) instantaneous discernment of ISO frequency regions and critical bands; 2) aural identification of audio-processing techniques, artifacts, and problems; 3) development of critical thinking skills and competence in current audio listening test methodologies; and 4) successful completion of a comprehensive bank of critical listening "golden ears" tests

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 531. Recording Engineering Seminar. 3 Credit Hours.

Students in MUE 531 will accomplish three primary goals: 1) understanding historical trends in the audio recording industry, particularly those involving key technological advances; 2) understanding and appreciating recent advances in sound recording technologies and methods; and 3) development of critical thinking, research, writing, and presentation skills.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 593. Special Projects in Music Engineering Technology. 1-3 Credit Hours.

Advanced individual instruction pertaining to faculty member's area expertise and student's area of interest. This course includes a culminating project.

Requisite: Frost School of Music only.

Components: IND.

Grading: GRD.

Typically Offered: Fall, Spring, & Summer.

MUE 594. Special Topics in Music Engineering Technology. 1-3 Credit Hours.

Advanced group/classroom instruction pertaining to faculty member's expertise and students' areas of interest.

Components: SEM.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 601. Transducer Theory. 3 Credit Hours.

Course covers the fundamentals of electromagnetism and audio transducer theory including loudspeaker and microphone systems. Classical electroacoustical analysis of transducers including acoustic suspension, bass-reflex, transmission line, electrostatic and horn loudspeakers, dynamic, ribbon and condenser pressure, and pressure-gradient microphones. Students use computer-aided design programs and Thiele-Small parameterization to model loudspeakers and measure loudspeaker responses. Open to MUE and EAN Majors only.

Components: LEC.

Grading: GRD.

Typically Offered: Spring.

MUE 602. Audio Signal Processing I. 3 Credit Hours.

A study of the theory and practice of digital audio topics including discrete time sampling, quantization, dithering, PCM, A/D and D/A conversion, digital filtering, oversampling, modulation codes, timebase, error correction codes, magnetic storage, DAT, and optical storage.

Requisite: Frost School of Music only.

Components: LEC.

Grading: GRD.

Typically Offered: Fall.

MUE 603. Audio Signal Processing II. 3 Credit Hours.

A study of the theory and practice of digital audio topics including fiber optics and networks, compact disc, interconnection, psychoacoustics, low bit-rate perceptual coding, MPEG, digital audio broadcasting, sigma-delta conversion, noise shaping, digital video, and emerging technologies. Open to MUE and EAN Majors only.

Components: LEC.

Grading: GRD.

Typically Offered: Spring.

MUE 604. Audio Signal Processing III. 3 Credit Hours.

Theory, design, and development of computer audio synthesizers and analyzers. Students implement software synthesizers including analog and physical modeling, wave-table, wave-shaping, and FM designs. Classical and modern theories of timbre and time-frequency analysis are included.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 606. Current Trends in Music Engineering II. 3 Credit Hours.

MUE 606 addresses current technologies, skills, and techniques employed in a specific aspect of the audio technology and/or music technology fields.

Components: LEC.

Grading: GRD.

Typically Offered: Spring.

MUE 608. Current Trends in Music Engineering III. 3 Credit Hours.

MUE 608 addresses current technologies, skills, and techniques employed in a specific aspect of the audio technology and/or music technology fields.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 610. Computational Psychoacoustics. 3 Credit Hours.

This course deals with the fundamentals of audition in human biological systems, including auditory sensory transduction, cochlear processes, neural pathways, cortical organization, and auditory illusions, with specific applications to perceptual data reduction techniques and auditory displays.

Requisite: Frost School of Music only.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 611. Current Trends in Music Engineering IV. 3 Credit Hours.

MUE 611 addresses current technologies, skills, and techniques employed in a specific aspect of the audio technology and/or music technology fields.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 620. Audio Technology for Musicians. 3 Credit Hours.

Introduction and overview of audio technology with emphasis on music recording, production equipment, and techniques. Topics include microphones, loudspeakers, mixing consoles, interconnection, amplifiers, digital processing, time code, and surround sound. Open to non-MUE majors.

Components: LEC.

Grading: GRD.

Typically Offered: Fall.

MUE 621. Timbral Ear Training. 3 Credit Hours.

Students in this course will accomplish four primary goals: 1) instantaneous discernment of ISO frequency regions and critical bands; 2) aural identification of audio-processing techniques, artifacts, and problems; 3) development of critical thinking skills and competence in current audio listening test methodologies; and 4) successful completion of a comprehensive bank of critical listening "golden ears" tests

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 694. Special Topics in Music Engineering Technology. 1-3 Credit Hours.

Advanced group/classroom instruction pertaining to faculty member's expertise and students' areas of interest.

Components: SEM.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 705. Current Trends in Music Engineering I. 3 Credit Hours.

This seminar-style course introduces new graduate students to research, the thesis process, and graduate-level music engineering topics, ranging from conceptual to practical. Theory, design and development of audio signal processing techniques. Topics include DSP architectures, systems design, algorithm development, and applications. DSP development tools used to write, debug, and test programs including time-domain based effects such as reverb, chorus, flanging, and digital delay as well as frequency-domain projects such as FIR, IIR, and FFT filters and vocoders.

Components: LEC.

Grading: GRD.

Typically Offered: Fall.

MUE 706. Current Topics in Audio Analysis and Signal Processing. 3 Credit Hours.

MUE 706 surveys recent topics related to audio analysis, synthesis, and signal processing with an emphasis in software programming and practical applications. Course material is drawn from several topics: current audio APIs and plug-in architectures, computational theories of musical timbre, machine listening, spatial audio, digital audio effects, new digital audio synthesis techniques, and machine-musician interaction modalities.

Requisite: Frost School of Music only.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 753. Transducer Workshop. 1 Credit Hour.

Fundamentals of electromagnetism and audio transducer theory including loudspeaker and microphone systems. Classical electro-acoustical analysis of transducers including acoustic suspensions, bass-reflex, transmission line, electrostatic and horn loudspeakers, dynamic, ribbon and condenser pressure, and pressure-gradient microphones. Students use computer-aided design programs and Thiele-Small parameterization to model loudspeakers and measure loudspeaker responses.

Requisite: Frost School of Music only.

Components: LEC.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 793. Special Projects in Music Engineering Technology. 1-3 Credit Hours.

Advanced individual instruction pertaining to faculty member's area of expertise and student's area of interest. This course includes a culminating project.

Components: IND.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 794. Special Topics in Music Engineering Technology. 1-3 Credit Hours.

Advanced group/classroom instruction pertaining to faculty member's expertise and students' areas of interest.

Components: SEM.

Grading: GRD.

Typically Offered: Offered by Announcement Only.

MUE 813. Master's Research Project. 1-3 Credit Hours.

The student working on his/her master's research project enrolls for credit as determined by his/her advisor. Credit is not awarded until the project paper is accepted.

Components: THI.

Grading: SUS.

Typically Offered: Fall & Spring.

MUE 820. Research in Residence. 1 Credit Hour.

Used to establish research in residence and maintain full-time enrollment for the master's degree after the student has completed the required hours of thesis or project credit.

Components: THI.

Grading: SUS.

Typically Offered: Fall, Spring, & Summer.