(AE) AUDIO ENGINEERING

Courses

AE 100. Audio Engineering I. 3 Hours.
This course surveys the fundamental concepts of audio production. It introduces students to sound and psycho-acoustics, the principles of audio consoles and signal routing, and essential technologies such as loudspeakers, microphones, and signal processing. Throughout the course, students develop a common vocabulary relating to the audio industry, concepts, and career options. Lab work includes mixing and signal flow exercises. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations.

AE 101. Applied Audio Engineering I. 2 Hours.
This course is the lab segment for AE 100 Audio I, which introduces acoustics and psycho-acoustics, the principles of audio consoles and signal routing, and essential technologies such as loudspeakers, microphones, and signal processing. Throughout the course students develop a vocabulary of common audio definitions, concepts, and career options. Lab work includes mixing and signal flow exercises. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations.

AE 102. Music Structure and Style for Audio. 3 Hours.
This course fosters an appreciation of various musical genres and their typical forms, stylistic components, and instrumentation. Through regular music listening and analysis, students develop their abilities to communicate in professional music environments. Emphasis is made on critical listening skills that highlight the recording and mixing techniques common in music production. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations.

AE 103. Intro To Live Sound Production. 3 Hours.
This course introduces the concepts and practices of live sound engineering. Students learn analog console functionality, build signal flow knowledge, develop ear training skills. and practice how to properly set up a system for a live event. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 100.

AE 104. Pro Tools 1. 3 Hours.
Pro Tools I offers an introduction to the most widely used application for music and post production in the world today. The course provides the foundational skills necessary for basic recording, mixing and editing within the Pro Tools environment. Students learn file structure, edit functions, time scale and ruler views, session configuration, recording and managing audio, importing audio and QuickTime movie files, MIDI basics, software based mixing, virtual instruments, region groups, looping audio, and the use of plug-ins. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 101.

AE 200. Audio Engineering II. 3 Hours.
In AE 200, students build upon their audio knowledge and experience obtained in Audio Tech. I, through classroom studies and hands-on recording and mixing. Students foster their knowledge by investigating audio fundamentals, signal flow, common recording technologies, and studio operation procedures. In the lab, students learn microphone, console, and session management techniques by recording live performers. In personal labs, students hone mixing and recording skills. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 103.

AE 201. Applied Audio Engineering II. 3 Hours.
In the studio, students learn microphone, console, and session management techniques through the recording of live performers. In personal labs, students hone mix skills through weekly mixing of prerecorded material. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 104.

AE 202. Intro To Music Production. 3 Hours.
This course helps students achieve an understanding of the ideas and principles behind the theory and the structure of music. Harmony, melody, rhythm, and form are explored, coupled with theory and ear training exercises, and composition projects. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations.

AE 203. Sound Reinforcement Techniques I. 3 Hours.
This course reinforces live sound knowledge and skills through hands on experience. Topics include digital console operation, microphones, mixing workflows, wireless audio technologies, and advanced signal flow concepts. Participation in performance events is required, including concerts, video productions, sporting events, and variety shows. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 103.

AE 205. Audio Studio Practicum. 1 Hour.
This course gives third-semester students in the Audio Engineering major the opportunity to assist and learn from upper-level students on senior projects. Students in this course will assist students in AE 411 Music Engineering & Production during recording, mixing, mastering, and production sessions in the WCC Audio Studio and WCC Studio B. Key components of this course include signal flow with microphones, hardware, and other equipment during tracking and mixing sessions, and music production techniques in Pro Tools.

AE 221. Intro to Post Production. 3 Hours.
This course explores the fundamentals of editing video as a complement to the audio portion of students' work. From file management to compression schemes and from editing on a timeline to distribution methods, students examine various facets of video, including commercials, films, live productions, and television shows. The course also looks at how certain aspects of audio post production integrate with variations of video, including a snapshot of Foley work, ADR, SFX mixing, and surround sound editing. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 104 or VF 212.

AE 253. Live Entertainment Technology. 3 Hours.
Students in this course explore the multi-disciplinary nature of live event production and the fundamentals of stage lighting, theatrical rigging, and entertainment rigging. Course outcomes emphasize event safety and methods for working effectively in a large, multi-department production crew. In addition, students become familiar with stage and production terminology, common job titles and their associated responsibilities, and complete mock load-ins and strikes in a variety of event scenarios. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations.

AE 299. Topic/. 1-6 Hour.
This course listing is intended to provide the opportunity for faculty to offer courses of interest in Communications Technology that would not normally be part of the University curriculum.

AE 300. Technical Foundations of Audio Systems. 3 Hours.
This course explores advanced audio theory including gain staging, loudness, electricity fundamentals, power, and grounding. It also addresses concerns in the design and interconnection of digital and analog audio equipment. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 200.

AE 301. Hybrid Mixing Techniques. 3 Hours.
In this course, students create music and post-production mixes, building technical and listening skills. A variety of workflows are explored, including in-the-box mixing with analog outboard gear, use of worksurface controllers, and immersive mixing fundamentals. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 201.

AE 302. Electronic Music Technology. 3 Hours.
The course covers the practices and principles of analog and digital sound synthesis, sequencing, sampling, and MIDI. Use of both hardware and software devices are employed and students learn techniques to create music tracks with various controllers and synthesized instruments. Electronic Music Technology also includes an overview of industry and technology innovators, an introduction to sound design methods and applications, and a survey of electronic musical equipment commonly found in internship and employment scenarios. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 202.

AE 303. Sound Reinforcement Techniques II. 3 Hours.
In this course students expand their experience with digital consoles, mixing techniques, cable construction, microphones, monitor mixing, and the design and interconnection of modern audio systems. Participation at live events as a mix engineer is also required. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 203.

AE 305. Audio Studio Practicum II. 1 Hour.
This course gives fourth- and fifth-semester students in the Audio Engineering major the opportunity to assist and learn from upper-level students on senior projects. Students in this course will assist students in AE 451 Advanced Music Engineering & Production during recording, mixing, mastering, and production sessions in the WCC Audio Studio and WCC Studio B. Key components of this course include advanced signal flow with microphones, hardware, and other equipment during tracking and mixing sessions, and advanced music production techniques in Pro Tools.

AE 311. Applications of Effective Recording. 3 Hours.
This course focuses primarily on recording in music and post-production environments. Topics include advanced instruction in signal flow, microphone choice and technique, preamplifier options, equalization and compression uses, and recording software. Regular recording of performance groups ensure that students have a full understanding of the tracking process. Students hone session management, communication, and record keeping skills to ensure an enjoyable studio experience for all and a quality final product. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 201.

AE 314. Pro Tools II Music. 3 Hours.
This course builds intermediate Pro Tools skills that are necessary in music production. Students learn the components of an HDx system, advanced mixing and editing options, the use of alternate production tools, time operations, alignment techniques, writing and editing automation, recording and comping multiple takes, plug-ins such as Auto Tune, virtual instruments, MIDI, and beat detective. Students complete hands-on projects involving recording and mixing music in the Pro Tools environment. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 201.

AE 324. Pro Tools II Post. 3 Hours.
This course builds intermediate Pro Tools skills in audio post production. Students learn the components of a HDx system, advanced mixing and editing options, the use of alternate production tools, time operations, alignment techniques, writing and editing automation, recording and comping multiple takes, elastic audio, virtual instruments, MIDI, and beat detective. Students complete hands-on projects involving editing and mixing audio for video in the Pro Tools environment. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 201.

AE 330. Audio Engineering Internship. 3 Hours.
This experiential course for Audio Engineering students involves supervised work with participating employers. It provides for the application of classroom learning in a professional work environment. The chosen site is be based upon; (1) an interview conducted by the management of the internship site, (2) the acceptance by the internship coordinator, and (3) the student's preference of location based on availability. The internship coordinator has the final decision on all internship placements. The coordinator's decision will be based on their interaction with the student during previous coursework and their understanding of the requirements of the student and the internship site. Consideration is given to the student's personal preferences with regard to location and type of internship site. Prerequisite(s): College Level=Senior.

AE 351. Audio Electronics. 3 Hours.
This course investigates the design and maintenance of audio electronics. Students explore electronic components and their use in typical audio circuits. Students also use soldering, measurement, and other tools to construct cabling and kits. Other topics include power and grounding, electrical safety, noise solutions in audio systems, and analog interfacing. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 300.

AE 352. Speaker Systems: Design & Optimization. 3 Hours.
This course focuses upon sound system design and optimization. Processing, amplifiers, loudspeakers, and system analysis tools are investigated in detail. Special attention is paid to system optimization, including impedance, phase, and coverage concerns. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 300.

AE 353. Broadcast Audio Engineering. 3 Hours.
In this course students receive hands-on training on multiple sound reinforcement consoles. Key topics in this course include advanced audio signal flow, design, commissioning, and setup of complex broadcast audio systems, and a focus on broadcast mixing principles. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 203.

AE 354. Broadcast Audio Engineering Event Practicum. 1 Hour.
In this complementary course to AE 353, students apply their skills with the Calrec Summa broadcast console and principles of broadcast production while working live TV or streaming events. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentration.

AE 402. Immersive Audio. 3 Hours.
This course will survey the world of immersive audio, including topics and techniques such as spatial audio, surround sound, Dolby Atmos, Ambisonics, and binaural audio. Students will be introduced to historical approaches, related psychoacoustic fundamentals, immersive technologies for live events, and the current state of immersive audio in the music, film, and live theatre industries. Experiential activities will include mixing a selection of music and post projects in 9.1.4 Dolby Atmos, using Meyer Sound's Spacemap Go in the Husson iEX Center, and capturing and creating original and immersive audio for soundscapes and other projects for premiere at the Husson Artwalk. Prerequisite(s): AE 302.

AE 403. Live Sound Production. 3 Hours.
In this course students explore the duties of the sound reinforcement professional, including advancing a show, and creating music style and event appropriate mixes. Additional topics include microphone selection, system troubleshooting, and operation of QLab. Projects include a variety of weekly mix assignments, and participation at live events in a variety of positions. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 353.

AE 404. Live Sound Production Practicum. 1 Hour.
This practicum provides experience that supplements and reinforces the learning and undertakings of AE 403, Live Sound Production. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations.

AE 411. Music Engineering & Production. 3 Hours.
This course instructs students in advanced music production procedures including the setup and use of the API Vision for tracking and mix sessions, recording and mix techniques, troubleshooting in the studio, working with producers and artists, use of software to edit recorded performances, and mastering. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 300 and AE 301 and AE 311.

AE 421. Post Production. 3 Hours.
This course is designed to instruct students in the acquisition, control, processing and purpose of audio in video production and digital filmmaking. Students learn the technology, techniques, and requirements for editing and adding additional audio to production sound. This course covers a wide array of audio topics including: audio acquisition, mixing techniques for different formats and specs, sound effects, ADR, and Foley. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 221 and AE 300 and AE 301 and AE 311.

AE 451. Advanced Music Engineering & Production. 3 Hours.
As the capstone course in the Music Production curriculum, students have the opportunity to put learned knowledge & skills (technical, soft, & critical thinking) to use by recording, mixing and mastering a complete musical project. Students are responsible for selecting an artist, helping them prepare and record their material, then mix, master, and deliver results in a production-ready package. Students receive significant studio time to complete the project to the satisfaction of both the artist and instructor. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 411.

AE 453. Advanced Live Sound Production. 3 Hours.
This capstone course investigates multiple advanced sound reinforcement topics, including digital audio networking, system optimization, wireless coordination, and entertainment rigging fundamentals. To test their learning, students pursue a handful of industry and manufacturer certifications. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 352.

AE 454. Advanced Live Sound Production Practicum. 1 Hour.
This practicum provides students an opportunity to implement knowledge and skills gained throughout the Live Sound Production program in an event environment. It parallels the capstone course, AE 453. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations.

AE 461. Advanced Post Production. 3 Hours.
This course provides students with significant studio time to record, edit, and mix sound components of a variety of post production mediums. Students gain further experience in both the production and post production of audio for visual media. A minimum of C+ must be earned for all required Audio Engineering courses in the Music Production, Post Production, and Live Sound Production concentrations. Prerequisite(s): AE 421.

AE 499. Topic/. 3 Hours.
This course listing is intended to provide the opportunity for faculty to offer advanced courses of interest in Audio Engineering that would not normally be part of the University curriculum.