



AUD-546: RECORDING MUSIC & LIVE SOUND

Effective Term

Fall 2026

BOT Approval Date

06/12/2025

Discipline

AUD - Audio Production

Course Number

546

Course Title

Recording Music & Live Sound

Short Title

Recording Music & Live Sound

Credit Status (CB 04)

D - Credit - Degree applicable

Units**Lecture Units**

3.00

Total Units

3.00

Hours**Lecture Contact Hours**

48-54

Out of Class Hours Lecture

96-108

Total Contact Hours

48 - 54

Total Out of Class Hours

96 - 108

Total Student Learning Hours

144 - 162

Distance Education

No

Catalog Description

This course covers professional microphone techniques for capturing vocals, acoustic instruments, and electronic music with clarity and precision. Explore advanced mixing methods to craft polished recordings, and gain hands-on experience setting up and operating public address (PA) systems for concerts, theater productions, and live events.



Requisites

Prerequisite(s)

Prerequisite(s) (must be taken before)

AUD-141 (with a grade of C or better).

Codes

TOP Code (CB 03)

1005.00* - *Commercial Music

CIP Code

50.0913 - Music Technology.

Repeatability Code

No

Grading Option

Letter grade OR P/NP

Minimum Qualifications

Minimum Qualifications	And/Or
Commercial Music	End

Learning Objectives

Learning Objectives

Learning Objective
1. Assess the acoustic and electronic properties of various musical instruments to determine optimal recording and live sound techniques
2. Evaluate microphone selections for vocals and instruments based on sonic characteristics, performance needs, and industry standards
3. Analyze advanced digital recording techniques for live sound applications
4. Synthesize a professional-quality mix, balancing spatial perspective, dynamic range, and sonic clarity
5. Evaluate, configure, and troubleshoot PA system components and signal flow to ensure high-quality live sound reinforcement
6. Develop strategic live sound solutions by designing and integrating a complete PA system, including wired and wireless microphones, dynamic processing, and stage monitoring
7. Analyze and adapt recording and live sound techniques to support diverse artists, musical genres, and performance environments, ensuring equitable and culturally responsive audio production

Learning Outcome Information

Course Learning Outcomes

Learning Outcome
1. Students will identify the groupings of a rock band for an overdub-style recording session.
2. Students will identify the microphone placement for a standard drum kit.
3. Students will identify the standard uses for a Channel-strip's Aux Sends during a live-sound event.

Content

Course Lecture Content

1. Recording Music
 - a. Microphone Selection for Musical Instruments
 - i. Drums
 1. Characteristics (e.g., transient spikes, frequency response)
 2. Microphone techniques for kick, snare, toms, overheads
 - ii. Acoustic String Instruments (e.g., guitar, violin, cello, harp)
 1. Tonal characteristics
 2. Best mic techniques for clarity and resonance
 - iii. Plucked String Instruments (e.g., bass, ukulele, banjo)
 1. Transient response and articulation
 2. Mic placement strategies
 - iv. Bowed String Instruments
 1. Capturing bowing dynamics and tone
 2. Mic positioning for orchestral and solo recordings
 - v. Struck String Instruments (e.g., piano, hammered dulcimer)
 1. Acoustic properties and mic placement considerations
 - vi. Woodwinds (e.g., flute, saxophone, clarinet)
 1. Directionality and breath dynamics
 2. Mic techniques for isolation and natural tone
 - vii. Brass Instruments (e.g., trumpet, trombone, tuba)
 1. Sound pressure levels and mic choices
 2. Strategies for live vs. studio recording
 - viii. Electronic Instruments (e.g., synthesizers, drum machines, electric guitar/bass)
 1. Direct input (DI) vs. mic'd amplification
 2. Capturing stereo image and effects
 - b. Microphone Selection for Vocals
 - c. Diverse Vocal Characteristics and Mic Techniques
 - i. High-Register Vocalists (soprano, alto, mezzo-alto)
 - ii. Low-Register Vocalists (tenor, baritone, bass)
 - d. Addressing Common Vocal Challenges
 - i. Breathing, plosives, sibilance, and fricatives
 - ii. Mic-to-source distance and proximity effect
 - e. Recording Vocal Ensembles and Harmonies
 - i. Mic placement for backup and harmony vocals
 - ii. Capturing group dynamics in studio and live settings
 - f. Advanced Microphone Techniques
 - i. Off-axis microphone placement
 - ii. Stereo arrays: coincident pairs, ORTF, spaced pairs
2. Mixing Music
 - a. Balancing and Enhancing Tracks
 - i. Mixing Fundamentals
 1. Balancing lead vocals, instruments, and background elements
 2. Achieving clarity and cohesion in a mix
 - ii. Signal Processing Techniques
 1. Equalization (EQ) strategies for separation and warmth
 2. Compression for dynamic consistency
 3. Reverb and delay for depth and spatial enhancement
 - b. Spatial Imaging and Stereo Field
 - i. Sound Placement and Panning
 1. Stereo vs. surround sound considerations
 2. Using panoramic potentiometers (pan pots)
 - ii. Phase and Compatibility Checks
 1. Stereo-to-mono translation
 2. Identifying and resolving phasing issues

- c. Evaluating and Finalizing the Mix
 - i. Critical Listening and Adjustments
 - 1. Balance, spatial perspective, dynamic range, and clarity
 - 2. Ensuring source quality and tonal integrity
 - 3. The cultural and emotional impact of mixing cultural music styles
 - ii. Mixdown Options and Delivery Formats
 - 1. Analog vs. digital mixdown
 - a. How technology has increased accessibility to quality recordings
 - 2. Sample rate, bit depth, and export considerations
 - 3. Platform accessibility and clarity for range of listeners
 - 4.
- 3. Live Sound (Concert & Event Setup)
 - a. Public Address (PA) System Design and Setup
 - i. Core Components and Functions
 - 1. Mixers, amplifiers, and signal processors
 - 2. Monitor systems (house vs. stage monitoring)
 - 3. Outboard gear vs. digital channel applications
 - ii. System Integration and Signal Flow
 - 1. Connecting wired and wireless microphones and instruments
 - 2. Managing stage setup for optimal performance
 - b. Live Mixing and Sound Reinforcement
 - i. Mixing in a Live Environment
 - 1. Equalization and balance adjustments
 - 2. Effects processing for live performances
 - ii. Troubleshooting and Problem-Solving
 - 1. Diagnosing and resolving audio issues in real time
 - 2. Feedback control and system reliability

Methods of Instruction

Method

Homework

Integration

Homework will be used to support the day's lecture and practical demonstrations, allowing the student a continued development and construction of knowledge at home. For example: Students will be assigned the study of stage plots and mix-channel assignments of various types of live-sound situations: Rock, Country, Blue-grass, Concert, Symphonic. Students will then create their own stage plots, as assigned by the instructor, that would mixer size, channel layout, back-of-house mixer, stage monitors, microphones types and their cable runs, amp placements and house speaker arrangement.

Method

Lecture

Integration

Lecture will consist of topics including (but not limited to), the characteristics of musical instruments; microphone techniques for vocals and instruments; how to construct proper mixdowns; the various components of a live sound (Public Address) system; how to set-up a live sound system, and how wireless microphones integrate with a live sound system.

Method

Observation and Demonstration

Integration

The instructor will demonstrate the varying pick-up patterns and frequency sensitivities of microphones, revealing to students how each characteristic can have a profound impact on musical-instrument and vocal situations.

Method

Projects

Integration

Projects will be used to demonstrate and practice correct microphones choices for instruments and vocals; proper multi-track recording set-up and hierarchy; a cohesive mixdown with and/or without vocals; the processes for constructing a live sound, concert sound system; and how to create a live mix for a stage band.

Methods of Evaluation**Method**

Exams/Tests

Integration

Comprehensive written and practical exams/tests with a narrowed range of topics will be used by the instructor to evaluate a student's mastery of technical knowledge. Exams and tests will cover topics such as the signal path of a mixing console, microphone use and placement for specific instruments, on-stage monitoring systems, and proper channel levels for the mixdown of a small, jazz combo band.

Method

Quizzes

Integration

Short, written quizzes will be used by the instructor to evaluate a student's understanding and comprehension of topics such as microphone characteristics, signal path (live sound and recording studio), and the set-up process of building a live-sound system.

Method

Small group projects

Integration

Recording projects will be evaluated by the instructor who will critically listen for a cohesive mixdown, proper equalization curves, and use of dynamic effects. Live sound projects will be evaluated for timeliness of stage set-ups, live mix quality, stage monitor set-up and implementation, and proper equalization curves.

Assignments**Assignment Type**

Reading

In-class and/or outside of class

Outside of class

Formative or Summative

Formative

Assignment

Analyze how diversity impacts audio production, exploring how different cultural, gender, and identity perspectives shape music and live sound. This assignment encourages critical thinking about ethical representation, accessibility, and industry inclusivity.

Reading Materials:

Read through the Diversity, Equity, & Inclusion page on the Audio Engineering Society (AES) website (<https://aes2.org/community/diversity-equity-inclusion-committee/>).

Assignment Instructions:

After completing the readings, write a 500-word reflection addressing the following:

How does cultural identity influence recording and mixing decisions?

What challenges do underrepresented groups face in the audio industry, and what solutions exist?

How can live sound professionals ensure accessibility and inclusivity in concert and event audio?

Provide an example of an artist, engineer, or production approach that promotes diversity in audio.

Assignment Type

Writing

In-class and/or outside of class

Outside of class

Formative or Summative

Formative

Assignment

Demonstrate understanding of audio signal flow, microphone selection, and live sound system design by analyzing a real-world recording or live sound scenario. This assignment will help reinforce key technical concepts while developing problem-solving skills relevant to professional audio production.

Assignment Instructions:

Write a 750-word technical analysis addressing the following:

1. Recording Scenario (Studio or Field Recording)

Describe an audio recording setup for a specific musical performance (e.g., a live band, solo vocalist, or orchestral ensemble).

Identify the microphone types and placements you would use and justify your choices based on instrument characteristics and recording environment.

Explain the signal path, from microphone input to final recording (including preamps, interfaces, DAW settings, and monitoring).

2. Live Sound Scenario

Design a public address (P.A.) system for a mid-sized venue (e.g., concert hall, outdoor festival, or theater).

Outline the signal chain, including microphones, mixers, processors, amplifiers, and speakers.

Discuss how you would handle monitoring, feedback control, and equalization to optimize sound quality.

3. Troubleshooting & Optimization

Identify potential technical issues in both scenarios (e.g., mic bleed, phase issues, feedback loops).

Suggest practical solutions to improve clarity, balance, and overall audio quality.

Assignment Type

Other

In-class and/or outside of class

In-class

Formative or Summative

Summative

Assignment

Apply your knowledge of mixing techniques, signal processing, and spatial imaging to create a polished, professional-quality mix. This project will evaluate your ability to balance elements, apply effects, and enhance clarity and depth in an audio production.

Assignment Instructions:

Part 1: Mixing & Processing (Hands-on Application)

Using the provided multitrack session containing raw recordings of a song or audio project, use a Digital Audio Workstation (DAW) and:

1. Balance & Leveling:

Adjust track levels to achieve a clear, professional mix.
Prioritize lead elements while maintaining clarity in supporting tracks.

2. EQ & Compression:

Apply equalization (EQ) to shape tonal balance and remove unwanted frequencies.
Use compression to control dynamics and enhance presence.

3. Reverb, Delay & Effects:

Implement spatial effects to create depth and ambiance.
Utilize creative effects (chorus, distortion, automation) where appropriate.

4. Panning & Stereo Imaging:

Position instruments across the stereo field for clarity and separation.
Ensure mono compatibility to prevent phase cancellation issues.

5. Final Mixdown & Export:

Render a final stereo mix in both WAV (lossless) and MP3 (compressed) formats.
Ensure proper headroom and loudness levels (-6dB peak before mastering).

Part 2: Written Analysis (Critical Thinking & Justification)

Alongside the mix, submit a 500-word reflective report addressing:

Mixing Choices: Explain why specific EQ, compression, and effects were applied.
Challenges & Solutions: Identify problems encountered and how they were resolved.
Artistic Intent: Describe how the mix supports the emotion and style of the track.

Final Deliverables:

Mixed WAV and MP3 files
Session file or screenshots of DAW settings
500-word reflective analysis

Course Materials

Textbooks

Huber, D.M., Caballero, E., & Runstein, R. (2023). Modern recording techniques: A practical guide to modern music production. 10th ed. Rutledge. ISBN: 978-1032197159

Class Size Information

Class Size

30

Class Size Category

F - Individualized, skills#based instruction/field practice 30

Diversity and Inclusion

Course Design and Materials: Course will incorporate diverse perspectives, authors, and examples that reflect a variety of cultures, identities, and lived experiences. Instructional materials will be reviewed regularly to ensure representation, inclusivity, and alignment with equity-minded practices across disciplines.

Inclusive Learning Environment: Instructors will establish classroom norms and policies that promote respect, civil discourse, and belonging in both online and face-to-face classes. Clear expectations for communication and engagement will support a learning space where all students feel valued and heard.

Accessible Instruction: Course content will be delivered using accessible design. Materials will follow accessibility guidelines within the CMS, including captioned media, readable document formats, and multiple means of engagement to support diverse learning.

Equitable Teaching Practices: Instructors will use transparent and grading criteria, varied assessment methods, and timely feedback to promote fairness and student success. Opportunities for revision, reflection, and multiple demonstrations of learning may be incorporated when appropriate to the discipline.

Culturally Responsive Pedagogies: Instructional strategies will encourage critical thinking about diverse perspectives and systems of power relevant to the course content. Faculty will foster opportunities for students to connect course material to real-world contexts.

Ongoing Reflection and Improvement: Faculty will engage in continuous professional development related to IDEAA principles and reflect on course practices using metacognition to identify opportunities for increased equity, inclusion, and accessibility.

Explain how diversity and inclusion(e.g., gender, culture/race, sexuality, etc.) is infused into the course.

Diversity and inclusion are infused to AUD-546, ensuring students develop culturally responsive audio production skills. The course covers microphone and mixing techniques for diverse vocal ranges and musical styles, awareness of how mixing can impact cultural recordings, and maximizing accessibility through technology platforms. Live sound applications address accessibility and clarity. Students will analyze ethical considerations in artist representation and engage in collaborative projects that reflect industry diversity.

Describe how assignments, instruction, evaluation, course content, and interactions are contextualized for diverse learners promoting an equitable course.

This course is designed to be equitable and inclusive, ensuring that diverse learners can engage, succeed, and see themselves reflected in the content. Assignments offer flexibility in both creative and technical approaches, allowing students to experience cultural backgrounds and musical influences on their work. Instruction incorporates multiple teaching methods—including hands-on demonstrations, visual guides, and discussions—to accommodate different learning styles. Evaluation is based on clear, skills-focused rubrics, with opportunities for revision and feedback to support growth. Course content highlights a variety of genres, recording techniques, and industry perspectives. Interactions are structured to foster collaboration and peer learning, ensuring students from different backgrounds can share experiences, perspectives, and expertise in a supportive environment.

Interactions

Explain how the course will incorporate student-to-student interaction.

Student-to-student interaction in this course will be a vital component of the learning experience, fostering collaboration and real-world problem-solving. Students will work in small teams to set up microphone arrays, troubleshoot live sound systems, and mix recordings, simulating the teamwork required in professional audio environments. Peer critiques and feedback sessions will allow students to evaluate each other's recording and mixing techniques, refining their critical listening and communication skills. Group lab exercises will require students to collaborate on live sound reinforcement, taking turns as engineers, performers, and technicians, ensuring a well-rounded understanding of each role. Additionally, discussion-based activities will encourage students to debate technical choices, workflow optimizations, and industry trends, promoting both technical knowledge and professional discourse.

Explain how the course will incorporate instructor-to-student interaction.

The instructor will engage with students through hands-on demonstrations, guided discussions, and real-time feedback during lab sessions. Lectures and workshops will provide foundational knowledge, while individualized coaching will help students refine their microphone techniques, mixing decisions, and live sound troubleshooting skills. Regular check-ins and critiques will ensure students receive constructive feedback on their work. Additionally, office hours and online discussion forums will offer opportunities for deeper engagement and support outside of class time.

Explain how the course will incorporate student-to-content interaction.

Students will engage with course content through practical, real-world applications of audio production techniques. They will experiment with different microphones, audio interfaces, and digital mixing tools to understand how theoretical concepts translate into practice. Assignments will include hands-on recording and mixing projects, case studies analyzing live sound setups, and listening exercises that challenge students to evaluate production techniques in professional recordings. Interactive learning materials, such as video tutorials, industry articles, and software simulations, will reinforce key concepts.

Explain how the course will incorporate student-to-self interaction (metacognitive).

Students will develop self-awareness and critical reflection through structured activities that encourage them to assess their growth and decision-making in audio production. Self-assessments and reflection journals will prompt students to analyze their technical choices, problem-solving approaches, and creative decisions. After each major project, students will complete post-mortem evaluations, identifying what worked, what didn't, and how they can improve in future recordings or live sound setups. Additionally, students will set personal learning goals at the beginning of the course and revisit them periodically to measure their progress and skill development.