



AUD-142: CINEMATIC AUDIO & SURROUND SOUND

Effective Term

Fall 2026

BOT Approval Date

12/11/2025

Discipline

AUD - Audio Production

Course Number

142

Course Title

Cinematic Audio & Surround Sound

Short Title

Cinematic Audio

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 explores advanced film audio post production, focusing on immersive sound design techniques. Using Pro Tools, students master surround sound mixing and Dolby Atmos workflows through hands-on projects and real-world scenarios. Participants will refine spatial audio skills and critical listening to create dynamic soundscapes that enhance cinematic storytelling. Ideal for professionals, the course equips students with technical expertise and creative insight necessary to excel in modern film post production.



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. Analyze the role of SMPTE timecode and video frame rates in audio post-production to ensure accurate synchronization between sound and picture.
2. Apply ducking techniques, noise reduction, and automation to enhance clarity and balance in audio mixes across various media formats.
3. Demonstrate proficiency in using TCE (Time Compression/Expansion) and X-FORM for precise time-stretching and pitch adjustments in audio post-production.
4. Evaluate and correct plosives, sibilance, and unwanted noise artifacts, utilizing spectral analysis tools and de-noising techniques to improve audio quality.
5. Design an edit cue list and implement advanced automation to streamline audio workflow and enhance production efficiency.
6. Develop and produce immersive audio in surround (5.1/7.1) and Dolby Atmos, integrating diverse cultural perspectives.
7. Compare the effectiveness of surround sound vs. Dolby Atmos mixing approaches, identifying the advantages and challenges of each format in storytelling and sound design.
8. Justify technical and creative decisions in a critical analysis of surround sound and Dolby Atmos projects, incorporating feedback, troubleshooting solutions, and industry best practices.
9. Construct culturally responsive soundscapes by investigating underrepresented auditory traditions, integrating diverse sonic elements to support inclusive storytelling in surround and immersive audio formats

Learning Outcome Information

Course Learning Outcomes

Learning Outcome

1. Students will assess the basic adjustments of an audio compressor.
2. Students will evaluate the four Phases for "Audio for Film/Video".
3. Students will analyze the audio signal path of a mixing console in conjunction with a standard Digital Audio Workstation and AD/DA interface.

Content

Course Lecture Content

1. Working with SMPTE and Video Frame Rates
 - a. Introduction to SMPTE Timecode
 - i. History and significance of SMPTE timecode
 - ii. How timecode is used in post-production
 - iii. Timecode formats (Drop-frame vs. Non-drop-frame)
 - iv. Synchronization for multilingual content, inclusive captioning practices, and adaptive media formats that ensure accessibility for diverse audiences—including those with disabilities, non-native language speakers, and culturally diverse communities. Emphasis will be placed on how timecode synchronization supports equitable access to cinematic experiences across global and multilingual contexts.
 - b. Video Frame Rates and Synchronization
 - i. Understanding frame rates (24fps, 30fps, etc.)
 - ii. Frame rate conversions and pull-up/pull-down techniques
 - iii. Synchronizing audio to video
 - c. Timecode Workflow in DAWs
 - i. How DAWs handle SMPTE
 - ii. Setting up and troubleshooting timecode sync
 - iii. Practical exercise: Aligning audio with video using timecode
2. Working with Audio-to-Video Topic
 - a. Syncing Audio with Video
 - i. Understanding different sync methods Common syncing issues and how to fix them
 - b. ADR (Automated Dialogue Replacement) and Foley
 - i. Techniques for recording ADR
 - ii. Foley sound design and placement
 - c. Editing and Aligning Sound to Picture
 - i. Working with markers and cues
 - ii. Using Pro Tools video engine for alignment
3. Introducing Ducking Techniques
 - a. What is Ducking and Why Use It?
 - i. Explanation of ducking in mixing
 - ii. Use cases in music, dialogue, and broadcast audio
 - b. Manual vs. Automatic Ducking
 - i. Using volume automation for ducking
 - ii. Side-chain compression techniques
 - c. Practical Applications
 - i. Hands-on exercise: Setting up ducking for voice-over narration
 - ii. Troubleshooting common ducking issues
4. Removing Noise; Hum, Crackles, and Pops
 - a. Identifying and Analyzing Noise Issues
 - i. Types of audio noise: hum, hiss, crackles, pops
 - ii. Using spectral analysis tools
 - b. Noise Reduction Techniques
 - i. EQ filtering techniques
 - ii. De-noising plugins and their application
 - c. Restoring Audio with RX (or Similar Software)
 - i. Using spectral repair tools
 - ii. Hands-on exercise: Cleaning a noisy dialogue track
5. Using TCE and X-FORM
 - a. Introduction to Time Compression/Expansion (TCE)
 - i. When to use TCE in post-production
 - ii. Different TCE algorithms
 - b. Topic 2: Advanced Time Stretching with X-FORM
 - i. How X-FORM differs from standard TCE
 - ii. Use cases for high-quality time stretching

- c. Topic 3: Practical Applications
 - i. Hands-on exercise: Adjusting dialogue timing without pitch shifting
- 6. Plosives and Sibillance
 - a. Understanding Plosives and Sibillance
 - i. How plosives and sibillance occur
 - ii. Identifying problem areas in recordings
 - b. Tools for Managing Plosives and Sibillance
 - i. De-essing techniques
 - ii. Using multi-band compression
 - c. Practical Fixes and Real-World Scenarios
 - i. Hands-on exercise: Cleaning up a problematic vocal recording
- 7. Working With Edit Cue Lists
 - a. The Role of Cue Lists in Audio Post-Production
 - i. How cue lists help organize audio edits
 - ii. Working with cue sheets for film and TV
 - b. Topic 2: Creating and Managing Cue Lists
 - i. Using DAW markers and region groups
 - ii. Exporting cue lists for external reference
 - c. Practical Exercise: Editing to a Cue List
 - i. Hands-on practice with timed cues
- 8. Advanced Automation
 - a. Automation Basics and Benefits
 - i. Types of automation: volume, pan, plugin automation
 - ii. Writing and reading automation
 - b. Advanced Automation Workflows
 - i. Dynamic EQ and multiband compression automation
 - ii. Automating effects for transitions
 - c. Hands-on Automation Practice
 - i. Using Pro Tools automation modes
 - ii. Creative use of automation for dialogue and music
- 9. Surround Sound Primer
 - a. Introduction to Surround Sound Formats
 - i. 5.1, 7.1, and Dolby Atmos explained
 - ii. Differences in mixing for surround vs. stereo
 - b. Surround Sound Mixing Techniques
 - i. Panning and spatial placement
 - ii. Binaural vs. discrete surround mixing
 - c. Hands-on Surround Sound Mixing
 - i. Mixing and exporting surround audio
 - ii. Real-world application in film and gaming
- 10. Dolby Atmos Training
 - a. Introduction to Dolby Atmos
 - i. What is Dolby Atmos and why it matters
 - ii. Overview of Dolby Renderer and DAW integration
 - b. Topic 2: Object-Based Mixing in Dolby Atmos
 - i. Understanding object vs. channel-based mixing
 - ii. Practical workflow for music and film
 - c. Hands-on Dolby Atmos Mixing
 - i. Setting up a session
 - ii. Encoding and exporting an Atmos mix

Methods of Instruction

Method

Lecture

Integration

Lectures will provide foundational knowledge on key audio post-production concepts, including SMPTE timecode, noise reduction, automation, and surround sound mixing. These sessions will include demonstrations using industry-standard software, real-world case studies, and interactive discussions to reinforce technical and creative applications.

Method

Observation and Demonstration

Integration

Students will observe and participate in instructor-led demonstrations of ADR and Foley recording, equalization properties, music choice and editing techniques.

Method

Group Projects

Integration

Working in small groups, students will apply the principles of microphone choice, ADR procedures, signal processing, and automation to complete a synchronized mixdown for film/video. Emphasis will be placed on selecting and implementing audio techniques that enhance storytelling from diverse cultural perspectives and ensure accessibility for all audiences. Students will be encouraged to consider how voice representation, language diversity, and inclusive sound design impact the final mix, fostering an equitable and culturally responsive approach to audio post-production

Methods of Evaluation**Method**

Projects

Integration

Students will work in teams to complete an audio post-production project applying key techniques such as noise removal, ducking, automation, and surround sound mixing. Assessment will be based on collaboration and workflow documentation, technical execution of deliverables, and peer feedback with self-reflection through anonymous reviews. Groups will present their workflows in class, discussing challenges and techniques, while actively engaging in constructive critiques of other projects.

Method

Class Participation

Integration

Class participation and interactive learning will be assessed through active engagement in discussions, hands-on technical exercises, and peer critiques. Students will contribute by answering and asking insightful questions, completing weekly practical assignments applying key concepts like timecode syncing and noise reduction, and providing constructive feedback on group projects. Emphasis will be placed on fostering an inclusive learning environment where diverse perspectives are valued in discussions and collaborations. A mid-semester self-reflection will allow students to evaluate their strengths, participation, areas for growth, and how they have engaged with diverse viewpoints in their learning process.

Method

Self-Evaluation

Integration

Students will maintain a portfolio showcasing their technical growth, problem-solving skills, and creative proficiency in audio post-production. This evaluation includes a Personal Progress Journal with weekly reflections on techniques learned and challenges faced, a Final Portfolio Submission featuring their best work in noise removal, automation, surround sound mixing, and Dolby Atmos, and a

Final Self-Assessment & Course Reflection analyzing their progress and key takeaways. Insights from peer and instructor feedback, as well as experiences from group projects and class participation, will be incorporated into their reflections.

Assignments

Assignment Type

Other

In-class and/or outside of class

In-class

Formative or Summative

Formative

Assignment

Formative Assignment: Surround Sound & Dolby Atmos Mixing Lab

Instructions to the Student:

Create a basic 5.1 or 7.1 mix, focusing on panning, balance, and spatial placement. Transition your mix into Dolby Atmos, incorporating object-based audio techniques such as height channels and dynamic movement. Refine your mix throughout the process based on instructor feedback, peer review, and self-assessment. Adjust spatial positioning and automation to enhance immersion. Submit a critical reflection evaluating your technical execution, creative decisions, and revisions. Compare your surround and Atmos mixing approaches, and articulate key challenges, solutions, and future learning goals.

Assignment Type

Writing

In-class and/or outside of class

Outside of class

Formative or Summative

Summative

Assignment

Writing Assignment: Reflective Essay and Presentation – “The Impact of Cultural Perspectives on Immersive Audio and Spatial Sound Design”

Instructions to the Student:

Write a 500-word reflective essay analyzing the following:

How cultural worldviews shape sound perception and spatial storytelling.

The value of incorporating non-Western and historically marginalized sonic traditions into immersive audio practices.

Your personal strategies for promoting accessibility, equity, and cultural responsiveness in future audio projects.

Use examples from global audio traditions, readings, and real-world case studies. After completing the essay, prepare and present a brief 3–5 minute oral summary of your key takeaways. Engage your classmates in a discussion on how cultural diversity influences innovation in spatial sound formats such as Dolby Atmos and ambisonics.

Assignment Type

Reading

In-class and/or outside of class

Outside of class



Formative or Summative

Formative

Assignment

Reading Assignment: Foundations of Spatial Audio & Multicultural Sound Design

Reading Selection:

Read Chapters 3–4 from Immersive Sound: The Art and Science of Binaural and Multichannel Audio, 2nd Edition, edited by Agnieszka Roginska and Paul Geluso. Focus on sections discussing cultural considerations in multichannel mixing and the use of spatial audio in diverse cinematic traditions.

Instructions to the Student:

After reading, write a one-page summary identifying how spatial audio techniques are used in different cultural and cinematic contexts. Highlight one specific example from the reading that demonstrates culturally distinct audio practices in surround or immersive formats. Be prepared to share your insights during class discussion.

Course Materials

Textbooks

Spatial Sound: Principles and Applications

Author: Bosun Xie

Publisher: Routledge

Publication Date: 2022

ISBN: 9780367533441

Overview: This comprehensive handbook delves into the fundamental principles and methods of spatial sound. It covers topics such as sound field and spatial hearing, two-channel stereophonic sound, multichannel surround sound, ambisonics, wavefield synthesis, binaural playback, virtual auditory displays, recording and synthesis, as well as the storage and transmission of spatial sound signals. The book also discusses objective and subjective evaluation methods.

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.

This course integrates diversity and inclusion into its technical training by emphasizing a global perspective on film audio postproduction. Alongside mastering Pro Tools, surround sound mixing, and Dolby Atmos, students explore how varied cultural narratives and diverse voices shape immersive soundscapes. By incorporating diverse perspectives and encouraging collaborative exercises, the course fosters cross-cultural dialogue and creative problem-solving. This approach not only deepens technical expertise but also enriches the creative process through a broad spectrum of perspectives.

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

Assignments are crafted to allow for personal expression and cultural relevance, encouraging students to draw on their own experiences to create immersive soundscapes. Instruction is delivered through varied formats—live demonstrations, interactive workshops, and self-paced tutorials—to accommodate different learning styles. Evaluations rely on clear, transparent rubrics, formative feedback, and reflective self-assessments to recognize diverse strengths. Course content includes inclusive case studies and examples that reflect multiple cultural, gender, and social perspectives, while all interactions promote open dialogue and equitable participation in mastering advanced film audio postproduction.

Interactions

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

Collaborative projects and group exercises using Pro Tools encourage students to work together on creating immersive soundscapes, blending surround sound and Dolby Atmos techniques. Peer reviews and group critiques will provide opportunities to share creative insights and offer constructive feedback, simulating real-world post production environments. This interactive approach not only deepens technical understanding but also fosters a dynamic, professional learning community.

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

The instructor leads in-depth lectures and live demonstrations that reveal the intricacies of immersive sound design and Pro Tools workflows for surround sound mixing and Dolby Atmos. Regular Q&A sessions, one-on-one mentoring, and scheduled office hours ensure personalized feedback on hands-on projects. Detailed critiques and real-time troubleshooting further support each student's technical growth and creative vision, fostering a dynamic and engaging learning environment.

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

Students engage directly with the course content by working with Pro Tools software, exploring immersive tutorials, and navigating interactive simulations that replicate real-world post production scenarios. Rich multimedia resources—including video demonstrations, detailed technical guides, and step-by-step exercises—allow learners to actively experiment with advanced surround sound mixing and Dolby Atmos workflows, thereby refining their spatial audio skills and critical listening in a self-paced, dynamic environment.

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

Student-to-self interaction is woven throughout the course via structured reflective exercises and self-assessment activities. After engaging in hands-on projects and real-world scenarios, students are encouraged to critically evaluate their work, analyze their creative and technical decisions, and set personalized learning goals. This metacognitive approach deepens self-awareness and empowers students to identify strengths and areas for improvement, ultimately guiding them toward mastery in immersive film audio post production.