

Glendale College

Course Outline of Record Report

Course ID 010778

Created - May 2025

MUSIC189 : Audio Mixer Programming and Networking

General Information

Author:	• Tobin Sparfeld
Course Code (CB01) :	MUSIC189
Course Title (CB02) :	Audio Mixer Programming and Networking
Department:	MUSIC
Proposal Start:	Spring 2026
TOP Code (CB03) :	(1005.00) Commercial Music*
CIP Code:	(50.0913) Music Technology.
SAM Code (CB09) :	C - Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000654142
Curriculum Committee Approval Date:	05/28/2025
Board of Trustees Approval Date:	07/08/2025
Last Cyclical Review Date:	05/28/2025
Course Description and Course Note:	MUSIC 189 is an intermediate level audio course which provides an overall study of professional digital mixing systems used in the live entertainment industry. Students study audio workflow, programming, and networking standards used by technicians in the entertainment industry. Note: This course may not be taken for credit by students who have completed THTR 189.
Justification:	New Course
Academic Career:	• Credit
Mode of Delivery:	• In-Person
Author:	No value
Course Family:	No value

Academic Senate Discipline

Primary Discipline:	• Music
Alternate Discipline:	• Theater Arts
Alternate Discipline:	No value

File Upload

File Upload

No Value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Transferable to both UC and CSU

Transferability Status

Pending

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	90
Total Course Out-of-Class Hours	72
Total Student Learning Hours	162

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience Education Status (CB10)

Variable Credit Course

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	2	4
Laboratory Hours	3	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	36
Laboratory	54
Studio	0
Total	90
Course Out-of-Class Hours	
Lecture	72
Laboratory	0
Studio	0
Total	72

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Prerequisites, Corequisites, Recommended Corequisites, and Recommended Preparation

Advisory

MUSIC181 - Live Sound I (in-development)

Objectives

- Describe the principles of signal flow as related to live sound.
- Demonstrate a working knowledge of the basic concepts and terminology of live sound reinforcement.

Entry Standards

Entry Standards	Description
No value	No value

Course Limitations

Cross Listed or Equivalent Course	Description
THTR 189	No Value

Requisite Validation**Upload Statistical Validation and/or other documents (if necessary)**

No Value

Specifications**Methods of Instruction**

Methods of Instruction	Lecture
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Methods of Instruction	Laboratory
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Methods of Instruction	Discussion
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Methods of Instruction	Demonstrations
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Methods of Instruction	Collaborative Learning
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Out of Class Assignments

- Written assignments, such as critiques of live performances

- Participation in or observation of live events on campus using audio mixer programming and networking

Methods of Evaluation

Project/Portfolio

Rationale

Individual projects based on the implementation of audio mixer programming and networking

Exam/Quiz/Test

Midterm Exam

Exam/Quiz/Test

Final Exam

Exam/Quiz/Test

Quizzes based on lecture readings and course material

Textbook Rationale

This is an essential Audio text. There is no equivalent.

Textbooks

Author

Title

Publisher

Date

ISBN

Swallow, Dave

Live Audio: The Art of Mixing a Show

Routledge

2010

9780240816043

Other Instructional Materials (i.e. OER, handouts)

No Value

Learning Outcomes

Course Objectives

Analyze the components of audio mixer programming and networking to better understand the relationship they have to one another.

Experiment with a variety of digital mixing systems in order to understand their differences and similarities.

Inspect and assess the set up and troubleshooting of microphone systems.

Examine a high end digital mixing system in order to assess the numerous capabilities.

SLOs

Experiment with a variety of digital audio mixing systems.

Expected Outcome Performance: 70.0

Inspect and assess the maintenance and repair of various audio systems.

Expected Outcome Performance: 70.0

Assess the capabilities of audio mixing for a production.

Expected Outcome Performance: 70.0

Demonstrate an understanding of how audio is mixed and programmed for a live production.

Expected Outcome Performance: 70.0

Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

Lecture Content

Overview of digital mixing systems, such as Yamaha, Digico, Soundcraft, Avid, Midas (8 hours)

- Introduction to digital vs. analog mixers
- Differences in workflows between manufacturers
- Console architecture: inputs, outputs, buses, matrices, and groups
- Control surfaces, touchscreen interfaces, and assignable controls
- Understanding firmware updates and software ecosystems
- Networked audio integration in digital mixers
- Hands-on exploration of console user interfaces

Setting up and troubleshooting Dante, MADI, and HyperMAC networking systems (8 hours)

- Overview of digital audio networking protocols
- Dante networking: Unicast vs. Multicast, latency settings, clocking
- Dante Controller software: routing, subscriptions, and redundancy
- MADI basics: coaxial vs. optical, daisy-chaining vs. star topology
- HyperMAC: integration in DiGiCo consoles, fiber vs. CAT5 connections
- Troubleshooting signal flow and sync issues in networked audio
- Best practices for redundancy and failover strategies
- Interfacing multiple protocols in hybrid systems

Patch, setup gain structures, EQs, dynamics, DCAs, delays, and routing to stage monitors and mains on each of the three high-end consoles (4 hours)

- Understanding input patching and digital stage boxes
- Gain staging for optimal signal-to-noise ratio
- Parametric and graphic EQs: applications for different sources
- Compression and gating techniques for live audio
- Using DCAs/VCA groups for efficient mix control
- Time-alignment techniques for delays and phase coherence
- Routing signals to mains, stage monitors, and auxiliary feeds

Utilize mixer off-line editor programs to preprogram a show on a PC or Mac (2 hours)

- Overview of offline editors for Yamaha, Digico, and Avid consoles
- Setting up input lists, routing, and patching ahead of time

- Creating and managing scenes, snapshots, and cue lists
- Pre-configuring effects, EQ, and dynamics processing
- Exporting and importing show files to the console
- Best practices for show file organization and versioning

Adding effects to inputs and outputs of live and recorded audio (2 hours)

- Types of effects: reverb, delay, chorus, flanger, pitch shifting
- Insert vs. send effects: when to use each method
- Parallel processing techniques for maintaining clarity
- Effect chains and routing for creative sound shaping
- Controlling effects dynamically during live performances
- Using snapshots for automated effect changes

Panning and mixing multitrack inputs of prerecorded audio (2 hours)

- Understanding stereo and surround mixing concepts
- Using panning for spatial clarity and separation
- Techniques for blending live and prerecorded elements
- Automation and recall of multitrack mix settings
- EQ and dynamics processing for balancing prerecorded sources

Setting up and troubleshooting of large wireless microphone and in-ear monitor systems (4 hours)

- Frequency coordination and RF spectrum management
- Using software tools like Shure Wireless Workbench and Sennheiser WSM
- Antenna placement, active vs. passive splitters, and boosters
- Intermodulation issues and how to prevent them
- Best practices for monitoring battery life and signal strength
- Troubleshooting dropouts, interference, and system failures

Setting up and troubleshooting of line array speaker systems (4 hours)

- Line array theory: physics of wavefront shaping
- Coverage pattern optimization and aiming techniques
- DSP tuning: time alignment, EQ, and crossover settings
- Subwoofer alignment strategies (cardioid, end-fire, etc.)
- Using prediction software for pre-show system design
- Common troubleshooting techniques for line array deployment

Programming synchronous and asynchronous show control using MIDI Show Control and OSC (2 hours)

- Introduction to MIDI Show Control (MSC) and Open Sound Control (OSC)
- Integrating digital mixers with lighting, video, and automation
- Synchronizing timecode with external show control systems
- Programming MIDI triggers for scene changes and automation
- Creating OSC commands for wireless control and remote operation
- Troubleshooting communication between different control systems

Total Hours: 36

Laboratory/Studio Content

Laboratory/Studio Content

Overview of digital mixing systems, such as Yamaha, Digico, Soundcraft, Avid, Midas (9 hours)

- Introduction to digital vs. analog mixers
- Differences in workflows between manufacturers
- Console architecture: inputs, outputs, buses, matrices, and groups
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- Understanding firmware updates and software ecosystems
- Networked audio integration in digital mixers
- Hands-on exploration of console user interfaces

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- Best practices for redundancy and failover strategies
- Interfacing multiple protocols in hybrid systems

Patch, setup gain structures, EQs, dynamics, DCAs, delays, and routing to stage monitors and mains on each of the three high-end consoles (6 hours)

- Understanding input patching and digital stage boxes
- Gain staging for optimal signal-to-noise ratio
- Parametric and graphic EQs: applications for different sources
- Using DCAs/VCA groups for efficient mix control
- Time-alignment techniques for delays and phase coherence
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Utilize mixer off-line editor programs to preprogram a show on a PC or Mac (3 hours)

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- Troubleshooting communication between different control systems

Audio mixer programming and networking crew work (6 hours)

- Practical Implementation of Audio Mixer Programming
- Practical Implementation of Networking for Audio Systems

Total Hours: 54

Additional Information

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Is it possible this course will have a material fee?

No

I have contacted my library liaison (<https://campusguides.glendale.edu/faculty/liasons>):

Yes

What term(s) will this course be offered?

Spring

Will any additional resources be needed for this course? (Click all that apply)

- New Equipment

If additional resources are needed, add a brief description and cost in the box provided.

This course will be included in the Audio Certificate of the new Entertainment Technology Academy (EnTech.) New equipment will need to be purchased for this course.