



El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	MUSI
Course Number:	181A
Descriptive Title:	Introduction to Electronic Music Studio
Division:	Fine Arts
Department:	Music
Course Disciplines:	Music
Catalog Description:	In this course, students are introduced to audio recording, live sound reinforcement, signal processors, microphones, reference monitors, room acoustics, Musical Instrument Digital Interface (MIDI), computers, music synthesis, and software applications. Emphasis is placed on the technical and creative utilization of audio equipment in conjunction with the production of audio recordings and live sound reinforcement.
Prerequisite:	
Co-requisite:	
Recommended Preparation:	
Enrollment Limitation:	
Hours Lecture (per week):	1
Hours Laboratory (per week):	3
Outside Study Hours:	2
Total Course Hours:	72
Course Units:	2
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	Prior to 07/1992
Transfer UC:	No
Effective Date:	
General Education: ECC	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	
Other:	

Student Learning Outcomes:	SLO #1: By the 8th week of class, Students will be expected to demonstrate an understanding of the basics of sound theory and the Waveform characteristics such as; Amplitude, Frequency, Velocity, Wavelength, Phase, Phase shift, Harmonic content, Envelope, and Studio Acoustics and Design. SLO #2: By the end of the 12th week, Students will be able to demonstrate knowledge of the various microphone types and microphone techniques by conducting a studio recording session using live instruments. SLO #3: By the end of the semester, the Student will engineer and demonstrate three of the basic recording processes such as preparation, recording, and overdubbing.
Course Objectives:	1. Demonstrate the operation of audio recorders, mixers, signal processors, MIDI, synthesizers, computers and software used for the production of audio recordings and live sound reinforcement. 2. Appraise current audio recording and sound reinforcement equipment. 3. Define and demonstrate concepts and techniques related to effective audio recording and live sound reinforcement. 4. Identify principles and terms related to room acoustics. 5. Apply acoustic principles to audio recording and live sound reinforcement. 6. Compare microphones and microphone placement techniques for effective audio recording and live sound reinforcement. 7. Evaluate reference monitors and monitor placement for quality performances.
Major Topics:	I. Audio recording A. Types 1. Live stereo 2. Live mixed 3. Multitrack 4. Random access 5. MIDI B. Pro Tools, Logic Studio 1. Operation 2. Formatting Hard Drive/ tape 3. Locate points 4. Setting levels

C. Digital sample rates

1. 44.1 kilohertz
2. 48 kilohertz
3. 96 kilohertz, 192 Kilohertz

D. Digital bit rates

1. 16 bit
2. 24 bit, 48 Bit

E. Digital transfer formats

1. AES/EBU
2. S/PDIF
3. TDIF
4. Lightpipe

F. CD/DVD burning

1. Track vs. Disk at once
2. DVD authoring

II. Audio production techniques

A. Tracking

B. Overdubbing

C. Mixdown

D. Bouncing

E. Punching in/out

F. Session procedures

1. Preproduction
2. Production schedule
3. Recording order
4. Track sheet
5. Session log

III. Recording and sound reinforcement equipment

A. Mixers

1. Recording
2. Live sound
3. Inline vs. split console
4. Signal flow
5. Input section
6. Output section
7. Monitor section

B. Amplifiers

1. Microphone preamps
2. Monitor amps

C. Effects processors

1. Equalization
2. Filters
3. Compressors
4. Limiters
5. Gates
6. Reverberation
7. Digital delay
8. Chorus
9. Flanging

D. Reference Monitors

1. Requirements
2. Near field
3. Far field
4. Drivers

5. Placement
IV. Microphones

A. Types

1. Dynamic
2. Ribbon
3. Condenser
4. Pressure Zone Microphone

B. Characteristics

1. Frequency response
2. Proximity effect
3. Presence peaks
4. Polar Patterns
5. Off axis coloration
6. Placement
7. Coincident (XY)
8. Near coincident (ORTIF)
9. Spaced Pair (AB)
10. Mid-sides (MS)
11. 3D rule
12. Instruments
13. Drums
14. Vocal

V. Computers and digital audio software

A. Types of computers

1. Desktops
2. Laptops

B. Software

1. Digital audio workstations

2. Sequencers

3. Audio editors

4. Effects plug-ins

5. Sound libraries

C. Synthesizers and samplers

1. Basic operation

VI. Room acoustics

A. Terminology

B. Speed of sound

C. Waveform measurement

1. Amplitude

2. Period

3. Wavelength

4. Hertz

5. Phase relationships

D. Overtones

1. Harmonic

2. Inharmonic

3. Fundamental

E. Reverberation

1. Direct sound

2. Early reflections

3. Reverberation

4. Echoes

F. Standing waves

1. Nodes

	2. Antinodes 3. Bass traps VII. MIDI A. Terminology B. Programming 1. Channels 2. Ports 3. Program banks 4. Continuous controllers 5. Timing clock VIII. Integration of equipment and acquired production techniques in a final project
Total Lecture Hours:	18
Total Laboratory Hours:	54
Total Hours:	72
Primary Method of Evaluation:	3) Skills demonstration
Typical Assignment Using Primary Method of Evaluation:	Using a Professional DAW such as Pro Tools, Logic Studio, Studio One, Computer/Mixer, and effects processors in the lab, record 8 to 24 tracks, then mixdown and balance the tracks. Bounce the Master tracks down to a WAV. AIFF and MP3 stereo file.
Critical Thinking Assignment 1:	Select a piece of music from a CD, WAV., AIFF or MP3 stereo recording and copy it into a folder on the computer. Using Pro Tools or Logic Studio, choose a small excerpt from the recording. Perform edits on the selection so that it will be able to repeat or loop seamlessly.
Critical Thinking Assignment 2:	Select one or more prerecorded audio sources and import them into tracks of the software program Pro Tool, Logi, or Cubase. Use these tracks as the basis of a recording project. Add more tracks using the virtual and or external synthesis instruments. Process the tracks using available audio and MIDI editing devices. Mix and balance the tracks into a finished audio recording.
Other Evaluation Methods:	Class Performance, Completion, Essay Exams, Fieldwork, Homework Problems, Laboratory Reports, Other (specify), Other Exams, Performance Exams, Quizzes, Reading Reports, Term or Other Papers, Written Homework
Instructional Methods:	Demonstration, Discussion, Field trips, Group Activities, Guest Speakers, Lab, Lecture, Multimedia presentations, Other (specify), Role play/simulation
If other:	
Work Outside of Class:	Journal (done on a continuing basis throughout the semester), Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting), Other (specify), Required reading, Study
If Other:	
Up-To-Date Representative Texts:	Dave Hampton. <u>The Business of Audio Engineering</u> . 2nd ed. Hal Leonard, 2013.(discipline standard)

	Glenn White. <u>The Audio Dictionary</u> . 3rd ed. University of Washington Press, 2005. (discipline standard) Bruce and Jenny Bartlett. <u>Practical Recording Techniques</u> . 7th ed. Focal Press, 2016. (discipline standard)
Alternative Texts:	
Required Supplementary Readings:	
Other Required Materials:	Headphones, Flash Drive (4 gig minimum), and 500gig (Fire Wire 1394) or USB2 external hard drive Mac compatible.
Requisite:	
Category:	
Requisite course(s): List both prerequisites and corequisites in this box.	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	
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Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Burt Goldstein
Date:	04/01/1986

Original Board Approval Date:	
Last Reviewed and/or Revised by:	Polli Chambers-Salazar
Date:	10/25/2024
Last Board Approval Date:	11/18/2025
Effective Term:	FA 2026