



**El Camino College**  
**COURSE OUTLINE OF RECORD – Approved**

**I. GENERAL COURSE INFORMATION**

**Subject and Number:** Music 181A  
**Descriptive Title:** Introduction to Electronic Music Studio  
**Course Disciplines:** Music  
**Division:** Fine Arts

**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.

**Conditions of Enrollment:**

*You have no defined requisites.*

<b>Course Length:</b>	<b>X Full Term</b>	<b>Other (Specify number of weeks):</b>
<b>Hours Lecture:</b>	<b>1.00 hours per week</b>	<b>TBA</b>
<b>Hours Laboratory:</b>	<b>2.00 hours per week</b>	<b>TBA</b>
<b>Course Units:</b>	<b>2.00</b>	

**Grading Method:** Letter  
**Credit Status:** Associate Degree Credit

**Transfer CSU:** X Effective Date: Prior to July 1992  
**Transfer UC:** No

**General Education:**  
**El Camino College:**

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**CSU GE:**

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**IGETC:**

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**II. OUTCOMES AND OBJECTIVES**

**A. COURSE STUDENT LEARNING OUTCOMES (The course student learning outcomes are listed below, along with a representative assessment method for each. Student learning outcomes are not subject to review, revision or approval by the College Curriculum Committee)**

**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.

**B. Course Student Learning Objectives (The major learning objective for students enrolled in this course are listed below, along with a representative assessment method for each)**

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.  
Performance exams
2. Appraise current audio recording and sound reinforcement equipment.  
Laboratory reports
3. Define and demonstrate concepts and techniques related to effective audio recording and live sound reinforcement.  
Performance exams
4. Identify principles and terms related to room acoustics.  
Essay exams
5. Apply acoustic principles to audio recording and live sound reinforcement.  
Completion
6. Compare microphones and microphone placement techniques for effective audio recording and live sound reinforcement.  
Performance exams
7. Evaluate reference monitors and monitor placement for quality performances.  
Laboratory reports

**III. OUTLINE OF SUBJECT MATTER (Topics are detailed enough to enable a qualified instructor to determine the major areas that should be covered as well as ensure consistency from instructor to instructor and semester to semester.)**

Lecture or Lab	Approximate Hours	Topic Number	Major Topic
Lab	15	I	Audio recording A. Types 1. Live stereo 2. Live mixed 3. Multitrack 4. Random access 5. MIDI B. Pro Tools, Logic Studio

			<ol style="list-style-type: none"> <li>1. Operation</li> <li>2. Formatting Hard Drive/ tape</li> <li>3. Locate points</li> <li>4. Setting levels</li> </ol> <p>C. Digital sample rates</p> <ol style="list-style-type: none"> <li>1. 44.1 kilohertz</li> <li>2. 48 kilohertz</li> <li>3. 96 kilohertz, 192 Kilohertz</li> </ol> <p>D. Digital bit rates</p> <ol style="list-style-type: none"> <li>1. 16 bit</li> <li>2. 24 bit, 48 Bit</li> </ol> <p>E. Digital transfer formats</p> <ol style="list-style-type: none"> <li>1. AES/EBU</li> <li>2. S/PDIF</li> <li>3. TDIF</li> <li>4. Lightpipe</li> </ol> <p>F. CD/DVD burning</p> <ol style="list-style-type: none"> <li>1. Track vs. Disk at once</li> <li>2. DVD authoring</li> </ol>
Lab	7	II	<p>Audio production techniques</p> <ol style="list-style-type: none"> <li>A. Tracking</li> <li>B. Overdubbing</li> <li>C. Mixdown</li> <li>D. Bouncing</li> <li>E. Punching in/out</li> <li>F. Session procedures <ol style="list-style-type: none"> <li>1. Preproduction</li> <li>2. Production schedule</li> <li>3. Recording order</li> <li>4. Track sheet</li> <li>5. Session log</li> </ol> </li> </ol>
Lab	8	III	<p>Recording and sound reinforcement equipment</p> <ol style="list-style-type: none"> <li>A. Mixers <ol style="list-style-type: none"> <li>1. Recording</li> <li>2. Live sound</li> <li>3. Inline vs. split console</li> <li>4. Signal flow</li> <li>5. Input section</li> <li>6. Output section</li> <li>7. Monitor section</li> </ol> </li> <li>B. Amplifiers <ol style="list-style-type: none"> <li>1. Microphone preamps</li> <li>2. Monitor amps</li> </ol> </li> <li>C. Effects processors <ol style="list-style-type: none"> <li>1. Equalization</li> <li>2. Filters</li> <li>3. Compressors</li> <li>4. Limiters</li> <li>5. Gates</li> <li>6. Reverberation</li> <li>7. Digital delay</li> </ol> </li> </ol>

			8. Chorus 9. Flanging D. Reference Monitors 1. Requirements 2. Near field 3. Far field 4. Drivers 5. Placement
Lab	6	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
Lecture	6	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
Lecture	6	VI	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
Lecture	2	VII	MIDI A. Terminology B. Programming 1. Channels 2. Ports 3. Program banks 4. Continuous controllers 5. Timing clock
Lecture	4	VIII	Integration of equipment and acquired production techniques in a final project
<b>Total Lecture Hours</b>		18	
<b>Total Laboratory Hours</b>		36	
<b>Total Hours</b>		54	

#### IV. PRIMARY METHOD OF EVALUATION AND SAMPLE ASSIGNMENTS

##### A. PRIMARY METHOD OF EVALUATION:

Skills demonstrations

##### B. 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.

##### C. COLLEGE-LEVEL CRITICAL THINKING ASSIGNMENTS:

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.
2. Select one or more prerecorded audio sources and import them into tracks of the software program Pro Tools ,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

##### D. OTHER TYPICAL ASSESSMENT AND EVALUATION METHODS:

Essay exams  
Performance exams  
Other exams  
Quizzes  
Reading reports

Written homework  
Laboratory reports  
Field work  
Class Performance  
Homework Problems  
Term or other papers  
Completion  
Other (specify):  
    Final Recording Mix and Composition Project  
    Journal (kept regularly throughout the course)

## **V. INSTRUCTIONAL METHODS**

Demonstration  
Discussion  
Field trips  
Group Activities  
Guest Speakers  
Internet Presentation/Resources  
Laboratory  
Lecture  
Multimedia presentations  
Role Play  
Other (please specify)  
    Recordings  
    Videos

**Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.**

## **VI. WORK OUTSIDE OF CLASS**

Study  
Required reading  
Journal  
Observation of or participation in an activity related to course content  
Other (specify)  
    2 Professional Audio Clinics/ Workshops, Field Trips

**Estimated Independent Study Hours per Week: 3**

## **VII. TEXTS AND MATERIALS**

### **A. UP-TO-DATE REPRESENTATIVE TEXTBOOKS**

Dave Hampton. The Business of Audio Engineering. 2nd ed. Hal Leonard, 2013.  
Glenn White. The Audio Dictionary. 3rd ed. University of Washington Press, 2005.  
Bruce and Jenny Bartlett. Practical Recording Techniques. 7th ed. Focal Press, 2016.

### **B. ALTERNATIVE TEXTBOOKS**

### **C. REQUIRED SUPPLEMENTARY READINGS**

### **D. OTHER REQUIRED MATERIALS**

Headphones, Flash Drive (4 gig minimum), and 500gig (Fire Wire 1394) or USB2 external hard drive Mac compatible.

**VIII. CONDITIONS OF ENROLLMENT**

**A. Requisites (Course and Non-Course Prerequisites and Corequisites)**

Requisites	Category and Justification
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**B. Requisite Skills**

Requisite Skills
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**C. Recommended Preparations (Course and Non-Course)**

Recommended Preparation	Category and Justification
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**D. Recommended Skills**

Recommended Skills
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**E. Enrollment Limitations**

Enrollment Limitations and Category	Enrollment Limitations Impact
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Course created by Burt Goldstein on 04/01/1986.

**BOARD APPROVAL DATE:**

**LAST BOARD APPROVAL DATE: 06/17/2019**

**Last Reviewed and/or Revised by: Jon Minei on 04/29/2019**

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