El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	MUSI
Course Number:	180
Descriptive Title:	Fundamentals of Electronic Music
Division:	Fine Arts
Department:	Music
Course Disciplines:	Music
Catalog Description:	This introductory course examines the terminology, equipment, techniques, and concepts related to technology used in the field of music. The course will survey the principles and practices of sound, Musical Instrument Digital Interface (MIDI), synthesis, notation, and audio recording utilizing hardware and software platforms used by professional musicians and college-level music students.
Prerequisite:	
Co-requisite:	
Recommended Preparation:	
Enrollment Limitation:	
Hours Lecture (per week):	2
Hours Laboratory (per week):	3
Outside Study Hours:	4
Total Course Hours:	90
Course Units:	3
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	Prior to 07/1992
Transfer UC:	Yes
Effective Date:	Proposed
General Education: ECC	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	
Other:	
Student Learning Outcomes:	**SLO #1:** Students should be able to compose a composition using the Computer and a specified Industry Standard DAW Software Program. The composition should be based on the elements

of the form, style, rhythm, harmony, melody and chord progressions used in commercial and traditional music.

SLO #2:

Student should be able to do a musical analysis of a given composition by ear and using the computer software reproduce and re-arrange the composition with similar instruments and sounds.

SLO #3:

Students will be able to demonstrate an understanding of musical notation and be able to print out a lead sheet of a musical example using a standard music notation program.

Course Objectives:	1. Explain the fundamentals of sound including waveforms, frequency, amplitude, and harmonics. 2. Demonstrate a conceptual and practical understanding of MIDI hardware, software, and sequencing. 3. Explain the fundamentals of synthesis techniques such as subtractive, digital, additive, wavetable, and sampling. 4. Describe the elements of computer music notation software and techniques. 5. Describe the properties and components of audio recording systems.

Major Topics:	I. **Overview of electronic music and sound design (3 hours, lecture)**
	A. Computers/Music Composition Theory
	B. Software
	C. Synthesizers
	II. **History and development of electronic music and synthesizers (6 hours, lecture)**
	A. Early Synthesizers
	B. Musique Concrete
	C. Tape music
	III. **Synthesizers and programming functions (12 hours, lecture)**
	A. Types of synthesis
	    1. Analog
	    2. Digital
	    3. Hybrid
	B. Synthesizer components
	    1. Envelopes
	    2. Filters
	    3. Amplifiers
	    4. Oscillators
	IV. **MIDI (3 hours, lecture)**
	A. Language
	    1. Bits and bytes
	    2. Hexadecimal numbers
	B. Programming
	    1. MIDI channels
	    2. Ports
	    3. Program change
	    4. Continuous controllers
	    5. System exclusive
	V. **MIDI sequencing/Composing (12 hours, lab)**
	A. Functions
	B. Tracks
	C. Piano roll editor
	D. Edit lists
	E. Quantization
	F. Looping
	VI. **Musical acoustics (6 hours, lecture)**
	A. Terminology
	B. Speed of sound
	C. Waveform measurement
	    1. Amplitude
	    2. Period
	    3. Wavelength
	    4. Hertz
	    5. Phase

D. Overtones
              1. Harmonic
              2. Inharmonic
          E. Reverberation
          F. Musical instrument design
              1. Source
              2. Modifier
              3. Controller
   VII.   **Electronic music equipment, software, and sound design programs (6 hours, lecture)**
          A. Effects processors
          B. Software effects plug-ins

              C. Notation/Engraving software

              D. Sound editing software

   VIII. **Electronic music equipment, software, and sound design programs (15 hours, lab)**

              A. Effects processors
              B. Software effects plug-ins
              C. Sound editing software

              D. Notation/Engraving software

   IX.   **Sound design and audio software (18 hours, lab)**

              A. Creating sound

              1. Additive
              2. Subtractive
              3. Wavetable
              4. Sampling

              B. Editing of sound
              C. Sound collage
              D. Audio looping
              E. Effects
              F. Importation
                  1. DVD
                  2. Video
                  3. Film
                  4. Other software programs

              G. Recording Audio

              1. Hardware components
              2. Software
              3. Microphone placement

          X. Integration of acquired sequencing, programming, and sound design skills in a final project (9 hours, lab)

Total Lecture Hours:	36
Total Laboratory Hours:	54
Total Hours:	90
Primary Method of Evaluation:	3) Skills demonstration
Typical Assignment Using Primary Method of Evaluation:	Using a digital audio workstation or DAW, construct a song consisting of eight or more tracks. One or more tracks may be looped, but at least two tracks must be played through and not looped. Two tracks must use automation.

Critical Thinking Assignment 1:	Analyze a multi-track session file and identify problems in the recording, mixing, and editing. What are possible solutions to these problems?
Critical Thinking Assignment 2:	In the sequencer software program, compose a three- to five-minute work that features the use of MIDI program, volume, and controller changes. Use various parts of the software program such as the piano roll editor. Quantize your performance and use the audio mixer to balance the tracks and perform real time changes of pan and volume.
Other Evaluation Methods:	Class Performance, Completion, Fieldwork, Homework Problems, Laboratory Reports, Other (specify), Quizzes, Reading Reports
Instructional Methods:	Demonstration, Discussion, Guest Speakers, Lab, Lecture, Multimedia presentations, Other (specify), Role play/simulation
If other:	
Work Outside of Class:	Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting), Problem solving activity, Required reading, Study, Written work (such as essay/composition/report/analysis/research)
If Other:	
Up-To-Date Representative Textbooks:	Bell, Adam Patrick. The Music Technology Cookbook: Ready-Made Recipes for the Classroom. 1st ed. Oxford University Press, 2020. Jones, Heath. Music Technology 101: The Basics of Music Production in the Technology Lab or Home Studio. Hal Leonard, 2021.
Alternative Textbooks:	
Required Supplementary Readings:	
Other Required Materials:	Headphones Flash Drive 8 GB
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:	Jon Minei
Date:	04/29/2019
Last Board Approval Date:	