

CATALOG INFORMATION

Dept and Nbr: MUSC 50

Title: INTRODUCTION TO MIDI

Full Title: Introduction to MIDI

Last Reviewed: 11/9/2020

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	2.00	17.5	Lab Scheduled	35.00
		Contact DHR	1.00		Contact DHR	17.50
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**  
An introduction to music sequencing and production with MIDI (Musical Instrument Digital Interface). Students will receive a solid technical foundation in MIDI, synthesis, and computer-based music notation, as well as hands-on experience with state-of-the-art industry software. Designed for students with an interest in composition, songwriting, digital audio, and/or multimedia.

**Prerequisites/Corequisites:**

**Recommended Preparation:**

**Limits on Enrollment:**

**Schedule of Classes Information:**  
Description: An introduction to music sequencing and production with MIDI (Musical Instrument Digital Interface). Students will receive a solid technical foundation in MIDI, synthesis, and computer-based music notation, as well as hands-on experience with state-of-the-art industry software. Designed for students with an interest in composition, songwriting, digital

audio, and/or multimedia. (Grade Only)

Prerequisites/Corequisites:

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:

<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
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<b>CSU Transfer:</b>	Transferable	Effective:	Fall 2009	Inactive:
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<b>UC Transfer:</b>	Effective:	Inactive:
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### **CID:**

CID Descriptor: CMUS 100X Introduction to Music Technology

SRJC Equivalent Course(s): MUSC50

### **Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

Upon completion of this course, students will be able to:

1. Explain the theoretical basis of MIDI and trace its historical development.
2. Utilize and apply a working vocabulary of MIDI terminology.
3. Demonstrate hands-on proficiency with a MIDI sequencer.
4. Explain and apply the concepts of hardware- and computer-based synthesis.
5. Demonstrate working knowledge of keyboard synthesizers, softsynths, samplers, drum modules, and other MIDI sound generators.
6. Use industry-standard software to produce computer-based music notation.

### **Topics and Scope:**

I. The History and Development of MIDI: Universal Music Software/Hardware Protocol

II. The MIDI Specification

A. MIDI Devices

1. Controllers
2. Sound sources: synthesizers, samplers, drum modules
3. Sequencers (hardware and software)

B. MIDI Channels (1-16)

C. MIDI Hardware signal path

1. MIDI cable: 5-pin DIN connector
2. MIDI hardware ports (IN/OUT/THRU)
3. Daisy chain
4. Multi-port

#### D. MIDI Channel messages

##### 1. Channel voice messages

- a. Status bytes and data bytes
- b. Note on/off (0-127)
- c. Note ID (0-127, middle C=60)
- d. Velocity (0-127)
- e. Aftertouch (0-127)
- f. Control change (volume, pan, breath, etc.) (0-127)
- g. Pitch bend
- h. Program change (0-127) (multi patch banks)

##### 2. Channel mode messages

- a. Omni on/off
- b. Poly/mono
- c. Multi-mode
- d. All notes off
- e. Reset all controllers
- f. Local on/off

#### E. MIDI System messages (global)

##### 1. System common messages

- a. MIDI time code
- b. Song position pointer
- c. Song select
- d. Tune request

##### 2. System real-time messages

- a. Timing clock
- b. Start/stop/continue
- c. Active sensing
- d. System reset

##### 3. System exclusive messages

- a. Universal editor/librarian
- b. End of exclusive message (EOX)

#### F. Global functions

1. Master tuning
2. Global transpose
3. MIDI mode
4. Global MIDI channel (receive/transmit)
5. Device ID#
6. Memory protect

### III. MIDI Sequencing

#### A. The user interface

1. Control bar/counter
  - a. Metronome/count-off
  - b. Setting tempo and meter
2. Tracks display
  - a. Record/play/mute/solo
  - b. Conductor track
  - c. Receive channels and transmit channels
  - d. Patch change
  - e. Softsynths (instruments)

#### B. Recording modes

1. Real-time entry
  - a. Replace mode

- b. Overdub mode
    - c. Punch-in recording
  - 2. Step-time entry
  - 3. Importing data
- C. Track editing
  - a. Copy/cut/paste
  - b. Scrubbing tracks
  - c. Quantizing
  - d. Editing velocity
  - e. Editing duration
  - f. Transposition
- D. MIDI mixing
  - 1. Automation
  - 2. Volume
  - 3. Panning
  - 4. Controller messages
- IV. Hardware- and Computer-Based Synthesis
  - A. Analog (subtractive) synthesis
    - 1. Three elements of sound: pitch, timbre, and amplitude
    - 2. Voltage-Controlled Oscillators (VCOs): pitch
    - 3. Basic waveforms
      - a. Sine wave
      - b. Triangle wave
      - c. Sawtooth
      - d. Square/pulse
      - e. Pink and white noise
    - 4. Filters (timbre)
      - a. Low-pass
      - b. High-pass
      - c. Band-pass
      - d. Notch
      - e. Resonance (Q)
      - f. Frequency cutoff point ( $f_c$ )
    - 5. Amplifiers (amplitude)
    - 6. Modifiers
      - a. Envelope Generator (EG): Attack/Decay/Sustain/Release (ADSR)
      - b. Low Frequency Oscillator (LFO): vibrato, tremolo
  - B. Frequency Modulation (FM) synthesis
    - 1. Carriers
    - 2. Modulators
  - C. Wavetable synthesis
  - D. Introduction to digital sampling
- V. Workstations
  - A. Multitimbral synthesizers
  - B. Sequencers
    - 1. Slave to internal vs. external sync mode
    - 2. SMPTE (Society of Motion Picture and Television Engineers) time code
    - 3. Standard MIDI Files (SMF)
    - 4. Programs and voices (patches)
    - 5. Patch banks
    - 6. The General MIDI (GM) standard
    - 7. Single/dual/split mode

- 8. Performance mode
- C. ReWire data transfer protocol
- VI. Introduction to Computer-Based Music Notation
  - A. Using the score window in a MIDI sequencer
  - B. Industry standards: Finale and Sibelius
  - C. Converting MIDI files into music notation

### Assignment:

1. Reading (10-20 pp. per week) from the text and handouts.
2. Hands-on proficiency demonstrations (3-5) on the hardware and software.
3. Quizzes (3-5) on vocabulary and technical terminology.
4. Completion of required laboratory hours.
5. Final project: an original MIDI sequence or composition (minimum of 3 minutes in length) that demonstrates mastery of the concepts of the course.

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.

Writing  
0 - 0%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

MIDI project(s)

Problem solving  
40 - 55%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Hands-on proficiency demonstrations

Skill Demonstrations  
25 - 35%

**Exams:** All forms of formal testing, other than skill performance exams.

Terminology quizzes

Exams  
10 - 25%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation, lab hours

Other Category  
5 - 10%

### Representative Textbooks and Materials:

The MIDI Manual: A Practical Guide to MIDI in the Project Studio. 3rd ed. David Miles Huber.

Focal Press, 2007.

MIDI Power! The Comprehensive Guide. 2nd ed. Robert Guerin. Course Technology PTR, 2005.

Instructor prepared materials.