MONTGOMERY COUNTY COMMUNITY COLLEGE
MUS 140
Introduction to Digital Music Technology
3-3-0

COURSE DESCRIPTION:
Introduction to Digital Music Technology is an entry-level course in modern music production. Students will study the nature of musical sound and the relationship between digital and analog sound processing. Students will also receive an introduction to the basics of MIDI, the fundamental computer music language. Through hands-on projects, students will learn about the various tools of modern audio production with an emphasis on digital tools including synthesizers, midi controllers, sequencers, mixers, effects generators and more. The students will prepare a final project that will demonstrate familiarity with these devices and an understanding of aesthetic choices associated with their use.

REQUISITES:
Previous or Concurrent Course Requirement
  − Music 120 Music Fundamentals with a minimum grade of "C"

Concurrent Course Requirements
None

LEARNING OUTCOMES Upon successful completion of the course the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Explain the acoustic nature of sounds, and how sound waves are represented digitally.	Lecture Hands-On Assignments in Music Lab Music Production Assignments Research Resources Practice and Demonstration	Written Quizzes, Tests Assignments

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
2. Demonstrate basic computer skills, operating system functions, hardware connections, virtual desktop environment vs. local Hard Drive and network applications, multiple internal and external storage and data transfers and basic computer terms and definitions.	Lecture Hands-On Assignments in Music Lab Music Production Assignments Research Resources Practice and Demonstration	In-Class Projects Lab Assignments
3. Describe various types of analog and digital music production tools available in today's world, and explain the differences between them and their functionality.	Lecture Hands-On Assignments in Music Lab Music Production Assignments Research Resources Practice and Demonstration	Written Quizzes, Tests Assignments
4. Set up a basic computer studio configuration including both MIDI Hardware and Software and audio input/output.	Lecture Hands-On Assignments in Music Lab Music Production Assignments Research Resources Practice and Demonstration	In-Class Projects Lab Assignments
5. Describe selected aspects of the history of music technology.	Research Resources	Research Project
6. Create a recorded project using synthesis, MIDI sequencing and editing, inserting effects, and mixing procedures to create the desired aesthetic result.	Hands-On Assignments in Music Lab Music Production Assignments Practice and Demonstration	Final Recorded Project

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
7. Explain the aesthetic choices made in the creation of the recorded project.	Hands-On Assignments in Music Lab Music Production Assignments Practice and Demonstration	Final Recorded Project

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria*.

SEQUENCE OF TOPICS:

1. The nature of sound and introductory acoustics.
   a. Introduction to the lab computer, operating system, network, terms and Blackboard
2. Principles of MIDI and MIDI history INTRO TO GARAGE BAND
   a. MIDI vs. sound
   b. Introduction to the MIDI Computer language and terms
3. Principles of digital audio. INTRODUCTION TO FINALE
   a. Digital vs. analog
   b. Sample rates, quantizing, etc.
4. Survey of production tools:
   a. Microphones, Cables, Synthesizers, Sequencers, Samplers, Recorders, Signal Processors, Mixers, Notation Software.
   b. RESEARCH PROJECT: comparison of available production tools
   c. PROJECT: FINALE ORCHESTRATION PROJECT
5. Principles and history of sound synthesis
   a. Different types of synthesizers
   b. Exploring REASON
6. Signal Flow.
   a. Analog and Digital Audio Signals and Connections
   b. Signal Flow Between Devices
   c. MIDI Signal Flow
   d. Setting Up the Studio
   e. MINI PROJECT: REASON PROJECT

7. MIDI Sequencing and MUSICAL FORM
    a. Basic MIDI Messages
    b. Patterns in Music: Rhythm patterns
        i. MINI RESEARCH PROJECT: Exploring rhythm patterns
    c. Creating Patterns of your own
    d. Building an Arrangement from Patterns
        i. MINI PROJECT: Creating a rhythm sequence
8. MIDI Sequencing Continued
    a. How a Sequencer Represents Time
    b. Real-Time Recording
    c. Record Modes: A Sequencer Is Not a Tape Recorder!
        a. Replace and Overdub
        b. Loop Recording
        c. Step Recording
    d. FINAL SEQUENCING PROJECT Step 1: Creating the basic tracks.
9. Editing MIDI Sequences
    a. Various editing tools within sequencers
    b. MIDI Event-Level Editing
    c. Fixing Mistakes
        i. Timing
        ii. Durations
        iii. Dynamics
        iv. Pitch
    d. Cut/Copy/Paste Operations
    e. FINAL SEQUENCING PROJECT Step 2: Begin editing your project
10. Editing MIDI Sequences, continued
    f. MIDI Mixing and Automation
    g. FINAL SEQUENCING PROJECT Step 2(continued): Finish editing your project
11. Mixing
    a. A More Detailed Look at Mixers.
    b. Technical Issues in Mixing
    c. Aesthetic Issues in Mixing
    d. MIDI Tracks into Audio
    e. Bouncing MIDI Tracks to Audio Files
    f. FINAL SEQUENCING PROJECT Part 3: Convert to Audio
12. Effects Processing, DSP, and Mixing:
    a. Insert Effects
    b. Aux Send and Return Effects
    c. MINI PROJECT: Set Up a Reverb Send and Return
    d. Introduction to other effects: EQ, Compression, Gating, Delay, Doubling, Flanging, Chorus, Reverb
    e. MINI PROJECT: Adding effects.

13. Hard-Disk Recording and Editing
    a. Overview of Sampling Concepts and Hard-Disk Recording
    b. Bouncing a Mix to Disk
    c. Editing a Hard-Disk recording
14. Preparing Files for Distribution
    a. Preparing Sequence Files for Distribution
    b. Importing and Exporting MIDI
    c. Posting Files on the Web
    d. Audio Distribution Formats
    e. Mastering for CD, MP3
    f. Audio File Compression Overview
    g. Making MP3 Files
    h. FINAL SEQUENCING PROJECT Part 4: Final mastering of your project.
15. CAPSTONE SESSION
    a. Distributing final audio files via the web and CD
    b. Discussion of the group's work.
    c. Sharing of the work with the college community.
    d. FINAL EXAM

LEARNING MATERIALS:
This course uses Open Educational Resources
Other learning materials may be required and made available directly to the student and/or via the College's Libraries and/or course management system.

This course is consistent with Montgomery County Community College's mission and educational goals.

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COURSE APPROVAL:
Prepared by: Andrew Kosciesza   Date: 7/6/2013
VPAA/Provost or designee Compliance Verification:
          Victoria L. Bastecki-Perez, Ed.D.   Date: 8/9/2013

Revised by: Andrew Kosciesza   Date: 12/27/2017
VPAA/Provost or designee Compliance Verification:
          Victoria L. Bastecki-Perez, Ed.D.   Date: 1/10/2018

Revised by: Andrew Kosciesza   Date: 9/7/2023
VPAA or designee Compliance Verification: Date: 9/7/2023

This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.