

# Music Technology I

This class is open to all students in grades 9 -12. This course is designed for students seeking knowledge and experience in music technology. Topics covered include: live sound recording and sound reinforcement; digital recording and midi sequencing; audio engineering and editing; effects processing and microphone technique; music business and commercial production. Students will be using digital audio workstations and a variety of recording studio equipment. This is a one-semester class that meets five days per week.

Prerequisite: None, however a working knowledge of computers is recommended. Previous musical experience is not necessary, but musicians, performers and songwriters will benefit greatly from this course.

## Course Overview

<b>Course Objectives</b>	<b>Essential Questions</b>	<b>Assessments</b>
<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• understand midi sequencing.</li> <li>• understand audio recording &amp; editing.</li> <li>• understand the acoustic properties of sound.</li> <li>• understand sound reinforcement.</li> <li>• understand signal flow and audio connections.</li> <li>• understand the historical development and applications of music technology.</li> </ul>	<ul style="list-style-type: none"> <li>• How do you create rhythmically organized, loop based songs using step sequence software?</li> <li>• What a sound reinforcement system and how does it work?</li> <li>• How are audio signals recorded and edited using a digital audio workstation</li> <li>• How is a song recorded and produced using a digital audio workstation?</li> </ul>	<ul style="list-style-type: none"> <li>• Beginning Step Sequencing</li> <li>• Song Sequencing</li> <li>• Basic Sound Reinforcement System</li> <li>• Dialogue Edit</li> <li>• Radio Spot</li> <li>• Cover Song</li> </ul>
<b>Content Outline</b>	<b>Standards</b>	<b>Skill Objectives</b>
<p>I. <a href="#">Unit I</a>: Introduction to Step Sequencing            II. <a href="#">Unit II</a>: Introduction to Live Sound            III. <a href="#">Unit III</a>: Introduction to Audio Editing            IV. <a href="#">Unit IV</a>: Introduction to Audio Production</p>	<p><a href="#">Link to Standards (Music 9-12)</a>            Connecticut State Music Standards are met in the following areas:</p> <ul style="list-style-type: none"> <li>• <i>Improvisation</i></li> <li>• <i>Composition</i></li> <li>• <i>Notation</i></li> <li>• <i>Connections</i></li> <li>• <i>History and Culture</i></li> </ul> <p><a href="#">Link to Standards (Technology 9-12)</a>            Connecticut State Technology Standards are met in the following areas:</p> <ul style="list-style-type: none"> <li>• <i>Application</i></li> <li>• <i>Technology Use</i></li> </ul>	<p>Students will:</p> <ul style="list-style-type: none"> <li>• arrange music using technology and computer software.</li> <li>• compose music using technology and computer software.</li> <li>• record music using technology and computer software.</li> <li>• individually and in a group, apply music knowledge and skills to participate in a electronically enhanced live sound event.</li> </ul>

**Pacing Guide – Music Technology I**

Pacing Guide – Music Technology I				
1st Marking Period			2nd Marking Period	
September	October	November	December	January
Unit 1 <a href="#">Introduction to Step Sequencing</a> 3-4 weeks	Unit 2 <a href="#">Introduction to Live Sound</a> 4-6 weeks	Unit 3 <a href="#">Introduction to Audio Editing</a> 6 weeks	Unit 4 <a href="#">Introduction to Audio Production</a> 4 weeks	

**Unit I - Introduction to Step Sequencing, 3-4 Weeks [top](#)**

**Standards**  
**Composition**  
**Students will compose and arrange music.**  
 Students will:

- compose music in several distinct styles, demonstrating creativity in using the elements of music for expressive effect.
- arrange pieces for voices or instruments other than those for which the pieces were written in ways that preserve or enhance the expressive effect of the music.

**Notation**  
**Students will read and notate music.**  
 Students will:

- demonstrate the ability to read an instrumental or vocal score of up to four staves by describing how the elements of music are used

<p><b>Unit Objectives</b>          Students will be able to:</p> <ul style="list-style-type: none"> <li>create rhythmically organized, loop based song sequences, using music production software.</li> </ul>	<p><b>Essential Question</b></p> <ul style="list-style-type: none"> <li>How do you create rhythmically organized, loop based songs using step sequence software?</li> </ul> <p><b>Focus Questions</b></p> <ul style="list-style-type: none"> <li>How are beats and measures organized in music production software?</li> <li>How are steps used to create rhythmic patterns?</li> <li>How do smaller patterns combine to make a larger work?</li> <li>What is standard song form?</li> <li>What technological developments make modern step sequencing possible?</li> </ul>	<p><b>Assessments</b></p> <ul style="list-style-type: none"> <li>Beginning Step Sequencing</li> <li>Song Sequencing</li> </ul>
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<p><b>Lesson Plans</b>  <b>Project 1: <i>Beginning Step Sequencing</i></b>          Students will use a step sequencer to recreate basic drum and bass patterns. They will organize multiple patterns into standard musical phrase lengths.</p> <p><b>Project 2: <i>Song Sequencing</i></b>          Students will use a step sequencer such as Fruity</p>	<p><b>Materials/Resources</b></p> <ul style="list-style-type: none"> <li>Sample drum patterns</li> <li>Blank step sequence grid sheets</li> </ul>	<p><b>Skill Objectives</b>          Students will:</p> <ul style="list-style-type: none"> <li>operate loop based sequencing software.</li> <li>create measure/beat based patterns.</li> <li>assemble patterns into song form.</li> </ul>
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<p>Loops or other similar software to create a short music work in verse/chorus form. The project should include a minimum of drum and bass tracks. Emphasis should be on appropriate usage of grid structure and rhythmic patterns.</p>		
<p><b><u>Technology Resources</u></b></p> <ul style="list-style-type: none"> <li>• Music Lab: Minimum 8 student workstations (2 students per station max) each including: <ul style="list-style-type: none"> <li>○ Digital audio workstation furniture with integrated music stand</li> <li>○ Midi Keyboard with onboard tone generator and sustain pedal</li> <li>○ Computer optimized for music production software with Cd/Dvd burner and appropriate expansion ports</li> <li>○ Minimum 17” monitor</li> <li>○ Multi-channel, High quality digital audio interface with microphone preamps</li> <li>○ Midi interface</li> <li>○ Minimum 4 channel headphone amplifier</li> <li>○ Minimum 2 closed headphones per workstation</li> <li>○ Multi-input surge protector</li> <li>○ Necessary cables and connectors</li> <li>○ Dynamic microphone and cable</li> </ul> </li> <li>• Music Lab teacher workstation similar to student workstation but optimized for presentation with projector, audio sound system, and web camera for in-class demonstration</li> <li>• Loops Production Software</li> </ul>	<p><b><u>Differentiated Instruction/ELL</u></b></p>	<p><b><u>Enrichment</u></b></p>

## Unit II – Introduction to Live Sound, 4-6 Weeks [top](#)

### Standards - Music

#### *Connections*

**Students will make connections between music, other disciplines and daily life.**

Students will:

- apply music knowledge and skills to solve problems relevant to a variety of careers.

### Standards - Technology

#### *Technology Use*

**Students will operate and use computers and other technologies as tools for productivity, problem solving and learning across the content areas.**

Students will:

- use content-specific tools and software.
- demonstrate the ability to identify, assess and adapt to new technology tools and resources.

### Unit Objective

Students will be able to:

- setup and operate a basic sound reinforcement system.

### Essential Question

- What a sound reinforcement system and how does it work?

### Focus Questions

- What are the basic properties of sound?
- What are the basic components of a sound reinforcement system?
- How do speakers produce sound?
- How do microphones capture sound?
- What is the role of an audio amplifier?
- How do you set input signal levels?
- How do you set channel signal levels?
- What is an audio mixer bus?
- What are the various types of audio connections?
- How does signal flow from source to intended destination?
- How do you produce a good quality audio signal in the analog domain?
- What technological developments make modern sound reinforcement possible?

### Assessment

- Basic Sound Reinforcement System

<p><b><u>Lesson Plans</u></b>  <b>Project:</b> <i>Basic Sound Reinforcement System</i>  Students will learn to identify and setup the components of a standard sound reinforcement system consisting of PA speakers, monitor speakers, mixer, amplifier(s), input devices, and associated cables.</p>	<p><b><u>Materials Resources</u></b></p> <ul style="list-style-type: none"> <li>• Diagrams and handouts of audio system design</li> <li>• Technical information about various components of a sound reinforcement system</li> <li>• Video footage of sound system usage in live applications</li> </ul>	<p><b><u>Skill Objectives</u></b>  Students will:</p> <ul style="list-style-type: none"> <li>• setup/breakdown and proper placement of a sound reinforcement system.</li> <li>• connect various components of a sound system.</li> <li>• route signals from source to intended destination.</li> <li>• set appropriate signal levels throughout the system.</li> <li>• test/troubleshoot the system.</li> <li>• identify mic level vs. line level devices.</li> </ul>
<p><b><u>Technology Resources</u></b></p> <ul style="list-style-type: none"> <li>• Music Lab</li> <li>• PA Speakers</li> <li>• Monitor Speakers</li> <li>• Amplifiers</li> <li>• Dynamic/Condenser Microphones</li> <li>• Audio Mixer</li> <li>• Line level instrument</li> <li>• Cables and Connectors</li> <li>• Speaker/Mic Stands</li> </ul>	<p><b><u>Differentiated Instruction/ELL</u></b></p>	<p><b><u>Enrichment</u></b></p>

**Unit III - Introduction to Audio Editing, 6 weeks [top](#)**

**Standards - Music**

***Composition***

**Students will compose and arrange music.**

Students will:

- compose music in several distinct styles, demonstrating creativity in using the elements of music for expressive effect.

***Connections***

**Students will make connections between music, other disciplines and daily life.**

Students will:

- explain ways in which the principles and subject matter of various disciplines outside the arts are interrelated with those of music.
- apply music knowledge and skills to solve problems relevant to a variety of careers.

**Standards - Technology**

***Application***

**Students will use appropriate information and technology to create written, visual, oral and multimedia products to communicate ideas, information or conclusions to others.**

Students will:

- use in depth applications of appropriate software and hardware to organize, analyze and interpret information.
- determine appropriate technology(s) and format(s) to clearly present information gathered from a variety of print and non-print resources, for a variety of audiences.

***Technology Use***

**Students will operate and use computers and other technologies as tools for productivity, problem solving and learning across the content areas.**

Students will:

- use content-specific tools and software.
- demonstrate the ability to identify, assess and adapt to new technology tools and resources.

**Unit Objectives**

Students will be able to:

- record, edit and rearrange digital audio files.
- produce a radio commercial using a digital audio workstation.

**Essential Question**

- How are audio signals recorded and edited using a digital audio workstation?

**Focus Questions**

- How do you produce a good quality audio signal in the digital domain?
- How does signal flow from source to intended

**Assessments**

- Dialogue Edit
- Radio Spot

	<p>destination?</p> <ul style="list-style-type: none"> <li>• What is audio to digital conversion?</li> <li>• How do you trim an audio file?</li> <li>• What are the different types of audio fades and what is their purpose?</li> <li>• How do you cut/paste audio?</li> <li>• What technological developments make modern audio editing possible?</li> </ul>	
<p><b><u>Lesson Plans</u></b></p> <p><b>Project 1: <i>Dialogue Edit</i></b> Students will record a given script and then edit/rearrange the audio using various tools available in a digital audio workstation to rewrite the original script.</p> <p><b>Project 2: <i>Radio Spot</i></b> Students will record their version of an existing radio spot adhering to a specific time length. In addition to speech, the project will include a sound bed and sound effects. Students will utilize the various tools of a digital audio workstation. The project culminates with a final mix down to a stereo audio master.</p>	<p><b><u>Materials Resources</u></b></p> <ul style="list-style-type: none"> <li>• Sample scripts of various speeches, texts, and radio spots</li> <li>• Audio loop/sample library (sound files)</li> <li>• Example(s) of professional radio spots</li> </ul>	<p><b><u>Skill Objectives</u></b></p> <p>Students will:</p> <ul style="list-style-type: none"> <li>• operate music production software.</li> <li>• connect and set levels for various components of a digital audio workstation.</li> <li>• record/import audio into music production software.</li> <li>• edit audio within the digital domain.</li> <li>• mix multiple tracks to one stereo master.</li> </ul>
<p><b><u>Technology Resources</u></b></p> <ul style="list-style-type: none"> <li>• Music Lab</li> <li>• Music Production Software</li> <li>• Music Keyboard/Synthesizer</li> <li>• Microphones</li> </ul>	<p><b><u>Differentiated Instruction/ELL</u></b></p>	<p><b><u>Enrichment</u></b></p>



**Unit IV - Introduction to Audio Production, 4 weeks** [top](#)

**Standards - Music**

***Improvisation***

**Students will improvise melodies, variations and accompaniments.**

Students will:

- improvise stylistically appropriate harmonizing parts.

***Composition***

**Students will compose and arrange music.**

Students will:

- compose music in several distinct styles, demonstrating creativity in using the elements of music for expressive effect.

***History And Cultures***

**Students will understand music in relation to history and culture.**

Students will:

- identify sources of American music genres, trace the evolution of those genres, and cite well-known musicians associated with them.

**Standards - Technology**

***Application***

**Students will use appropriate information and technology to create written, visual, oral and multimedia products to communicate ideas, information or conclusions to others.**

Students will:

- use in depth applications of appropriate software and hardware to organize, analyze and interpret information.

***Technology Use***

**Students will operate and use computers and other technologies as tools for productivity, problem solving and learning across the content areas.**

Students will:

- use content-specific tools and software.

**Unit Objectives**

Students will be able to:

- record a recreation of a popular song using a digital audio workstation.
- integrate live instruments, vocals, and midi tracks in one project.

**Essential Question**

- How is a song recorded and produced using a digital audio workstation?

**Focus Questions**

- How are midi tracks created and edited in a digital audio workstation?
- What are the differences between overwrite,

**Assessment**

- Cover Song

	<p>punch-in, and sound-on-sound recording modes?</p> <ul style="list-style-type: none"> <li>• What tools are available in a digital audio workstation to improve the quality of a recording?</li> <li>• What is automation and how is it used as part of the mixing process?</li> <li>• What technological developments make multi-track recording possible?</li> </ul>	
<p><b><u>Lesson Plans</u></b>  <b>Project:</b> <i>Cover Song</i>  Students will use music production software to record and produce a recreation of an existing popular recording; a “cover song”. In most cases basic rhythm tracks should be created via midi with all other tracks recorded as audio. The objective is to reproduce the original as closely as possible including the vocals, given student/class musical proficiency. The project culminates with a final mix down to a stereo audio master.</p>	<p><b><u>Materials / Resources</u></b></p> <ul style="list-style-type: none"> <li>• Recording of original song. Imported into DAW for reference</li> <li>• Lyric/Lead sheet for original song</li> <li>• Bass line/Chord sheet</li> </ul>	<p><b><u>Skill Objectives</u></b>  Students will:</p> <ul style="list-style-type: none"> <li>• operate music production software.</li> <li>• aurally transcribe (re-create by ear) musical patterns.</li> <li>• record and edit midi tracks.</li> <li>• automate various parameters of midi/audio tracks.</li> </ul>
<p><b><u>Technology Resources</u></b></p> <ul style="list-style-type: none"> <li>• Music Lab</li> <li>• Music Production Software</li> <li>• Music Keyboard/Synthesizer</li> <li>• Microphones</li> <li>• Guitar/Bass</li> </ul>	<p><b><u>Differentiated Instruction/ELL</u></b></p>	<p><b><u>Enrichment</u></b></p>