

Audio Production I

Primary Career Cluster:	Arts, A/V Technology & Communications
Consultant:	Rachel Allen, (615) 532-2835, Rachel.Allen@tn.gov
Course Code(s):	
Prerequisite(s):	None
Credit:	1
Grade Level:	9
Graduation Requirements:	This course satisfies one of three credits required for an elective focus when taken in conjunction with other Arts, A/V Technology & Communication courses.
Programs of Study and Sequence:	This is the first course in the <i>Audio Production</i> program of study.
Necessary Equipment:	Refer to the Teacher Resources page.
Aligned Student Organization(s):	SkillsUSA: http://site1.tnskillsusa.com/ Brandon Hudson, (615) 532-2804, Brandon.Hudson@tn.gov Technology Student Association (TSA): http://www.tntsa.org Amanda Hodges, (615) 532-6270, Amanda.Hodges@tn.gov
Coordinating Work-Based Learning:	If a teacher has completed work-based learning training, appropriate student placement can be offered. To learn more, please visit http://www.tn.gov/education/cte/work_based_learning.shtml .
Available Student Industry Certifications:	
Dual Credit or Dual Enrollment Opportunities:	There are no known dual credit/dual enrollment opportunities for this course. If interested in developing, reach out to a local postsecondary institution to establish an articulation agreement.
Teacher Endorsement(s):	576, 597
Required Teacher Certifications/Training:	
Teacher Resources:	http://www.tn.gov/education/cte/artstech.shtml

Course Description

Audio Production I is a foundational course in the Arts, A/V Technology & Communications cluster for students interested in audio production occupations. Upon completion of this

course, proficient students will be to explain and operate basic audio technology including but not limited to microphones, mixers, and a consumer level editing software (i.e.: Garageband). Students will establish basic skills in operating audio mixers and other production equipment. Standards in this course include career exploration, an overview of the history and evolution of audio production, and legal issues affecting audio production. In addition, students will begin compiling artifacts for inclusion in a portfolio, which they will carry with them throughout the full sequence of courses in this program of study. Standards in this course are aligned with Tennessee State Standards for English Language Arts & Literacy in Technical Subjects, Tennessee State Standards in Mathematics, and Tennessee State Standards for Physical World Concepts, Physics, and Visual Art.*

Program of Study Application

This is the first course in the Audio *Production* program of study. For more information on the benefits and requirements of implementing this program in full, please visit the Arts, A/V Technology & Communications website at <http://www.tn.gov/education/cte/artstech.shtml>.

Course Standards

Safety

1. Accurately read and interpret safety rules, including but not limited to rules published by the Occupational Safety and Health Administration (OSHA), and state and national code requirements. Be able to distinguish between the rules and explain why certain rules apply in a written, oral, or digital presentation using domain-specific terminology. (TN Reading 3, 4, 6; TN Writing 4, 5, 6, 9)
2. Explain the intended use of equipment available in the classroom. Demonstrate how to properly inspect, use, and maintain safe operating procedures with equipment. Incorporate safety procedures and complete a written safety test with 100 percent accuracy. (TN Reading 3, 4; TN Writing 9)
3. Determine the safety considerations for working both in the studio and in the field. Create a hazard assessment checklist and perform safety inspections for various environments, including a classroom studio. (TN Reading 3, 4; TN Writing 4, 8)

History and Evolution of Audio Production

4. Research the development of audio production throughout history, analyzing how advances in technology have impacted the industry. Create an annotated timeline or visual graphic illustrating the significant people, time periods, and technological advances affecting audio production. Citing resources from informational texts, include justification for why each identified item is significant. (TN Reading 1, 2, 3, 4, 5, 7; TN Writing 2, 9)
5. Analyze the impact of audio productions on society. Investigate the role of audio and its importance in the entertainment, education, convention, business and other industries. For example, compose a persuasive essay describing how certain aspects of audio would be missed or make a particular industry different than it is today if audio was not involved. (TN Reading 1, 2, 4; TN Writing 2, 4, 9)

Career Exploration

6. Research audio production occupations, such as recording engineer, a/v equipment technician, live event audio technician, mastering editor, repair technician, producer, installation technician, acoustical engineer, systems designer, systems tuner or product sales. Interpret labor market data, such as information from the Bureau of Labor Statistics, O*Net OnLine, and AES documentation to identify the industries that audio production professionals work in, including but not limited to audio installation, live events, recording industry and more. Determine areas of largest growth and discuss emerging trends and careers in audio production-related industries. (TN Reading 1, 2, 4, 7; TN Writing 2, 6, 9)
7. Choose an audio production related career that is most relatable or that may be pursued. Summarize all aspects of that specific audio related career including salary, geographical opportunities, pathway to that career, and lifestyle surrounding that career. Other aspects of this industry should be addressed such as professionalism and responsibility. (TN Reading 1, 2, 4, 7; TN Writing 2, 6, 9; Math S-ID)

Ethical and Legal Issues

8. Investigate the laws impacting the work of audio production professionals. Examine laws and issues regarding the many different types of copyright issues involved in recording, live performance and playback of audio material. In a written or oral presentation, summarize and explain the legal concerns for creating, obtaining, or sharing a production as though leading a training or tutorial for fellow employees. Include the use of mechanical licenses. (TN Reading 2, 3, 4, 6; TN Writing 2, 4)

Introduction to the Science of Audio

9. Explore the basic scientific theory of what sound is and how it is affected by different environments. Students should be able to explain basic audio terminology and theory related to the science of sound. Basic mathematics will be used to demonstrate how sound moves and its properties. Practice audio rules and laws with math and science that affect audio and the perception of sound. (TN Reading 2, 3, 4, 5, 9; TN Writing 7, 8, 9; TN Physical Science 2, TN Physical World Concepts 3, TN Physics 4)
10. Discover health issues related to audio and how it affects human ears. Research the anatomy of the human ear and regulations set forth by OSHA in relationship to sound related issues. Correctly label the human ear and briefly describe what the major parts do. In addition, describe ways to minimize premature hearing loss and other health problems related to sound. (Human Anatomy and Physiology 3)

Production Equipment

11. Examine the features and functions of a recording and live audio mixer. Explain the functions and locations of input and output connectors, input gain, EQ, Auxiliaries, Routing, Mute, Pan, Sub Groups (busses) and Master Output Sections. Explain how to properly set input gain on a channel and how to route audio through an input channel to each a sub group and to each kind of output of the mixer. Summarize the purpose and steps of getting signal flow through a typical audio mixer correctly by having students write step by step procedures and highlighting signal flow on the mixer's signal flow chart in its manual. (TN Reading 3, 4; TN Writing 4, 5, 6)
12. Analyze the different types of microphones and the technical aspects of them to properly choose, use and operate them for different situations and sources. Explain the differences between magnetic and variable capacitance transducers and the major types of pick-up

patterns. Complete a research project, properly matching different combinations of pick-up patterns and transducer types of microphones for various audio sources. (TN Reading 2, 3, 4, 5, 9: TN Writing 7, 8, 9: TN Physical Science 2, TN Physical World Concepts 3, TN Physics 4)

13. Become familiar with various cable and connector types commonly used in audio production in both studio and live event audio. Correctly choose which type of cable and/or connector to use for various applications and audio sources and outputs.
14. Discover the technical makeup of studio and live event speakers and the basic principles of how they work. Choose speakers based on knowing how to read the specification sheets from the manufacturer and knowing what the application will be. Research speakers based on several criteria like application, price, specification needs, etc. (TN Reading 2, 3, 4, 5, 9: TN Writing 7, 8, 9)
15. Explore basic and professional audio DAWs. Define what a DAW is and research how they work, how much they cost and how they can be implemented. Research hardware that is needed to operate DAW and provide an equipment list and line item cost to start or create a basic home or project studio. (TN Reading 2, 3, 4, 5, 9: TN Writing 4, 6, 8)

Instruments

16. Examine the more commonly used instruments in recordings. Describe which octaves and frequencies those instruments encompass. Research to be able to recognize each instrument, how it's played, the general sound it makes and possible ways to apply a microphone to record that instrument. (TN Reading 1, 2, 4, 7; TN Writing 2, 6, 9)

Audio Components and Signal Flow

17. Examine the major components needed to create a sound system or recording system. Define smaller components such as compressors, equalizers, preamps, amplifiers, effects processors and more. Discover what each component does and give examples of when and how it might be used. Examine example flow charts showing how audio signal flows through a mixer or a whole system and use a flowchart from a manual and label symbols and highlight specific paths. Explain the differences between inputs, outputs and show the ability to read flow charts to operate, repair or troubleshoot various audio equipment. (TN Reading 2, 3, 4, 9: TN Writing 4, 8, 9)

Recording, Editing, Mixing

18. Use a DAW (Pro Tools, Garageband, Logic, etc.) to create original music by using pre-recorded material and/or original materials. Discover the proper order of connecting computer hardware, interfaces and other equipment needed to use the DAW. Complete a basic project on the DAW (4 or 5 tracks with loops and midi instruments or real), showing the ability to mix, cut, paste, EQ, compress, apply automation and bounce the track as a two track final product.
19. Examine different recording techniques with several different instruments and microphone combinations. Create a microphone journal and write down descriptive words for each microphone used in each placement location to understand and hear the differences that choosing the microphone and placement makes on capturing sound. (TN Reading 2, 3, 4, 9: TN Writing 4, 8, 9)

Analyzing Recordings

20. Demonstrate knowledge of audible components to recorded material and live performances. Analyze recorded material for clarity, overall quality and techniques. Write a review of sample pieces of recorded material. Write down descriptive words maybe not usually associated with music and describe their meaning. Example: warm, dark, bright, harsh, piercing, dull. (TN Reading 2, 3, 4, 9; TN Writing 4, 8, 9)

Portfolio

21. Gather examples of professional portfolios from contemporary audio engineers and producers. List the items that are often included in a professional portfolio. In a written, visual, or oral presentation, describe the components of a professional portfolio and the benefits of maintaining one. (TN Reading 1, 4, 9; TN Writing 2, 4, 8, 9)
22. Compile relevant artifacts to create a student portfolio connecting personal career preparation to concepts learned in this course, including written descriptions of project processes and reflections on learning outcomes. (TN Reading 2, 4, 9; TN Writing 4, 9)

Standards Alignment Notes

*References to other standards include:

- TN Reading: [Tennessee State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects](#); Reading Standards for Literacy in Science and Technical Subjects 6-12; Grades 9-10 Students (page 62).
 - Note: While not directly aligned to one specific standard, students who are engaging in activities outlined above should be able to also demonstrate fluency in Standard 10 at the conclusion of the course.
- TN Writing: [Tennessee State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects](#); Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6-12; Grades 9-10 Students (pages 64-66).
 - Note: While not directly aligned to one specific standard, students who are engaging in activities outlined above should be able to also demonstrate fluency in Standards 3 and 10 at the conclusion of the course.
- TN Math: [Tennessee State Standards for Mathematics](#); Math Standards for High School: Number and Quantity, Statistics (pages 58-83).
 - Note: The standards in this course are not meant to teach mathematical concepts. However, the concepts referenced above may provide teachers with opportunities to collaborate with mathematics educators to design project based activities or collaborate on lesson planning. Students who are engaging in activities listed above should be able to demonstrate quantitative and statistical reasoning as applied to specific technical concepts. In addition, students will have the opportunity to practice the habits of mind as described in the eight Standards for Mathematical Practice.
- TN Physical World Concepts: Tennessee Science: [Physical World Concepts](#) standard 3 may provide additional insight and activities for educators.
- TN Physical Science: Tennessee Science: [Physical Science](#) standard 2 may provide additional insight and activities for educators.
- TN Physics: Tennessee Science: [Physics](#) standard 4 may provide additional insight and activities for educators.

- TN Visual Art: Tennessee Visual Art: [Visual Art](#) standards 2.1 and 2.2 may provide additional insight and activities for educators.
- P21: Partnership for 21st Century Skills [Framework for 21st Century Learning](#)
 - Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills.