Audio Production III

Primary Career Cluster:	Arts, A/V Technology & Communications
Consultant:	Rachel Allen, (615) 532-2835, Rachel.Allen@tn.gov
Course Code(s):	
Prerequisite(s):	*Audio Production I* and *Audio Production II*
Credit:	1
Grade Level:	11
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 third course in the *Audio Production* 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 III is an advanced 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 set up and operate audio equipment associated with live events such as concerts and understand the basic knowledge needed for installation of audio equipment. Standards in this course include using live PA equipment, tuning a system, understanding audio design and installation, troubleshooting and exploring careers in the live event industry. In addition, students will operate a full functioning rental audio system for community events and assist in professional installations and repairs of installed audio systems. 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 third 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 in a live production environment and an installation scenario. Create a hazard assessment checklist and perform safety inspections for various environments, including a production warehouse and on location events. (TN Reading 3, 4; TN Writing 4, 8)

Studio vs Live

4. Demonstrate knowledge of the differences in studio and live audio. Research the variables in both scenarios including type of equipment, work vs life balance, work environment, different challenges, costs involved in operating both and others. Create a brief summary of the main differences between the two including theory. (TN Reading 2, 3, 4, 9; TN Writing 4, 7, 9)

5. Analyze technical riders for touring artists. Understand the technical details of these documents and how to fulfill them to meet the needs of a tour or event. Examine different artist riders and discover what the different items mean and decipher the information that pertains to the production company providing the technical aspects of the event. (TN Reading 2, 3, 4)

Production Equipment

6. Analyze audio publications to compare the different live audio products offered and understand the difference in pricing, quality and use. Learn to select the proper equipment for an installation or tour/show based on reading technical specifications from manufacturers and professional reviews and on the needs of the event (coverage, power, throw, etc.) (TN Reading 2, 3, 4, 5, 9; TN Physical Science 2; Physics 4; TN Math)

7. Discover the technical makeup of live event speakers and the basic principles of how they work and the different options. 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. Select proper speakers based on event, speaker coverage, reduction of reflections, etc. (TN Reading 2, 3, 4, 5, 9; TN Math)

8. Research the development and use of wireless technologies in audio production including wireless microphones, wireless in-ear monitors, wireless intercom, and wireless controls (tablets, phones). Research new FCC rulings about frequency allocations and how it affects the entertainment industry and what new technologies manufacturers are turning to. (TN Reading 2, 3, 4)

9. Analyze differences in live audio mixers and become familiar with several major brands and the options offered. Create a summary of when to use specific brands and model numbers and the reasons why for either live event or installation. Example: what features are desirable for installation compared to a live event? (TN Reading 2, 3, 4, 9; TN Writing 4, 7, 9)

10. Examine live audio gear and how to operate the live event equipment. This includes a live digital mixer, larger PA speakers, stage monitors, stage microphones and more. Read the manufacturers user manuals and each student will teach the class on the features of the equipment. (TN Reading 2, 3, 4, 9; TN Writing 4, 7, 9)

11. Master setup and use of live audio production equipment including analog and digital mixers, powered and unpowered speakers, wireless microphones (both handheld and lapel), in-ear monitors, floor monitors and other outboard gear. Students should be able to complete a set of tasks set forth for each piece of equipment. Previous knowledge from Audio Production I about acoustics, how sound travels and manufacturer specifications will need to be recalled to practice positioning and operating the equipment. A rough drawing of a stage or installation set up with labels will be created and given to other students to check the directions for accuracy and clarity. (TN Writing 4, 5, 6)

12. Examine the use of a basic RTA (real time analyzer) and/or the industry standard SMAART computer software plus a calibrated microphone to "tune" or "EQ" a portable and installed audio system to account for room acoustics or other environmental effects on the audio performance. Summarize the pros and cons of using equipment versus human ears in setting these parameters and what the results of each are. (TN Reading 2, 3, 4, 5, 9; TN Physical Science 2; Physics 4)

13. Execute a full PA set up for a mock or real planned event needing a PA system. Online or purchased speaker positioning software will be examined and used for the set up as well as prior knowledge about each piece of equipment. Documented requests from the client will be interpreted to fulfill the needs of the event properly and efficiently and on budget. Documentation will be required to organize the proper equipment and then set the system up on time and according to requests and budget. Operate the system. Follow a logical order for taking system down and collect payment. (TN Reading 1, 2, 4, 7; TN Writing 2, 6, 9)

14. Analyze low level power distribution and concert/installation rigging and the different options available. Examine different ways to rig (hang, hoist or lift) audio equipment into position for installation and/or a single live event for audio. Research rigging gear and write a basic summary of the principles of hanging or lifting heavy objects for production purposes. (TN Reading 1, 2, 4, 7; TN Writing 2, 6, 9; TN Math)

History and Evolution of Live and Installation Audio

15. Research the history and development of live audio gear and techniques and the differences between doing live audio/installation compared to studio recording. Examine the progression of live audio gear and summarize the major developments with written text and/or a time line. 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)

Career Exploration

16. Research live event audio production occupations, a/v equipment technician, live event audio technician, repair technician, 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 and live events. 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; TN Math S-ID)

17. Investigate the pros and cons of a touring lifestyle and what a career path to that and/or installation careers looks like. Find stories and firsthand accounts of what living on the road is like and what a typical job entails with a "day in the life" style of essay. (TN Reading 1, 2, 4, 7; TN Writing 2, 6, 9)

Introduction to Audio System Design

18. Explore the basic ideas and theories behind system design and all factors and considerations involved in installation systems. Explain specific factors and how to overcome issues for both installations and touring. Knowledge of physical tools and software programs to assist in system design should be included. Explore unique equipment for installations, especially computer software that is used to design for speaker behavior and placement. (TN Reading 2, 3, 4, 5, 9; TN Physical Science 2; Physics 4)

Ear Training/Mixing

19. Analyze audio frequencies with SMAART and/or an RTA to learn to quickly recognize frequencies by ear to assist in system "tuning" operating and troubleshooting. Build an audible mix with either live sources or prerecorded in a live environment. Evaluate the process for building a mix taking into consideration live variables including but not limited to the room acoustics, the stage noise and the style of source. (TN Physics 4)

Troubleshooting/In-House Repair

20. Discover quick troubleshooting processes and techniques for repairing equipment in and during a live event to keep the event continuing. Learn basic repairs of equipment after returning from an event or on location for an installation. Scenarios will be given to which ideas for resolving the issue quickly will be examined. (TN Reading 2, 3, 4; TN Writing 2, 4, 9)

Portfolio

21. Update the portfolio to reflect the cumulative total of all projects undertaken across the program of study. Continually reflect on coursework experiences and revise and refine the career plan generated in *Audio Production II*. Include written description s of project types and leaning outcomes. (TN Writing 4, 5, 7, 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.