2025 Multimedia— Digital Audio Production

The Research and Curriculum Unit (RCU), located in Starkville, as part of Mississippi State University (MSU), was established to foster educational enhancements and innovations. In keeping with the land-grant mission of MSU, the RCU is dedicated to improving the quality of life for Mississippians. The RCU enhances the intellectual and professional development of Mississippi students and educators while applying knowledge and educational research to the lives of the people of the state. The RCU works within the contexts of curriculum development and revision, research, assessment, professional development, and industrial training.

Table of Contents

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Acknowledgments

The Digital Audio Production curriculum was presented to the Mississippi State Board of Education on January 16, 2025. The following persons were serving on the state board at the time:

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Standards

Standards and alignment crosswalks are referenced in the appendix. Depending on the curriculum, these crosswalks should identify alignment to the standards mentioned below, as well as possible related academic topics as required in the Subject Area Testing Program in Algebra I, Biology I, English II, and U.S. History from 1877, which could be integrated into the content of the units. Mississippi's CTE Sports Journalism and Broadcasting is aligned to the following standards:

Information Technology Cluster
- Web & Digital Communications Career Pathway (IT-WD)
- Arts, A/V Technology & Communications Cluster
- Printing Technology Career Pathway (AR-PRT)
- A/V Technology & Film Career Pathway (AR-AV)
- Visual Arts Career Pathway (AR-VIS)

The standards were extensively researched and reviewed by leaders in the industry, secondary and postsecondary instructors, and university specialists. For each content standard, performance elements representing major topic areas with accompanying performance indicators were developed. Measurements of assessment of the performance elements and performance indicators were developed at the basic, intermediate, and advanced levels. A complete copy of the standards can be accessed at careertech.org/career-technical-education/cctc.

International Society for Technology in Education Standards (ISTE)
Reprinted with permission from *ISTE Standards for Students* (2016). All rights reserved. Permission does not constitute an endorsement by ISTE (iste.org).

College- and Career-Readiness Standards
College- and career-readiness standards emphasize critical thinking, teamwork, and problem-solving skills. Students will learn the skills and abilities demanded by the workforce of today and the future. Mississippi adopted Mississippi College- and Career-Readiness Standards (MCCRS) to provide a consistent, clear understanding of what students are expected to learn and so teachers and parents know what they need to do to help them.
mdek12.org/oae/college-and-career-readiness-standards

Framework for 21st Century Learning
In defining 21st-century learning, the Partnership for 21st Century Skills has embraced key themes and skill areas that represent the essential knowledge for the 21st century: global awareness; financial, economic, business, and entrepreneurial literacy; civic literacy; health literacy; environmental literacy; learning and innovation skills; information, media, and technology skills; and life and career skills.
battelleforkids.org/networks/p21/frameworks-resources

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Preface

Secondary CTE programs in Mississippi face many challenges resulting from sweeping educational reforms at the national and state levels. Schools and teachers are increasingly being held accountable for providing applied learning activities to every student in the classroom. This accountability is measured through increased requirements for mastery and attainment of competency as documented through both formative and summative assessments. This document provides information, tools, and solutions that will aid students, teachers, and schools in creating and implementing applied, interactive, and innovative lessons. Through best practices, alignment with national standards and certifications, community partnerships, and a hands-on, student-centered concept, educators will be able to truly engage students in meaningful and collaborative learning opportunities.

The courses in this document reflect the statutory requirements as found in Section 37-3-49, *Mississippi Code of 1972*, as amended (Section 37-3-46). In addition, this curriculum reflects guidelines imposed by federal and state mandates (Laws, 1988, Ch. 487, §14; Laws, 1991, Ch. 423, §1; Laws, 1992, Ch. 519, §4 eff. from and after July 1, 1992; Strengthening Career and Technical Education for the 21st Century Act, 2019 [Perkins V]; and Every Student Succeeds Act, 2015).

Mississippi Teacher Professional Resources

The following are resources for Mississippi teachers:

Curriculum, Assessment, and Professional Learning
Program resources can be found at the RCU's website, rcu.msstate.edu.

Learning Management System: An Online Resource
Learning management system information can be found at the RCU's website, under Professional Learning.

Should you need additional instructions, contact the RCU at 662.325.2510 or helpdesk@rcu.msstate.edu.

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Executive Summary

Pathway Description
The Digital Audio Production course within the Multimedia pathway provides students with comprehensive training in digital audio techniques, covering foundational safety and legal knowledge to advanced audio production skills. Emphasizing creativity and technical proficiency, the curriculum includes hands-on experience in recording, editing, mixing, and mastering audio projects for various applications. Students develop a professional portfolio showcasing their ability to produce high-quality audio content for music, film, broadcasting, and multimedia productions.

Grade Level and Class Size Recommendations
It is recommended that students enter this program as sophomores. Exceptions to this are a district-level decision based on class size, enrollment numbers, student maturity, and CTE delivery method. This is a hands-on, lab- or shop-based course. Therefore, a maximum of 15 students is recommended per class with only one class with the teacher at a time.

Student Prerequisites
For students to experience success in the program, the following student prerequisites are suggested:

1. C or higher in English (the previous year)
2. C or higher in high school-level math (last course taken or the instructor can specify the level of math instruction needed)
3. Instructor approval and Test of Adult Basic Education (TABE) reading score (eighth grade or higher)
       or
4. TABE reading and math score (eighth grade or higher)
       or
5. Instructor approval

Assessment
The latest assessment blueprint for the curriculum can be found at rcu.msstate.edu/curriculum.

Applied Academic Credit
The latest academic credit information can be found at mdek12.org/ese/approved-course-for-the-secondary-schools.

Teacher Licensure
The latest teacher licensure information can be found at mdek12.org/oel/apply-for-an-educator-license.

Professional Learning
If you have specific questions about the content of any training sessions provided, please contact the RCU at 662.325.2510 or helpdesk@rcu.msstate.edu.

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Course Outline

This curriculum consists of one 1-credit course.

Multimedia—Digital Audio Production— Course Code: <mark>XXXXXX</mark>

Unit	Unit Title	Hours
1	Orientation, Safety, and Leadership	10
2	Introduction to Digital Audio	15
3	Recording Techniques	20
4	Digital Audio Editing	25
5	Audio Effects Processing	25
6	Mixing and Mastering	25
7	Applied Audio Production	20
Total		**140**

Career Pathway Outlook

Overview
The Digital Audio Production course is an integral part of the Multimedia pathway, designed to complement the Digital Video Production course. This pathway emphasizes foundational skills in audio and video production, preparing students for careers in broadcasting, audio engineering, sound design, and multimedia production. The curriculum leverages the latest technology and creative tools to provide students with hands-on experience in producing high-quality digital audio content.

Needs of the Future Workforce
The U.S. Bureau of Labor Statistics forecasts steady growth in digital audio production and related fields from 2022 to 2032, mirroring trends across multimedia industries. Approximately 7,000 new jobs in these fields are expected annually due to growth and turnover. As of May 2023, the average wage in these fields was $55,260, surpassing the median for all occupations. The majority of audio engineers and sound designers specialize in digital media, broadcasting, and music production. A significant percentage of these graduates find roles in multimedia production, live sound, and post-production. Technical roles requiring a bachelor's degree are projected to grow by 6% from 2022 to 2032, outpacing other media occupations. High-earning positions such as sound designers, audio engineers, and multimedia producers average around $70,000 nationally, while entry-level positions earn about $40,000. For detailed data on current and future multimedia core-related jobs, consult Table 1.1.

Table 1.1: Current and Projected Occupation Report

Description	Jobs, 2022	Projected Jobs, 2032	Change (Number)	Change (Percent)	Average Hourly Earnings, 2024
Sound Designers	40	40	0	0%	$31.31
Multimedia Producers	280	290	10	3.6%	$23.17
Broadcast Technicians	200	160	(40)	(20%)	$16.98

Source: Mississippi Department of Employment Security; mdes.ms.gov (2024).

Perkins V Requirements and Academic Infusion
The Digital Audio Production curriculum meets Perkins V requirements by introducing students to and preparing them for high-skill, high-wage occupations within the arts, A/V technology, and communications field. It also offers students a program of study, including secondary, postsecondary, and institutions of higher learning courses, that will further prepare them for multimedia-related careers. Additionally, this curriculum is integrated with academic college- and career-readiness standards, and it focuses on ongoing and meaningful professional development for teachers as well as relationships with industry.

Transition to Postsecondary Education
The latest articulation information for secondary to postsecondary can be found at the Mississippi Community College Board website, mccb.edu.

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Best Practices

Innovative Instructional Technologies
Classrooms should be equipped with tools that will teach today's digital learners through applicable and modern practices. The Digital Audio Production educator's goal should be to include teaching strategies that incorporate current technology. To make use of the latest online communication tools—wikis, blogs, podcasts, and social media platforms—the classroom teacher is encouraged to use a learning management system that introduces students to education in an online environment and places more of the responsibility of learning on the student.

Differentiated Instruction
Students learn in a variety of ways, and numerous factors—students' background, emotional health, and circumstances—create unique learners. By providing various teaching and assessment strategies, students with various learning preferences can have more opportunities to succeed.

CTE Student Organizations
Teachers should investigate opportunities to sponsor a student organization. There are several in Mississippi that will foster the types of learning expected from the Digital Audio Production curriculum. SkillsUSA, TSA, and FBLA are examples of student organizations. Student organizations provide participants and members with growth opportunities and competitive events. They also open the doors to the world of multimedia careers and scholarship opportunities.

Cooperative Learning
Cooperative learning can help students understand topics when independent learning cannot. Therefore, you will see several opportunities in the Digital Audio Production curriculum for group work. To function in today's workforce, students need to be able to work collaboratively with others and solve problems without excessive conflict. The curriculum provides opportunities for students to work together and help each other complete complex tasks. There are many field experiences within the curriculum that will allow and encourage collaboration with professionals currently in the multimedia field.

Professional Organizations

Association for Career and Technical Education (ACTE)
acteonline.org

Future Business Leaders of America (FBLA)
fbla.org

Mississippi Association for Career and Technical Education (MS ACTE)
mississippiacte.com

SkillsUSA
skillsusa.org

Technology Student Association (TSA)
tsaweb.org

Using This Document

Competencies and Suggested Objectives
A competency represents a general concept or performance that students are expected to master as a requirement for satisfactorily completing a unit. Students will be expected to receive instruction on all competencies. The suggested objectives represent the enabling and supporting knowledge and performances that will indicate mastery of the competency at the course level.

Teacher Resources
All teachers should request to be added to the Canvas Resource Guide for their course. For questions or to be added to the guide, send a Help Desk ticket to the RCU by emailing helpdesk@rcu.msstate.edu.

Perkins V Quality Indicators and Enrichment Material
Some of the units may include an enrichment section at the end. This material will greatly enhance the learning experiences of students. If the Digital Audio Production program is using a national certification, work-based learning, or another measure of accountability that aligns with Perkins V as a quality indicator, this material could very well be assessed on that quality indicator. It is the responsibility of the teacher to ensure all competencies for the selected quality indicator are covered throughout the year.

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Unit 1: Orientation, Safety, and Leadership

Competencies and Suggested Objectives

1. Describe local program and career center policies and procedures. DOK1
   a. Describe local program and career center policies and procedures, including dress code, attendance, academic requirements, discipline, and transportation regulations.
   b. Discuss the importance of adhering to these policies in a professional setting.

2. State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided to students by student organizations. DOK1
   a. Explain leadership procedures used in organizational meetings to reach an agreement.
   b. Describe the purposes and benefits of student organizations related to digital audio production.

3. Identify legal requirements and ethical considerations for participation in the digital audio production industry. DOK1
   a. Describe ways to avoid legal liability problems in the industry.
   b. Discuss ethical considerations and professional standards in digital audio production.

4. Describe personal safety rules for working in the digital audio production industry. DOK1
   a. Identify and apply terms and definitions for safety.
   b. Identify accidents, their causes, and prevention methods.
   c. Identify general safety procedures for handling audio equipment.
   d. Identify and apply emergency first aid if necessary.

5. Develop leadership and teamwork skills in a digital audio production setting. DOK2
   a. Participate in group projects to understand roles and responsibilities in a digital audio production team.
   b. Demonstrate effective communication and problem-solving skills in a team setting.

6. Explore careers in digital audio production within Mississippi and the broader multimedia pathway. DOK2
   a. Research various careers in digital audio production, with a focus on opportunities available in Mississippi.
   b. Conduct informational interviews with professionals in the field and present findings to the class.

7. Develop and maintain a digital portfolio. DOK3
   a. Create and maintain a digital portfolio to document projects and progress.
   b. Continuously update the portfolio with completed projects and reflections.

Note: Safety is to be taught as an ongoing part of the program. Students are required to complete a written safety test with 100% accuracy before entering the shop for lab simulations and projects. This test should be documented in each student's file.

Note: This unit will be ongoing throughout the year. Time allotted for this unit will be distributed over the entire year.

Unit 2: Introduction to Digital Audio

Competencies and Suggested Objectives
1. Understand key digital audio concepts and their impact on sound quality. ^{DOK2}
a. Define terms such as sample rate, bit depth, and signal-to-noise ratio.
b. Explain how different sample rates and bit depths affect audio fidelity.
2. Map the signal flow in a digital audio recording system. ^{DOK2}
a. Identify the components of a digital audio recording system (microphone, preamp, converter, DAW, and interface).
b. Illustrate the signal flow path from sound source to recorded audio.
3. Distinguish between common types of microphones and their applications. ^{DOK2}
a. Classify microphones by directivity patterns (omnidirectional, cardioid, etc.).
b. Recommend appropriate microphone types for different recording scenarios.
4. Establish and operate a basic digital audio recording system. ^{DOK3}
a. Assemble and configure a digital audio workstation with all necessary components.
b. Perform a test recording to ensure the system is functioning correctly.
5. Develop critical listening skills for audio quality assessment. ^{DOK2}
a. Identify and evaluate different audio qualities in sample recordings.
b. Develop criteria for assessing audio quality in various recording scenarios.
6. Develop and maintain a digital portfolio. ^{DOK3}
a. Add descriptions and reflections on projects and activities completed in this unit to the digital portfolio.
b. Upload audio samples and system setup documentation to the portfolio.

Unit 3: Recording Techniques

Competencies and Suggested Objectives

1. Apply microphone placement techniques to capture high-quality audio. ^{DOK3}
   a. Describe microphone positioning for different sound sources (vocals, instruments).
   b. Utilize microphone placement strategies to achieve desired sonic characteristics.

2. Create a recording environment for optimal sound capture. ^{DOK3}
   a. Identify and position acoustic treatment materials (absorption panels, diffusers).
   b. Troubleshoot and minimize common recording environment issues (room noise, reflections).

3. Organize and execute location recordings. ^{DOK3}
   a. Identify and select appropriate equipment for location recording.
   b. Employ strategies to mitigate the challenges of recording in uncontrolled environments.

4. Conduct multi-track recording sessions. ^{DOK3}
   a. Plan and organize a multi-track recording session, including track layout and signal routing.
   b. Execute the recording session, ensuring all tracks are captured accurately.

5. Develop and maintain a digital portfolio. ^{DOK3}
   a. Add descriptions and reflections on projects and activities completed in this unit to the digital portfolio.
   b. Upload audio samples and documentation of recording setups to the portfolio.

Unit 4: Digital Audio Editing

Competencies and Suggested Objectives

1. Navigate and utilize a Digital Audio Workstation (DAW) interface. DOK2
   a. Demonstrate proficiency in basic DAW functions (creating tracks, importing media, navigation tools).
   b. Organize and manage audio projects effectively within the DAW environment.

2. Apply fundamental editing techniques in a DAW. DOK3
   a. Use editing tools to adjust the timing, placement, and length of audio clips.
   b. Employ crossfades and fades to create smooth transitions.
   c. Utilize normalization and gain adjustments for consistent audio levels.

3. Perform advanced editing and cleaning techniques. DOK3
   a. Edit audio to correct timing inaccuracies and mistakes.
   b. Employ noise reduction techniques to remove unwanted sounds.

4. Create and manipulate audio loops and samples. DOK3
   a. Extract and edit audio loops from recordings.
   b. Integrate loops and samples into audio projects creatively.

5. Develop and maintain a digital portfolio. DOK3
   a. Add descriptions and reflections on projects and activities completed in this unit to the digital portfolio.
   b. Upload edited audio samples and project files to the portfolio.

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EDUCATION

Unit 5: Audio Effects Processing

Competencies and Suggested Objectives

1. Explain the purpose and function of common audio effects. [DOK2]
   a. Describe the use of equalization (EQ) in shaping sound.
   b. Define compression and limiting, explaining their role in controlling dynamics.
   c. Differentiate between time-based effects (reverb, delay) and their use in creating spatial effects.

2. Apply audio effects to enhance sound quality and achieve creative goals. [DOK3]
   a. Strategically use EQ for tonal balance and corrective audio processing.
   b. Employ dynamics processors to control the dynamic range of audio signals.
   c. Utilize effects to add depth, dimension, and creative sonic textures.

3. Design and implement custom effect chains. [DOK3]
   a. Combine multiple audio effects to create a custom processing chain.
   b. Experiment with different effect combinations to achieve unique sounds.

4. Automate effect parameters for dynamic audio processing. [DOK3]
   a. Use automation tools to control effect parameters over time.
   b. Create dynamic changes in audio effects to enhance the listening experience.

5. Maintain and update a digital portfolio. [DOK3]
   a. Add descriptions and reflections on projects and activities completed in this unit to the digital portfolio.
   b. Upload audio samples demonstrating the use of audio effects to the portfolio.

Unit 6: Mixing and Mastering

Competencies and Suggested Objectives

1. Apply mixing techniques to create balanced and polished audio productions. [DOK3]
   a. Adjust levels, panning, and equalization to achieve a cohesive mix.
   b. Utilize automation tools to create dynamic changes within a mix.

2. Implement mastering techniques to prepare audio for final distribution. [DOK3]
   a. Utilize mastering EQ and compression to optimize sonic consistency.
   b. Apply limiting to maximize loudness while avoiding distortion.

3. Analyze and critique professional mixes and masters. [DOK4]
   a. Compare student projects to professional audio productions.
   b. Identify areas for improvement and implement necessary adjustments.

4. Prepare audio files for different distribution formats. [DOK3]
   a. Export and format audio files for various platforms (CD, streaming, etc.).
   b. Ensure compatibility and quality across different distribution channels.

5. Maintain and update a digital portfolio. [DOK3]
   a. Add descriptions and reflections on projects and activities completed in this unit to the digital portfolio.
   b. Upload mixed and mastered audio samples to the portfolio.

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EDUCATION

Unit 7: Applied Audio Production

Competencies and Suggested Objectives

1. Plan and execute a complete audio production project. [DOK4]
    a. Develop a project plan including pre-production, production, and post-production stages.
    b. Coordinate and manage all aspects of an audio production project, including recording, editing, mixing, and mastering.

2. Create and present a professional audio portfolio. [DOK4]
    a. Compile a selection of audio projects demonstrating proficiency in various techniques.
    b. Present and critique portfolio pieces in a professional manner, incorporating feedback for improvement.

3. Collaborate with peers on group audio projects. [DOK4]
    a. Work in teams to produce audio content, sharing responsibilities and roles.
    b. Reflect on group dynamics and the collaborative process.

4. Engage with industry professionals for feedback and mentorship. [DOK3]
    a. Participate in workshops and seminars led by industry experts.
    b. Apply feedback from professionals to improve audio production skills.

5. Maintain and update a digital portfolio. [DOK3]
    a. Add final project descriptions and reflections to the digital portfolio.
    b. Ensure the portfolio is comprehensive and professionally presented.

Student Competency Profile

Student's Name: _____

This record is intended to serve as a method of noting student achievement of the competencies in each unit. It can be duplicated for each student, and it can serve as a cumulative record of competencies achieved in the course.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Orientation, Safety, and Leadership		
	1.	Describe local program and career center policies and procedures.
	2.	State procedures of leadership used to reach an agreement in an orderly manner and personal development opportunities provided to students by student organizations.
	3.	Identify legal requirements and ethical considerations for participation in the digital audio production industry.
	4.	Describe personal safety rules for working in the digital audio production industry
	5	Develop leadership and teamwork skills in a digital audio production setting.
	6.	Explore careers in digital audio production within Mississippi and the broader multimedia pathway.
	7.	Develop and maintain a digital portfolio.
Unit 2: Introduction to Digital Audio		
	1.	Understand key digital audio concepts and their impact on sound quality.
	2.	Map the signal flow in a digital audio recording system.
	3.	Distinguish between common types of microphones and their applications.
	4.	Establish and operate a basic digital audio recording system.
	5.	Develop critical listening skills for audio quality assessment.
	6.	Develop and maintain a digital portfolio.
Unit 3: Recording Techniques		
	1.	Apply microphone placement techniques to capture high-quality audio.
	2.	Set up a recording environment for optimal sound capture.
	3.	Plan and execute location recordings.
	4.	Conduct multi-track recording sessions.
	5.	Develop and maintain a digital portfolio.
Unit 4: Digital Audio Editing		
	1.	Navigate and utilize a Digital Audio Workstation (DAW) interface

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	2.	Apply fundamental editing techniques in a DAW.
	3.	Perform advanced editing and cleaning techniques.
	4.	Create and manipulate audio loops and samples.
	5.	Develop and maintain a digital portfolio.

Unit 5: Audio Effects Processing

	1.	Explain the purpose and function of common audio effects.
	2.	Apply audio effects to enhance sound quality and achieve creative goals.
	3.	Design and implement custom effect chains.
	4.	Automate effect parameters for dynamic audio processing.
	5.	Develop and maintain a digital portfolio.

Unit 6: Mixing and Mastering

	1.	Apply mixing techniques to create balanced and polished audio productions.
	2.	Implement mastering techniques to prepare audio for final distribution.
	3.	Analyze and critique professional mixes and masters.
	4.	Prepare audio files for different distribution formats.
	5.	Develop and maintain a digital portfolio.

Unit 7: Applied Audio Production

	1.	Plan and execute a complete audio production project.
	2.	Create and present a professional audio portfolio.
	3.	Collaborate with peers on group audio projects.
	4.	Engage with industry professionals for feedback and mentorship.
	5.	Develop and maintain a digital portfolio.

Appendix A: Industry Standards

	Units	1	2	3	4	5	6	7
Standards								
WDC1		X	X	X	X	X	X	X
WDC2		X	X	X	X	X	X	X
WDC3		X	X	X	X	X	X	X
WDC4				X	X	X	X	X
WDC5				X	X	X	X	X
WDC6		X	X	X	X	X	X	X
WDC7		X	X	X	X	X	X	X
WDC8		X	X	X	X	X	X	X
WDC9		X	X	X	X	X	X	X
WDC10		X	X	X	X	X	X	X
PRT1		X	X	X	X	X	X	X
PRT2		X	X	X	X	X	X	X
PRT3		X	X	X	X	X	X	X
AVT1		X	X	X	X	X	X	X
AVT2		X	X	X	X	X	X	X
AVT3		X	X	X	X	X	X	X
AVT4		X	X	X	X	X	X	X
VIS1		X	X	X	X	X	X	X
VIS2		X	X	X	X	X	X	X

Information Technology Career Cluster (IT)

WDC Web & Digital Communications Career Pathway

1. Analyze customer requirements to design and develop a Web or digital communication product.
2. Apply the design and development process to produce user-focused Web and digital communications solutions.
3. Write product specifications that define the scope of work aligned to customer requirements.
4. Demonstrate the effective use of tools for digital communication production, development, and project management.
5. Develop, administer, and maintain Web applications.
6. Design, create and publish a digital communication product based on customer needs.
7. Evaluate the functionality of a digital communication product using industry accepted techniques and metrics.
8. Implement quality assurance processes to deliver quality digital communication products and services.
9. Perform maintenance and customer support functions for digital communication products.
10. Comply with intellectual property laws, copyright laws and ethical practices when creating Web/digital communications.

Arts, A/V Technology & Communications Career Cluster (AR)

PRT Printing Technology Career Pathway

1. Manage the printing process, including customer service and sales, scheduling, production, and quality control.

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EDUCATION

2. Demonstrate the production of various print, multimedia, or digital media products.
3. Perform finishing and distribution operations related to the printing process.

AV   A/V Technology & Film Career Pathway
1. Describe the history, terminology, occupations and value of audio, video, and film technology.
2. Demonstrate the use of basic tools and equipment used in audio, video, and film production.
3. Demonstrate technical support skills for audio, video and/or film productions.
4. Design an audio, video and/or film production.

VIS   Visual Arts Career Pathway
1. Describe the history and evolution of the visual arts and its role in and impact on society.
2. Analyze how the application of visual arts elements and principles of design communicate and express ideas.
3. Analyze and create two and three-dimensional visual art forms using various media.

Appendix B: 21st Century Skills

	Units	1	2	3	4	5	6	7
Standards								
CS1		X	X	X	X	X	X	X
CS2		X	X	X	X	X	X	X
CS3		X	X	X	X	X	X	X
CS4								
CS5		X	X	X	X	X	X	X
CS6		X	X	X	X	X	X	X
CS7		X	X	X	X	X	X	X
CS8		X	X	X	X	X	X	X
CS9		X	X	X	X	X	X	X
CS10		X	X	X	X	X	X	X
CS11		X	X	X	X	X	X	X
CS12		X	X	X	X	X	X	X
CS13		X	X	X	X	X	X	X
CS14		X	X	X	X	X	X	X
CS15		X	X	X	X	X	X	X
CS16		X	X	X	X	X	X	X

CSS1-21st Century Themes
CS1   Global Awareness
1. Using 21st century skills to understand and address global issues.
2. Learning from and working collaboratively with individuals representing diverse cultures, religions, and lifestyles in a spirit of mutual respect and open dialogue in personal, work, and community contexts
3. Understanding other nations and cultures, including the use of non-English languages
CS2   Financial, Economic, Business, and Entrepreneurial Literacy
1. Knowing how to make appropriate personal economic choices.
2. Understanding the role of the economy in society
3. Using entrepreneurial skills to enhance workplace productivity and career options.
CS3   Civic Literacy
1. Participating effectively in civic life through knowing how to stay informed and understanding governmental processes.
2. Exercising the rights and obligations of citizenship at local, state, national, and global levels
3. Understanding the local and global implications of civic decisions
CS4   Health Literacy
1. Obtaining, interpreting, and understanding basic health information and services and using such information and services in ways that enhance health.
2. Understanding preventive physical and mental health measures, including proper diet, nutrition, exercise, risk avoidance, and stress reduction
3. Using available information to make appropriate health-related decisions.
4. Establishing and monitoring personal and family health goals
5. Understanding national and international public health and safety issues.
CS5   Environmental Literacy

MISSISSIPPI
DEPARTMENT OF
EDUCATION

1. Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water, and ecosystems.
2. Demonstrate knowledge and understanding of society's impact on the natural world (e.g., population growth, population development, resource consumption rate, etc.).
3. Investigate and analyze environmental issues and make accurate conclusions about effective solutions.
4. Take individual and collective action toward addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues).

CSS2-Learning and Innovation Skills
    CS6   **Creativity and Innovation**
       1. Think creatively
       2. Work creatively with others
       3. Implement innovations
    CS7   **Critical Thinking and Problem Solving**
       1. Reason effectively
       2. Use systems thinking
       3. Make judgments and decisions
       4. Solve problems
    CS8   **Communication and Collaboration**
       1. Communicate clearly
       2. Collaborate with others

CSS3-Information, Media, and Technology Skills
    CS9   **Information Literacy**
       1. Access and evaluate information
       2. Use and manage information
    CS10 **Media Literacy**
       1. Analyze media
       2. Create media products
    CS11 **ICT Literacy**
       1. Apply technology effectively

CSS4-Life and Career Skills
    CS12 **Flexibility and Adaptability**
       1. Adapt to change
       2. Be flexible
    CS13 **Initiative and Self-Direction**
       1. Manage goals and time
       2. Work independently
       3. Be self-directed learners
    CS14 **Social and Cross-Cultural Skills**
       1. Interact effectively with others

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2. Work effectively in diverse teams

CS15 Productivity and Accountability
1. Manage projects
2. Produce results

CS16 Leadership and Responsibility
1. Guide and lead others
2. Be responsible to others

Appendix C: College and Career Ready Standards

	Units	1	2	3	4	5	6	7
Standards								
RL.11.1		X	X	X	X	X	X	X
RL.11.2		X	X	X	X	X	X	X
RL.11.3		X	X	X	X	X	X	X
RL.11.4		X	X	X	X	X	X	X
RL.11.5		X	X	X	X	X	X	X
RL.11.6		X	X	X	X	X	X	X
RI.11.7		X	X	X	X	X	X	X
RI.11.8		X	X	X	X	X	X	X
RI.11.9		X	X	X	X	X	X	X
RI.11.10		X	X	X	X	X	X	X
W.11.1		X	X	X	X	X	X	X
W.11.2		X	X	X	X	X	X	X
W.11.3		X	X	X	X	X	X	X
W.11.4		X	X	X	X	X	X	X
W.11.5		X	X	X	X	X	X	X
W.11.6		X	X	X	X	X	X	X
W.11.7		X	X	X	X	X	X	X
W.11.8		X	X	X	X	X	X	X
W.11.9		X	X	X	X	X	X	X
W.11.10		X	X	X	X	X	X	X
SL.11.1		X	X	X	X	X	X	X
SL.11.2		X	X	X	X	X	X	X
SL.11.3		X	X	X	X	X	X	X
SL.11.4		X	X	X	X	X	X	X
SL.11.5		X	X	X	X	X	X	X
SL.11.6		X	X	X	X	X	X	X
L.11.1		X	X	X	X	X	X	X
L.11.2		X	X	X	X	X	X	X
L.11.3		X	X	X	X	X	X	X
L.11.4		X	X	X	X	X	X	X
L.11.5		X	X	X	X	X	X	X
L.11.6		X	X	X	X	X	X	X

2016 Mississippi College- and Career- Readiness Standards for English Language Arts: English III

RL **Reading Literature**

Key Ideas and Details

1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
2. Determine themes or central ideas of a text and analyze in detail their development over the course of the text, including how details of a text interact and build on one another to produce a complex account; provide an accurate summary of the text based upon this analysis.
3. Analyze the impact of the author's choices regarding how to develop and relate elements of a literary text (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).

Craft and Structure

4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific

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word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)

5. Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.

6. Analyze a case in which grasping a point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).

RI   Reading Informational Text

Integration of Knowledge and Ideas

1. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

2. Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., The Federalist, presidential addresses).

3. Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance for their themes, purposes, and rhetorical features. Such documents might include The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address.

Range of Reading and Level of Text Complexity

4. By the end of grade 11, read and comprehend literary nonfiction in the grades 11-CCR text complexity band proficiently, with scaffolding as needed at the high end of the range.

W   Writing

Text Types and Purposes

1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
   a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.
   b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.
   c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
   d. Establish and maintain a formal style and objective tone while attending to

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the norms and conventions of the discipline in which they are writing.
   e. Provide a concluding statement or section that follows from and supports the argument presented.
2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.
   a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
   b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
   c. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
   d. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.
   e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
   f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.
   a. Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.
   b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.
   c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).
   d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.
   e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

Production and Distribution of Writing
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should

demonstrate command of Language standards 1–3 up to and including grades 11–12.)

6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

   a. Apply grades 11–12 Reading standards to literature (e.g., "Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics").

   b. Apply grades 11–12 Reading standards to literary nonfiction and/or informational texts (e.g., "Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning [e.g., in U.S. Supreme Court Case majority opinions and dissents] and the premises, purposes, and arguments in works of public advocacy [e.g., The Federalist, presidential addresses]").

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

SL   **Speaking and Listening**

Comprehension and Collaboration

1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

   a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

   b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

   c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a

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topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.

    d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

2. Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.

Presentation of Knowledge and Ideas

4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.

5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

6. Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11–12 Language standards 1 and 3 for specific expectations.)

L   **Language**

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
    a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.
    b. Resolve issues of complex or contested usage, consulting references (e.g., Merriam-Webster's Dictionary of English Usage, Garner's Modern American Usage) as needed.

2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
    a. Observe hyphenation conventions.
    b. Spell correctly.

Knowledge of Language

3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
    a. Vary syntax for effect, consulting references (e.g., Tufte's Artful Sentences) for guidance as needed; when analyzing complex texts, demonstrate an understanding of how syntax contributes to the purpose or meaning of the text.

Vocabulary Acquisition and Use
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, choosing flexibly from a range of strategies.
   a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
   b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., conceive, conception, conceivable).
   c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage.
   d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
   a. Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text.
   b. Analyze nuances in the meaning of words with similar denotations.
6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Appendix D: Common Core State Standards for Mathematics

Standards	Units	1	2	3	4	5	6	7
N-RN.1				X	X		X	X
N-RN.2				X	X		X	X
N-RN.3				X	X	X	X	X
N-Q.2				X	X	X	X	X
N-CN.1				X	X	X	X	X
N-CN.2				X	X	X	X	X
N-CN.7				X	X	X	X	X
A-SSE.2				X	X	X	X	X
A-SSE.3				X	X	X	X	X
A-SSE.4				X	X		X	X

2016 Mississippi College- and Career- Readiness Standards for Mathematics: High School - Algebra II

Number and Quantity

RN   The Real Number System

Extend the properties of exponents to rational exponents

1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define $5^{1/3}$ to be the cube root of 5 because we want $[5^{1/3}]^3 = 5^{(1/3)\,3}$ to hold, so $[5^{1/3}]^3$ must equal 5.

2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.

Q   Quantities

Reason quantitatively and use units to solve problems

2. Define appropriate quantities for the purpose of descriptive modeling.

CN   The Complex Number System

Perform arithmetic operations with complex numbers

1. Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.

2. Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.

Use complex numbers in polynomial identities and equations

7. Solve quadratic equations with real coefficients that have complex solutions.

Algebra

SSE   Seeing Structure in Expressions

Interpret the structure of expressions

2. Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

Write expressions in equivalent forms to solve problems

3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
   a. Use the properties of exponents to transform expressions for exponential functions.
4. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1) and use the formula to solve problems. For example, calculate mortgage payments.

Appendix E: International Society for Technology in Education Standards (ISTE)

	Units	1	2	3	4	5	6	7
Standards								
T1		X	X	X	X	X	X	X
T2		X	X	X	X	X	X	X
T3		X	X	X	X	X	X	X
T4		X	X	X	X	X	X	X
T5		X	X	X	X	X	X	X
T6		X	X	X	X	X	X	X

International Society for Technology in Education Standards (ISTE)

T1   Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students do the following:

a. Apply existing knowledge to generate new ideas, products, or processes.
b. Create original works as a means of personal or group expression.
c. Use models and simulations to explore complex systems and issues.
d. Identify trends and forecast possibilities.

T2   Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students do the following:

a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.
b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats.
c. Develop cultural understanding and global awareness by engaging with learners of other cultures.
d. Contribute to project teams to produce original works or solve problems.

T3   Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information. Students do the following:

a. Plan strategies to guide inquiry.
b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
d. Process data and report results.

T4   Critical Thinking, Problem Solving, and Decision Making

Students use critical-thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students do the following:

a. Identify and define authentic problems and significant questions for investigation.
b. Plan and manage activities to develop a solution or complete a project.

c. Collect and analyze data to identify solutions and/or make informed decisions.

d. Use multiple processes and diverse perspectives to explore alternative solutions.

T5   Digital Citizenship

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students do the following:

a. Advocate and practice safe, legal, and responsible use of information and technology.

b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.

c. Demonstrate personal responsibility for lifelong learning.

d. Exhibit leadership for digital citizenship.

T6   Technology Operations and Concepts

Students demonstrate a sound understanding of technology concepts, systems, and operations. Students do the following:

a. Understand and use technology systems.

b. Select and use applications effectively and productively.

c. Troubleshoot systems and applications.

d. Transfer current knowledge to learning of new technologies.