2024 Construction Core

Program CIP: 46.0000—Construction

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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 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.

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Dr. Ray Morgigno, interim state superintendent of education, executive secretary
Mr. Glen V. East, chair
Mr. Matt Miller, vice chair
Dr. Ronnie L. McGehee
Mr. Bill Jacobs
Mr. Mike Pruitt
Mrs. Mary Werner
Dr. Wendi Barrett
Mr. Charlie Frugé, student representative
Ms. Kate Riddle, student representative

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Standards

NCCER Learning Series Construction Standards
The NCCER developed and published a set of industry standards taught nationwide by contractors, associations, construction users, and secondary and postsecondary schools called the NCCER Learning Series. When developing this set of standards, the NCCER assembled a team of subject matter experts that represented construction companies and schools across the nation. Each committee met several times and combined experts' knowledge and experience to finalize the set of national industry standards.

As a part of the accreditation process, all Mississippi construction instructors will be required to successfully complete the Instructor Certification Training Program. This program ensures that instructors possess a deep knowledge of content of the standards.

International Society for Technology in Education Standards (ISTE)
 iste.org

College- and Career-Ready 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. 21 *Framework Definitions* (2019).
battelleforkids.org/networks/p21/frameworks-resources

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, 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.

Executive Summary

Pathway Description
The Construction Core instructional program provides a foundation of knowledge to prepare students for employment or continued education in several occupations related to the construction industry. The curriculum framework for this program was developed in partnership with the Mississippi Construction Education Foundation (MCEF). MCEF is the accredited sponsor of the National Center for Construction Education and Research (NCCER).
When developing this curriculum, the authors recognized the importance of incorporating differentiated instruction and the needs of 21st-century learners. Therefore, teaching strategies include online and face-to-face instruction that aligns with NCCER Connect e-books, online lectures, video presentations, online quizzes, active figures, and Spanish content. Students will have access to this information to learn new content as well as to review, reinforce, and revise their work.

College, Career, and Certifications
NCCER Learning Series

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
In order for students to be successful in the construction program, the following student prerequisites are in place:

1. C or higher in English (the previous year)
2. C or higher in math (last course taken or the instructor can specify the math)
   or
3. Instructor approval and TABE Reading Score (eighth grade or higher)
   or
4. Instructor approval

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

Teacher Licensure
The latest teacher licensure information can be found at mdek12.org/OTL/OEL.

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

Course Outlines

Option 1—Two 1-Carnegie-Unit Courses
This curriculum consists of two 1-credit courses that should be completed in the following sequence:

1. **Safety and Orientation to Construction—Course Code: 993102**
2. **Introduction to Construction—Course Code: 993103**

Course Description: **Safety and Orientation to Construction**
Safety and Orientation to Construction includes an introduction to the field, as well as fundamentals of construction safety, tools, math, blueprint reading, and either basic carpentry or electrical skills.

Course Description: **Introduction to Construction**
Introduction to Construction emphasizes an overview of construction-related trades, including one of two options, either carpentry or electrical wiring. This course gives students' real-world, hands-on practice in these areas. This course should be taken only after students successfully pass the Safety and Orientation to Construction course.

Safety and Orientation to Construction—Course Code: 993102

Unit	Unit Title	Hours
1	Orientation and Build Your Future in Construction	15
2	Employability Skills	10
3	Fundamentals of Student Organizations	20
4	Communication Skills	20
5	Basic Safety	24
6	Introduction to Construction Math	34
7a	Hand Tools Part I	17
Total		**140**

Introduction to Construction—Course Code: 993103

Unit	Unit Title	Hours
7b	Hand Tools Part II	13
8	Power Tools	30
9	Introduction to Construction Drawings	30
10	Introduction to Materials Handling	15
11	This unit contains a local district option. OPTION A: Introduction to Carpentry **OR** OPTION B: Introduction to Electrical Wiring	52
Total		**140**

Option 2—One 2-Carnegie-Unit Course

This curriculum consists of one two-credit course, which should be completed in the following sequence:

1. **Construction—Course Code: 993101**

Course Description: Construction
Construction introduces students to the fundamentals of construction safety, tools, math, and blueprint reading, as well as either basic carpentry or electrical skills.

Construction—Course Code: 993101

Unit	Unit Title	Hours
1	Orientation and Build Your Future in Construction	15
2	Employability Skills	10
3	Fundamentals of Student Organizations	20
4	Communication Skills	20
5	Basic Safety	24
6	Introduction to Construction Math	34
7a	Hand Tools Part I	17
7b	Hand Tools Part II	13
8	Power Tools	30
9	Introduction to Construction Drawings	30
10	Introduction to Materials Handling	15
11	This unit contains a local district option. OPTION A: Introduction to Carpentry **OR** OPTION B: Introduction to Electrical Wiring	52
Total		**280**

Career Pathway Outlook

Overview

By implementing the National Center for Construction Education and Research (NCCER)'s Learning Series construction skills standards into the construction-related pathways, students who successfully master the curriculum should have the skills to enter the workforce or pursue an advanced degree. These skills are based on industry-validated performance indicators. The pathway will include applied instruction designed to articulate with programs offered in Mississippi's community and junior colleges. The architecture and construction career pathway covers aspects of the construction process, including building, designing, maintaining, and managing structures. A graduate of this construction pathway can advance to become a carpenter, construction inspector, construction laborer, electrician, general contractor, iron/metalworker, landscape architect, plumber, sheet metal worker, and solar photovoltaic installer, among many other skilled occupations. Construction work is physically and mentally demanding, requiring many successful skills. Job sites include a variety of simultaneously occurring construction-related activities. Construction laborers may work in teams at various heights on scaffolding and roofs and on infrastructure projects like roads, bridges, and tunnels. They may work in commercial buildings, confined spaces, or industrial facilities operating heavy equipment, all while facing diverse weather conditions during home construction or renovation. This industry is expanding due to growing populations, urbanization, infrastructure development, and aging infrastructure, which requires significant investments in repair and replacement. The U.S. Bureau of Labor Statistics determined that by 2032, architecture and engineering occupations will increase by 5.2% nationally. In this same timeframe, construction laborer and construction manager jobs will increase by 4.4% and 4.5%, respectively, which ranks those occupations 20th overall in the potential for the most job growth. In the construction world, solar photovoltaic installers, responsible for assembling, installing, and maintaining solar panel systems on rooftops or other structures, placed 15th in the fastest-growing occupations in America. Sustainable materials, automation and digitization, offsite fabrication, the internet of Things (IoT), and artificial intelligence can aid in preventing equipment failures, optimizing energy usage, and improving construction site planning and safety.

Some construction-related careers may require at least an associate degree, although careers with the highest earning potential—chief executives, architects, and engineers, for example—require advanced degrees. Students enrolled in these courses should be well prepared to pursue community college and four-year college degrees.

Needs of the Future Workforce

According to the U.S. Bureau of Labor Statistics, through 2032, construction occupation employment is projected to grow about as fast as the national average for all occupations. On average, about 646,100 openings are projected each year in these occupations due to employment growth and the need to replace workers who leave the occupations permanently. In 2022, Mississippi's Gulfport-Biloxi-Pascagoula area saw the highest concentration of electrician jobs statewide, equating to 12 electricians per 1,000 jobs available. Statewide, concerning electricians and carpenters, there are 5,020 and 2,670 laborers, respectively. Nationally, residential building construction-related jobs account for 38 out of every 1,000 jobs available. Also, through 2032, new construction laborer jobs will grow to 61,900 overall, while earning

$40,750 yearly. In 2021, 46 % of construction laborers who received a college degree held a management position. Of those with bachelor's degrees, the top three occupations were, in descending order, construction managers, civil engineers, and cost estimators. Through 2032, jobs for project management specialists are expected to increase by 6%, with civil engineers and construction managers only slightly behind at 5% growth each. Regarding construction labor, 11% were employed in business and financial operations while 18% were employed in a combination of construction, extraction, architecture, and engineering occupations. Refer to Table 1.1 for information regarding current and projected construction-related occupations.

Table 1.1: Current and Projected Occupation Report

Description	Jobs, 2022	Projected Jobs, 2032	Change (Number)	Change (Percent)	Average Hourly Earnings, 2023
Architects, Except Landscape and Naval	410	420	10	2.4%	$50.12
Architectural and Engineering Managers	940	980	40	4.3%	$59.52
Cement Masons and Concrete Finishers	650	700	50	7.7%	$19.44
Civil Engineers	2,080	2,140	60	2.9%	$41.30
Construction and Building Inspectors	670	700	30	4.5%	$25.14
Construction Laborers	12,210	12,530	320	2.6%	$15.56
Electrical and Electronic Engineering Technologists and Technicians	850	870	20	2.4%	$28.29
Electrical Engineers	1,260	1,300	40	3.2%	$43.65
Electrical Power Line Installers and Repairers	2,020	2,130	110	5.4%	$31.09
Electricians	5,780	6,280	500	8.7%	$26.08
Environmental Engineering Technologists and Technicians	110	140	30	27.3%	$20.92
Excavating and Loading Machine and Dragline Operators, Surface Mining	420	430	10	2.4%	$21.40
First Line Supervisors of Construction Trades and Extraction Workers	6,380	6,620	240	3.8%	$29.70
First Line Supervisors of Mechanics, Installers, and Repairers	4,550	4,800	250	5.5%	$31.67
Glaziers	320	340	20	6.3%	$18.79

Helpers, Construction Trades, All Other	190	200	10	5.3%	$14.07
Helpers,.Carpenters	190	200	10	5.3%	$16.15
Helpers,.Electricians	780	790	10	1.3%	$16.14
Helpers,.Pipelayers, Plumbers, Pipefitters, and Steamfitters	350	390	40	11.4%	$15.12
Highway Maintenance Workers	2,580	2,860	280	10.9%	$14.56
Industrial Engineering Technologists and Technicians	360	380	20	5.6%	$31.59
Industrial Engineers	1,940	2,170	230	11.9%	$39.58
Installation, Maintenance, and Repair Occupations	55,600	58,480	2880	5.2%	$22.73
Insulation Workers, Floor, Ceiling, and Wall	410	420	10	2.4%	$23.73
Mechanical Engineering Technologists and Technicians	100	110	10	10%	$24.88
Mechanical Engineers	1,590	1,710	120	7.5%	$40.66
Operating Engineers and Other Construction Equipment Operators	3,430	3,590	160	4.7%	$19.53
Painters, Construction and Maintenance	2,160	2,210	50	2.3%	$17.86
Paving, Surfacing, and Tamping Equipment Operators	710	740	30	4.2%	$16.93
Pipelayers	390	410	20	5.1%	$14.90
Plumbers, Pipefitters, and Steamfitters	3,050	3,300	250	8.2%	$22.80
Roofers	620	660	40	6.5%	$16.08
Septic Tank Servicers and Sewer Pipe Cleaners	250	300	50	20%	$17.29
Sheet Metal Workers	1,510	1,570	60	4%	$21.86
Structural Iron and Steel Workers	640	650	10	1.6%	$20.41
Surveying and Mapping Technicians	640	690	50	7.8%	$22.72
Surveyors	430	440	10	2.3%	$25.36
Tile and Stone Setters	230	260	30	13%	$18.30

Source: Mississippi Department of Employment Security; mdes.ms.gov (2023).

Perkins V Requirements and Academic Infusion

The construction core curriculum meets Perkins V requirements of introducing students to and preparing them for high-skill, high-wage occupations in construction fields. It also offers students a program of study, including secondary, postsecondary, and institutions of higher learning courses, that will further prepare them for construction careers. Additionally, this curriculum is integrated with academic college- and career-readiness standards. Lastly, 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.

Professional Organizations

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

National Center for Construction Education and Research (NCCER)
nccer.org

Skills USA – Mississippi
mdek12.org/CTE/SO/SkillsUSA

SkillsUSA-National
skillsusa.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 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 for students. If the construction program uses a national certification, work-based learning, or other measure of accountability that aligns with Perkins V as a quality indicator, this material could be assessed on that quality indicator. The teacher must ensure all competencies for the selected quality indicator are covered throughout the year.

Unit 1: Orientation and Build Your Future in Construction

Competencies and Suggested Objectives
1. Describe local program and center expectations, policies, and procedures. DOK1 a. Describe local program and career center policies and procedures, including dress code, attendance, academic requirements, discipline, shop/lab rules and regulations, and transportation regulations. b. Give a brief overview of the course. Explain to students what construction technology is, why it is important, and how it will be delivered. c. Compare and contrast local program and school policies to the expectations of employers. d. Preview course objectives, program policy, and industry standards.
2. Explore work-based learning opportunities related to program areas. DOK1 a. Define work-based learning. b. Explore the opportunities available through the program areas: • Work-based learning • Job shadowing • Apprenticeship programs • On-the-job training • Etc.

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: Employability Skills

Competencies and Suggested Objectives
1. Describe employment opportunities in the construction industry. DOK1 a. Describe employment opportunities, including potential earnings, employee benefits, job availability, working conditions, educational requirements, required technology skills, and continuing education/training. b. Discuss the guidelines for developing a proper résumé. c. Demonstrate completing job applications.
2. Examine the Mississippi Department of Employment Security (MDES) website and its applications relating to employment opportunities. DOK1 a. Perform various searches through the MDES website, such as: • Number of jobs available for a specific area of expertise • Hourly wage • Percent of jobs in the county • Percent of jobs in the state
3. Demonstrate appropriate interview skills. DOK1 a. Identify interview skills, such as speaking, dress, professionalism, and punctuality. b. Simulate a job interview.
4. Describe basic employee responsibilities and appropriate work ethics. DOK1 a. Compare and contrast employment responsibilities and expectations to local school and program policies and expectations. b. Define effective relationship skills and workplace issues, including but not limited to sexual harassment, stress, and substance abuse.

Unit 3: Fundamentals of Student Organizations

Competencies and Suggested Objectives
1. Discuss the history, mission, and purpose of student organizations, including SkillsUSA. DOK1 a. Trace the history of the program area student organization. b. Identify the mission, purpose, and/or goals of the program area's student organization.
2. Explore the advantages of membership in a student organization. DOK1 a. Discuss the membership process for the program area's student organization. b. Explain the activities related to the local chapter and the state and national organizations.
3. Discuss the organizations' brand resources. DOK1 a. Identify the motto, creed, and/or pledge and discuss their meanings. b. Recognize related brand resources, such as: • Emblem • Colors • Official attire • Logos • Graphic standards
4. Describe the importance of effective communication skills. DOK1 a. Demonstrate verbal and nonverbal communication skills. b. Apply appropriate speaking and listening skills to class- and work-related situations.
5. Apply leadership skills to class- and work-related situations and 21st Century Skills. DOK2 a. Define leadership. b. Discuss the attributes of a leader. c. Identify the roles a leader can assume.
6. Utilize teambuilding skills in class- and work-related situations. DOK2 a. Define teambuilding. b. Discuss the attributes of a team. c. Identify the roles included in a team.
7. Discuss the various competitions offered through the program area's student organization. DOK1 a. Describe each competition and the skills needed to accomplish the tasks. b. Perform the tasks needed to complete an assigned requirement for a competition.

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

Unit 4: Communication Skills

Competencies and Suggested Objectives
1. Demonstrate the ability to follow verbal and written instructions and communicate effectively in on-the-job situations. DOK2 a. Follow basic written and verbal instructions. b. Effectively communicate in on-the-job situations using verbal, written, or electronic communication. c. Demonstrate reading and writing requirements in on-the-job situations.
2. Discuss the importance of good listening skills in on-the-job situations. DOK2 a. Apply the tips for developing good listening skills.

Unit 5: Basic Safety

Competencies and Suggested Objectives
1. Describe, define, and illustrate general safety rules for working in a shop/lab and how they relate to the construction industry. DOK2 a. Describe how to avoid on-site accidents. b. Explain the relationship between housekeeping and safety. c. Explain the importance of following all safety rules and company safety policies according to Occupational Safety and Health Administration (OSHA) standards. d. Explain the importance of reporting all on-the-job injuries, accidents, and near misses. e. Explain the need for evacuation policies and the importance of following them. f. Explain causes of accidents and the impact of accident costs. g. Compare and contrast shop/lab safety rules to industry safety rules.
2. Identify and apply safety around welding operations. DOK1 a. Use proper safety practices when welding or working around welding operations. b. Use proper safety practices when welding in or near trenches and excavations. c. Explain the term "proximity work."
3. Display appropriate safety precautions to take around common jobsite hazards. DOK1 a. Explain the safety requirements for working in confined areas. b. Explain the different barriers and barricades and how they are used.
4. Demonstrate the appropriate use and care of personal protective equipment (PPE). DOK1 a. Identify commonly used PPE items. b. Understand proper use of PPE. c. Demonstrate appropriate care for PPE.
5. Explain fall protection, ladder, stair, and scaffold procedures and requirements. DOK1 a. Explain the use of proper fall protection. b. Inspect and safely work with various ladders, stairs, and scaffolds.
6. Explain the safety data sheet (SDS). DOK1 a. Explain the function of the SDS. b. Interpret the requirements of the SDS. c. Discuss hazardous material exposures.
7. Display appropriate safety procedures related to fires. DOK1 a. Explain the process by which fires start. b. Explain fire prevention of various flammable liquids. c. Explain the classes of fire and the types of extinguishers. d. Illustrate the proper steps to follow when using a fire extinguisher. e. Demonstrate the proper techniques for putting out a fire.
8. Explain safety in and around electrical situations. DOK1 a. Explain injuries that can result when electrical contact occurs. b. Explain safety around electrical hazards. c. Explain action to take when an electrical shock occurs.

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 6: Introduction to Construction Math

Competencies and Suggested Objectives
1. Apply the four basic math skills using whole numbers, fractions, decimals, and percentages, both with and without a calculator. DOK2 a. Define basic geometric shapes used in the construction industry. b. Add, subtract, multiply, and divide whole numbers, decimals, and fractions with and without a calculator. c. Convert whole numbers to fractions and convert fractions to whole numbers. d. Convert decimals to percentages and convert percentages to decimals. e. Convert fractions to decimals. f. Convert fractions to percentages. g. Demonstrate reading a standard and metric ruler and tape measure. h. Recognize and use length, weight, volume, and temperature metric units.

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

Unit 7a: Hand Tools Part I

Competencies and Suggested Objectives
1. Demonstrate the use and maintenance of hand tools. DOK2 a. Identify, visually inspect, and discuss the safe use of common hand tools including: • Adjustable wrenches • Chisels and punches • Clamps • Demolition tools • Files • Hammers • Handsaws • Levels • Non-adjustable wrenches • Pliers • Screwdrivers • Shovels • Sockets • Squares • Tape measures • Utility knives

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

Unit 7b: Hand Tools Part II

Competencies and Suggested Objectives
1. Demonstrate the use and maintenance of hand tools. DOK2 a. Discuss safety rules. b. Select and demonstrate the use of hand tools. c. Explain the procedures for maintenance.

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

Unit 8: Power Tools

Competencies and Suggested Objectives
1. Demonstrate the use and maintenance of power tools. DOK2 a. Identify, visually inspect, and discuss the safe use of common power tools including: • Circular saw • Electric drill (corded or cordless) • Hammer drill • Impact driver • Jigsaw • Miter or cutoff saw • Oscillating multi-tool • Portable band saw • Portable or bench grinder • Power nailer • Reciprocating saw • Table saw b. Discuss safety rules. c. Select and demonstrate the use of power tools. d. Explain the procedures for maintenance.

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

Unit 9: Introduction to Construction Drawings

Competencies and Suggested Objectives
1. Read, analyze, and understand basic components of a blueprint. DOK3 a. Recognize and identify terms, components, and symbols commonly used on blueprints. b. Relate information on construction drawings to actual locations on the print. c. Demonstrate the use of an engineer's and architect's scales. d. Recognize different types of drawings. e. Interpret and use drawing dimensions.

Unit 10: Introduction to Materials Handling

Competencies and Suggested Objectives
1. Safely handle and store materials. DOK1 a. Define a load. b. Establish a pre-task plan prior to moving a load. c. Demonstrate proper materials-handling techniques. d. Choose appropriate materials-handling equipment for the task. e. Recognize hazards and follow safety procedures required for materials handling. f. Identify and demonstrate commonly used knots.

OPTION A - Unit 11 will be used for the instruction of Construction Core: Introduction to Carpentry

OPTION A - Unit 11: Introduction to Carpentry

Competencies and Suggested Objectives
1. Explain the fundamentals of the carpentry trade. DOK1 a. Define terms related to the carpentry trade. b. Discuss the history of the carpentry trade. c. Describe modern carpentry. d. Describe career ladders, stages of progress, and advancement possibilities in carpentry work. e. Discuss the skills, attitudes, abilities, personal traits, and responsibilities a person needs to work as a successful carpenter. f. Recognize materials used and the importance of safety in the carpentry industry.
2. Demonstrate safety when working in carpentry and with carpentry tools. DOK2 a. Demonstrate safety procedures related to carpentry and working with carpentry tools. b. Identify hazards related to carpentry and how to avoid or minimize them in the workplace.
3. Correctly identify building materials, fasteners, and adhesives. DOK2 a. Identify and state the use of various building materials, types of softwoods and hardwoods, and the safety precautions associated with each. b. Identify the different grades and markings of wood building materials and types of engineered lumber. c. Calculate the quantities of building materials using industry-standard methods. d. Identify fasteners, anchors, and adhesives used in construction work and explain their uses.

OPTION B - Unit 11 will be used for the instruction of Construction Core: Introduction to Electrical Wiring

OPTION B - Unit 11: Introduction to Electrical Wiring

Competencies and Suggested Objectives
1. Explain the fundamentals of the electrical trade. DOK1 a. Describe the apprenticeship/training, career paths/opportunities, and responsibilities for electrical trades. b. Define the various sectors of the electrical industry. c. State the tasks typically performed by an electrician.
2. Demonstrate safety in and around electrical circuits and equipment. DOK2 a. Define terms related to electrical safety. b. Demonstrate safe working procedures in a construction and shop/lab environment. c. Explain the purpose of OSHA and how it promotes safety on the job. d. Identify electrical hazards and how to avoid or minimize them in the workplace. e. Explain safety issues concerning lock-out/tag-out procedures, personal protection using assured grounding and isolation programs, confined space entry, respiratory protection, and fall protection systems. f. Develop a task plan and a hazard assessment for a given task and select the appropriate PPE and work methods to perform the task safely.
3. Discuss electrical circuits. DOK2 a. Define voltage and identify how it can be produced. b. Explain the difference between conductors and insulators. c. Define the units of measurement used to measure the properties of electricity. d. Demonstrate the meters used to measure voltage, current, and resistance. e. Explain and construct the basic characteristics of series and parallel circuits.

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 and Build Your Future in Construction		
	1.	Describe local program and center expectations, policies, and procedures.
	2.	Explore work-based learning opportunities related to program areas.
Unit 2: Employability Skills		
	1.	Describe employment opportunities in the construction industry.
	2.	Examine the Mississippi Department of Employment Security (MDES) website and its applications relating to employment opportunities.
	3.	Demonstrate appropriate interview skills.
	4.	Describe basic employee responsibilities and appropriate work ethics.
Unit 3: Fundamentals of Student Organizations		
	1.	Discuss the history, mission, and purpose of student organizations, including SkillsUSA.
	2.	Explore the advantages of membership in a student organization.
	3.	Discuss the organizations brand resources.
	4.	Describe the importance of effective communication skills.
	5.	Apply leadership skills to class- and work-related situations and 21st Century Skills.
	6.	Utilize teambuilding skills in class- and work-related situations.
	7.	Discuss the various competitions offered through the program area's student organization.
Unit 4: Communication Skills		
	1.	Demonstrate the ability to follow verbal and written instructions and communicate effectively in on-the-job situations.
	2.	Discuss the importance of good listening skills in on-the-job situations.
Unit 5: Basic Safety		
	1.	Describe, define, and illustrate general safety rules for working in a shop/lab and how they relate to the construction industry.
	2.	Identify and apply safety around welding operations.
	3.	Display appropriate safety precautions to take around common jobsite hazards.

	4.	Demonstrate the appropriate use and care of personal protective equipment (PPE).
	5.	Explain fall protection, ladder, stair, and scaffold procedures and requirements.
	6.	Explain the safety data sheet (SDS).
	7.	Display appropriate safety procedures related to fires.
	8.	Explain safety in and around electrical situations.
Unit 6: Introduction to Construction Math		
	1.	Apply the four basic math skills using whole numbers, fractions, decimals, and percentages, both with and without a calculator.
Unit 7a: Hand Tools Part I		
	1.	Demonstrate the use and maintenance of hand tools.
Unit 7b: Hand Tools Part II		
	1.	Demonstrate the use and maintenance of hand tools.
Unit 8: Power Tools		
	1.	Demonstrate the use and maintenance of power tools.
Unit 9: Introduction to Construction Drawings		
	1.	Read, analyze, and understand basic components of a blueprint.
Unit 10: Introduction to Materials Handling		
	1.	Safely handle and store materials.
OPTION A - Unit 11 will be used for the instruction of Construction Core: Introduction to Carpentry.		
OPTION A - Unit 11: Introduction to Carpentry		
	1.	Explain the fundamentals of the carpentry trade.
	2.	Demonstrate safety when working in carpentry and with carpentry tools.
	3.	Correctly identify building materials, fasteners, and adhesives.
OPTION B - Unit 11 will be used for the instruction of Construction Core: Introduction to Electrical Wiring.		
OPTION B - Unit 11: Introduction to Electrical Wiring		
	1.	Explain the fundamentals of the electrical trade.
	2.	Demonstrate safety in and around electrical circuits and equipment.
	3.	Discuss electrical circuits.

Appendix A: Industry Standards

	Units	1	2	3	4	5	6	7a	7b	8	9	10	11
Standards													
Core													
BYF		X											
BSM						X							
ICM							X						
IHT								X	X				
IPT										X			
BLU											X		
COM					X								
EMP			X										
IMH												X	
Level 1 - General Carpentry													
OTT													X
BFA													X
HPT													X
OR													
Level 1 - Electrical													
OET													X
ESF													X
IEC													X

National Center for Construction Education and Research (NCCER)-Learning Series Standards for the Construction Core Technology Program

NCCER Core

1. BYF – Building Your Future In Construction (00100)
2. BSM - Basic Safety (00101)
3. ICM - Introduction to Construction Math (00102)
4. IHT - Introduction to Hand Tools (00103)
5. IPT - Introduction to Power Tools (00104)
6. BLU - Introduction to Construction Drawings (00105)
7. COM - Basic Communication Skills (00107)
8. EMP - Basic Employability Skills (00108)
9. IMH - Introduction to Materials Handling (00109)

LEVEL 1 General Carpentry

1. OTT - Orientation to Carpentry (27101)
2. BFA - Building Materials, Fasteners, and Adhesives (27106)
3. HPT - Hand and Power Tools (27103 - 13)

LEVEL 1 Electrical

1. OET - Orientation to the Electrical Trade (26101-08)
2. ESF - Electrical Safety (26102-08)
3. IEC - Introduction to Electrical Circuits (26103-08)