

OFFICE OF INSTRUCTIONAL ENHANCEMENT AND INTERNAL OPERATIONS
Summary of State Board of Education Agenda Items
April 17 - 18, 2012

OFFICE OF CAREER AND TECHNICAL EDUCATION

08. Approval to revise the *Mississippi Secondary Curriculum Frameworks* in Career and Technical Education for (1) Agricultural and Natural Resources, (2) Architecture and Drafting, (3) Electrical, (4) Finance and Accounting, (5) International Business, (6) Masonry, (7) Plumbing, (8) Precision Machining, and (9) Technology Foundations
(Has cleared the Administrative Procedures Act process with no public comments)

Executive Summary

The following secondary curriculum frameworks are recommended for approval:

1. Agricultural and Natural Resources
2. Architecture and Drafting
3. Electrical
4. Finance and Accounting
5. International Business
6. Masonry
7. Plumbing
8. Precision Machining
9. Technology Foundations

Each curriculum framework follows the established format established for secondary career and technical education programs. Draft curricula for each program were revised and reviewed with input from local district personnel and business/industry collaborators. Approved secondary curricula will be disseminated for implementation in the Fall 2012.

The *Executive Summary-Secondary Curricula Frameworks* contains the following elements for each revised secondary curricula:

- ❖ Program Description
- ❖ CIP Code and CIP Name
- ❖ Course Outline and Codes
- ❖ Curriculum Framework
 - Student Competencies
 - Suggested Student Objectives

All curricula frameworks are designed to provide local programs with a foundation that can be used to develop localized instructional management plans and course syllabi. Contents of each framework are not designed to limit the content of a course, but to provide a minimum baseline of instruction, which all programs must meet.

Teachers, administrators, and instructional management personnel are encouraged to expand and enhance the statewide frameworks to better meet the needs of their students.

NOTE: The Office of Career and Technical Education has provided printed, bound executive summaries for the curriculum frameworks. The completed documents are available upon request.

Recommendation: Approval

Back-up material attached

FRAMEWORKS FOR
VOCATIONAL-TECHNICAL PROGRAMS
REVISED IN
2011

SECONDARY
EXECUTIVE SUMMARY
2012

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Foreword

Secondary career-technical education programs in Mississippi are faced with many challenges resulting from sweeping educational reforms at the national and state levels. Schools and teachers are increasingly being held accountable for providing true 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.

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; Carl D. Perkins Vocational Education Act III, 1998; and No Child Left Behind Act of 2001).

Each secondary career-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- Unit Number and Title
- Suggested Time on Task - An estimated number of clock hours of instruction that should be required to teach the competencies and objectives of the unit. A minimum of 140 hours of instruction is required for each Carnegie unit credit. The curriculum framework should account for approximately 75-80 percent of the time in the course.
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 - 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.
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- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each competency. Emphasis has been placed on strategies which reflect active learning methodologies. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.
- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include rubrics, class participation, reflection, and journaling. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Integrated Academic Topics, Workplace Skills, Technology Standards, and Occupational Standards - This section identifies related academic topics as required in the Subject Area Assessment Program (SATP) in Algebra I, Biology I, English II, and U. S. History from 1877, which are integrated into the content of the unit. It also identifies the 21st Century Skills, which were developed by the Partnership for 21st Century Skills, a group of business and education organizations concerned about the gap between the knowledge and skills learned in school and those needed in communities and the workplace. A portion of the 21st Century Skills addresses learning skills needed in the 21st century, including information and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills. The need for these types of skills have been recognized for some time and

the 21st Century Skills are adapted in part from the 1991 report from the U.S. Secretary of Labor's Commission on Achieving Necessary Skills (SCANS). Another important aspect of learning and working in the 21st century involves technology skills, and the International Society for Technology in Education, developers of the National Education Technology Standards (NETS), were strategic partners in the Partnership for 21st Century Skills.

- References - A list of suggested references is provided for each unit. The list includes some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

Agricultural and Natural Resources Executive Summary Pathway Description

Agricultural and Natural Resources is a pathway to introduce the student to the broad field of agriculture and natural resources, including the production of plants and animals and the management of natural resources. The program includes instruction in the applied sciences related to plant and animal production and natural resource conservation and management, as well as introducing the student to agribusiness management practices and maintenance of facilities and equipment. Students in the pathway will participate in active learning exercises including integral activities of the FFA organization and supervised experiences. Students who successfully complete the competencies in this pathway will possess fundamental knowledge and skills that can be used to secure entry-level employment or as a foundation for continuing their education. Industry standards are adapted from the publication Career Cluster Resources for Agriculture, Food, and Natural Resources, developed by the National Association of State Directors of Career and Technical Education.

Industry Certification

No national industry-recognized certifications are known to exist at this time. Competencies and suggested performance indicators in the ANR course have been correlated, however, to the National Agriculture, Food, and Natural Resources (AFNR) Career Cluster Content Standards that have been reviewed and endorsed at the national level by the National Council on Agricultural Education.

Assessment

Students will be assessed using the Agricultural and Natural Resources (ANR) MS-CPAS2 test. At the end of the first year, first-year students will be assessed using the ANR first-year MS-CPAS2 test. The first-year test is based on content from first-year ANR curriculum material. At the end of the second year, the second-year students will be assessed using the ANR second-year MS-CPAS2 test. The second-year test is based on content from the second-year ANR curriculum material. The MS-CPAS2 blueprint can be found at www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx If there are questions regarding assessment of this program, please contact the Instructional Design Specialist at the Research and Curriculum Unit at 662.325.2510.

Student Prerequisites

In order for students to be able to experience success in the ANR 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)
3. Instructor Approval and TABE Reading Score (eighth grade or higher)

or

1. TABE Reading Score (eighth grade or higher)

2. Instructor Approval

or

1. Instructor Approval

Applied Academic Credit

Content of the Concepts of ANR course has been aligned to the *2010 Mississippi Science Curriculum Framework*. Students who successfully complete the first- and second-year ANR curriculum will receive two elective science credits that will count toward high-school science graduation requirements.

Professional Learning

If you have specific questions about the content of each training session provided, please contact the Research and Curriculum Unit at 662.325.2510, and ask for the Professional Learning Specialist.

Course Outlines

Option 1 — Four One-Carnegie-Unit Courses

Course Description: Fundamentals of Agricultural and Natural Resources

Course Description: Agricultural and Natural Resources: Soils and Ag Lab Operations

Course Description: Agricultural and Natural Resources: Environmental Science

Course Description: Agricultural and Natural Resources: Equipment Operation and Business MGT

Fundamentals of Agricultural and Natural Resources — Course Code: 991102

Unit	Unit Name	Hours
1	Intro to ANR*	10
2	Leadership and Human Relations*	15
3	Supervised Agricultural Experience (SAE) Programs*	15
4	Science of Animals	35
5	Science of Plants	30
Total		105

Agricultural and Natural Resources: Soils and Ag Lab Operations — Course Code: 991103

Unit	Unit Name	Hours
6	Science of Soil	30
7	Agricultural Lab Operations and Safety	75
Total		105

Agricultural and Natural Resources: Environmental Science — Course Code: 991104

Unit	Unit Name	Hours
8	Orientation/Careers/Leadership*	25
9	Science of the Ag Environment	15
10	Water Quality	15
11	Forestry and the Environment	15
12	Wildlife and the Environment	15
13	Environmental Stewardship	20
Total		105

Agricultural and Natural Resources: Equipment Operation and Business MGT — Course Code: 991105

Unit	Unit Name	Hours
14	Construction and Agricultural Equipment Operation and Maintenance	75
15	Agricultural Business Management and Processes	30
Total		105

Option 2 — Two Two-Carnegie-Unit Courses

Course Description: Agricultural and Natural Resources I

Course Description: Agricultural and Natural Resources II

Agricultural and Natural Resources I — Course Code: 991100

Unit	Unit Name	Hours
1	Intro to ANR*	10
2	Leadership and Human Relations*	15
3	Supervised Agricultural Experience (SAE) Programs*	15
4	Science of Animals	35
5	Science of Plants	30
6	Science of Soil	30
7	Agricultural Lab Operations and Safety	75
Total		210

Agricultural and Natural Resources II—Course Code: 991101

Unit	Unit Name	Hours
8	Orientation/Careers/Leadership*	25
9	Science of the Ag Environment	15
10	Water Quality	15
11	Forestry and the Environment	15
12	Wildlife and the Environment	15
13	Environmental Stewardship	20
14	Construction and Agricultural Equipment Operation and Maintenance	75
15	Agricultural Business Management and Processes	30
Total		210

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Architecture and Drafting Executive Summary

Pathway Description

Architecture and Drafting is a pathway in the Architecture and Construction career cluster. Study in this program allows students to produce workable drawings on the drawing board and with the computer. Upon successful completion of the program, the student will be qualified for an entry-level drafting or related position or may pursue postsecondary education. Skills developed through the course of study assist students in meeting requirements for the ADDA certification. Students are provided the opportunity to participate in career and technical student organizations, including SkillsUSA.

Architectural Design and Drafting I is the entry-level course of the secondary Architecture and Drafting program. Students will gain foundation competencies related to orientation, safety, leadership and personal development, and drafting and CAD skills. Students receive 2-2.5 Carnegie units, depending upon time spent in the course.

Architectural Design and Drafting II is the exit level course of the secondary Architecture and Drafting program. Students will gain foundation competencies related to orientation, safety, advanced leadership and personal development, architectural drafting, and CAD skills. The architectural drafting section includes floor plans, elevations, foundations, and sections. Students receive 2-2.5 Carnegie units, depending upon time spent in the course.

Industry Certification

An industry-recognized certification is available through the American Design Drafting Association and the American Digital Design Association.

Assessment

Students will be assessed using the Architecture and Drafting MS-CPAS2 test. The MS-CPAS2 blueprint can be found at the Research and Curriculum Unit's Web site (www.rcu.msstate.edu). All students will test after Year 1 of the Architecture and Drafting program. A second test covering the second year material in Architecture and Drafting will be administered to students upon completion of their program. If there are questions regarding assessment of this program, please contact the Architecture and Construction instructional design specialist at the Research and Curriculum Unit at 662.325.2510.

Student Prerequisites

In order for students to be successful in the Installation and Service: HVAC program, the following student prerequisites are in place:

4. C or higher in English (the previous year)
5. C or higher in Math (last course taken or the instructor can specify the math)
or
6. Instructor approval and TABE reading score (eighth grade or higher)
or
7. Instructor approval

Applied Academic Credit (if applicable)

Applied Math content from the curriculum was aligned to the 2007 Mississippi Math Framework Revised Academic Benchmarks. It is proposed that upon the completion of this program, students will earn 1 Carnegie unit of Applied Math credit that can be used for graduation requirements.

If there are questions regarding applied academic credit, please contact the program supervisor listed on the front page of this document.

Licensure Requirements

986 Career Pathway: Architecture and Drafting

This endorsement licenses a person to teach the following secondary courses:

994300	2-Carnegie unit Architectural Design and Drafting I
994301	2-Carnegie unit Architectural Design and Drafting II
994302	1-Carnegie unit Concepts of Drafting
994303	1-Carnegie unit Drafting Design
994304	1-Carnegie unit Architectural Drafting
994305	1-Carnegie unit Architectural Drafting Application

Minimum Requirements for this Endorsement:

1. Education

- Hold a 2-year college degree (associate degree) or higher from an accredited institution of higher education.

2. Occupational Experience and Related Assessment of that Experience

- Applicants with an associate degree must have at least 2 years of verifiable occupational experience in the past 10 years. Experience must be appropriate to the subject to be taught.
- Applicants with a bachelor's or higher degree must have at least 1 year of verifiable occupational experience in the past 10 years. Experience must be appropriate to the subject to be taught.

This endorsement requires the following assessment(s) of occupational expertise:

American Design Drafting Association Certification: ADDA Certified Drafter

OR

Other teacher occupational competency assessment approved by the Mississippi Department of Education Office of Career and Technical Education.

3. Technology Literacy and Related Assessment of that Competency

- Applicant must validate technology competency by attaining the established minimum score or higher on an assessment approved by the Mississippi Department of Education (MDE). The assessment must be directly related to technology competency required by the grade level and subject matter being taught. Approved assessments for this license are IC3, Propulse, or other specific assessment created by third-party vendors, authorized by the Local Education Agency and approved by the MDE.

4. Teacher Education Preparation and Related Assessment(s) of that Education

- Applicant must enroll immediately in the Vocational Instructor Preparation (VIP) program.
- Applicant must complete the individualized professional development plan requirements of the VIP program prior to the expiration date of the 3-year vocational license.
- Applicant must successfully complete a certification for online learning workshop, module, or course that is approved by the MDE.
- Applicant must successfully complete the Architecture and Drafting Certification workshop, module, or course that is approved by the MDE.

note: If the applicant meets all requirements listed above, that applicant will be issued a 986 endorsement—a 5-year license. If the applicant does not meet all requirements, the applicant may be issued a 3-year endorsement (license), and all requirements stated above must be satisfied prior to the ending date of that license.

Professional Learning

The professional learning itinerary for the middle school or individual pathways can be found at <http://redesign.rcu.msstate.edu>. If you have specific questions about the content of each training session provided, please contact the Research and Curriculum Unit at 662.325.2510, and ask for the professional learning specialist.

Course Outlines

Option 1—Four 1-Carnegie-Unit Courses

Architecture and Drafting is an instructional program designed to teach students to produce workable drawings on the drawing board and with the computer. Upon successful completion of the program, the student will be qualified for an entry level drafting or related position or may pursue postsecondary education.

The content of this curriculum framework is based on national standards as developed by the **American Design Drafting Association**.

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

1. Concepts of Drafting (Course Code: 994302)
2. Drafting Design (Course Code: 994303)
3. Architectural Drafting (Course Code: 994304)
4. Architectural Drafting Application (Course Code: 994305)

Course Description: Concepts of Drafting (Course Code: 994302) includes an introduction to the field as well as fundamentals of safety, math, geometric construction, graphic projection, and computer aided drafting (CAD) applications. This is a one-Carnegie-unit course.

Course Description: Drafting and Design (Course Code: 994303) emphasizes an overview of safety and an in-depth study of the elements of drafting. This course gives student's real-world, hands-on practice in these areas. This one-Carnegie-unit course should only be taken after student successfully passes Concepts of Drafting.

Course Description: Architectural Drafting (Course Code: 994304) includes a study of mathematics used in drafting and residential and commercial drafting techniques. This course also reinforces safety related to the drafting and design industry. This one-Carnegie-unit course should only be taken after student successfully passes Drafting and Design.

Course Description: Architectural Drafting Application (Course Code: 994305) is a continued study of residential and commercial drafting techniques. This course also includes a study of the uses of drafting and design in today's global market place. This one-Carnegie-unit course should only be taken after student successfully passes Architectural Drafting.

Concepts of Drafting—Course Code: 994302

Unit	Unit Name	Hours
1	Orientation and Safety	14
2	Introduction to Drafting	15
3	Lettering	7
4	Geometric Construction	25
5	Computer Aided Drafting (CAD)	20
6	Orthographic Projection	30
Total		111

Drafting and Design—Course Code: 994303

Unit	Unit Name	Hours
1	Orientation and Safety	14
7	Dimensioning	8
8	Sectional Views	14
9	Auxiliary Views	10
10	Pictorial Views	15
11	Machine Drafting	40
Total		101

Architectural Drafting—Course Code: 994304

Unit	Unit Name	Hours
1	Orientation and Safety	14
12	Architectural Drafting Math	25
13	Residential Architectural Drafting I	70
Total		109

Architectural Drafting Application—Course Code: 994305

Unit	Unit Name	Hours
1	Orientation and Safety	14
14	Residential Architectural Drafting II	70
15	Field Applications of Architectural Drafting	25
Total		109

Option 2—Two 2-Carnegie-Unit Courses

Architecture and Drafting is an instructional program designed to teach students to produce workable drawings on the drawing board and with the computer. Upon successful completion of the program, the student will be qualified for an entry level drafting or related position or may pursue postsecondary education.

The content of this curriculum framework is based on national standards as developed by the American Design Drafting Association.

Course Description: Architectural Design and Drafting I (994300) is the entry level course of the secondary Architecture I & II program. Students will gain foundation competencies related to orientation, safety, leadership and personal development, and drafting and CAD skills. Students receive 2-2½ Carnegie units, depending upon time spent in the course.

Course Description: Architectural Design and Drafting II (994301) is the exit level course of the secondary Architecture and Drafting program. Students will gain foundation competencies related to orientation, safety, advanced leadership and personal development, architectural drafting, and CAD skills. The architectural drafting section includes floor plans, elevations, foundations, and sections. Students receive 2-2½ Carnegie units, depending upon time spent in the course. This course should only be taken after the student successfully passes Architectural Design and Drafting I.

Architectural Design and Drafting I — Course Code: 994300

Unit	Unit Name	Hours
1	Orientation and Safety	28
2	Introduction to Drafting	15
3	Lettering	7
4	Geometric Construction	25
5	Computer Aided Drafting (CAD)	20
6	Orthographic Projection	30
7	Dimensioning	8
8	Sectional Views	14
9	Auxiliary Views	10
10	Pictorial Drawings	15
11	Machine Drafting	40
Total		212

Architectural Design and Drafting II — Course Code: 994301

Unit	Unit Name	Hours
1	Orientation and Safety (Review)	28
12	Architectural Drafting Math	25
13	Residential Architectural Drafting I	70
14	Residential Architectural Drafting II	70
15	Field Applications of Architectural Drafting	25
Total		218

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Electrical Executive Summary

Pathway Description

Electrical is a pathway in the Architecture and Construction career cluster. Study in the course allows an individual to prepare for employment and/or continued education in the electrical field. Skills developed through the course of study assist students in meeting requirements for the NCCER certification. Students are provided the opportunity to participate in Career and Technical Student Organizations to include SkillsUSA.

Industry Certification

The NCCER developed and published a set of industry standards that are taught nationwide by contractors, associations, construction users, and secondary and postsecondary schools called the Contren 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.

This state-of-the-art curriculum is modeled after the eight Mississippi NCCER Accredited Training and Education Facilities (ATEF). In order to become an NCCER ATEF program, school districts must meet a set of guidelines including the following:

1. Use the approved curriculum.
2. All instructors must be NCCER certified.
3. All completed Form 200s and release forms on all student completions are to be forwarded to MCEF for proper approval. MCEF will in turn forward to NCCER for processing.
4. Follow NCCER guidelines on test security and performance profiles.
5. Have an active advisory committee with at least two commercial contractors involved.
6. Follow safety practices and Occupational Safety and Health Administration (OSHA) standards used in the class and lab areas.
7. Involve commercial contractors in class presentations or field trips.
8. All construction programs must be included in the accreditation process.
9. Show active involvement in student leadership development (e.g., VICA and SkillsUSA).
10. Provide demonstrated placement into construction-related occupations, and provide timely reports to MCEF.

Districts will be required to complete a self-evaluation of all programs and host a site visit from industry to ensure proper lab, safety, and instructional procedures are in place.

Assessment

Students will be assessed using the Secondary Electrical Year Two MS-CPAS2 test. The MS-CPAS2 blueprint can be found at <http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx>. All students will test after year one of the Construction program. A second test covering the second year material in Electrical will be administered to students upon completion of their program. If there are

questions regarding assessment of this program, please contact the Architecture and Construction instructional design specialist at the Research and Curriculum Unit at 662.325.2510.

Student Prerequisites

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

8. C or higher in English (the previous year)
9. C or higher in Math (last course taken or the instructor can specify the math)

or

10. Instructor Approval and TABE Reading Score (eighth grade or higher)

or

11. Instructor Approval

Licensure Requirements

A 978 educator license is required to teach the Electrical pathway. This endorsement licenses a person to teach the following secondary courses:

993101	Construction
993102	Safety and Orientation to Construction
993103	Introduction to Construction
993120	Electrical
993121	Theory and Application of Electrical I
993122	Theory and Application of Electrical II

Minimum Requirements for this Endorsement:

1. Education

- Applicant must have earned a two-year college degree (associate degree) or higher from an accredited institution of higher education. [Exception: Teachers with a currently valid license and endorsement #352 Electrical may earn this endorsement based on that #352 endorsement even if two-year college degree is not earned. All other requirements for this endorsement must be satisfied.]

2. Technology Literacy and Related Assessment of that Competency

- Applicant must validate technology competency by attaining the established minimum score or higher on an assessment approved by the Mississippi Department of Education (MDE). The assessment must be directly related to technology competency required by the grade level and subject matter being taught. Approved assessments for this license are IC3, Propulse, or other specific assessment created by third-party vendors, authorized by the Local Education Agency (LEA) and approved by the MDE.

3. Occupational Experience and Related Assessment of that Experience

- Applicants with an associate degree must have at least two years of verifiable occupational experience in the past ten years. Experience must be appropriate to the subject to be taught.
- Applicants with a bachelor or higher degree must have at least one year of verifiable occupational experience in the past ten years. Experience must be appropriate to the subject to be taught.

This endorsement requires the following assessment(s) of occupational expertise: National Center for Construction Education and Research (NCCER), National Craft Assessment and Certification Program: Earn required score on Commercial Electrician assessment. OR Other teacher occupational competency assessment approved by the MDE Office of Career and Technical Education.

4. Teacher Education Preparation and Related Assessment(s) of that Education
- Applicant must enroll immediately in Vocational Instructor Preparation (VIP) program or the College and Career Readiness Educator Program (CCREP).
 - Applicant must complete the individualized professional development plan (PDP) requirements of the VIP or CCREP program prior to the expiration date of the three-year vocational license.
 - Applicant must successfully complete the Contren instructor certification.
 - Applicant must successfully complete a certification for online learning workshop, module, or course that is approved by the Mississippi Department of Education.
 - Applicant must successfully complete the Construction certification workshop, module, or course that is approved by the Mississippi Department of Education.
- Note #1: If the applicant meets all requirements listed above, that applicant will be issued a 978 endorsement—a five-year license. If the applicant does not meet all requirements, the applicant may be issued a three-year endorsement (license), and all requirements stated above must be satisfied prior to the ending date of that license.

Professional Learning

The professional learning itinerary for the middle school or individual pathways can be found at www.rcu.msstate.edu. If you have specific questions about the content of each training session provided, please contact the Research and Curriculum Unit at 662.325.2510 and ask for the Professional Learning Specialist.

Course Outlines

Option 1—Two One-Carnegie-Unit Courses

Course Description: Theory and Application of the Electrical I

The Theory and Application of the Electrical I course consists of an in-depth study of electrical theory and an introduction to wiring. This one-Carnegie-unit course should only be taken after students successfully pass Safety and Orientation to Construction and Introduction to Construction.

Course Description: Theory and Application of Electrical II

The Theory and Application of Electrical II course consists of an in-depth study of devices and boxes, hand bending, conductors and cables, and electrical drawings. This one-Carnegie-unit course should only be taken after students successfully pass Theory and Application of Electrical I.

Theory and Application of Electrical I —Course Code: 993121

Unit Number	Unit Name	Hours
1	Orientation and Safety (Review and Reinforcement)	6
2	Introduction to Electrical Theory	30
3	Introduction to NEC and Residential Wiring	50
Total		86

Theory and Application of Electrical II —Course Code: 993122

Unit Number	Unit Name	Hours
4	Devices and Boxes	50
5	Hand Bending	30
6	Conductors and Cables	30
7	Electrical Construction Drawings	14
Total		124

Option 2—One Two-Carnegie-Unit Course

Course Description: Electrical (993120)

The Electrical course consists of an in-depth study of electrical theory, introduction to wiring, devices and boxes, hand bending, conductors and cables, and electrical drawings. This two-Carnegie-unit course should only be taken after students successfully pass Electrical. Upon the completion of the two courses, students will have the knowledge to complete the Contren Level I Certification.

Electrical—Course Code: 993120

Unit	Unit Name	Hours
1	Orientation and Safety (Review and Reinforcement)	6
2	Introduction to Electrical Theory	30
3	Introduction to NEC and Residential Wiring	50
4	Devices and Boxes	50
5	Hand Bending	30
6	Conductors and Cables	30
7	Electrical Construction Drawings	14
Total		210

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- 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.
- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each competency. Emphasis has been placed on strategies which reflect active learning methodologies. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.
- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include rubrics, class participation, reflection, and journaling. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Integrated Academic Topics, Workplace Skills, Technology Standards, and Occupational Standards - This section identifies related academic topics as required in the Subject Area Assessment Program (SATP) in Algebra I, Biology I, English II, and U. S. History from 1877, which are integrated into the content of the unit. It also identifies the 21st Century Skills, which were developed by the Partnership for 21st Century Skills, a group of business and education organizations concerned about the gap between the knowledge and skills learned in school and those needed in communities and the workplace. A portion of the 21st Century Skills addresses learning skills needed in the 21st century, including information and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills. The need for these types of skills have been recognized for some time and

the 21st Century Skills are adapted in part from the 1991 report from the U.S. Secretary of Labor's Commission on Achieving Necessary Skills (SCANS). Another important aspect of learning and working in the 21st century involves technology skills, and the International Society for Technology in Education, developers of the National Education Technology Standards (NETS), were strategic partners in the Partnership for 21st Century Skills.

- References - A list of suggested references is provided for each unit. The list includes some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

Finance and Accounting Executive Summary

Pathway Description

The Finance and Accounting pathway is designed to introduce students to the field of financial analysis and management. Students in the Finance and Accounting pathway will acquire knowledge and develop skills through classroom learning and hands-on experiences. Nearly every organization has a financial manager or an accountant employed. They oversee investment strategies, maintain budgets, prepare financial reports and statements, and help implement long-term financial goals for their organizations. In this field, firms are not only seeking individuals with advanced degrees, but they also want future employees that have past work experience.

Industry Certification

The Institute for the Assessment of Skills and Knowledge of Business (A*S*K) provides the A*S*K Concepts of Finance Certificate. This certification is based on extensive research of industry practice and formal validation by business practitioners. The A*S*K Concepts of Finance Certificate exam is aligned to the performance indicators defined in the National MBA Curriculum Standards.

Assessment

Students in the Finance and Accounting pathway will be assessed using the Business Fundamentals MS-CPAS2 when they complete year one of the program and they will be assessed using the Finance and Accounting MS-CPAS2 when they complete year two of the program. If there are questions regarding assessment of this program, please contact the business instructional design specialist at the Research and Curriculum Unit at 662.325.2510.

Licensure Requirements

The 952 licensure endorsement is needed to teach the Finance and Accounting program. The requirements for the 952 licensure endorsement are listed below:

1. Applicant must hold a current 5-year standard teaching license in one of the following subject areas: 105 Business Education, 318 Marketing, 192 Social Studies, 193 Economics.
2. Applicant must validate technology competency by attaining the established minimum score or higher on an assessment approved by the Mississippi Department of Education (MDE). The assessment must be directly related to technology competency required by the grade level and subject matter being taught. Approved assessments for this license are IC3, Propulse, or other specific assessment created by third-party vendors, authorized by the Local Education Agency (LEA) and approved by the MDE.
3. Applicant must enroll immediately in the Vocational Instructor Preparation (VIP) program or the College and Career Readiness Education Program (CCREP).
4. Applicant must complete the individualized Professional Development Plan (PDP) requirements of the VIP or CCREP prior to the expiration date of the 3-year vocational license.

5. Applicant must successfully complete a certification for an online learning workshop, module, or course that is approved by the MDE.
6. Applicant must successfully complete the Master Teacher of Economics program as approved by the MDE.
7. Applicant must successfully complete the Finance and Accounting Certification workshop, module, or course that is approved by the MDE.

Note: If the applicant meets all requirements listed above, that applicant will be issued an endorsement supplemental to his or her existing 5-year license. If the applicant does not meet all requirements, the applicant will be issued an emergency endorsement, and all requirements for the supplemental endorsement must be satisfied prior to the renewal date of the standard license.

The following articulation plan for the Finance and Accounting Pathway is pending approval from the MCCB.

High School Program	Community College Programs	Community College Course
Finance and Accounting (52.0304 Accounting and Finance)	Office Systems Technology (Program CIP - Office Systems Technology: 52.0401 - Administrative Assistant and Secretarial Science) Accounting Technology (Program CIP - Accounting Technology: 52.0302 - Accounting Technology/Technician and Bookkeeping) Microcomputer Technology (Program CIP - Microcomputer Technology: 52.0407 - Business/Office Automation/Technology/Data Entry) Health-care Data Technology (Program CIP – Health-care Data Technology: 51.0799 - Health and Medical Administrative Services, Other)	BOT 1313 - Applied Business Math BOT 1433 - Business Accounting
	Banking and Finance Technology (Program CIP: 52.0803 – Banking and Financial Support Services)	BFT 1513 - Banking and Finance Math BFT 1213 - Principles of Banking

	Court Reporting Technology (Program CIP: 22.0303 – Court Reporting/Court Reporter)	BOT 1313 - Applied Business Math
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Student Prerequisites

In order for students to be able to experience success in the Finance and Accounting program, the following prerequisites are in place:

- 1. C or higher in English (the previous year)
 - 2. C or higher in Pre-Algebra
 - 3. Instructor approval
- or
- 1. TABE Reading Score (Eighth grade or higher)
- or
- 1. Instructor approval

Professional Learning

The professional learning itinerary for the middle school or individual pathways can be found at <http://www.rcu.msstate.edu/>. If you have specific questions about the content of each training session provided, please contact the Research and Curriculum Unit at 662.325.2510 and ask for the professional learning specialist.

Course Outlines

Option 1—Four 1-Carnegie-Unit Courses

Course Description: Business Fundamentals I (1 Carnegie Unit)

Course Code: 992301

This course begins with an introduction to business fundamentals, communication and interpersonal skills, and professional development for continued education, training, and careers in business management. Major topics of study in this course are business and economics. Participation in DECA (student organization) is ongoing. Students will develop skills toward meeting requirements for the Microsoft Project Skill Standards for Microsoft Office Specialist Certification.

Course Description: Business Fundamentals II (1 Carnegie Unit)

Course Code: 992302

This course begins with an introduction to business fundamentals. Major topics in this course include economics, business, management, entrepreneurship, business law, and personal finance. Participation in DECA (student organization) is ongoing. Students will develop skills toward meeting requirements for the Microsoft Project Skill Standards for Microsoft Office Specialist Certification.

Upon the completion of Business Fundamentals I and II, students will earn 1/2 Personal Finance credit and 1/2 Economics credit that can be used to satisfy graduation requirements. The Business Fundamentals Course can be downloaded from

http://info.rcu.msstate.edu/services/curriculum.asp?p=/Curricula/Career_Pathways/.

Course Description: Business Finance (1 Carnegie Unit)

Course Code: 992001

The purpose of this course is to introduce the techniques of financial analysis with an emphasis on corporate finance. The concepts developed in this course form the foundation for subsequent business courses at the postsecondary level. The main topics covered include the time value of money and the net present value rule, capital budgeting decisions, uncertainty and the tradeoff between risk and return, and corporate financing and dividend policy decisions.

Course Description: Accounting Fundamentals (1 Carnegie Unit)

Course Code: 992002

This course introduces students to the fundamental principles and procedures of accounting. Students will develop financial analysis and decision-making skills that will assist them in future studies and/or career opportunities in business. Students will acquire an understanding of how accounting is used in business operations, as well as how accounting and accounting reports are used by managers, investors and other business stakeholders in their decision-making processes. Spreadsheets and accounting software are utilized.

Business Fundamentals I (1 Carnegie Unit)

Course Code: 992301

Unit	Unit Name	Hours
1	Introduction to Business	10
2	Communication and Interpersonal Skills	20
3	Professional Development	15
4	Economics	70
	Total	115

Business Fundamentals II (1 Carnegie Unit)

Course Code: 992302

Unit	Unit Name	Hours
5	Business, Management, and Entrepreneurship	55
6	Business Law	30
7	Personal Finance	30
	Total	115

Business Finance (1 Carnegie Unit)**Course Code: 992001**

Unit	Unit Name	Hours
1	Professional Development in Business Finance	15
2	Financial Analysis	60
3	Risk Management	15
4	Banking and Finance	20
5	International Finance	20
	Total	130

Accounting Fundamentals (1 Carnegie Unit)**Course Code: 992002**

Unit	Unit Name	Hours
6	The Accounting Profession	10
7	Accounting Principles	120
	Total	130

Option 2—Two 2-Carnegie-Unit Courses**Course Description: Business Fundamentals (2 Carnegie Units)****Course Code: 992300**

This year-long course begins with an introduction to business and marketing fundamentals; communication and interpersonal skills; and professional development for continued education, training, and careers in business management. Major topics of study in this course are economics, business, management, entrepreneurship, business law, and personal finance.

Participation in DECA (student organization) is ongoing. Students will develop skills toward meeting requirements for the Microsoft Project Skill Standards for Microsoft Office Specialist Certification. The Business Fundamentals Course can be downloaded from <http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx>.

Course Description: Finance and Accounting (2 Carnegie Units)**Course Code: 992000**

The purpose of this course is to introduce the fundamentals of financial analysis and accounting principles and procedures in a business setting. Students will develop financial analysis and decision-making skills that will assist them in future studies and/or career opportunities in business. The finance topics covered include the time value of money and the net present value rule, capital budgeting decisions, uncertainty and the tradeoff between risk and return, and corporate financing and dividend policy decisions. Students will acquire an understanding of how accounting is used in business operations, as well as how accounting and accounting reports are used by managers, investors, and other business stakeholders in their decision-making processes. Spreadsheets and accounting software are utilized.

Business Fundamentals (2 Carnegie Units)**Course Code: 992300**

Unit	Unit Name	Hours
1	Introduction to Business	10
2	Communication and Interpersonal Skills	20
3	Professional Development	15
4	Economics	70
5	Business, Management, and Entrepreneurship	55
6	Business Law	30
7	Personal Finance	30
	Total	230

Finance and Accounting (2 Carnegie Units)**Course Code: 992000**

Unit	Unit Name	Hours
1	Professional Development in Business Finance	15
2	Financial Analysis	60
3	Risk Management	15
4	Banking and Finance	20
5	International Finance	20
6	The Accounting Profession	10
7	Accounting Principles	120
	Total	260

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- References - A list of suggested references is provided for each unit. The list includes some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

International Business Executive Summary

Course Description

The International Business course is designed to introduce students to basic business operations surrounding global trade. Competencies for this course focus on raising awareness of the interrelatedness of one country's political policies and economic practices on another; learning to improve international business relations through appropriate communication strategies; understanding the global business environment; exploring basic concepts underlying international finance, management, marketing, and trade relations; and identifying forms of business ownership and international business opportunities.

Industry Certification

No industry certification is available for this course at this time.

Student Prerequisites

In order for students to be able to succeed in the entrepreneurship program, the following student prerequisites are in place:

1. C or higher in English (the previous year)
 2. C or higher in Pre-Algebra
 3. Instructor approval
- or
1. TABE Reading Score (Eighth grade or higher)
- or
2. Instructor approval

Licensure Requirements

Educators that meet the requirements for endorsement codes 955, 956, or 952 are eligible to teach International Business. For information on the requirements for obtaining an endorsement in 955, 956, or 952, refer to the Mississippi Department of Education Office of Educator Licensure *Guidelines and Clarification of Requirements for Issuance of Career and Technical Education (Occupational Educator)*. This guide can be found on the Mississippi Department of Education Office of Educator Licensure Web site under Vocational Guidelines (http://www.mde.k12.ms.us/ed_licensure/post_secondary.html).

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Course Outlines

One Carnegie Unit

Course Code: 992308

Unit	Unit Name	Hours
1	Foundations of International Business	20
2	Global Business Ownership and Entrepreneurship	20
3	The Global Business Environment	20
4	International Business Communication, Ethics, and Social	20
5	International Management	15
6	International Marketing	15
7	International Finance	15
Total		125

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Masonry Executive Summary

Pathway Description

Masonry is a pathway in the Architecture and Construction career cluster. Study in the course allows an individual to prepare for employment and/or continued education in the masonry field. Skills developed through the course of study assist students in meeting requirements for the NCCER certification. Students are provided the opportunity to participate in Career and Technical Student Organizations to include SkillsUSA.

Industry Certification

The NCCER developed and published a set of industry standards that are taught nationwide by contractors, associations, construction users, and secondary and postsecondary schools called the Contren 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.

This state-of-the-art curriculum is modeled after the eight Mississippi NCCER Accredited Training and Education Facilities (ATEF). In order to become an NCCER ATEF program, school districts must meet a set of guidelines including the following:

1. Use the approved curriculum.
2. All instructors must be NCCER certified.
3. All completed Form 200s and release forms on all student completions are to be forwarded to MCEF for proper approval. MCEF will in turn forward to NCCER for processing.
4. Follow NCCER guidelines on test security and performance profiles.
5. Have an active advisory committee with at least two commercial contractors involved.
6. Follow safety practices and Occupational Safety and Health Administration (OSHA) standards used in the class and lab areas.
7. Involve commercial contractors in class presentations or field trips.
8. All construction programs must be included in the accreditation process.
9. Show active involvement in student leadership development (e.g., VICA and SkillsUSA).
10. Provide demonstrated placement into construction-related occupations and timely reports to MCEF.

Districts will be required to complete a self-evaluation of all programs and host a site visit from industry to ensure proper lab, safety, and instructional procedures are in place.

Assessment

Students will be assessed using the Masonry Technology MS-CPAS2 test. The MS-CPAS2 blueprint can be found at the Research and Curriculum Unit's Web site (www.rcu.msstate.edu). All students will test after year one of the Construction program. A second test covering the second year material in Masonry will be administered to students upon completion of their program. If there are questions regarding assessment

of this program, please contact the Architecture and Construction Instructional Design Specialist at the Research and Curriculum Unit at 662.325.2510.

Student Prerequisites

In order for students to be successful in the Masonry 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

Licensure Requirements

979 Career Pathway: Masonry

This endorsement licenses a person to teach the following secondary courses:

993101	Construction
993102	Safety and Orientation to Construction
993103	Introduction to Construction
993130	Masonry
993131	Theory and Application of Masonry I
993132	Theory and Application of Masonry II

Minimum Requirements for this Endorsement:

1. Education

- Applicant must have earned a two-year college degree (associate degree) or higher from an accredited institution of higher education. [Exception: Teachers with a currently valid license and endorsement #360 Brick, Block and Stone Masonry may earn this endorsement based on that #360 endorsement even if two-year college degree is not earned. All other requirements for this endorsement must be satisfied.]

2. Technology Literacy and Related Assessment of that Competency

-Applicant must validate technology competency by attaining the established minimum score or higher on an assessment approved by the Mississippi Department of Education (MDE). The assessment must be directly related to technology competency required by the grade level and subject matter being taught. Approved assessments for this license are IC3, Propulse, or other specific assessment created by third-party vendors, authorized by the Local Education Agency (LEA) and approved by the MDE.

3. Occupational Experience and Related Assessment of that Experience

-Applicants with an associate degree must have at least two years of verifiable occupational experience in the past ten years. Experience must be appropriate to the subject to be taught.
- Applicants with a bachelor or higher degree must have at least one year of verifiable occupational experience in the past ten years. Experience must be appropriate to the subject to be taught.

This endorsement requires the following assessment(s) of occupational expertise:

Teacher Occupational Competency Assessment at Mississippi State University's Research and Curriculum Unit in the following area:

TOCA at RCU—Masonry OR

Other teacher occupational competency assessment approved by MDE Office of Career and Technical Education.

4. Teacher Education Preparation and Related Assessment(s) of that Education

- Applicant must enroll immediately in Vocational Instructor Preparation (VIP) program or the College and Career Readiness Educator Program (CCREP).
- Applicant must complete the individualized professional development plan (PDP) requirements of the VIP or CCREP program prior to the expiration date of the three-year vocational license.
- Applicant must successfully complete the Contren Instructor Certification.
- Applicant must successfully complete a Certification for online learning workshop, module, or course that is approved by the Mississippi Department of Education.
- Applicant must successfully complete the Construction Certification workshop, module, or course that is approved by the Mississippi Department of Education.

Note #1: If the applicant meets all requirements listed above, that applicant will be issued a 977 endorsement—a five-year license. If the applicant does not meet all requirements, the applicant may be issued a three-year endorsement (license), and all requirements stated above must be satisfied prior to the ending date of that license.

Professional Learning

The professional learning itinerary for the middle school or individual pathways can be found at the Research and Curriculum Unit's Web site (www.rcu.msstate.edu). If you have specific questions about the content of each training session provided, please contact the Research and Curriculum Unit at 662.325.2510 and ask for the Professional Learning Specialist.

Course Outlines

Option 1—Two One-Carnegie-Unit Courses

Course Description: The Theory and Application of Masonry I course consists of an in-depth study of mortar, grout, measurements, drawings, and estimating. This one-Carnegie-unit course should only be taken after students successfully pass Safety and Orientation to Construction and Introduction to Construction.

Course Description: The Theory and Application of Masonry II course consists of an in-depth study of advanced laying techniques, construction techniques, and moisture control. This one-Carnegie-unit course should only be taken after students successfully pass Theory and Application of Masonry I

Theory and Application of Masonry I—Course Code: 993131

Unit	Unit Name	Hours
Unit 1	Orientation, Advanced Leadership, and Employability Skills (Review)	10
Unit 2	Basic Safety (Review)	15
Unit 3	Power Tools and Equipment (Review)	15
Unit 4	Mortar and Grout	25
Unit 5	Measurements/Drawings/Specifications and Estimating	35
Total		100

Theory and Application of Masonry II—Course Code: 993132

Unit	Unit Name	Hours
Unit 6	Advanced Laying Techniques and Metal Work	80
Unit 7	Construction Techniques and Moisture Control	30
Total		110

Option 2—One Two-Carnegie-Unit Course

Course Description: The Masonry course consists of an in-depth study of mortar, grout, measurements, drawings, estimating, advanced laying techniques, construction techniques, and moisture control. This two-Carnegie-unit course should only be taken after students successfully pass Construction. Upon the completion of the two courses, students will have the knowledge to complete the Contren Level I Certification.

Masonry—Course Code: Masonry-993130

Unit	Unit Name	Hours
Unit 1	Orientation, Advanced Leadership, and Employability Skills (Review)	10
Unit 2	Basic Safety (Review)	15
Unit 3	Power Tools and Equipment (Review)	15
Unit 4	Mortar and Grout	25
Unit 5	Measurements/Drawings/Specifications and Estimating	35
Unit 6	Advanced Laying Techniques and Metal Work	80
Unit 7	Construction Techniques and Moisture Control	30
Total		210

FRAMEWORKS FOR
VOCATIONAL-TECHNICAL PROGRAMS
REVISED IN
2011

SECONDARY
EXECUTIVE SUMMARY
2012

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The Mississippi Department of Education, Office of Career and Technical Education does not discriminate on the basis of race, color, religion, national origin, sex, age, or disability in the provision of educational programs and services or employment opportunities and benefits. The following office has been designated to handle inquiries and complaints regarding the non-discrimination policies of the Mississippi Department of Education: Director, Office of Human Resources, Mississippi Department of Education, 359 North West Street, Suite 203, Jackson, Mississippi 39201, (601) 359-3511.

Foreword

Secondary career-technical education programs in Mississippi are faced with many challenges resulting from sweeping educational reforms at the national and state levels. Schools and teachers are increasingly being held accountable for providing true 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.

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; Carl D. Perkins Vocational Education Act III, 1998; and No Child Left Behind Act of 2001).

Each secondary career-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- Unit Number and Title
- Suggested Time on Task - An estimated number of clock hours of instruction that should be required to teach the competencies and objectives of the unit. A minimum of 140 hours of instruction is required for each Carnegie unit credit. The curriculum framework should account for approximately 75-80 percent of the time in the course.
- 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.
- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each competency. Emphasis has been placed on strategies which reflect active learning methodologies. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.
- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include rubrics, class participation, reflection, and journaling. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Integrated Academic Topics, Workplace Skills, Technology Standards, and Occupational Standards - This section identifies related academic topics as required in the Subject Area Assessment Program (SATP) in Algebra I, Biology I, English II, and U. S. History from 1877, which are integrated into the content of the unit. It also identifies the 21st Century Skills, which were developed by the Partnership for 21st Century Skills, a group of business and education organizations concerned about the gap between the knowledge and skills learned in school and those needed in communities and the workplace. A portion of the 21st Century Skills addresses learning skills needed in the 21st century, including information and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills. The need for these types of skills have been recognized for some time and

the 21st Century Skills are adapted in part from the 1991 report from the U.S. Secretary of Labor's Commission on Achieving Necessary Skills (SCANS). Another important aspect of learning and working in the 21st century involves technology skills, and the International Society for Technology in Education, developers of the National Education Technology Standards (NETS), were strategic partners in the Partnership for 21st Century Skills.

- References - A list of suggested references is provided for each unit. The list includes some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

Plumbing Executive Summary

Pathway Description

Plumbing is a pathway in the Architecture and Construction career cluster. Study in the course allows an individual to prepare for employment and/or continued education in the plumbing field. Skills developed through the course of study assist students in meeting requirements for the NCCER certification. Students are provided the opportunity to participate in Career and Technical Student Organizations to include SkillsUSA.

Industry Certification

The NCCER developed and published a set of industry standards that are taught nationwide by contractors, associations, construction users, and secondary and postsecondary schools called the Contren 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.

This state-of-the-art curriculum is modeled after the eight Mississippi NCCER Accredited Training and Education Facilities (ATEF). In order to become an NCCER ATEF program, school districts must meet a set of guidelines including the following:

11. Use the approved curriculum.
12. All instructors must be NCCER certified.
13. All completed Form 200s and release forms on all student completions are to be forwarded to MCEF for proper approval. MCEF will in turn forward to NCCER for processing.
14. Follow NCCER guidelines on test security and performance profiles.
15. Have an active advisory committee with at least two commercial contractors involved.
16. Follow safety practices and Occupational Safety and Health Administration (OSHA) standards used in the class and lab areas.
17. Involve commercial contractors in class presentations or field trips.
18. All construction programs must be included in the accreditation process.
19. Show active involvement in student leadership development (e.g., VICA and SkillsUSA).
20. Provide demonstrated placement into construction-related occupations and timely reports to MCEF.

Districts will be required to complete a self-evaluation of all programs and host a site visit from industry to ensure proper lab, safety, and instructional procedures are in place.

Assessment

Students will be assessed using the Plumbing MS-CPAS2 test. The MS-CPAS2 blueprint will be developed and placed online once the curriculum is implemented. A test will be developed once the curriculum is implemented. All students will test after year one of the Construction program. A second test covering the second year material in Plumbing will be administered to students upon completion of their program. If there are questions

regarding assessment of this program, please contact the Architecture and Construction Instructional Design Specialist at the Research and Curriculum Unit at 662.325.2510.

Student Prerequisites

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

5. C or higher in English (the previous year)
 6. C or higher in math (last course taken or the instructor can specify the math)
- or**
7. Instructor approval and TABE Reading Score (eighth grade or higher)
- or**
8. Instructor approval

Licensure Requirements

980 Career Pathway: Plumbing

This endorsement licenses a person to teach the following secondary courses:

993101	Construction
993102	Safety and Orientation to Construction
993103	Introduction to Construction
993140	Plumbing
993141	Theory and Application of Plumbing I
993142	Theory and Application of Plumbing II

Minimum Requirements for this Endorsement:

1. Education

-Applicant must have earned a two-year college degree (associate degree) or higher from an accredited institution of higher education. [\[Exception: Teachers with a currently valid license and endorsement #363 Plumbing and Pipe Fitting may earn this endorsement based on that #363 endorsement even if two-year college degree is not earned. All other requirements for this endorsement must be satisfied.\]](#)

2. Technology Literacy and Related Assessment of that Competency

-Applicant must validate technology competency by attaining the established minimum score or higher on an assessment approved by the Mississippi Department of Education (MDE). The assessment must be directly related to technology competency required by the grade level and subject matter being taught. Approved assessments for this license are IC3, Propulse, or other specific assessment created by third-party vendors, authorized by the Local Education Agency (LEA) and approved by the MDE.

3. Occupational Experience and Related Assessment of that Experience

-Applicants with an associate degree must have at least two years of verifiable occupational experience in the past ten years. Experience must be appropriate to the subject to be taught.
- Applicants with a bachelor or higher degree must have at least one year of verifiable occupational experience in the past ten years. Experience must be appropriate to the subject to be taught.

This endorsement requires the following assessment(s) of occupational expertise:

National Center for Construction Education and Research (NCCER), National Craft Assessment and Certification Program: Earn required score on Plumber assessment.

OR

Other teacher occupational competency assessment approved by MDE Office of Career and Technical Education.

4. Teacher Education Preparation and Related Assessment(s) of that Education

- Applicant must enroll immediately in Vocational Instructor Preparation (VIP) program or the College and Career Readiness Educator Program (CCREP).
- Applicant must complete the individualized professional development plan (PDP) requirements of the VIP or CCREP program prior to the expiration date of the three-year vocational license.
- Applicant must successfully complete the Contren Instructor Certification.
- Applicant must successfully complete a Certification for online learning workshop, module, or course that is approved by the Mississippi Department of Education.
- Applicant must successfully complete the Construction Certification workshop, module, or course that is approved by the Mississippi Department of Education.

Note #1: If the applicant meets all requirements listed above, that applicant will be issued a 980 endorsement—a five-year license. If the applicant does not meet all requirements, the applicant may be issued a three-year endorsement (license), and all requirements stated above must be satisfied prior to the ending date of that license.

Professional Learning

The professional learning itinerary for the middle school or individual pathways can be found at the Research and Curriculum Unit's Web site (www.rcu.msstate.edu). If you have specific questions about the content of each training session provided, please contact the RCU at 662.325.2510 and ask for the Professional Learning Specialist.

Course Outlines

Option 1—Two One-Carnegie-Unit Courses

Course Description: The Theory and Application of Plumbing I course consists of an in-depth study of plumbing safety, math, drawings, and materials and fittings. This one-Carnegie-unit course should only be taken after students successfully pass Safety and Orientation to Construction and Introduction to Construction.

Course Description: The Theory and Application of Plumbing II course consists of an in-depth study of fixtures and faucets; drain, waste, and vent (DWV) systems; and water distribution systems. This one-Carnegie-unit course should only be taken after students successfully pass Theory and Application of Plumbing I.

Theory and Application of Plumbing I—Course Code: 993141

Unit	Unit Name	Hours
1	Introduction and Orientation	10
2	Basic Safety	20
3	Plumbing Math	30
4	Plumbing Drawings	20
5	Plumbing Materials and Fittings	30
Total		110

Theory and Application of Plumbing II—Course Code: 993142

Unit	Unit Name	Hours
6	Fixtures and Faucets	20
7	Introduction to Drain, Waste, and Vents (DWV) Systems	45
8	Introduction to Water Distribution Systems	45
Total		110

Option 2—One Two-Carnegie-Unit Courses

Course Description: The Plumbing course consists of an in-depth study of plumbing safety; math; drawings; fixtures and faucets; introduction to drain, waste, and vent (DWV) systems; and water distribution systems. This two-Carnegie-unit course should only be taken after students successfully pass Construction. Upon the completion of the two courses, students will have the knowledge to complete the Contren Level I Certification.

Plumbing—Course Code: 993140

Unit	Unit Name	Hours
1	Introduction and Orientation	10
2	Basic Safety	20
3	Plumbing Math	30
4	Plumbing Drawings	20
5	Plumbing Materials and Fittings	30
6	Fixtures and Faucets	20
7	Introduction to Drain, Waste, and Vents (DWV) Systems	45
8	Introduction to Water Distribution Systems	45
Total		220

FRAMEWORKS FOR
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Foreword

Secondary career-technical education programs in Mississippi are faced with many challenges resulting from sweeping educational reforms at the national and state levels. Schools and teachers are increasingly being held accountable for providing true 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.

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; Carl D. Perkins Vocational Education Act III, 1998; and No Child Left Behind Act of 2001).

Each secondary career-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- Unit Number and Title
- Suggested Time on Task - An estimated number of clock hours of instruction that should be required to teach the competencies and objectives of the unit. A minimum of 140 hours of instruction is required for each Carnegie unit credit. The curriculum framework should account for approximately 75-80 percent of the time in the course.
- 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.
- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each competency. Emphasis has been placed on strategies which reflect active learning methodologies. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.
- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include rubrics, class participation, reflection, and journaling. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Integrated Academic Topics, Workplace Skills, Technology Standards, and Occupational Standards - This section identifies related academic topics as required in the Subject Area Assessment Program (SATP) in Algebra I, Biology I, English II, and U. S. History from 1877, which are integrated into the content of the unit. It also identifies the 21st Century Skills, which were developed by the Partnership for 21st Century Skills, a group of business and education organizations concerned about the gap between the knowledge and skills learned in school and those needed in communities and the workplace. A portion of the 21st Century Skills addresses learning skills needed in the 21st century, including information and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills. The need for these types of skills have been recognized for some time and

the 21st Century Skills are adapted in part from the 1991 report from the U.S. Secretary of Labor's Commission on Achieving Necessary Skills (SCANS). Another important aspect of learning and working in the 21st century involves technology skills, and the International Society for Technology in Education, developers of the National Education Technology Standards (NETS), were strategic partners in the Partnership for 21st Century Skills.

- References - A list of suggested references is provided for each unit. The list includes some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

Precision Machining Executive Summary

Pathway Description

The Precision Machining pathway is designed as a secondary program for preparation to enter the field of precision machining and metal turning. The Precision Machining program includes an introduction to the basic machining metalworking processes. The purpose of the course is to prepare students to continue study in a postsecondary metals program (Precision Machining, Machine Tool Operation, and Automotive Machining) or to begin work at the entry level in a machining occupation. The machining courses found in this curriculum were written to the National Institute for Metalworking Skills (NIMS) credentialing standards.

Industry Certification

The NIMS is a nationally-recognized nonprofit organization that was established in 1995 to help develop industry standards to maintain the United States' global competitiveness. NIMS sets industry standards and certifies individuals who meet the quality requirements contained in the industry standards. NIMS also accredits training programs and facilities that meet NIMS quality requirements. The NIMS organization and standards are accredited by the American National Standards Institute (ANSI) in the metalworking field.

NIMS metalworking standards reflect expertise in areas such as stamping, press brake, roll forming, machining, tool and die making, mold making, screw machining, and machine maintenance and repair. All NIMS standards are industry written and industry validated and subjected to regular, periodic reviews under the procedures accredited and audited by ANSI. The NIMS Level 1 credential consists of bench work, layout, milling, drill press, surface grinding, and lathing between centers. The students are required to perform a NIMS-approved project in each area in order to attain credentialing in those areas. The student must be able to complete the NIMS project with 100% accuracy before being allowed to take an additional online written test. Once both the performance evaluation and the online test are administered and passed, the student will receive a NIMS certification for each area successfully completed, that is, bench work, layout, milling, drill press, surface grinding, and lathing between centers. The NIMS organization awards credentials for each area of competency in the Level 1 module after successful completion of projects and written tests.

NIMS credentials are used throughout the United States by industry to recruit, hire, place, and promote individual workers. NIMS may also be used to measure performance of individuals pursuing metalworking careers. Articulation may be established using the NIMS credentials for articulation among training programs.

Students who study basic machine metalworking processes may pursue, at their cost, a certification with the National Institute for Metalworking Skills, Inc. (NIMS). Students who study this curriculum may pursue certification of the NIMS Level 1 standards for machining. Attaining this certification is an option for the student; therefore, the student is responsible for the financial costs attributed with achievement of the certification.

Assessment

Students will be assessed using the Precision Machining MS-CPAS2 test. The MS-CPAS2 blueprint can be found at <http://www.rcu.msstate.edu/>. If there are questions regarding assessment of this program, please contact the Manufacturing Cluster Instructional Design Specialists at the Research and Curriculum Unit at 662.325.2510.

Student Prerequisites

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

1. C or Higher in English (the previous year)
 2. C or Higher in Math
 3. Instructor Approval and TABE Reading Score (eighth grade or higher)
- OR
4. Instructor Approval

Applied Academic Credit (if applicable)

No applied academic credit is available for this pathway at this time.

Licensure Requirements

969 Career Pathway: Precision Machining

This endorsement licenses a person to teach the following secondary courses:

- | | |
|--------|---------------------------------|
| 993200 | 2-Manufacturing Fundamentals |
| 993400 | 2-Precision Machining |
| 993202 | 1-Manufacturing Fundamentals I |
| 993203 | 1-Manufacturing Fundamentals II |
| 993401 | 1-Precision Machining I |
| 993402 | 1-Precision Machining II |

Minimum Requirements for this Endorsement:

1. Education

- Hold a two-year college degree (associate degree) or higher from an accredited institution of higher education.

2. Occupational Experience and Related Assessment of that Experience

- Applicants with an associate degree must have at least two years of verifiable occupational experience in the past 10 years. Experience must be appropriate to the subject to be taught.

- Applicants with a bachelor or higher degree must have at least one year of verifiable occupational experience in the past 10 years. Experience must be appropriate to the subject to be taught.

This endorsement requires the following assessment(s) of occupational expertise:

National Institute of Metalworking Skills (NIMS) Level One

OR

Other teacher occupational competency assessment approved by MDE Office of Career and Technical Education.

3. Technology Literacy and Related Assessment of that Competency

- Applicant must validate technology competency by attaining the established minimum score or higher on an assessment approved by the Mississippi Department of Education (MDE). The assessment must be directly related to technology competency required by the grade level and subject matter being taught. Approved assessments for this license are IC3, Propulse, or other specific assessment created by third-party vendors, authorized by the Local Education Agency (LEA), and approved by the MDE.

4. Teacher Education Preparation and Related Assessment(s) of that Education

- Applicant must enroll immediately in Vocational Instructor Preparation (VIP) program.

- Applicant must complete the individualized professional development plan (PDP) requirements of the VIP program prior to the expiration date of the three-year vocational license.

- Applicant must successfully complete a Certification for online learning workshop, module, or course that is approved by the Mississippi Department of Education.

- Applicant must successfully complete the Architecture and Drafting Certification workshop, module, or course that is approved by the Mississippi Department of Education.

note #1: If the applicant meets all requirements listed above, that applicant will be issued a 969 endorsement (a five-year license). If the applicant does not meet all requirements, the applicant may be issued a three-year endorsement (license), and all requirements stated above must be satisfied prior to the ending date of that license.

*Exception: Teachers with a currently valid license and endorsement #359 Machine Shop or #361 Metal Trades may earn this endorsement based on that #359 or #361 endorsement even if a two-year college degree is not earned. All other requirements for this endorsement must be satisfied.

Professional Learning

The professional learning itinerary for the middle school or individual pathways can be found at <http://redesign.rcu.msstate.edu>. If you have specific questions about the content of each training session provided, please contact the Research and Curriculum Unit (RCU) at 662.325.2510, and ask for the Professional Learning Specialist.

Course Outlines

Option 1—Four One-Carnegie-Unit Courses

Upon completion of this option, the student will be trained to take the NIMS Level 1 Certification exams (CNC Milling and CNC Lathing certifications are dependent upon local school resources). This curriculum consists of four one-credit courses, which should be completed in the following sequence:

- Scheduling and operating more than one course in the same classroom/laboratory with the same teacher is not allowed.
- Safety will be reinforced and tested at the beginning of each course.
- Students must complete Metal Fabrication courses with a score of 80/C or higher in class work to advance to the next level.

Course Description: 1. Manufacturing Machining I (Course Code: 993202)

Manufacturing Machining I (Course Code: 993202) includes an introduction to the field as well as fundamentals of safety, tools, math, blueprint reading, and milling machinery. This is a one-Carnegie-unit course.

Course Description: 2. Manufacturing Machining II (Course Code: 993203)

Manufacturing Machining II (Course Code: 993203) emphasizes an overview of safety and leadership, the lathe theory, and grinding operations. This course gives student's real-world, hands-on practice in these areas. This one-Carnegie-unit course should only be taken after students successfully pass Manufacturing Machining I.

Course Description: 3. Precision Machining I (Course Code: 993401)

Precision Machining I (Course Code: 993204) includes a study of precision machining techniques in advanced lathe operation. This one-Carnegie-unit course should only be taken after students successfully pass Manufacturing Machining II.

Course Description: 4. Precision Machining II (Course Code: 993402)

Precision Machining II (Course Code: 993205) includes a study of precision machining techniques in advanced milling and CNC operation. This one-Carnegie-unit course should only be taken after students successfully pass Precision Machining I.

Manufacturing Machining I — Course Code: 993202

Unit	Unit Name	Hours
1	Orientation, Leadership, and Basic Safety	15
2	Math, Measuring Tools, and Instruments	20
3	Introduction to Blueprints and Hand and Power Tools	25
4	Drill Press and Band Saw Theory and Operation	20
5	Milling Machine Theory and Operation	30
Total		110

Manufacturing Machining II — Course Code: 993203

Unit	Unit Name	Hours
8	Orientation, Advanced Leadership, and Employability Skills	5
9	Basic Safety (Review and Reinforcement)	5
4	Lathe Theory and Operation	75
6	Grinding Theory and Operation	25
Total		110

Precision Machining I — Course Code: 993401

Unit	Unit Name	Hours
7	Orientation, Advanced Leadership, and Employability Skills	5
8	Basic Safety (Review and Reinforcement)	15
10	Advanced Lathe Operation	95
Total		115

Precision Machining II — Course Code: 993402

Unit	Unit Name	Hours
7	Orientation, Advanced Leadership, and Employability Skills	5
8	Basic Safety (Review and Reinforcement)	10
11	Advanced Milling Operation	95
12	Computerized Numerical Control	10
Total		120

Note: CNC Milling and CNC Lathing course content are dependent upon local school resources

Option 2—Two Two-Carnegie-Unit Courses

This curriculum consists of two two-Carnegie-unit courses.

- Scheduling and operating more than one course in the same classroom/laboratory with the same teacher is not allowed.
- Safety will be reinforced and tested at the beginning of each course.
- Students must complete Metal Fabrication courses with a score of 80/C or higher in class work to advance to the next level.

Course Description: Manufacturing Fundamentals (Course Code: 993200)

Manufacturing Fundamentals I content includes orientation and leadership; basic safety; math, measuring tools, and instruments; blueprints; hand and power tools; lathe theory and operation; milling machine theory and operation; and grinding operations. Safety is emphasized in each unit and every activity.

Course Description: Precision Machining (Course Code: 993400)

Precision Machining includes advanced precision machining techniques in lathing, vertical milling and Computer Numerical Control (CNC). (CNC course content depth is dependent upon local school resources)

Manufacturing Fundamentals — Course Code: 993200

Unit	Unit Name	Hours
1	Orientation, Leadership, and Basic Safety	25
2	Math, Measuring Tools, and Instruments	20
3	Introduction to Blueprints and Hand and Power Tools	25
4	Drill Press and Band Saw Theory and Operation	20
5	Milling Machine Theory and Operation	30
6	Lathe Theory and Operation	75
7	Grinding Theory and Operation	25
Total		220

Precision Machining — Course Code: 993400

Unit	Unit Name	Hours
8	Orientation, Advanced Leadership, and Employability Skills	10
9	Basic Safety (Review and Reinforcement)	10
10	Advanced Lathe Operation	95
11	Advanced Milling Operation	95
12	Computerized Numerical Control	10
Total		220

FRAMEWORKS FOR
VOCATIONAL-TECHNICAL PROGRAMS
REVISED IN
2011

SECONDARY
EXECUTIVE SUMMARY
2012

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Foreword

Secondary career-technical education programs in Mississippi are faced with many challenges resulting from sweeping educational reforms at the national and state levels. Schools and teachers are increasingly being held accountable for providing true 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.

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; Carl D. Perkins Vocational Education Act III, 1998; and No Child Left Behind Act of 2001).

Each secondary career-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- Unit Number and Title
- Suggested Time on Task - An estimated number of clock hours of instruction that should be required to teach the competencies and objectives of the unit. A minimum of 140 hours of instruction is required for each Carnegie unit credit. The curriculum framework should account for approximately 75-80 percent of the time in the course.
- 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.
- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each competency. Emphasis has been placed on strategies which reflect active learning methodologies. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.
- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include rubrics, class participation, reflection, and journaling. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Integrated Academic Topics, Workplace Skills, Technology Standards, and Occupational Standards - This section identifies related academic topics as required in the Subject Area Assessment Program (SATP) in Algebra I, Biology I, English II, and U. S. History from 1877, which are integrated into the content of the unit. It also identifies the 21st Century Skills, which were developed by the Partnership for 21st Century Skills, a group of business and education organizations concerned about the gap between the knowledge and skills learned in school and those needed in communities and the workplace. A portion of the 21st Century Skills addresses learning skills needed in the 21st century, including information and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills. The need for these types of skills have been recognized for some time and

the 21st Century Skills are adapted in part from the 1991 report from the U.S. Secretary of Labor's Commission on Achieving Necessary Skills (SCANS). Another important aspect of learning and working in the 21st century involves technology skills, and the International Society for Technology in Education, developers of the National Education Technology Standards (NETS), were strategic partners in the Partnership for 21st Century Skills.

- References - A list of suggested references is provided for each unit. The list includes some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

Technology Foundations

Technology Foundations Executive Summary

Program Description

Technology Foundations is a technology-rich curriculum that prepares students to function in the 21st Century environment. This course is designed to provide foundational skills in all relevant areas of technology, including keyboarding, operating systems, word processing, spreadsheets, desktop publishing, multimedia presentations, and social networking. The course also focuses on self- and career development by encouraging students to create a program of study that maps out their high school and postsecondary education.

Technology Foundations is built upon the Common Core Standards, 21st Century Skills, and the National Educational Technology Standards for Students (NETS-S). Upon successful completion of the course, students will have been exposed to the latest technology and will be able to make informed decisions on how to ethically interact both online and off.

Upon successful completion of Technology Foundations, students will receive one (1) Carnegie unit to be applied toward the Business and Technology graduation requirement.

Student Prerequisites

Students enrolled in Technology Foundations should be classified as eighth-grade students. Any exception to this rule should be discussed with the Mississippi Department of Education.

Licensure Requirements

This is an “add-on” endorsement that may be earned only by persons who hold a currently valid five-year standard Mississippi Educator License with endorsement in any subject area (academic or occupational).

A #984 endorsement allows a person to teach the following course:

992307 Technology Foundations

This endorsement requires the following:

1. Applicant must hold a currently valid five-year standard Mississippi Educator License.
2. Applicant must validate technology competency by attaining the established minimum score or higher on an assessment approved by the Mississippi Department of Education (MDE). The assessment must be directly related to technology competency required by the grade level and subject matter being taught. Approved assessment for this license is IC3.
3. Applicant must successfully complete a certification for online learning workshop, module, or course that is approved by the MDE.
4. Applicant must demonstrate keyboarding skill with proper technique and with speed of a total of 30 net words per minute (minimum) using the touch method.
5. Applicant must successfully complete the Technology Foundations certification workshop, module, or course that is approved by the MDE.

Note: If the applicant meets all requirements listed above, that applicant will be issued an endorsement supplemental to their existing five-year license. If the applicant does not meet all requirements, the applicant will be issued an emergency endorsement, and all requirements for the supplemental endorsement must be satisfied prior to the renewal date of the standard license.

Professional Learning

The professional learning itinerary for the middle school or individual pathways can be found at the RCU's website (<http://www.rcu.msstate.edu/>). If you have specific questions about the

content of each training session provided, please contact the Research and Curriculum Unit at 662.325.2510 and ask for the Professional Learning Specialist.

Course Outlines

Unit	Unit Name	Hours
1	Orientation and Ethics	5
2	Internet Tools in the Classroom	5
3	Computing Fundamentals	5
4	Windows and Operating Systems	5
5	Keyboarding	30
6	Word Processing/Desktop Publishing	30
7	Multimedia Presentations	10
8	Spreadsheet Applications	25
9	Social Media	10
10	Career Exploration	10
Total		135