

OFFICE OF INSTRUCTIONAL ENHANCEMENT AND INTERNAL OPERATIONS
Summary of State Board of Education Agenda Items
July 13-14, 2011

OFFICE OF VOCATIONAL EDUCATION AND WORKFORCE DEVELOPMENT

12. Approval to revise the *Mississippi Secondary Curriculum Frameworks in Vocational Education and Workforce Development: Business Management, Entrepreneurship, Horticulture, and Science, Technology, Engineering, and Mathematics (STEM)*
(Has cleared Administrative Procedures Act process with no public comments)

EXECUTIVE SUMMARY

The following secondary curriculum frameworks are recommended for approval:

1. Business Management
2. Entrepreneurship
3. Horticulture
4. Science, Technology, Engineering, and Mathematics (STEM)

Each curriculum framework follows the established format established for secondary vocational and technical 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 2011-2012 school year.

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.

Recommendation: Approval

Back-up material attached

FRAMEWORKS FOR
CAREER-TECHNICAL PROGRAMS
REVISED IN
2011

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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).

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- 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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- 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. 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. 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.

Business Management

Business Management Executive Summary

Program Description

Business Management is a 2-year program for students in the Business: Management, Marketing, and Technology Pathway. The program is designed to prepare students for careers or continuing education in management or entrepreneurship and was written to incorporate the Business Administration Core Standards published by the Marketing Education Resource Center.

Course Outlines

This course focuses on business management and the development of an extensive business plan that encompass all areas of business, including communication, procedures, operations and security, information, and applications, needed in order to operate a successful business. Students will continue to develop educational, career, and professional plans in the area of business management. 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.

Business and Marketing Fundamentals (2 Carnegie Units)

Course Code: 992300

Unit	Title	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

Management (2 Carnegie Units)

Course Code: 992303

Unit	Title	Hours
8	Introduction to Business Management	30
9	Principles of Business Management	30
10	Business Communication for Managers	30
11	Business Procedures	25
12	Business Operations and Security	25
13	Information Management	30
14	Management Applications	35
	Total	205

Option 2 – Four One-Carnegie-Unit Courses

Course Description: Business and Marketing Fundamentals, Part A

This 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 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 and Marketing Fundamentals, Part B

This course begins with an introduction to business and marketing 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.

Course Description: Management Fundamentals

This course focuses on business management and the development of an extensive business plan that encompasses all areas of business, including communication and procedures, needed in order to operate a successful business. Students will continue to develop educational, career, and professional plans in the area of business management. 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: Management Essentials

This course focuses on business management and the development of an extensive business plan that encompasses all areas of business, including operations and security, information, and applications needed in order to operate a successful business. Students will continue to develop educational, career, and professional plans in the area of business management. 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.

Business and Marketing Fundamentals, Part A (1 Carnegie Unit)

Course Code: 992301

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

Business and Marketing Fundamentals, Part B (1 Carnegie Unit)

Course Code: 992302

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

Management Fundamentals (1 Carnegie Unit)

Course Code: 992304

Unit	Title	Hours
8	Introduction to Business Management	30
9	Principles of Business Management	30
10	Communication for Managers	30
11	Business Procedures	25
	Total	115

Management Essentials (1 Carnegie Unit)

Course Code: 992306

Unit	Title	Hours
12	Business Operations and Security	25
13	Information Management	30
14	Management Applications	35
	Total	90

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Entrepreneurship

Entrepreneurship Executive Summary

Course Description

Entrepreneurship is a course in the Business career cluster. This course introduces students to the rewards and risks of owning or operating a business enterprise. Emphasis is placed on the mastery of skills needed to plan, organize, manage, and finance a small business. Skills in communication, technical writing, mathematics, research, and problem-solving are reinforced as each student prepares his/her own business plan. Work-based learning strategies appropriate for this course will be provided through the Career Pathway Experience (CPE) program. Simulations, projects, teamwork, and FBLA leadership activities, meetings, conferences, and competitions provide opportunities for application of instructional competencies.

Course Outline

Entrepreneurship (One Carnegie Unit)

Unit	Title	Hours
1	Introduction, Safety, and Orientation	5
2	Entrepreneurial Skills	5
3	Ready Skills: Business Foundations and Communication Skills	10
4	Ready Skills: Economics	15
5	Ready Skills: Financial Literacy	15
6	Ready Skills: Professional Development	5
7	Business Functions: Financial Management	10
8	Business Functions: Human Resource Management	10
9	Business Functions: Marketing Management	10
10	Business Functions: Operations and Strategic Management	20
11	Business Plan	35
	Teacher Selected Curriculum Activities	10
		140

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Horticulture

Horticulture Executive Summary

Pathway Description

The secondary pathway in Horticulture prepares individuals for entry level employment or continuing education in a wide variety of fields in the horticulture industry. Students enrolled in the pathway participate in a variety of instructional activities including lectures, discussions, laboratory experiences at the school, and work-based learning activities in the field such as field trips and shadowing experiences. Students also receive supplementary instruction and reinforcement of learning through activities in youth organizations. Topics covered in the two-year program include plant structure and growth; plant propagation; pest management; floristry; greenhouse crops and management; olericulture; plantscaping; landscape design, installation, and management; and turfgrass management. Student competencies and suggested objectives in the curriculum framework have been correlated to the knowledge and skill statements listed in Career Cluster Resources for Agriculture, Food, and Natural Resources, as published 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 in the field of horticulture. Competencies and suggested performance indicators in the horticulture courses 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.

Articulation

The following articulation plan is in place for the Horticulture Pathway.

High School Program	Community College Programs	Community College Course
Horticulture (Program CIP: 01.0601 – Applied Horticulture/Horticultural Operations, General)	Horticulture Technology (Program CIP: 01.0601 – Horticulture Service Operations and Management) (Program CIP: 01.0605 – Landscaping) (Program CIP: 01.0607 – Turf Management)	HLT 1411 - Leadership MGT HLT 1213 - Applied Principles of Plan Propagation

Assessment

Students will be assessed using the Horticulture MS-CPAS2 test. The MS-CPAS2 blueprint can be found at <http://info.rcu.msstate.edu/services/curriculum.asp>. If there are questions regarding assessment of this program, please contact the agriculture instructional design specialist at the Research and Curriculum Unit at 662.325.2510.

Student Prerequisites

In order for students to experience success in the Horticulture program, the following prerequisites are recommended:

1. C or Higher in Pre-Algebra
or
2. TABE Math Computation and TABE Math Applied Score (eighth grade or higher)
or
3. Instructor Approval

Applied Academic Credit

Content of the Horticulture course has been aligned to the 2010 Mississippi Science Curriculum Framework. Students who complete Horticulture will receive two electives and two science credits or four elective credits that will count toward high school science graduation requirements.

Licensure Requirements

The 995 licensure endorsement is needed to teach the Horticulture pathway. The requirements for the 995 licensure endorsement are listed below:

1. Hold a valid Mississippi Educator License with endorsement #301 – Vocational Agriculture Education Programs or #302 – Agriculture.
2. Possess a baccalaureate degree in an agricultural subject area.
3. Enroll immediately in the Vocational Instructor Preparation (VIP) program or the College and Career Readiness Education Program (CCREP).
4. 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. Successfully complete an MDE-approved computer literacy certification exam.
6. Successfully complete a certification for an online learning workshop, module, or course that is approved by MDE.

Note: If the applicant meets all requirements listed above, that applicant will be issued a 995 endorsement—a 5-year license. If the applicant does not meet **all** requirements, the applicant will 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

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

Program CIP Code: 01.0601

This curriculum framework is divided into four one-Carnegie-unit courses as outlined below. The first two courses are comprised of units from Horticulture Year 1. The last two courses are comprised of units from Horticulture Year 2.

Option 1 – Four One-Carnegie-Unit Courses

Course Description: Introduction to Horticulture teaches students the about horticulture orientation and leadership development. Students are also introduced to basic plant and soil science (Plant Structure and Growth). This course also focuses on horticulture structures.

Course Description: Horticulture Plant Processes focuses on plant propagation, principles of pest management greenhouse crops and olericulture production.

Course Description: Horticulture Nursery is a comprehensive course that reviews leadership, careers, and safety. It also introduces students to nursery and landscape plant identification horticulture marketing and business procedures container and field crop production.

Course Description: Horticulture Landscape and Turf grass covers the concepts of landscape design, installation, construction, and maintenance. Students will also learn skills and knowledge associated with turfgrass installation and maintenance, pomology production, basic principles of floristry.

Introduction to Horticulture (Course Code: 991402)

Unit	Title	Hours
1	Horticulture Orientation and Leadership Development	17.5
2	Basic Plant and Soil Science (Plant Structure and Growth)	67.5
3	Horticulture Structures	20.0
		105

Horticulture Plant Processes (Course Code: 991403)

Unit	Title	Hours
4	Plant Propagation	33.0
5	Principles of Pest Management	28.0
6	Greenhouse Crops and Olericulture Production	44.0
		105

Horticulture Nursery (Course Code: 991404)

Unit	Title	Hours
7	Leadership, Careers, and Safety	25.0
8	Nursery and Landscape Plant Identification	25.0
9	Horticulture Marketing and Business Procedures	27.5
10	Container and Field Crop Production	27.5
		105

Horticulture Landscape and Turf grass (Course Code: 991405)

Unit	Title	Hours
11	Landscape Design, Installation, Construction, and Maintenance	67.5
12	Turfgrass Installation and Maintenance	15.0
13	Pomology Production	10.0
14	Basic Principles of Floristry	22.5
		115

Program CIP Code: 01.0601

This curriculum framework is divided into four one-Carnegie-unit courses as outlined below. The first two courses are comprised of units from Horticulture Year 1. The last two courses are comprised of units from Horticulture Year 2.

Horticulture I (Two Carnegie Unit) - Course Code: 991400

Unit	Title	Hours
1	Horticulture Orientation and Leadership Development	17.5
2	Basic Plant and Soil Science (Plant Structure and Growth)	67.5
3	Horticulture Structures	20.0
4	Plant Propagation	33.0
5	Principles of Pest Management	28.0
6	Greenhouse Crops and Olericulture Production	44.0
		210

Horticulture II (Two Carnegie Unit) - Course Code: 991401

Unit	Title	Hours
7	Leadership, Careers, and Safety	25.0
8	Nursery and Landscape Plant Identification	25.0
9	Horticulture Marketing and Business Procedures	27.5
10	Container and Field Crop Production	27.5
11	Landscape Design, Installation, Construction, and Maintenance	67.5
12	Turfgrass Installation and Maintenance	15.0
13	Pomology Production	10.0
14	Basic Principles of Floristry	22.5
		220

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 - 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. 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. 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.

STEM Applications Executive Summary

Course Description

STEM Applications is a course that introduces students to concepts and careers in the areas of science, technology, engineering and mathematics. It is an innovative instructional program that prepares students to engage in future academic and vocational courses of study in high school, community college, and institutions of higher learning. During the course, the students will become aware of current topics in several sciences, emerging technology, computer aided design, robotics, and financial literacy. This course is intended to provide an overview of the topics covered in the growing STEM field and to give students the opportunity to investigate careers in this area. Students will develop academic and technical skills, 21st Century Skills, and human relations competencies that accompany technical skills for job success and lifelong learning.

Licensure Requirements

The 983 licensure endorsement is needed to teach the STEM Applications course. The requirements for the 983 licensure endorsement are listed below:

1. Applicant must have earned a 4-year education degree (bachelor's degree) or higher from an accredited institution of higher education.
2. Applicant must hold a current and valid Mississippi 5-year teaching license.
3. Applicant must successfully complete an MDE-approved computer literacy certification exam.
4. Applicant must successfully complete certification for an online learning workshop, module, or course that is approved by the MDE.
5. Applicant must successfully complete a STEM Applications certification workshop, module, or course that is approved by the MDE.

Note: If an applicant meets all requirements listed above, that applicant will be issued a 983 endorsement to be added to his/her 5-year license.

Professional Learning

The professional learning itinerary for the middle school or individual pathways can be found at <http://info.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 Outline

Unit Number	Unit Name	Hours
1	Orientation and Ethics	5
2	Technology Literacy	5
3	The Design Process	5
4	Emerging Technologies (ongoing)	5
5	Computer Aided Design	25
6	Sustainable Design and Technology	10
7	Power and Energy	25
8	Robotics Simulation	10
9	Financial and Economic Literacy	20
10	Workplace Skills: School to Careers III	10
Total		120