2011 Mississippi Curriculum Framework

Postsecondary Forestry Technology
(Program CIP: 03.0511 – Forest Technology/Technician)

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Published by

Acknowledgments

Standards in this document are based on information from the following organizations:

SAF Standards   Industry standards referenced were adapted from *Standards and Procedures for Recognizing Educational Programs in Forest Technology*, as published by the Society of American Foresters.
http://www.safnet.org/education/techaccstd082409.doc

Related Academic Standards   CTB/McGraw-Hill LLC. (2005). *Tests of adult basic education, Forms 9 and 10.* Monterey, CA: Author. Reproduced with permission of CTB/McGraw-Hill LLC. TABE is a registered trademark of The McGraw-Hill Companies, Inc. Copyright © 2005 by CTB/McGraw-Hill LLC. Reproduction of this material is permitted for educational purposes only.

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Preface

Forestry Technology Research Synopsis

Articles, books, Web sites, and other materials listed at the end of each course were considered during the revision process. The Society of American Foresters Web site and educational program standards were especially useful in providing insight into trends and issues in the field. Suggested references were detailed for use by instructors and students during the study of the topics outlined.

Industry advisory team members from colleges throughout the state were asked to give input related to changes to be made to the curriculum framework. Instructors from colleges throughout the state were also asked to give input on changes to be made to the curriculum framework. Specific comments related to this program included statements from Advisory Committee members including expressions of the need for more technology as well as the need for updated technology such as new computers, better processors, and more up-to-date GIS technologies.. Changes suggested for the curriculum included more lab time and the addition of a GPS/GIS core course.

Needs of the Future Workforce
Employment of foresters is projected to grow slower than average in the United States, 6% and about as fast as average in Mississippi, 9% (EMSI, 2010). The Federal Government and some State governments expect a large number of their workers to retire over the next decade. As a result, there is likely to be a large number of job openings for foresters and conservation scientists in government. In general, workers with formal education from a postsecondary program, along with good technical and communication skills, should have the best opportunities for entry-level work (United States Bureau of Labor Statistics, 2010).

Forestry Technology Employment Projections and Earnings

Region	2010 Jobs	2020 Jobs	Change	% Change	Openings	2010 Median Hourly Earnings
Regional Total	283	308	25	9%	64	$18.76
National Total	11,250	11,977	727	6%	2,306	$24.32

EMSI, 2010

Industry and instructor comments, along with current research, were considered by the curriculum revision team during the revision process. Changes were made as needed and appropriate. Many of the skills and topics noted in the research were already included in the curriculum framework. Specific changes made to the curriculum at the January 24, 2011, curriculum revision meeting included:
- Competencies and objectives were reviewed to ensure accuracy and appropriateness.
- Specific additions or deletions as related to the standards
- The Recommended Tools and Equipment list was updated.

Curriculum
The following national standards were referenced in each course of the curriculum:
- CTB/McGraw-Hill LLC *Tests of Adult Basic Education, Forms 9 and 10* Academic Standards

- *21st Century Skills*
- *Standards and Procedures for Recognizing Educational Programs in Forest Technology*, as published by the Society of American Foresters. http://www.safnet.org/education/techaccstd082409.doc

Assessment
Students will be assessed using the Forestry Technology MS-CPAS2 test. The MS-CPAS2 blueprint can be found at http://www.rcu.msstate.edu/. All students will test after year one of their program. A second test covering the second year material will be administered to AAS track students upon completion of their program. 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.

No alternate assessments are available at this time.

Professional Learning
It is suggested that instructors participate in professional learning related to the following concepts:

- How to use the program Blackboard site
- Differentiated instruction – To learn more about differentiated instruction, please go to http://www.paec.org/teacher2teacher/additional_subjects.html and click on Differentiated Instruction. Work through this online course and review the additional resources.

Program Exceptions
Due to the fact that the Forestry Technology course selection is designed for Botany to be taken in the first semester of the freshman year, this program cannot have a certificate option. The content obtained from Botany is the basis for more advanced Forestry courses taken later in the semester and into the sophomore year.

Articulation
Articulation credit from Secondary Forestry to Postsecondary Forestry Technology will be awarded beginning upon implementation of this curriculum by the college. The course to be articulated is Fundamentals of Forestry (FOT 1813) with the stipulation of passing the MS-CPAS2 according to State Board for Community and Junior Colleges (MCCB) guidelines

Articulated Secondary Course	Articulated Postsecondary Course
[S] Forestry (CIP: CIP: 03.0511 – Forestry Technology/Technician)	FOT1813 – Fundamentals of Forestry

Statewide Guidelines on Articulated Credit

Eligibility

- To be eligible for articulated credit, a student must:
    - Complete the articulated Secondary Career Program.

Postsecondary Forestry Technology

- o Score 80 percent or higher on the Mississippi Career Planning and Assessment System (MS CPAS) in their secondary program of study.
- To be awarded articulated credit, a student must:
    - o Complete application for articulated credit at the community or junior college.
    - o Enroll in the community or junior college within 18 months of graduation.
    - o Successfully complete 12 non-developmental career/technical or academic credit hours in the corresponding articulated postsecondary Career-Technical program of study.

How MS CPAS will be documented
- The Research and Curriculum Unit of Mississippi State University will provide the SBCJC a list of all secondary CTE students scoring at or above the 80 percentile for the articulated programs.
- The SBCJC will forward the list of students eligible for articulated credit to the Colleges.

Transcripting of Articulated Credit
- Students must complete twelve (12) non-developmental career/technical or academic credit hours in the articulated postsecondary Career-Technical program of study before the articulated credit is transcripted.
- No grade will be given on the transcript for articulated courses, only hours granted will be transcripted (thus resulting in no change in quality points).

Time Limit
- MS CPAS scores will be accepted to demonstrate competencies for up to 18 months after high school graduation.

Cost
- No costs will be assessed on hours earned through articulated credit.

Foreword

As the world economy continues to evolve, businesses and industries must adopt new practices and processes in order to survive. Quality and cost control, work teams and participatory management, and an infusion of technology are transforming the way people work and do business. Employees are now expected to read, write, and communicate effectively; think creatively, solve problems, and make decisions; and interact with each other and the technologies in the workplace. Career–technical programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact local career–technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and career skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U.S. Department of Education and Labor, provide career and technical educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document. Referenced throughout the courses of the curriculum are 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. Another important aspect of learning and working in the 21st century involves technology skills. The International Society for Technology in Education, developer of the National Educational Technology Standards (NETS), was a strategic partner in the Partnership for 21st Century Skills. Each postsecondary program of instruction consists of a program description and a suggested sequence of courses that focus on the development of occupational competencies. The MS-CPAS2 blueprints are based upon the suggested course sequences to allow for year 1 and year 2 assessments for all exit options. Please refer to the blueprint online. Each career–technical course in this sequence has been written using a common format, which includes the following components:

- Course Name – A common name that will be used by all community and junior colleges in reporting students

- Course Abbreviation – A common abbreviation that will be used by all community and junior colleges in reporting students

- Classification – Courses may be classified as the following:
    - Career–technical core – A required career–technical course for all students
    - Area of concentration (AOC) core – A course required in an area of concentration of a cluster of programs
    - Career–technical elective – An elective career–technical course
    - Related academic course – An academic course that provides academic skills and knowledge directly related to the program area

- Academic core – An academic course that is required as part of the requirements for an associate's degree

- Description – A short narrative that includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester

- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course

- Corequisites – A listing of courses that may be taken while enrolled in the course

- Competencies and Suggested Objectives – A listing of the competencies (major concepts and performances) and the suggested student objectives that will enable students to demonstrate mastery of these competencies

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75% of the time allocated to each course. The remaining 25% of each course should be developed at the local district level and may reflect the following:
  - Additional competencies and objectives within the course related to topics not found in the state framework, including activities related to specific needs of industries in the community college district
  - Activities that develop a higher level of mastery on the existing competencies and suggested objectives
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed or revised
  - Activities that include integration of academic and career–technical skills and course work, school-to-work transition activities, and articulation of secondary and postsecondary career–technical programs
  - Individualized learning activities, including work-site learning activities, to better prepare individuals in the courses for their chosen occupational areas

- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

- Programs that offer an Associate of Applied Science degree must include a minimum 15-semester-credit-hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:
  - 3 semester credit hours (sch)   Math/Science Elective
  - 3 semester credit hours   Written Communications Elective
  - 3 semester credit hours   Oral Communications Elective
  - 3 semester credit hours   Humanities/Fine Arts Elective

o   3 semester credit hours   Social/Behavioral Science Elective

It is recommended that courses in the academic core be spaced out over the entire length of the program, so that students complete some academic and career–technical courses each semester. Each community or junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- Career–technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

In order to provide flexibility within the districts, individual courses within a framework may be customized by doing the following:

- Adding new competencies and suggested objectives
- Revising or extending the suggested objectives for individual competencies
- Adjusting the semester credit hours of a course to be up 1 hour or down 1 hour (after informing the Mississippi Community College Board [MCCB] of the change)

In addition, the curriculum framework as a whole may be customized by doing the following:

- Resequencing courses within the suggested course sequence reflecting the new assessment format
- Developing and adding a new course that meets specific needs of industries and other clients in the community or junior college district (with MCCB approval)
- Utilizing the career technical elective options in many of the curricula to customize programs

Table of Contents

Program Description

Postsecondary Forestry Technology is an instructional program that prepares individuals to produce, protect, and manage timber and other forest crops. Students enrolled in the program will participate in a variety of learning experiences related to land and forest measurements, growth processes of timber stands, tree identification, timber and forest product harvesting, timber stand management and protection, and forest products utilization. Emphasis is placed on the development of job skills that allow students to enter employment. The latest technologies and computer application skills are incorporated into courses. The program combines lecture-based activities with laboratory field experiences.

Forestry Technology is a two-year technical program. An Associate of Applied Science degree is awarded upon successful completion of the curriculum.

Industry standards referenced were adapted from *Standards and Procedures for Recognizing Educational Programs in Forest Technology*, as published by the Society of American Foresters http://www.safnet.org/education/techaccstd082409.doc

Suggested Course Sequence*
Forestry Technology
Associate of Applied Science Degree

FIRST YEAR

4 sch	Natural Science Elective**	3-4 sch	Elective
4 sch	Forest Measurements I (FOT 1114)	3-4 sch	Elective
3 sch	Microcomputer Application Elective	4 sch	Applied Soils – Conservation and Use (AGT 1714)
3 sch	Introduction to Forestry (FOT 1813)	3-4 sch	Elective
3-4 sch	Math/Science Elective	3 sch	Written Communications Elective

_____
17-18 sch

_____
16-19 sch

SECOND YEAR

4 sch	Forest Surveying and Spatial Applications (FOT 2124)	4 sch	Timber Harvesting (FOT 2424)
4 sch	Silviculture I (FOT 2614)	3-4 sch	Elective
4 sch	Applied Dendrology (FOT 1714)	3-4 sch	Elective
3 sch	Oral Communications Elective	3 sch	Humanities/Fine Arts Elective
		3 sch	Social/Behavioral Science Elective

_____
15 sch

_____
16-18 sch

* Students who lack entry level skills in math, English, science, etc. will be provided related studies.

ELECTIVES

Any Instructor approved elective
**Natural Science Elective - Botany (BIO 1314)and Botany Lab BIO 1310

4 sch   Forest Measurements II (FOT 1124)
4 sch   Forest Protection (FOT 1314)
4 sch   Forest Products Utilization (FOT 1414)
4 sch   Silviculture II (FOT 2624)
4 sch   Advanced GIS/GPS in Forestry (FOT 2214)
3 sch   Principles of Accounting I (ACC 1213)
3 sch   Applied Agricultural Economics (AGT 2263)
1-3 sch Special Problem in Forestry Technology [FOT 291(1-3)]
1-6 sch Supervised Work Experience in Forestry Technology [FOT 292(1-6)]
1-6 sch Work-Based Learning [WBL 292(1-6)]
3 sch   Legal Environment of Business (BAD 2413)
3 sch   Mapping and Topography (DDT 2423)
3 sch   Fundamentals of Drafting (DDT 1113)

3 sch   Business Statistics (BAD 2323 or MAT 2323)
3 sch   Economics I (Macroeconomics) (ECO 2113)
3 sch   Economics II (Macroeconomics) (ECO 2123)

Forestry Technology Courses

Course Name: Forest Measurements I

Course Abbreviation: FOT 1114

Classification: Career-Technical Core

Description: A course covering fundamentals of forest measurements. Includes instruction in locating land on a map, applying sampling techniques, and processing and summarizing field data. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives
1. Establish the physical location of timber and forest products to be cruised.(DOK3, SAF1, SAF5, SAF6)
a. Apply U.S. Public Land Survey procedures to locate land on a map.(DOK1)
b. Physically locate corners and boundaries of land to be cruised from a map.(DOK2)
c. Make a preliminary study of the property to determine sampling technique, topography, cruise intensity, and direction of cruise lines.(DOK3)
2. Apply sampling techniques to measure standing timber and forest products on a given tract of land.(DOK3, SAF1, SAF5, SAF6)
a. Describe the different types of sampling techniques used in measuring standing timber including line plot, strip, and prism cruising.(DOK1)
b. Select the appropriate sampling technique, intensity, and equipment to measure standing timber on a given tract.(DOK2)
c. Measure standing timber on the given tract according to the sampling technique and intensity stated.(DOK2)
d. Record data following industry accepted practices.(DOK1)
3. Process field data to determine volume and weight of forest products on a given plot of land.(DOK3, SAF1, SAF5, SAF6)
a. Interpret raw data from a cruise.(DOK2)
b. Calculate cruise tally volumes and weights for the individual tract by product class and species (hardwood, pine, pulpwood, sawtimber, specialty products).(DOK3)
4. Summarize field data and prepare a cruise report.(DOK3, SAF1, SAF5, SAF6)
a. Prepare a detailed cruise report including legal description, timber volumes and values by species and class, average volume per acre, and average volume per tree.(DOK 3)

STANDARDS

2010 Standards for Postsecondary Forestry Technology Programs

SAF1   Dendrology
SAF5   Measurement
SAF6 Land Surveying

Postsecondary Forestry Technology

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

21ˢᵗ Century Skills

CSS1-21st Century Themes
    CS1   Global Awareness
    CS2   Financial, Economic, Business, and Entrepreneurial Literacy
    CS3   Civic Literacy
    CS4   Health Literacy
    CS5   Environmental Literacy
CSS2-Learning and Innovation Skills

CS6   Creativity and Innovation
CS7   Critical Thinking and Problem Solving
CS8   Communication and Collaboration
CSS3-Information, Media and Technology Skills
CS9   Information Literacy
CS10   Media Literacy
CS11   ICT Literacy
CSS4-Life and Career Skills
CS12   Flexibility and Adaptability
CS13   Initiative and Self-Direction
CS14   Social and Cross-Cultural Skills
CS15   Productivity and Accountability
CS16   Leadership and Responsibility

SUGGESTED REFERENCES

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Avery, H. E., & Burkhart, H. (2002). *Forest measurements*. New York: McGraw Hill.

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Computer Software

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USGS. (2011). *Seamless data distribution system*. Retrieved January 24, 2011, from http://seamless.usgs.gov

Course Name: Forest Measurements II

Course Abbreviation: FOT 1124

Classification: Career-Technical Elective

Description: A continuation of Forest Measurement I with emphasis on electronic and computer applications in forest measurement. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: Forest Measurements I (FOT 1114)

Competencies and Suggested Objectives

1. Perform forest measurements using computerized equipment.(DOK3, SAF1, SAF5, SAF6)
    a. Determine acreage of a parcel of land using a global positioning instrument.(DOK2)
    b. Determine sampling intensity needed from GPS data.(DOK3)
    c. Compute tract volume using a data recorder.(DOK3)
    d. Download and process tract volume.(DOK2)
    e. Digitize a tract map from field information.(DOK2)
    f. Generate a computerized report of findings.(DOK1)
    g. Obtain timber price reports. (DOK1)

STANDARDS

2010 Standards for Postsecondary Forestry Technology Programs

SAF1 Dendrology
SAF5 Measurement
SAF6 Land Surveying

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations

Postsecondary Forestry Technology

A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
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    CS4   Health Literacy
    CS5   Environmental Literacy
CSS2-Learning and Innovation Skills
    CS6   Creativity and Innovation
    CS7   Critical Thinking and Problem Solving
    CS8   Communication and Collaboration
CSS3-Information, Media and Technology Skills
    CS9   Information Literacy
    CS10   Media Literacy
    CS11   ICT Literacy
CSS4-Life and Career Skills
    CS12   Flexibility and Adaptability
    CS13   Initiative and Self-Direction
    CS14   Social and Cross-Cultural Skills
    CS15   Productivity and Accountability
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USGS. (2011). *Seamless data distribution system*. Retrieved January 24, 2011from http://seamless.usgs.gov

Course Name: Forest Protection

Course Abbreviation: FOT 1314

Classification: Career-Technical Elective

Description: A course in methods and techniques for protecting forests from fire, insect, and disease damage. Includes instruction in prescribed burning procedures. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives

1. Apply prescribed burning methods. [DOK3,SAF1, SAF2, SAF3, SAF4, SAF8, SAF10, SAF11, SAF12]
  a. Identify and describe weather factors that affect prescribed burning, including NOAA and other forecasting tools. [DOK1]
  b. Describe factors that influence timing of a prescribed burn. [DOK1]
  c. Describe regulations and liability associated with prescribed burning. [DOK1]
  d. Compare the different types of prescribed burn methods including backfire, head fire, flank fire, spot fire, and aerial ignition. [DOK2]
  e. Develop a prescribed burn plan that includes notification of appropriate agencies, personnel, and adjacent land owners; a safety evacuation plan; application for burn permit; location of fire breaks; specific burn techniques to be employed; and fire control procedures and equipment to be used. [DOK3]
  f. Conduct a prescribed burn and evaluate the results. [DOK3]

2. Apply fire suppression techniques [DOK2, SAF1, SAF2, SAF3, SAF4, SAF8, SAF10, SAF11, SAF12]
  a. Describe direct and indirect fire suppression techniques including plow lanes and backfires, and direct attack. [DOK1]
  b. Prepare a report on a specific fire in the local area and analyze the procedures used in suppression. [DOK2]

3. Apply insect control techniques. [DOK2, SAF1, SAF2, SAF3, SAF4, SAF8, SAF10, SAF11, SAF12]
  a. Identify common insect pests associated with trees including physical recognition, life cycle, and probable reasons for attack. [DOK2]
  b. Describe control methods and strategies for implementation. [DOK1]

4. Apply disease control methods. [DOK1, SAF1, SAF2, SAF3, SAF4, SAF8, SAF10, SAF11, SAF12]
  a. Identify common diseases associated with trees including recognition/diagnosis of the disease, and life cycle. [DOK1]
  b. Describe control methods and strategies for implementation. [DOK1]

STANDARDS

2010 Standards for Postsecondary Forestry Technology Programs

SAF1   Dendrology
SAF2   Forest Ecology
SAF3   Silviculture

Postsecondary Forestry Technology

SAF4   Protection
SAF8   Woods Safety
SAF10 Multiple Use of Forest Lands
SAF11 Forest Management Practices
SAF12 Principles of Human Resource Management

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

21st Century Skills

CSS1-21st Century Themes
    CS1   Global Awareness

Postsecondary Forestry Technology

CS2   Financial, Economic, Business, and Entrepreneurial Literacy
CS3   Civic Literacy
CS4   Health Literacy
CS5   Environmental Literacy

CSS2-Learning and Innovation Skills
CS6   Creativity and Innovation
CS7   Critical Thinking and Problem Solving
CS8   Communication and Collaboration

CSS3-Information, Media and Technology Skills
CS9   Information Literacy
CS10   Media Literacy
CS11   ICT Literacy

CSS4-Life and Career Skills
CS12   Flexibility and Adaptability
CS13   Initiative and Self-Direction
CS14   Social and Cross-Cultural Skills
CS15   Productivity and Accountability
CS16   Leadership and Responsibility

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Books

U.S. Department of Agriculture. (1990). *Insects and disease of trees in the South.* Washington, DC: Author.

U.S. Department of Agriculture. (1989). *A guide for prescribed fire in Southern forest* (Technical Report No. R8-TP11). Washington, DC: Author.

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University of Georgia Cooperative Extension Service. (2006, August). *Bugwood.* Retrieved January 24, 2011, from the Web site: http://www.bugwood.org/

U.S. Department of Commerce. (2006, October). *National Oceanic and Atmospheric Administration.* Retrieved January 24, 2011, from Web site: www.noaa.gov

Course Name: Forest Products Utilization

Course Abbreviation: FOT 1414

Classification: Career-Technical Elective

Description: A survey of wood and forest products processing operations. Includes instruction in principles related to forest products processing and their applications.
(4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives

1. Describe principles that apply to processing of forest products. [DOK3, SAF1, SAF5, SAF8, SAF9, SAF11, SAF12]
 	
   a. Identify primary and secondary forest product industries. [DOK1]
   b. Describe the microscopic characteristics of wood. [DOK1]
   c. Evaluate the wood-water relationship. [DOK3]
   d. Identify marketing information and factors that determine log and lumber cost. [DOK1]

2. Apply principles of forest products processing. [DOK2, SAF1, SAF5, SAF8, SAF9, SAF11, SAF12]
   a. Grade trees, logs, and lumber. [DOK2]
   b. Compare different methods for treating forest products. [DOK2]
   c. Compare the different processes for kiln drying forest products. [DOK2]

STANDARDS

2010 Standards for Postsecondary Forestry Technology Programs

SAF1   Dendrology
SAF5   Measurement
SAF8   Woods Safety
SAF9   Harvesting Techniques
SAF11 Forest Management Practices
SAF12 Principles of Human Resource Management

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1 Addition of Whole Numbers (no regrouping, regrouping)
M2 Subtraction of Whole Numbers (no regrouping, regrouping)
M3 Multiplication of Whole Numbers (no regrouping, regrouping)

Postsecondary Forestry Technology

M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

21st Century Skills

CSS1-21st Century Themes
    CS1   Global Awareness
    CS2   Financial, Economic, Business, and Entrepreneurial Literacy
    CS3   Civic Literacy
    CS4   Health Literacy
    CS5   Environmental Literacy
CSS2-Learning and Innovation Skills
    CS6   Creativity and Innovation
    CS7   Critical Thinking and Problem Solving
    CS8   Communication and Collaboration
CSS3-Information, Media and Technology Skills
    CS9   Information Literacy
    CS10   Media Literacy
    CS11   ICT Literacy
CSS4-Life and Career Skills
    CS12   Flexibility and Adaptability
    CS13   Initiative and Self-Direction
    CS14   Social and Cross-Cultural Skills
    CS15   Productivity and Accountability

CS16   Leadership and Responsibility

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Books

Haygreen, J. G., & Bowyer, J. L. (2003). *Forest products and wood science* (4th ed.). Ames, IA: Iowa State University Press.

National Hardwood Lumber Association. (2007). *Rules for the measurement and inspection of hardwood and cypress lumber*. Memphis, TN: Author.

Web Sites

The department of wood science and forest products. Retrieved January 24, 2011, from http://www.woodscience.vt.edu/

National hardwood lumber association. Retrieved January 24, 2011, from http://www.nhla.com/

Course Name: Applied Dendrology

Course Abbreviation: FOT 1714

Classification: Career-Technical Core

Description: A study of trees and woody vines including their classification and commercial uses. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives
1. Apply the binomial classification system. (DOK1, SAF1, SAF2, SAF3, SAF5, SAF10, SAF11)   a. Classify forest plant species according to the binomial classification system. (DOK1)
2. Apply site-species relationships. (DOK2, SAF1, SAF2, SAF3, SAF5, SAF10, SAF11)   a. Compare the distribution of trees and woody vines in Mississippi by regions in the state. (DOK2)

3. Identify commercially important tree species. (DOK2, SAF1, SAF2, SAF3, SAF5, SAF10, SAF11)
    a. Identify important tree species in the area, utilizing leaves, buds, bark, and site observations and their uses (economic, esthetic, and recreational). (DOK1)
    b. Compare the relative economic importance of tree species by price for all wood products produced. (DOK2)

STANDARDS

2010 Standards for Postsecondary Forestry Technology Programs

SAF1   Dendrology
SAF2   Forest Ecology
SAF3   Silviculture
SAF5   Measurement
SAF10 Multiple Use of Forest Lands
SAF11 Forest Management Practices

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)

Postsecondary Forestry Technology

M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

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21st Century Skills

CSS1-21st Century Themes
    CS1   Global Awareness
    CS2   Financial, Economic, Business, and Entrepreneurial Literacy
    CS3   Civic Literacy
    CS4   Health Literacy
    CS5   Environmental Literacy
CSS2-Learning and Innovation Skills
    CS6   Creativity and Innovation
    CS7   Critical Thinking and Problem Solving
    CS8   Communication and Collaboration
CSS3-Information, Media and Technology Skills
    CS9   Information Literacy
    CS10   Media Literacy
    CS11   ICT Literacy
CSS4-Life and Career Skills
    CS12   Flexibility and Adaptability
    CS13   Initiative and Self-Direction
    CS14   Social and Cross-Cultural Skills
    CS15   Productivity and Accountability
    CS16   Leadership and Responsibility

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Woody Plants in North America [Computer software]. (2001). Dubuque, IA: Kendall/Hunt.

Web Sites

Auburn University Department of Forestry. (2011). *Trees of Alabama and the Southeast.* Retrieved January 24, 2011, from http://www.forestry.auburn.edu/samuelson/dendrology/

Forest mensuration: Tcruise and SOLO applications. (n.d.). Retrieved January 24, 2011, from http://www.uwsp.edu/forestry/rrogers/tcruise.htm

National Wildlife Federation. (2011). *eNature:American's wildlife resource*. Retrieved January 24, 2011, from http://www.enature.com/home/

United States of Agriculture. (2006). *Silvics of North America.* Retrieved January 24, 2011, from http://www.na.fs.fed.us/Spfo/pubs/silvics_manual/table_of_contents.htm

Virginia Tech. (2011). *Id it.* Retrieved January 24, 2011, from http://www.dendro.cnre.vt.edu/dendrology/main.htm

Course Name: Introduction to Forestry

Course Abbreviation: FOT 1813

Classification: Career-Technical Core

Description: A study of the development of the forest industry in Mississippi and the United States. An exploration of occupational careers in forestry including forest products industries. Includes common terms used in forest occupations. (3 sch: 3 hr. lecture)

Prerequisites: None

Competencies and Suggested Objectives

1. Trace the development of forestry in Mississippi and in the United States. [DOK1, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12]
 	
   a. Identify major events and people which have influenced the development of forest policy and legislation in Mississippi and in the United States. [DOK1]
   b. Identify and describe practices and techniques in forestry. [DOK1]

2. Explore educational and career opportunities in forestry and the forest products industries. [DOK1, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12]
 	
   a. Identify career opportunities in public and private sectors. [DOK1]
   b. Identify opportunities for continuing education in forestry. [DOK1].
   c. Investigate requirements for different job opportunities including education, working conditions, salaries/wages, and potential for advancement. [DOK1]

3. Apply common terminology used in forest occupations. [DOK1, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12]   a. Define and apply standard forestry terms. [DOK1]

STANDARDS

2010 Standards for Postsecondary Forestry Technology Programs

SAF1   Dendrology
SAF2   Forest Ecology
SAF3   Silviculture
SAF4   Protection
SAF5   Measurement
SAF6   Land Surveying
SAF7   Aerial Photo Interpretation
SAF8   Woods Safety
SAF9   Harvesting Techniques
SAF10 Multiple Use of Forest Lands
SAF11 Forest Management Practices
SAF12 Principles of Human Resource Management

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

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21st Century Skills

CSS1-21st Century Themes
    CS1   Global Awareness
    CS2   Financial, Economic, Business, and Entrepreneurial Literacy
    CS3   Civic Literacy
    CS4   Health Literacy
    CS5   Environmental Literacy
CSS2-Learning and Innovation Skills
    CS6   Creativity and Innovation

CS7   Critical Thinking and Problem Solving
CS8   Communication and Collaboration
CSS3-Information, Media and Technology Skills
CS9   Information Literacy
CS10   Media Literacy
CS11   ICT Literacy
CSS4-Life and Career Skills
CS12   Flexibility and Adaptability
CS13   Initiative and Self-Direction
CS14   Social and Cross-Cultural Skills
CS15   Productivity and Accountability
CS16   Leadership and Responsibility

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American Tree Farm System. (n.d.). *Tree farmer, the practical guide to sustainable forestry.* Washington, DC: Author.

Forest Landowners Association. (n.d.). *Forest landowner's magazine*. Atlanta: Author.

Journal of Forestry. (n.d.). Bethesda, MD: Society of American Foresters.

O'Brien Publications. (n.d.). *Paper age magazine.* Hingham, MA: Author.

Railway Tie Association. (n.d.). *Crossties magazine.* Fayetteville, GA: Author.

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Careers in Forestry. (2005, October). Retrieved from http://www.cfr.msstate.edu/

Mississippi Forestry Association. (n.d.). Retrieved January 24, 2011, from http://msforestry.net/

SAF Career Center. (n.d.). Retrieved January 24, 2011, from http://www.safnet.org/careercenter/index.cfm.

National Urban and Community Forestry Council. (n.d.). Retrieved January 24, 2011from http://www.treelink.org/nucfac/

Course Name: Forest Surveying and Spatial Applications

Course Abbreviation: FOT 2124

Classification: Career-Technical Core

Description: A course to provide land surveying skills required in the forest industry. Includes instruction in interpreting legal descriptions, deeds, maps, and spatial imagery. Includes demonstration of surveying practices and spatial imagery practices and equipment.
(4 sch: 2 hr. lecture, 4 hr. lab) (Formerly Forest Surveying)

Prerequisites: None

Competencies and Suggested Objectives

1. Interpret the legal description of land. [DOK1, SAF5, SAF6, SAF7, SAF8, SAF9, SAF12]
   a. Use the U. S. Public Land survey system to locate and describe a given parcel of land on a map. [DOK1]
   b. Use the U. S. Public Land survey system to write a legal description for a given parcel of land. [DOK1]

2. Locate and interpret land deeds. [DOK3, SAF5, SAF6, SAF7, SAF8, SAF9, SAF12]
   a. Search indices to locate land records. [DOK1]
   b. Trace the chain of title for a given parcel of land over a given period of time (title search). [DOK2]
   c. Interpret land deeds to determine location, ownership, type of conveyance, distances, and directions of boundaries and corners, and other parameters associated with deeds. [DOK3]

3. Interpret maps and spatial imagery. [DOK3, SAF5, SAF6, SAF7, SAF8, SAF9, SAF12]
   a. Interpret topographic maps to determine boundaries and corners, acreage, legal description of land, elevations, and landmarks for a given parcel of land. [DOK3]
   b. Interpret spatial imagery to determine boundaries and corners, acreage, legal description of land, elevations, and landmarks for a given parcel of land. [DOK3]

4. Demonstrate the use of surveying equipment and instruments in forestry technology occupations. [DOK2, SAF5, SAF6, SAF7, SAF8, SAF9, SAF12]   a. Demonstrate use and proper care of surveying instruments and equipment including compasses, transits, global positioning system (GPS) receivers, and distance measuring equipment. [DOK2]

5. Demonstrate surveying practices used in forestry technology occupations. [DOK2, SAF5, SAF6, SAF7, SAF8, SAF9, SAF12]
 	
   a. Locate and mark corners and boundary lines for a given parcel of land. [DOK1]
   b. Demonstrate the use of GPS and distance measuring equipment. [DOK2]

STANDARDS

2010 Standards for Postsecondary Forestry Technology Programs

SAF5 Measurement
SAF6 Land Surveying
SAF7 Aerial Photo Interpretation
SAF8 Woods Safety
SAF9 Harvesting Techniques
SAF12 Principles of Human Resource Management

Related Academic Standards

R1 Interpret Graphic Information (forms, maps, reference sources)
R2 Words in Context (same and opposite meaning)
R3 Recall Information (details, sequence)
R4 Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1 Addition of Whole Numbers (no regrouping, regrouping)
M2 Subtraction of Whole Numbers (no regrouping, regrouping)
M3 Multiplication of Whole Numbers (no regrouping, regrouping)
M4 Division of Whole Numbers (no remainder, remainder)
M5 Decimals (addition, subtraction, multiplication, division)
M6 Fractions (addition, subtraction, multiplication, division)
M7 Integers (addition, subtraction, multiplication, division)
M8 Percents
M9 Algebraic Operations
A1 Numeration (ordering, place value, scientific notation)
A2 Number Theory (ratio, proportion)
A3 Data Interpretation (graph, table, chart, diagram)
A4 Pre-Algebra and Algebra (equations, inequality)
A5 Measurement (money, time, temperature, length, area, volume)
A6 Geometry (angles, Pythagorean theory)
A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8 Estimation (rounding, estimation)
L1 Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2 Sentence Formation (fragments, run-on, clarity)
L3 Paragraph Development (topic sentence, supporting sentence, sequence)
L4 Capitalization (proper noun, titles)
L5 Punctuation (comma, semicolon)
L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1 Vowel (short, long)
S2 Consonant (variant spelling, silent letter)
S3 Structural Unit (root, suffix)

CSS1-21st Century Themes
    CS1   Global Awareness
    CS2   Financial, Economic, Business, and Entrepreneurial Literacy
    CS3   Civic Literacy
    CS4   Health Literacy
    CS5   Environmental Literacy
CSS2-Learning and Innovation Skills
    CS6   Creativity and Innovation
    CS7   Critical Thinking and Problem Solving
    CS8   Communication and Collaboration
CSS3-Information, Media and Technology Skills
    CS9   Information Literacy
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    CS11   ICT Literacy
CSS4-Life and Career Skills
    CS12   Flexibility and Adaptability
    CS13   Initiative and Self-Direction
    CS14   Social and Cross-Cultural Skills
    CS15   Productivity and Accountability
    CS16   Leadership and Responsibility

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Books

Ormsby, T., Napoleon, E., Breslin, P., & Frunzi, N. (1998). *Getting to know ArcView GIS 3.x*. Redlands, CA: ESRI Press.

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ESRI. (n.d.). *Arcinfo* [Computer software]. Redlands, CA: Author.

Maptech. (n.d.). *Terrain Navigator* [Computer software]. Amesbury, MA: Author.

Microsoft Office [Computer software]. (n.d.). Redmond, WA: Microsoft.

New Horizons. (n.d.). Introduction to Topographic Maps (Version 1.2) [Computer software]. Armidale, Australia: Author.

Web Sites

GIS for Forestry. (n.d.). Retrieved January 24, 2011, from http://esri.com/industries/forestry/index.html

Course Name: Advanced GPS/GIS in Forestry

Course Abbreviation: FOT 2214

Classification: Career-Technical Elective

Description: A course that includes use of remote sensing imagery and geographic information systems software in forest operations. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives
1. Explain principles of remote sensing interpretation and application of aerial photos and other remote sensing images. (DOK3, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12)
a. Select project areas for evaluation. (DOK2)
b. Find resources for project area image data. (DOK1)
c. Inspect and process image data of project areas for target information. (DOK3)
d. Explore other resources and methods of remote sensing. (DOK3)
2. Examine the use of the global positioning system and geographic information systems software. (DOK3, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12)
a. Demonstrate the use of the global positioning system to find latitude, longitude, and elevation. (DOK2)
b. Demonstrate the use of the global positioning system to find state plane coordinates. (DOK2)
c. Obtain base station location for differential correction. (DOK2)
d. Record location coordinates for routing and navigation. (DOK1)
e. Process data into X and Y coordinates. (DOK2)
f. Generate tract maps and determine acreage using GIS. (DOK3)

STANDARDS

2010 Standards for Postsecondary Forestry Technology Programs

SAF1   Dendrology
SAF2   Forest Ecology
SAF3   Silviculture
SAF4   Protection
SAF5   Measurement
SAF6   Land Surveying
SAF7   Aerial Photo Interpretation
SAF8   Woods Safety
SAF9   Harvesting Techniques
SAF10 Multiple Use of Forest Lands
SAF11 Forest Management Practices
SAF12 Principles of Human Resource Management

Postsecondary Forestry Technology

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

21ˢᵗ Century Skills

CSS1-21st Century Themes
    CS1   Global Awareness
    CS2   Financial, Economic, Business, and Entrepreneurial Literacy
    CS3   Civic Literacy
    CS4   Health Literacy
    CS5   Environmental Literacy
CSS2-Learning and Innovation Skills

        CS6   Creativity and Innovation
        CS7   Critical Thinking and Problem Solving
        CS8   Communication and Collaboration
CSS3-Information, Media and Technology Skills
        CS9   Information Literacy
        CS10   Media Literacy
        CS11   ICT Literacy
CSS4-Life and Career Skills
        CS12   Flexibility and Adaptability
        CS13   Initiative and Self-Direction
        CS14   Social and Cross-Cultural Skills
        CS15   Productivity and Accountability
        CS16   Leadership and Responsibility

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Microsoft Office [Computer software]. (n.d.). Redmond, WA: Microsoft.

New Horizons. (n.d.). Introduction to Topographic Maps (Version 1.2) [Computer software].
      Armidale, New South Wales, Australia: Author.

Course Name: Timber Harvesting

Course Abbreviation: FOT 2424

Classification: Career-Technical Core

Description: A course dealing with harvesting practices including development of timber harvesting, regulations, harvesting plans, best management practices, and timber contracts (legal terminology). Includes observations of logging operations. (4 sch: 1 hr. lecture, 6 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives
1. Describe timber harvesting equipment and practices used in the southeastern United States. (DOK3, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12)   a. Describe how timber harvesting practices have evolved over time in response to economic, environmental, and regulatory factors. (DOK2)   b. Discuss the use of harvesting equipment including operating costs, advantages, and limitations. (DOK1)   c. Observe equipment in logging operations and prepare a report based on the observations. (DOK3)
2. Identify regulations associated with timber harvesting operations. (DOK1, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12)   a. Describe safety regulations for timber harvesting operations. (DOK1)   b. Describe environmental regulations for timber harvesting operations. (DOK1)
3. Prepare a timber harvesting plan for a given parcel of timber. (DOK3, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12)   a. Identify and describe Best Management Practices (BMP's) for timber harvesting, including minimizing visual and environmental impact. (DOK3)   b. Prepare a logging plan for a given tract of timber to include placement of decks, skid trails and roads, equipment to be used, access to public roads, and BMP's to be used. (DOK2)
4. Interpret a timber sale contract (legal terminology). (DOK3, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12)   a. Identify essential elements of a timber sale contract including owner, location, timber removal period, type of payment, and special considerations. (DOK3)

STANDARDS

2010 Standards for Postsecondary Forestry Technology Programs

SAF1   Dendrology
SAF2   Forest Ecology
SAF3   Silviculture
SAF4   Protection
SAF5   Measurement

Postsecondary Forestry Technology

SAF6   Land Surveying
SAF7   Aerial Photo Interpretation
SAF8   Woods Safety
SAF9   Harvesting Techniques
SAF10 Multiple Use of Forest Lands
SAF11 Forest Management Practices
SAF12 Principles of Human Resource Management

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
S2   Consonant (variant spelling, silent letter)
S3   Structural Unit (root, suffix)

CSS1-21st Century Themes
    CS1   Global Awareness
    CS2   Financial, Economic, Business, and Entrepreneurial Literacy
    CS3   Civic Literacy
    CS4   Health Literacy
    CS5   Environmental Literacy
CSS2-Learning and Innovation Skills
    CS6   Creativity and Innovation
    CS7   Critical Thinking and Problem Solving
    CS8   Communication and Collaboration
CSS3-Information, Media and Technology Skills
    CS9   Information Literacy
    CS10   Media Literacy
    CS11   ICT Literacy
CSS4-Life and Career Skills
    CS12   Flexibility and Adaptability
    CS13   Initiative and Self-Direction
    CS14   Social and Cross-Cultural Skills
    CS15   Productivity and Accountability
    CS16   Leadership and Responsibility

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Mississippi Forestry Commission. (2000). *Best management practices for forestry in Mississippi* (3rd ed.). Jackson, MS: Author.

Stenzel, G., Walbridge, T. A., & Pearce, J. K. (1985). *Logging and pulpwood production* (2nd ed.). New York: Wiley.

Journals

Hatten-Brown Publications. (n.d.). *Southern loggin' times magazine.* Montgomery, AL: Author.

Hatten-Brown Publications. (n.d.). *Timber harvesting magazine*. Montgomery, AL: Author.

Course Name: Silviculture I

Course Abbreviation: FOT 2614

Classification: Career-Technical Core

Description: A course dealing with the growth and development of trees and stands. Includes instruction in principles of tree and stand growth and development, regeneration, and intermediate cuttings. (4 sch: 2 hr. lecture, 4 hr. lab)

Prerequisites: None

Competencies and Suggested Objectives

1. Apply principles of tree physiology (silvics). (DOK1, SAF1, SAF2,S AF3, SAF4, SAF5, SAF6 SAF7,SAF8,SAF9, SAF10, SAF11, SAF12)
 	
    a. Describe the factors that affect growth of individual trees in the forest. (DOK1)
    b. Describe factors that affect the growth and development of forest stands. (DOK1)

2. Apply principles of regeneration and reproductive methods. (DOK3, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12)
 	
    a. Describe procedures for implementing regeneration of timber stands, including natural regeneration and artificial regeneration. (DOK1)
    b. Prepare a regeneration plan for a given parcel of land. (DOK3)

3. Select intermediate cutting procedures for various stands of timber. (DOK3, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6, SAF7, SAF8, SAF9, SAF10, SAF11, SAF12)
 	
    a. Describe the different types of intermediate cuttings to include release cuttings, thinnings, pruning, and salvage. (DOK1)
    b. Select the appropriate intermediate cutting procedure for a given stand of timber. (DOK3)
    c. Select trees for intermediate cutting. (DOK3)

STANDARDS

2010 Standards for Postsecondary Forestry Technology Programs

SAF1   Dendrology
SAF2   Forest Ecology
SAF3   Silviculture
SAF4   Protection
SAF5   Measurement
SAF6   Land Surveying
SAF7   Aerial Photo Interpretation
SAF8   Woods Safety
SAF9   Harvesting Techniques
SAF10 Multiple Use of Forest Lands
SAF11 Forest Management Practices
SAF12 Principles of Human Resource Management

Related Academic Standards

R1   Interpret Graphic Information (forms, maps, reference sources)
R2   Words in Context (same and opposite meaning)
R3   Recall Information (details, sequence)
R4   Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5   Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
M1   Addition of Whole Numbers (no regrouping, regrouping)
M2   Subtraction of Whole Numbers (no regrouping, regrouping)
M3   Multiplication of Whole Numbers (no regrouping, regrouping)
M4   Division of Whole Numbers (no remainder, remainder)
M5   Decimals (addition, subtraction, multiplication, division)
M6   Fractions (addition, subtraction, multiplication, division)
M7   Integers (addition, subtraction, multiplication, division)
M8   Percents
M9   Algebraic Operations
A1   Numeration (ordering, place value, scientific notation)
A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
L4   Capitalization (proper noun, titles)
L5   Punctuation (comma, semicolon)
L6   Writing Conventions (quotation marks, apostrophe, parts of a letter)
S1   Vowel (short, long)
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S3   Structural Unit (root, suffix)

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21ˢᵗ Century Skills

CSS1-21st Century Themes
    CS1   Global Awareness
    CS2   Financial, Economic, Business, and Entrepreneurial Literacy
    CS3   Civic Literacy
    CS4   Health Literacy
    CS5   Environmental Literacy
CSS2-Learning and Innovation Skills
    CS6   Creativity and Innovation

CS7   Critical Thinking and Problem Solving
CS8   Communication and Collaboration
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CS9   Information Literacy
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CS12   Flexibility and Adaptability
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CS14   Social and Cross-Cultural Skills
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CS16   Leadership and Responsibility

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Course Name: Silviculture II

Course Abbreviation: FOT 2624

Classification: Career-Technical Elective

Description: A continuation of Silviculture I with emphasis on site preparation and regeneration practices. (4 sch: 2 hr. lecture; 4 hr. lab)

Prerequisites: Silviculture I

Competencies and Suggested Objectives
1. Apply site preparation practices used in forestry. (DOK3, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6 SAF7, SAF8, SAF9, SAF10, SAF11, SAF12)

a. Describe the different types of site preparation practices used in forestry including prescribed burning, shear and rake, chopping, herbicidal treatments, and planting with herbicide applications. (DOK1)
    b. Compare costs and benefits of each different type of site preparation practice. (DOK2)
    c. Prepare a site preparation plan for a given tract of land to include procedures, budget, timing, acreage treated, and participation in government programs. (DOK3)

2. Apply regeneration practices used in forestry. (DOK2, SAF1, SAF2, SAF3, SAF4, SAF5, SAF6 SAF7, SAF8, SAF9, SAF10, SAF11, SAF12)

a. Describe the advantages and disadvantages of the different types of natural and artificial regeneration practices. (DOK1)
    b. Describe the use of genetically improved seedlings in regeneration. (DOK1)
    c. Describe the different types of planting practices used in artificial regeneration. (DOK1)
    d. Observe and participate in tree planting activities and inspections. (DOK2)
    e. Describe the process of genetic tree improvement. (DOK1)

STANDARDS

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A2   Number Theory (ratio, proportion)
A3   Data Interpretation (graph, table, chart, diagram)
A4   Pre-Algebra and Algebra (equations, inequality)
A5   Measurement (money, time, temperature, length, area, volume)
A6   Geometry (angles, Pythagorean theory)
A7   Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8   Estimation (rounding, estimation)
L1   Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2   Sentence Formation (fragments, run-on, clarity)
L3   Paragraph Development (topic sentence, supporting sentence, sequence)
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   CS6   Creativity and Innovation

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CS13   Initiative and Self-Direction
CS14   Social and Cross-Cultural Skills
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Books

Baker, J. B., & Broadfoot, W. M. (1984). *Site evaluation for commercially important Southern hardwood* (Tech Rep. SO-26)*.* Washington, DC: USDA.

Nyland, R. D. (2002). *Silviculture: Concepts and applications*. Boston: McGraw-Hill.

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Soil Survey Staff. (1993). *County soil survey manual.* Washington, DC: USDA.

USDA Forest Service. (1996). *A guide to the care and planting of Southern pine seedlings*. Washington, DC: Author.

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Mississippi State University. (n.d.). *MSU cares: Coordinated access to the research and extension system.* Retrieved January 24, 2011from http://msucares.com

Monsanto. (2011). *Monsanto image.* Retrieved January 24, 2011, from http://www.monsanto.com

Course Name: Special Problem in Forestry Technology

Course Abbreviation: FOT 291(1-6)

Classification: Career-Technical Elective

Description: A course designed to provide the student with practical application of skills and knowledge gained in other Forest Technology courses. The instructor works closely with the student to insure that the selection of a project will enhance the student's learning experience. (1-6 sch: 2-6 hr. lab)

Prerequisites: Minimum of 12 sch Forestry Technology related courses or consent of instructor

Competencies and Suggested Objectives

1. Develop a written plan which details the activities and projects to be completed.
   a. Use a written plan which details the activities and projects to be completed.
   b. Perform written occupational objectives in the special problem.

2. Assess accomplishment of objectives.
   a. Prepare daily written assessments of accomplishment of objectives.
   b. Present weekly written reports to the instructor of activities performed and objectives accomplished.

3. Use and follow a set of written guidelines for the special problem.   a. Develop and follow a set of written guidelines for the special problem.

STANDARDS

Specific standards and DOK Level of competence for this course will depend upon the nature of the problem under investigation.

SUGGESTED REFERENCES

Specific references for use in this course will depend upon the nature of the problem under investigation.

Course Name: Supervised Work Experience in Forestry Technology

Course Abbreviation: FOT 292(1-6)

Classification: Career-Technical Elective

Description: A course which is a cooperative program involving students, employers, and educational staff and is designed to integrate the student's technical studies with real world situations. Variable credit is awarded on the basis of one semester hour per 45 contact hours. (1-6 sch: 3-18 hr. externship)

Prerequisite: Consent of instructor and completion of at least one semester of advanced coursework in Forestry Technology.

Competencies and Suggested Objectives
1. Follow a set of instructor-written guidelines for the supervised work experience program.

2. Apply skills needed to be a viable member of the workforce.
    a. Prepare a description of skills to be developed in the supervised work experience program.
    b. Practice skills needed to be a viable member of the workforce.

3. Practice human relationship skills in the supervised work experience program.
4. Practice positive work habits, responsibilities, and ethics.
5. Develop written occupational objectives in the supervised work experience program.

6. Assess performance of occupational skills.
    a. Prepare daily written assessments of work performance as specified in the occupational objectives.
    b. Present weekly written reports to the instructor of activities performed and objectives accomplished.

STANDARDS

Specific standards and DOK Level of competence for this course will depend upon the nature of the problem under investigation.

SUGGESTED REFERENCES

Specific references for use in this course will depend upon the nature of the problem under investigation.

Course Name: Special Problem in Conservation Law

Course Abbreviation: FOT 294 (1-6)

Classification: Career-Technical Elective

Description: A course designed to provide the student with practical application of skills and knowledge gained in other Conservation Law courses. The instructor works closely with the student to insure that the selection of a project will enhance the student's learning experience. (1-6 sch: 2-6 hr. lab)

Prerequisites: Minimum of 12 sch Forestry Technology/ Conservation Law related courses or consent of instructor

Competencies and Suggested Objectives

1. Develop a written plan which details the activities and projects to be completed.
   a. Use a written plan which details the activities and projects to be completed.
   b. Perform written occupational objectives in the special problem.

2. Assess accomplishment of objectives.
   a. Prepare daily written assessments of accomplishment of objectives.
   b. Present weekly written reports to the instructor of activities performed and objectives accomplished.

3. Use and follow a set of written guidelines for the special problem.   a. Develop and follow a set of written guidelines for the special problem.

STANDARDS

Specific standards and DOK Level of competence for this course will depend upon the nature of the problem under investigation.

SUGGESTED REFERENCES

Specific references for use in this course will depend upon the nature of the problem under investigation.

Course Name: Work-Based Learning I, II, III, IV, V, and VI

Course Abbreviation: WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)

Classification: Free Elective

Description: A structured work-site learning experience in which the student, program area teacher, Work-Based Learning Coordinator, and worksite supervisor/mentor develop and implement an educational training agreement. Designed to integrate the student's academic and technical skills into a work environment. May include regular meetings and seminars with school personnel and employers for supplemental instruction and progress reviews.
(1-3 sch: 3-9 hours externship)

Prerequisite: Concurrent enrollment in career-technical program area courses

Competencies and Suggested Objectives

1. Apply technical skills and related academic knowledge needed to be a viable member of the workforce.
    a. Demonstrate technical skills necessary to complete job requirements.
    b. Demonstrate academic skills necessary to complete job requirements.
    c. Perform tasks detailed in an educational training agreement at the work setting.

2. Apply general workplace skills to include positive work habits necessary for successful employment.
    a. Demonstrate appropriate human relationship skills in the work setting to include conflict resolution, team participation, leadership, negotiation, and customer/client service.
    b. Utilize time, materials, and resource management skills.
    c. Use critical thinking skills such as problem solving, decision making, and reasoning.
    d. Acquire, evaluate, organize, maintain, interpret, and communicate information.

STANDARDS

Specific standards and DOK Level of competence for this course will depend upon the nature of the problem under investigation.

SUGGESTED REFERENCES

Specific references for this course will depend upon the nature of the problem under investigation.

Recommended Tools and Equipment

CAPITALIZED ITEMS

1. GPS unit (1 per 4 students)
2. Hand-held 2-way radio (1 per 4 students)
3. HAGLOF Distance Measuring Device (1 per 4 students)
4. HAGLOF Vertex (1 per 4 students)
5. Field data recorder (1 per program)
6. Laptop computer to military specs, with accessories (1 per teacher)
7. Microcomputer with CD-ROM (1 per student)
8. Microcomputer laser printer (networked) (1 per network)
9. Digitizing tablet for computer (1 per program)
10. Electronic distance measure unit (1 per 10 students)

NON-CAPITALIZED ITEMS

1. Map light table (2 per program)
2. Diameter tape (1 per 3 students)
3. Clinometer (1 per 3 students)
4. Loggers tape (1 per 3 students)
5. Prism (1 per 3 students)
6. Tally book (1 per 3 students)
7. Compass (1 per 3 students)
8. Cruiser's vest or field bag (1 per 3 students)
9. Surveyor's transit with stadia (1 per 10 students)
10. Staff compass (1 per 10 students)
11. Range pole (1 per 10 students)
12. Gunter's chain (1 per 10 students)
13. Chain pins (1 bundle per 10 students)
14. Tree marking devices (1 per 2 students)
15. Increment borer (1 per 2 students)
16. Bark gauge (1 per 2 students)
17. Hard hats (1 per student)
18. Snake leggings (1 per student)
19. Safety glasses or goggles (1 per student)
20. Ear plugs or muffs (1 per student)
21. First aid kit (1 per 10 students)
22. Drip torch (1 per 10 students)
23. Backpack water pump (1 per 5 students)
24. Fire rake (1 per 5 students)
25. Fire flap (1 per 5 students)
26. Fire axe (1 per 5 students)
27. Round point shovel (1 per 5 students)
28. Wind speed detector (1 per 1 program)
29. Fire weather kit (1 per program)

30. Lumber rules (1 per student)
31. Moisture meter (1 per 5 students)
32. Tree injector (1 per 5 students)
33. Tree planting bar (1 per 5 students)
34. Hoe-dad planter (1 per 5 students)
35. Tree planting bag (1 per 5 students)

RECOMMENDED INSTRUCTIONAL AIDS

It is recommended that instructors have access to the following items:

1. Microcomputer integrated software package (word processing, spreadsheet and data base)
2. Digitizing software package
3. Timber cruising software package
4. GPS mapping system software
5. Wood identification kit
6. Video camera/recorder
7. TV/monitor and VCR/DVD player
8. Cart, AV (for use with TV monitor and VCR/DVD)
9. Digital camera
10. LED projector

Appendix A: Standards for Postsecondary Forestry Technology Programs[1]

The following standards were adopted from *Standards and Procedures for Recognizing Educational Programs in Forest Technology*, as published on the Society of American Foresters Web site. For more information on certification of postsecondary Forestry Technology programs, see the Society's Web site at http://www.safnet.org/education/techaccstd082409.doc

Abbreviation	Description
SAF1	Dendrology: Field identification of regionally important species by leaves, twigs, bark, and fruit characteristics; knowledge of family, genus, and species of each specimen; knowledge of species association and succession; knowledge of the major commercial trees in North America and their uses; understanding of the use of dichotomous keys.
SAF2	Forest Ecology: Plant succession; site; soils; silvics; environmental protection; weather and climate influences; relations of trees to other organisms; biodiversity; ecosystems.
SAF3	Silviculture: Methods of regeneration; site preparation; planting practices; intermediate treatments; nursery practice; seed orchards; pesticide use and application; prescribed burning; pre-commercial thinning; commercial thinning; and harvest cutting.
SAF4	Protection: Fire management; regional problems and control of insects, diseases, and animal damage; threats to forest health.
SAF5	Measurement: Forest measuring equipment; log scaling practices; forest product measurement; sampling statistics; cruising and inventory techniques; log rules and volume tables; log and tree grading; growth measurement; computer applications and usage.
SAF6	Land Surveying: Hand compass; surveying equipment and procedures; pacing and chaining; map reading; deed and title search; land descriptions; computer mapping; global positioning systems (GPS); geographic information systems.
SAF7	Aerial Photo Interpretation: Set up stereo for viewing; scale; height measurement; type mapping; road location; bearings and distances; area determination; identification and interpretation.

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[1] Society of American Foresters. (2010). *Standards and Procedures for Recognizing Educational Programs in Forest Technology.* Retrieved January 11, 2011, from www.**safnet.org**/education/techaccstd082409.doc

SAF8   Woods Safety: Basic first aid; identification of hazards; hand and power tool safety, pesticide/herbicide safety.

SAF9   Harvesting Techniques: Harvesting systems; cost analysis; logging plans; wood identification; wood products; road layout and construction; best management practices (BMP's).

SAF10   Multiple Use of Forest Lands: Wildlife; fish habitat; recreation; wilderness; watershed; timber; range; minerals; public conflicts and public participation.

SAF11   Forest Management Practices: Timber appraisal; contracts; forest management principles; principles of ecosystem (landscape) based management; regional forest management regulations; sustainable forest management concepts/certification; record keeping and basic accounting.

SAF12   Principles of Human Resource Management: Human behavior; groups, individuals; motivation; leadership; team building and dynamics; planning; decision-making; rating and evaluation; controlling the workforce; conflict resolution; and ethics.

Appendix B: Related Academic Standards[2]

<u>Reading</u>
R1 Interpret Graphic Information (forms, maps, reference sources)
R2 Words in Context (same and opposite meaning)
R3 Recall Information (details, sequence)
R4 Construct Meaning (main idea, summary/paraphrase, compare/contrast, cause/effect)
R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)

<u>Mathematics Computation</u>
M1 Addition of Whole Numbers (no regrouping, regrouping)
M2 Subtraction of Whole Numbers (no regrouping, regrouping)
M3 Multiplication of Whole Numbers (no regrouping, regrouping)
M4 Division of Whole Numbers (no remainder, remainder)
M5 Decimals (addition, subtraction, multiplication, division)
M6 Fractions (addition, subtraction, multiplication, division)
M7 Integers (addition, subtraction, multiplication, division)
M8 Percents
M9 Algebraic Operations

<u>Applied Mathematics</u>
A1 Numeration (ordering, place value, scientific notation)
A2 Number Theory (ratio, proportion)
A3 Data Interpretation (graph, table, chart, diagram)
A4 Pre-Algebra and Algebra (equations, inequality)
A5 Measurement (money, time, temperature, length, area, volume)
A6 Geometry (angles, Pythagorean theory)
A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
A8 Estimation (rounding, estimation)

<u>Language</u>
L1 Usage (pronoun, tense, subject/verb agreement, adjective, adverb)
L2 Sentence Formation (fragments, run-on, clarity)
L3 Paragraph Development (topic sentence, supporting sentence, sequence)
L4 Capitalization (proper noun, titles)
L5 Punctuation (comma, semicolon)
L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)

<u>Spelling</u>
S1 Vowel (short, long)
S2 Consonant (variant spelling, silent letter)
S3 Structural Unit (root, suffix)

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[2] CTB/McGraw-Hill LLC. (2005). *Tests of adult basic education, Forms 9 and 10.* Monterey, CA: Author. Reproduced with permission of CTB/McGraw-Hill LLC. TABE is a registered trademark of The McGraw-Hill Companies, Inc. Copyright © 2005 by CTB/McGraw-Hill LLC. Reproduction of this material is permitted for educational purposes only.

Appendix C: 21st Century Skills[3]

CSS1-21st Century Themes
CS1   Global Awareness
   1. Using 21st century skills to understand and address global issues
   2. Learning from and working collaboratively with individuals representing diverse cultures, religions and lifestyles in a spirit of mutual respect and open dialogue in personal, work and community contexts
   3. Understanding other nations and cultures, including the use of non-English languages

CS2   Financial, Economic, Business and Entrepreneurial Literacy
   1. Knowing how to make appropriate personal economic choices
   2. Understanding the role of the economy in society
   3. Using entrepreneurial skills to enhance workplace productivity and career options

CS3   Civic Literacy
   1. Participating effectively in civic life through knowing how to stay informed and understanding governmental processes
   2. Exercising the rights and obligations of citizenship at local, state, national and global levels
   3. Understanding the local and global implications of civic decisions

CS4   Health Literacy
   1. Obtaining, interpreting and understanding basic health information and services and using such information and services in ways that enhance health
   2. Understanding preventive physical and mental health measures, including proper diet, nutrition, exercise, risk avoidance and stress reduction
   3. Using available information to make appropriate health-related decisions
   4. Establishing and monitoring personal and family health goals
   5. Understanding national and international public health and safety issues

CS5   Environmental Literacy
   1. Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water and ecosystems
   2. Demonstrate knowledge and understanding of society's impact on the natural world (e.g., population growth, population development, resource consumption rate, etc.)
   3. Investigate and analyze environmental issues, and make accurate conclusions about effective solutions
   4. Take individual and collective action towards addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues)

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[3] *21st century skills.* (n.d.). Washington, DC: Partnership for 21st Century Skills.

CSS2-Learning and Innovation Skills
    CS6   **Creativity and Innovation**
        1.   Think Creatively
        2.   Work Creatively with Others
        3.   Implement Innovations
    CS7   **Critical Thinking and Problem Solving**
        1.   Reason Effectively
        2.   Use Systems Thinking
        3.   Make Judgments and Decisions
        4.   Solve Problems
    CS8   **Communication and Collaboration**
        1.   Communicate Clearly
        2.   Collaborate with Others

CSS3-Information, Media and Technology Skills
    CS9   **Information Literacy**
        1.   Access and Evaluate Information
        2.   Use and Manage Information
    CS10 **Media Literacy**
        1.   Analyze Media
        2.   Create Media Products
    CS11 **ICT Literacy**
        1.   Apply Technology Effectively

CSS4-Life and Career Skills
    CS12 **Flexibility and Adaptability**
        1.   Adapt to change
        2.   Be Flexible
    CS13 **Initiative and Self-Direction**
        1.   Manage Goals and Time
        2.   Work Independently
        3.   Be Self-directed Learners
    CS14 **Social and Cross-Cultural Skills**
        1.   Interact Effectively with Others
        2.   Work Effectively in Diverse Teams
    CS15 **Productivity and Accountability**
        1.   Manage Projects
        2.   Produce Results
    CS16 **Leadership and Responsibility**
        1.   Guide and Lead Others
        2.   Be Responsible to Others