Implementation Date
Fall 2008

PROGRAM CONCENTRATION: Agriculture
CAREER PATHWAY: Forestry and Natural Resources
COURSE TITLE: Forest Science

This course provides entry-level skills for employment in the forest industry and for further study. The course covers establishing forests by natural and artificial means, maintaining and surveying forests, identifying and protecting trees, practicing silviculture, measuring trees and land, mapping, preparing for timber sales and harvest, employing multiple-use resource management, keeping records, and figuring taxes. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.

AG-FS-1. Students will become oriented to the comprehensive program of agricultural education, learn to work safely in the agriculture lab and work sites, demonstrate selected competencies in leadership through the FFA and agricultural industry organizations, and develop plans for a supervised agricultural experience (SAE) program.

a. Explain the role of the Agriculture Education program and the FFA in personal development.
b. Demonstrate knowledge learned through a Supervised Agricultural Experience (SAE) program.
c. Develop leadership and personal development skills through participation in the FFA.
d. Explore career opportunities in agriscience through the FFA and Agriculture Education Program.
e. Explore the professional agricultural organizations associated with the course content.

Academic Standards:

ELA10C1. The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

ELA9RL5. The student researches the life of a particular person as it is represented in a variety of texts.

SCSh9. Students will enhance reading in all curriculum areas.

ELA10LSV1 (d). Actively solicits another person's comments or opinion. (e) Offers own opinion forcefully without domineering.

ELA10LSV1 (i). Employs group decision-making techniques such as brainstorming

or a problem-solving sequence (e.g., recognizes problem, defines problem, identifies possible solutions, selects optimal solution, implements solution, evaluates solution).

ELA10LSV1 (e). Offers own opinion forcefully without domineering; (f) Contributes voluntarily and responds directly when solicited by teacher or discussion leader; (g) Gives reasons in support of opinions expressed.

AG-FS-2. Students will evaluate human needs and demonstrate the role of forestry in meeting the needs of humans historically, currently and in the future.

a. Define terms used in forestry.
b. Describe, identify, and understand the major components found within the definition of forestry.
c. List the employment opportunities in forestry.
d. Describe the educational requirements for forestry employment.
e. List and describe forest products.
f. List and describe the benefits of the forest.
g. Discuss historical events related to forestry in the United States and Georgia.

Academic Standards:

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

ELA9LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

ELA9RL5. The student researches the life of a particular person as it is represented in a variety of texts

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh9. Students will enhance reading in all curriculum areas.

SSEF5. The student will describe the roles of government in a market economy.

AG-FS-3. Students will identify potential hazards in forestry and identify procedures for first-aid and safety.

a. Describe terms relative to forest safety.

b. Describe and identify environmental hazards in the forest.
c. Conduct themselves in a safe manner while in the forest.
d. Identify stinging insects in Georgia forests.
e. Identify the two (2) most venomous spiders in Georgia.
f. Identify the four (4) most venomous snakes in Georgia.
g. Identify three (3) poisonous plants in Georgia.
h. Demonstrate an understanding of first aid techniques and materials.

Academic Standards:

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

ELA9LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh9. Students will enhance reading in all curriculum areas.

AG-FS-4. Students will identify trees and explain their environmental and economic value.

a. Identify and describe the structure and functions of tree parts.
b. Describe the physiological processes of tree growth.
c. Explain the differences between Angiosperms and Gymnosperms.
d. Identify and classify common tree species.
e. Identify the economic and environmental value of common tree species.

Academic Standards:

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

ELA9LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

SSEMI2. The student will explain how the Law of Demand, the Law of Supply,

prices, and profits work to determine production and distribution in a market economy.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh9. Students will enhance reading in all curriculum areas.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

AG-FS-5. Students will develop an understanding of the role of fire in a forest environment.

a. Describe the types, causes, effects, and prevention of wildfires.
b. Identify and explain pre-suppression techniques for wildfires.
c. Explain how air movement, topography, and fuel types affect fire behavior.
d. Analyze, plan, and evaluate a prescribed fire.

Academic Standards:

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

ELA9LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh9. Students will enhance reading in all curriculum areas.

AG-FS-6. Students will demonstrate an understanding of forest regeneration principles and practices.

a. Explain the advantages and disadvantages of natural and artificial regeneration for pine and hardwoods.
b. Select the proper species, site, and spacing of trees for maximum growth and yield.
c. Identify the procedure to follow when ordering seedlings.
d. Determine the optimum planting date for specific sites and explain how to handle and store the seedling properly.

e. Demonstrate the proper planting procedure.
f. Evaluate the results of planting.

Academic Standards:

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

ELA9LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh9. Students will enhance reading in all curriculum areas.

AG-FS-7. Students will demonstrate the knowledge and skills necessary to evaluate and regulate timber stand growth for various forest objectives.

a. Identify and prescribe major silvicultural practices for managing timber stand growth.
b. Identify and prescribe harvesting practices for forest management.

Academic Standards:

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

ELA9LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh9. Students will enhance reading in all curriculum areas.

AG-FS-8. Students will demonstrate standard industry forest measurement methods used for forest product inventory.

a. Define common forest measurement terms.
b. Identify and demonstrate the use of forest measurement tools.
c. Draw tally symbols and utilize symbols properly in forest measurement.
d. Determine forest product classification.
e. Utilize basic concepts for timber cruising and determine timber volumes.
f. Determine direction, compare azimuths and bearings, and adjust compass declination.

Academic Standards:

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

ELA9LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh9. Students will enhance reading in all curriculum areas.

SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.

MM1A3. Students will solve simple equations.

MMIGI. Students will investigate properties of geometric figures in the coordinate plane.

MMIG3. Students will discover, prove, and apply properties of triangles, quadrilaterals, and other polygons.

MM1P4. Students will make connections among mathematical ideas and to other disciplines.

MM1P1. Students will solve problems (using appropriate technology).

MM2G1. Students will identify and use special right triangles.

MM1P3. Students will communicate mathematically.

MM1P5. Students will represent mathematics in multiple ways.

Implementation Date
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AG-FS-9. Students will identify methods of controlling undesirable forest tree species based upon prescribed forest management objectives.

a. Define and identify undesirable forest species.
b. Describe and explain environmental factors, required conditions, and physical and mechanical factors affecting control of undesirable species.
c. Explain the types of forest herbicides and describe application methods.

Academic Standards:

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

ELA9LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh9. Students will enhance reading in all curriculum areas.

AG-FS-10. Students will identify and classify forest disorders and prescribe methods of control.

a. Describe the economic losses attributed by insects and diseases.
b. Describe which stages of development affect insects and diseases.
c. Explain the most important insects and diseases that affect pines.
d. Explain why outbreaks vary in size, frequency, and duration.
e. Identify common forest insects and describe their life cycles and control.
f. Identify common forest diseases, describe life cycles, and recommend control practices.

Academic Standards:

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

ELA9LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh9. Students will enhance reading in all curriculum areas.

AG-FS-11. Students will define financial terms and describe concepts and strategies used in marketing forest products.

a. Define financial terms related to forest resources.
b. Compute forest values and simple and compound interest.
c. Identify factors affecting forest land cost.
d. Describe methods of marketing and selling timber.
e. Explain the basics concepts of bids and written sale contracts.
f. Develop an understanding of alternative forest income.

Academic Standards:

ELA9LSV1. The student participates in student-to-teacher, student-to-student, and group verbal interactions.

ELA9LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

SCSh9. Students will enhance reading in all curriculum areas.

SSEM12. The student will explain how the Law of Demand, the Law of Supply, prices, and profits work to determine production and distribution in a market economy.

CTAE Foundation Skills

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U. S. Department of

Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

CTAE-FS-1 Technical Skills: Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

CTAE-FS-2 Academic Foundations: Learners achieve state academic standards at or above grade level.

CTAE-FS-3 Communications: Learners use various communication skills in expressing and interpreting information.

CTAE-FS-4 Problem Solving and Critical Thinking: Learners define and solve problems, and use problem-solving and improvement methods and tools.

CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

CTAE-FS-6 Systems: Learners understand a variety of organizational structures and functions.

CTAE-FS-7 Safety, Health and Environment: Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

CTAE-FS-8 Leadership and Teamwork: Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

CTAE-FS-9 Ethics and Legal Responsibilities: Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

CTAE-FS-10 Career Development: Learners plan and manage

academic-career plans and employment relations.

CTAE-FS-11 Entrepreneurship: Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.