

**Agriculture, Food & Natural Resources Career Cluster**  
**Forest Science**  
**Course Number 03.45100**

**Course Description**

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.

**Course Standard 1**

**AFNR-FS-1**

The following standard is included in all CTAE courses adopted for the Career Cluster/Pathways. Teachers should incorporate the elements of this standard into lesson plans during the course. The topics listed for each element of the standard may be addressed in differentiated instruction matching the content of each course. These elements may also be addressed with specific lessons from a variety of resources. This content is not to be treated as a unit or separate body of knowledge but rather integrated into class activities as applications of the concept.

**Standard: Demonstrate employability skills required by business and industry.**

The following elements should be integrated throughout the content of this course.

**1.1 Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.**

Person-to-Person Etiquette	Telephone and Email Etiquette	Cell Phone and Internet Etiquette	Communicating At Work	Listening
Interacting with Your Boss	Telephone Conversations	Using Blogs	Improving Communication Skills	Reasons, Benefits, and Barriers
Interacting with Subordinates	Barriers to Phone conversations	Using Social Media	Effective Oral Communication	Listening Strategies
Interacting with Co-workers	Making and Returning Calls		Effective Written Communication	Ways We Filter What We Hear
Interacting with Suppliers	Making Cold Calls		Effective Nonverbal Skills	Developing a Listening Attitude
	Handling Conference Calls		Effective Word Use	Show You Are Listening
	Handling Unsolicited Calls		Giving and Receiving Feedback	Asking Questions
				Obtaining Feedback
				Getting Others to Listen

Nonverbal Communication	Written Communication	Speaking	Applications and Effective Résumés
Communicating Nonverbally	Writing Documents	Using Language Carefully	Completing a Job Application
Reading Body Language and mixed Messages	Constructive Criticism in Writing	One-on-One Conversations	Writing a Cover Letter
Matching Verbal and Nonverbal communication		Small Group Communication	Things to Include in a Résumé
Improving Nonverbal Indicators		Large Group Communication	Selling Yourself in a Résumé

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Nonverbal Feedback		Making Speeches	Terms to Use in a Résumé
Showing Confidence Nonverbally		Involving the Audience	Describing Your Job Strengths
Showing Assertiveness		Answering Questions	Organizing Your Résumé
		Visual and Media Aids	Writing an Electronic Résumé
		Errors in Presentation	Dressing Up Your Résumé

### 1.2 Demonstrate creativity by asking challenging questions and applying innovative procedures and methods.

Teamwork and Problem Solving	Meeting Etiquette
Thinking Creatively	Preparation and Participation in Meetings
Taking Risks	Conducting Two-Person or Large Group Meetings
Building Team Communication	Inviting and Introducing Speakers
	Facilitating Discussions and Closing
	Preparing Visual Aids
	Virtual Meetings

### 1.3 Exhibit critical thinking and problem solving skills to locate, analyze and apply information in career planning and employment situations.

Problem Solving	Customer Service	The Application Process	Interviewing Skills	Finding the Right Job
Transferable Job Skills	Gaining Trust and Interacting with Customers	Providing Information, Accuracy and Double Checking	Preparing for an Interview	Locating Jobs and Networking
Becoming a Problem Solver	Learning and Giving Customers What They Want	Online Application Process	Questions to Ask in an Interview	Job Shopping Online
Identifying a Problem	Keeping Customers Coming Back	Following Up After Submitting an Application	Things to Include in a Career Portfolio	Job Search Websites
Becoming a Critical Thinker	Seeing the Customer's Point	Effective Résumés:	Traits Employers are Seeking	Participation in Job Fairs
Managing	Selling Yourself and the Company	Matching Your Talents to a Job	Considerations Before Taking a Job	Searching the Classified Ads
	Handling Customer Complaints	When a Résumé Should be Used		Using Employment Agencies
	Strategies for Customer Service			Landing an Internship
				Staying Motivated to Search

### 1.4 Model work readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity.

Workplace Ethics	Personal Characteristics	Employer Expectations	Business Etiquette	Communicating at Work
Demonstrating Good Work Ethic	Demonstrating a Good Attitude	Behaviors Employers Expect	Language and Behavior	Handling Anger
Behaving Appropriately	Gaining and Showing Respect	Objectionable Behaviors	Keeping Information Confidential	Dealing with Difficult Coworkers
Maintaining Honesty	Demonstrating Responsibility	Establishing Credibility	Avoiding Gossip	Dealing with a Difficult Boss
Playing Fair	Showing Dependability	Demonstrating Your Skills	Appropriate Work Email	Dealing with Difficult Customers
Using Ethical Language	Being Courteous	Building Work Relationships	Cell Phone Etiquette	Dealing with Conflict

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Showing Responsibility	Gaining Coworkers' Trust		Appropriate Work Texting	
Reducing Harassment	Persevering		Understanding Copyright	
Respecting Diversity	Handling Criticism		Social Networking	
Making Truthfulness a Habit	Showing Professionalism			
Leaving a Job Ethically				

### 1.5 Apply the appropriate skill sets to be productive in a changing, technological, diverse workplace to be able to work independently and apply team work skills.

Expected Work Traits	Teamwork	Time Management
Demonstrating Responsibility	Teamwork Skills	Managing Time
Dealing with Information Overload	Reasons Companies Use Teams	Putting First Things First
Transferable Job Skills	Decisions Teams Make	Juggling Many Priorities
Managing Change	Team Responsibilities	Overcoming Procrastination
Adopting a New Technology	Problems That Affect Teams	Organizing Workspace and Tasks
	Expressing Yourself on a Team	Staying Organized
	Giving and Receiving Constructive Criticism	Finding More Time
		Managing Projects
		Prioritizing Personal and Work Life

### 1.6 Present a professional image through appearance, behavior and language.

On-the-Job Etiquette	Person-to-Person Etiquette	Communication Etiquette	Presenting Yourself
Using Professional Manners	Meeting Business Acquaintances	Creating a Good Impression	Looking Professional
Introducing People	Meeting People for the First Time	Keeping Phone Calls Professional	Dressing for Success
Appropriate Dress	Showing Politeness	Proper Use of Work Email	Showing a Professional Attitude
Business Meal Functions		Proper Use of Cell Phone	Using Good Posture
Behavior at Work Parties		Proper Use in Texting	Presenting Yourself to Associates
Behavior at Conventions			Accepting Criticism
International Etiquette			Demonstrating Leadership
Cross-Cultural Etiquette			
Working in a Cubicle			

### Support of CTAE Foundation Course Standards and Georgia Standards of Excellence L9-10RST 1-10 and L9-10WHST 1-10:

Georgia Standards of Excellence ELA/Literacy standards have been written specifically for technical subjects and have been adopted as part of the official standards for all CTAE courses.

## Course Standard 2

### AFNR-FS-2

**Orient and apply the comprehensive program of agricultural education, learn to work safely in the agricultural lab and work sites, demonstrate selected competencies in leadership through the FFA and agricultural industry organizations, and develop plans for a Supervised Agricultural Experience Program (SAEP).**

- 2.1 Summarize the role of the Agricultural Education program and the FFA in personal development.
- 2.2 Illustrate the relationship of the FFA within the Agricultural Education model and describe the role and function of the organizational structure from the chapter to national level.
- 2.3 Interpret basic FFA information such as the emblem, colors, motto, mission, salute, behavior and official dress.
- 2.4 Demonstrate communication skills individually and within group situations by using public speaking skills and parliamentary procedure abilities.
- 2.5 Design personal leadership plan that includes opportunities for personal development through student, chapter, and community related activities.

## Course Standard 3

### AFNR-FS-3

**Evaluate human needs and demonstrate the role of forestry in meeting the needs of humans historically, currently, and in the future.**

- 3.1 Differentiate between renewable and nonrenewable natural resources.
- 3.2 Research the employment opportunities in the forestry industry.
- 3.3 Identify products made from trees.
- 3.4 Discuss historical events related to forestry in the United States.

## Course Standard 4

### AFNR-FS-4

**Recognize potential hazards in forestry and identify procedures for first-aid and safety.**

- 4.1 Identify hazards associated with the outdoor environment.
- 4.2 Demonstrate safety practices when working in an outdoor environment.
- 4.3 Demonstrate appropriate responses to accidents and injuries that occur in an outdoor environment.
- 4.4 Differentiate between stinging insects and beneficial insects in Georgia forests and discuss examples of each type.
- 4.5 Describe techniques used to manage pests of forest plants.
- 4.6 Differentiate between venomous spiders and snakes from non-venomous ones in Georgia forests and discuss examples of each type.

## Course Standard 5

### AFNR-FS-5

**Compare and contrast Georgia trees and explain their environmental and economic value.**

- 5.1 Identify the different species of trees native to Georgia.
- 5.2 Collect and display a leaf notebook containing the native trees of Georgia.
- 5.3 Describe the physiological processes of tree growth.
- 5.4 Display and illustrate examples of how trees are important to the economy and environment.

## Course Standard 6

### AFNR-FS-6

#### Develop a logical understanding of the role of fire in a forest environment.

- 6.1 Differentiate between desirable and undesirable fires and prepare a report on the role fire plays in a healthy forest.
- 6.2 Explain techniques used to suppress wildfires and manage prescribed fire.
- 6.3 Demonstrate the application of fire suppression and fire safety techniques.
- 6.4 Formulate how air movement, topography, and fuel affect fire behavior.
- 6.5 Analyze, plan, and evaluate a prescribed fire.

## Course Standard 7

### AFNR-FS-7

#### Connect concepts to explain an understanding of forest regeneration principles and practices.

- 7.1 Identify characteristics of a healthy forest.
- 7.2 Identify ways in which forest stands may be improved.
- 7.3 Formulate a timber stand improvement plan for a forest.
- 7.4 Differentiate between natural and artificial regeneration for pine and hardwoods.
- 7.5 Select the proper species, site, and spacing of trees for maximum growth and yield based on data collected from site.
- 7.6 Determine the optimum planting date for specific planting sites and explain how to handle and store the seedlings properly.
- 7.7 Compare a poorly planted seedling to a properly planted seedling by recording growth data.

## Course Standard 8

### AFNR-FS-8

#### Summarize to be able to explain the knowledge and skills necessary to evaluate and regulate timber stand growth for various forest objectives.

- 8.1 Identify and prescribe major silviculture practices for managing timber stand growth.
- 8.2 Describe techniques used to harvest timber.
- 8.3 Research Best Management Practices (BMP) for forestry and sustaining forest land.
- 8.4 Visit a timber harvesting site that has harvested timber according to BMP and record findings.
- 8.5 Explain techniques uses to process forest products.

## Course Standard 9

### AFNR-FS-9

#### Analyze standard industry forest measurement methods used for forest product inventory.

- 9.1 Describe the value of timber inventories.
- 9.2 Discuss the procedures for conducting timber inventories.
- 9.3 Conduct a timber inventory according to standard industry forest measurement methods.
- 9.4 Identify and demonstrate the use of forest measurement tools.
- 9.5 Draw tally symbols and utilize symbols properly in forest measurement.
- 9.6 Categorize forest products.
- 9.7 Formulate timber volume from timber cruising techniques.
- 9.8 Demonstrate how to use maps to identify directions and features, calculate actual distance and determine the elevations of points.
- 9.9 Employ Global Positioning System (GPS) and Geographic Information Systems (GIS) technologies to inventory features in forest management.

## Course Standard 10

### AFNR-BFS-10

**Identify and explain methods of controlling undesirable and invasive forest tree species based upon prescribed forest management objectives.**

- 10.1 Define and identify undesirable forest species.
- 10.2 Discuss environmental factors that influence the establishment and spread of undesirable and invasive species.
- 10.3 Develop and implement a plan to reduce the impact of undesirable and invasive species on a timber site.
- 10.4 Explain the types of forest herbicides and describe application methods.

## Course Standard 11

### AFNR-FS-11

**Identify and classify forest disorders and prescribe methods of control.**

- 11.1 Show the economic losses attributed by insects and diseases.
- 11.2 Identify and explain the major insects and diseases of Georgia forests.
- 11.3 Describe which stages of insect and disease development affect forests the most.
- 11.4 Draw a conclusion on what causes an outbreak of a particular disease or insect in a timber stand.
- 11.5 Identify common forest insects and diseases and describe their life cycles and control.