

Agriculture, Food & Natural Resources Career Cluster
Agricultural Mechanics Technology II
Course Number 01.42200

Course Description

The goal of this laboratory course is designed to offer students intermediate level experiences in selected major areas of agricultural mechanics technology which may include small engine maintenance and repair, metal fabrication, concrete construction, building construction, plumbing, electrical wiring, maintenance of agricultural machinery, equipment and tractors and soil and water conservation. Learning activities include information, skill development and problem solving.

Course Standard 1

AFNR-AMTII-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-AMTII-2

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

- 2.1 Explain the role of the Agriculture Education program and the FFA in personal development.
- 2.2 Demonstrate knowledge learned through a SAEP.
- 2.3 Develop leadership and personal development skills through participation in the FFA.
- 2.4 Explore career opportunities in agricultural mechanics through the FFA and Agriculture Education Program.
- 2.5 Explores the professional agricultural organizations associated with the course content.

Course Standard 3

AFNR-AMTII-3

Recognize and describe hazards in woodworking, identify how to create a safe work environment, and demonstrate proper woodworking safety practices.

- 3.1 Describe a safe work environment.
- 3.2 Identify and eliminate potential hazards in woodworking.
- 3.3 Distinguish the areas identified by various safety colors and the importance of the coding.
- 3.4 Describe the meaning of each safety color.
- 3.5 Exhibit proper dress and protective devices for laboratory activities.
- 3.6 Safely operate all hand tools, power tools, and equipment in the woodworking laboratory.

Course Standard 4

AFNR-AMTII-4

Identify and investigate careers in the agriculture mechanics industry in the area of woodworking.

- 4.1 Identify and describe occupations in agriculture woodworking.
- 4.2 List and describe employment skills in agriculture woodworking.
- 4.3 Explain requirements necessary to secure a job in the agriculture woodworking industry.
- 4.4 Research the job entry employment opportunities available in agriculture woodworking and compile a list of those opportunities available locally.
- 4.5 Identify the professional careers available in agriculture woodworking and create a low-chart that visually illustrates the educational preparation necessary to obtain those jobs.

Course Standard 5

AFNR-AMTII-5

Distinguish and explain the correct use of common woodworking hand tools and layout tools used in woodworking.

- 5.1 Demonstrate the use of woodworking hand tools.
- 5.2 Demonstrate the proper care and storage of hand tools.
- 5.3 Demonstrate the techniques for restoring worn, damaged, or abused tools to good working condition.

Course Standard 6

AFNR-AMTII-6

Select and use common portable and stationary power woodworking machines safely.

- 6.1 Perform basic procedures for using stationary power woodworking machines.
- 6.2 Describe major parts of specified tools and machines.
- 6.3 Analyze the main uses and safety precautions for each woodworking machine.
- 6.4 Demonstrate the proper operation of basic power woodworking equipment.

Course Standard 7

AFNR-AMTII-7

Examine, identify, and select common types of lumber and fasteners used in woodworking.

- 7.1 Describe and identify common woods; including hardness and uses.
- 7.2 Examine wood materials and assess the characteristics of assigned industry grades.
- 7.3 Classify common dimension of wood materials.
- 7.4 Identify screws, nails, bolts, and other fasteners.
- 7.5 Select appropriate screws, nails, bolts, and other fasteners for various uses.
- 7.6 Compare different types of wood glues and their recommended uses.
- 7.7 Display proper techniques for making basic glue joints.

Course Standard 8

AFNR-AMTII-8

Design, draw, construct, finish, and explain the entire process for a woodworking project.

- 8.1 Create woodworking project plans using common drawing equipment and basic drawing symbols.
- 8.2 State the use and format of a bill of materials.
- 8.3 Calculate the bill of materials including board feet of lumber and material costs.
- 8.4 Select and plan projects that develop woodworking skills with hand tools.
- 8.5 Select and safely use woodworking tools during project construction.
- 8.6 Demonstrate proper techniques for safely using hand tools.
- 8.7 Prepare wood projects for finishing by selecting and using appropriate materials.
- 8.8 Select and use filler, paint, varnish, and stains on woodworking projects.

Course Standard 9

AFNR-AMTII-9

Using learned techniques, design, layout, and construct an agricultural structure.

- 9.1 Interpret and analyze property maps to determine boundary lines.
- 9.2 Analyze the impact of topography, climate, and utilities upon building construction.
- 9.3 Analyze the environmental effects of the buildings being constructed.
- 9.4 Interpret local codes and regulations for building construction.
- 9.5 Interpret a blueprint and specifications of a building.
- 9.6 Apply basic math skills to estimate construction materials.
- 9.7 Identify construction materials for agricultural buildings.
- 9.8 Prepare a material list for estimating construction materials.
- 9.9 Measure construction materials using measuring tools or instruments.
- 9.10 Design a cost-efficient building.
- 9.11 Design an energy-efficient building.
- 9.12 Design a building for the weather conditions of the local area.
- 9.13 Set up and manipulate a builder's level and engineer's rod.
- 9.14 Record accurate notes of elevation readings taken.

- 9.15 Demonstrate the procedure for laying out an agricultural structure including footings, walls, rafters, and roofing systems.

Course Standard 10

AFNR-AMTII-10

Demonstrate and explain the plumbing process and skills for agricultural structures.

- 10.1 Perform the safety practices that should be observed in performing plumbing work in accordance to industry standards.
- 10.2 Identify the proper tools to be used when plumbing with plastic and other common materials.
- 10.3 Maintain plumbing tools used in plumbing with plastic and other common materials.
- 10.4 Select the correct plumbing materials and fittings for plumbing installation.
- 10.5 Demonstrate the proper uses of plumbing tools to standard set by the instructor.
- 10.6 Prepare plumbing materials for installation.
- 10.7 Measure and cut plastic pipe and other common materials.
- 10.8 Identify the proper procedure and materials used in joining various plumbing fixtures and fittings.
- 10.9 Install plumbing and fixtures in agricultural structures.

Course Standard 11

AFNR-AMTII-11

Demonstrate concrete construction skills needed for building agriculture structures.

- 11.1 Practice concrete construction safety practices.
- 11.2 Identify hand tools used for concrete work.
- 11.3 Demonstrate the proper skills of maintaining concrete hand tools.
- 11.4 Apply the correct mathematical procedure for determining concrete in cubic yards needed for a jobsite.
- 11.5 Layout and install concrete forms for building an agriculture structure.
- 11.6 Install reinforcement using steel, wire mesh and other materials for a concrete pad.
- 11.7 Explain the necessity of accuracy when measuring materials and estimating volume of concrete needed.
- 11.8 Determine the correct ratio of Portland Cement, sand, aggregate, and water when mixing concrete for various environmental applications.
- 11.9 Interpret the building plans regarding the quality of concrete mix ratio and the delivery, placement and consolidation of concrete into forms.
- 11.10 Demonstrate the procedure for pouring and finishing concrete.
- 11.11 Demonstrate the proper procedures for using concrete tools in mixing mortar and laying block.