

**Agriculture, Food and Natural Resources Cluster
Commercial Fishing, Management and Fisheries Science
Course Number 02.45100**

Course Description: This course provides students with basic knowledge and understanding of common fishing practices and relevant gear for commercial fishing in southeast region Atlantic waters. Students will master content related to fishing gear, basic deck operations, handling of nets and gear, use of related electronic fishing equipment, basic maintenance and marketing of daily catch and products. Additional essential content covering management and fisheries science will include appropriate regional fish species, licensing and management of commercial fishing operations, commercial fishing licensing, and financial management. Students completing this third course will be eligible to earn a science credit for Oceanography as an embedded course.

Course Standard 1

AFNR-CFMFS-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
Nonverbal Feedback		Making Speeches	Terms to Use in a Résumé

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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
Showing Responsibility	Gaining Coworkers' Trust		Appropriate Work Texting	

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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-CFMFS-2

Obtain and interpret information for fishing equipment used in the commercial fishing industry.

- 2.1 Explain and show the common categories of commercial fishing gear.
- 2.2 Categorize the types of nets, including shapes and sizes that are used in the commercial fishing industry.
- 2.3 Identify the forms of hook and line gear used in the commercial fishing industry.
- 2.4 Demonstrate the use of traps in the commercial fishing industry.
- 2.5 Summarize the uses of a winch on land and water for commercial fishing operations.

Course Standard 3

AFNR-CFMFS-3

Describe and discuss the history, types of fish, and modern practices in the commercial fishing industry.

- 3.1 Discuss the Atlantic waters commercial fishing industry and its history.
- 3.2 Categorize the various types of fisheries used in the various Atlantic water regions.
- 3.3 Describe the common types of fish harvested and respective seasons for the Atlantic commercial fishing regions often used by the Georgia commercial fishing industry.
- 3.4 Demonstrate how the equipment is worked and techniques often displayed in finding fish for a commercial fishing industry catch.
- 3.5 Show and summarize fishing methods and practices commonly used in the commercial fishing industry.
- 3.6 Research and hypothesize the importance of sustainable fishing practices and impact catch limits, seasons, and size of keeper fish play on the commercial fishing industry.

Course Standard 4

AFNR-CFMFS-4

Obtain, evaluate, and communicate information to model the flow of energy in the ocean.

- 4.1 Construct an explanation supporting claim some of the earliest life forms originated in the ocean.
- 4.2 Compare and contrast the relative role of photosynthesis and chemosynthesis in oceanic biologic productivity and describe the oceanic realms in which each mode of primary production occurs.
- 4.3 Develop and use models to analyze the flow of energy and cycling of matter in marine ecosystems including food webs and trophic levels.
- 4.4 Ask questions to investigate relationships between biotic and abiotic factors in marine ecosystems including estuaries, coral reefs, kelp forests, the open ocean, and the deep ocean.

Course Standard 5

AFNR-CFMFS-5

Obtain and interpret information about the characteristics, physical features, and boundaries of the oceans as they relate to the commercial fishing industry.

- 5.1 Analyze and interpret geologic data to describe how the Earth's ocean basins, ocean and atmosphere were formed.
- 5.2 Construct an argument from evidence to support the role of plate tectonics in shaping the physical features of the ocean and continents.
- 5.3 Analyze and interpret data to understand how the dynamic events at plate boundaries influence the physical features of oceans and continents.
- 5.4 Develop and use models to investigate geological features from the continental margins to the deep ocean basins and effect on commercial fishing.
- 5.5 Classify the sources of different types of marine sediments as they relate to the commercial fishing industry.

Course Standard 6

AFNR-CFMFS-6

Obtain, evaluate, and communicate information on the physical and chemical properties of seawater and how they influence the structure of the ocean.

- 6.1 Develop and use a model to demonstrate how the ocean and land are connected by the hydrologic and other biogeochemical cycles.
- 6.2 Plan and carry out an investigation in water quality monitoring to discover the unique properties of seawater when compared to fresh water.
- 6.3 Investigate how the water column is structured based upon the physical properties of seawater (temperature, salinity, density).
- 6.4 Develop an argument based on evidence to support the claim that the physical properties of sea water influence the evolution, adaptations and distributions of invertebrate and vertebrate marine organisms.

Course Standard 7

AFNR-CFMFS-7

Demonstrate knowledge and importance of on board and land responsibilities within a commercial fishing industry.

- 7.1 Explain and show lookout responsibilities and duties for a deck hand on a commercial fishing vessel.
- 7.2 Observe, learn, and demonstrate proper procedures for basic maintenance on a commercial fishing vessel.
- 7.3 Identify the role, duties, and responsibilities for the captain, deck hands, processors, and anglers in the commercial fishing industry.
- 7.4 Describe the common equipment found, supply responsibilities, housekeeping duties for a deck hand on a commercial fishing vessel.
- 7.5 List and demonstrate the various deck hand responsibilities for mending nets, setting nets, sorting catches, and additional jobs on a commercial fishing vessel.
- 7.6 Explain the quick action and techniques for seafood storage used on a commercial fishing vessel.

Course Standard 8

AFNR-CFMFS-8

Obtain, evaluate, and communicate information of navigation equipment and onboard electronics uses on commercial fishing vessels and why humans explore our oceans.

- 8.1 Describe and show proper uses for navigation using radar and weather detection electronics on board commercial fishing vessels.
- 8.2 Compare and list the different types of radios used on board commercial fishing vessels.
- 8.3 Explain how to use a chart plotter on board commercial fishing vessels.
- 8.4 Explain how to distinguish objects, ocean floor depth, and fish detection equipment used on board commercial fishing vessels.
- 8.5 Obtain, evaluate, and communicate information that compares historical and modern motivations for ocean exploration and methods of exploration.
- 8.6 Define problems and challenges associated with oceanographic research and exploration and impact to the commercial fishing industry.
- 8.7 Research uses of technology focusing on seawater corrosiveness, deep sea temperatures and pressure, water depth and distance from land for commercial fishing, and wave action on fishing grounds.
- 8.8 Simulate and describe basic boat handling skills, techniques, and terminology for navigational purposes on a commercial fishing vessel.

Course Standard 9

AFNR-CFMFS-9

Research and utilize basic maintenance and general repairs for commercial fishing vessels and gear.

- 9.1 Demonstrate and complete pre-trip inspection checklist for vessel and gear on a commercial fishing vessel.
- 9.2 Identify and demonstrate by conducting basic vessel and engine maintenance required before leaving port for a commercial fishing vessel.
- 9.3 Summarize process and conduct basic fishing gear maintenance used for a commercial fishing vessel.
- 9.4 Demonstrate basic welding techniques to fix or repair equipment on a commercial fishing vessel.
- 9.5 Identify and demonstrate methods to locate, troubleshoot, and complete basic engineering tasks on a commercial fishing vessel.
- 9.6 Conduct basic boat handling, steering, and equipment maintenance procedures before departing on a commercial fishing vessel.

Course Standard 10

AFNR-CFMFS-10

Explain and categorize the steps for product offloading and marketing for a commercial fishing vessel.

- 10.1 Distinguish relevant information to identify harvest preservation and quality control methods used on a commercial fishing vessel.
- 10.2 Classify and summarize harvest-processing techniques used in the commercial fishing industry.
- 10.3 Compare and contrast harvest marketing, sales, and profits for the commercial fishing industry.
- 10.4 Describe and demonstrate harvest offloading and handling procedures used in the commercial fishing industry when brought to port and on a commercial fishing vessel when storing to bring to port.

Course Standard 11

AFNR-CFMFS-11

Research and interpret information regarding the biological and life history of southeast Atlantic Ocean commercial fishing species.

- 11.1 Identify and categorize fish species for legal size and correct season to commercially harvest.
- 11.2 Classify and summarize the terminology referenced when discussing fish species life cycles.
- 11.3 Analyze and draw conclusions regarding the life cycle, ecology, and spawning needs for commercial fish in the southeast Atlantic Ocean region.

Course Standard 12

AFNR-CFMFS-12

Obtain, evaluate, and communicate information on how waves and tides are created and their influence on coastal processes.

- 12.1 Develop and use models to demonstrate how ocean waves are generated (e.g. wind, atmospheric pressure gradients, gravitation, earthquakes, storms, and surface tension forces).
- 12.2 Analyze the properties of ocean waves and how they change as they interact with the seafloor.
- 12.3 Construct an argument based on evidence from tide tables and lunar calendars to explain the role of the moon and sun in the formation of tides and tidal patterns.
- 12.4 Explain the effects of waves and tides on coastlines, including how they interact with sandy shorelines to transport sediments, influence barrier islands, and affect the marine organisms that live there.

Course Standard 13

AFNR-CFMFS-13

Obtain, evaluate, and communicate information about how humans use the ocean as a resource and the need for responsible stewardship and fisheries management.

- 13.1 Construct an argument based on evidence about the impact that extraction of physical, geological, chemical, and biological resources from the oceans has on marine ecosystems.
- 13.2 Compare and contrast the various responsibilities and challenges for fisheries and fisheries management.
- 13.3 Cite evidence for fisheries management and stock production regarding the ecological carrying capacity and maximum stock assessment for fisheries in the southeast Atlantic Ocean region.
- 13.4 Design, evaluate, and refine solutions on how to use the ocean as a source of alternative energy.
- 13.5 Construct an explanation based on evidence on how recreation and transportation impact marine ecosystems.
- 13.6 Analyze and interpret data to investigate the causes of ocean acidification, biomagnification of pollutants, ocean deoxygenation, and eutrophication.
- 13.7 Construct an argument based on evidence to examine policies and laws related to responsible stewardship of the oceans.
- 13.8 Design and evaluate a sustainability plan that includes conservation efforts to reduce human impact on the ocean.

Course Standard 14

AFNR-CFMFS-14

Explain, connect, and utilize information supporting Commercial Fishing Regulations, Licensing, and Financial Literacy and Management.

- 14.1 Discuss and identify federal and state commercial fishing and fisheries regulations.
- 14.2 Discuss and identify federal and state commercial fishing and fisheries licensing requirements.
- 14.3 Describe and identify internal controls for financial management as provided for the commercial fishing industry regulations and financial reporting.
- 14.4 Complete the steps and procedures necessary to prepare a bank reconciliation based on monthly statements for accounting purposes.
- 14.5 Support the rationale to classify business transactions and record keeping for financial management of potential accounts for a commercial fishing vessel.
- 14.6 Identify and discuss the various types of financial business statements prepared for a commercial fishing vessel on a weekly, monthly, quarterly, and annual basis.

Course Standard 15

AFNR-CFMFS-15

Relate the role of the FFA student organization in the students' personal development.

- 15.1 Summarize the FFA history including a basic timeline of events, key people, and major historical occurrences of the organization.
- 15.2 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.
- 15.3 Interpret basic FFA information such as the emblem, colors, motto, mission, salute, behavior, and official dress.
- 15.4 Demonstrate communication skills individually and within group situations by using public speaking skills and parliamentary procedure abilities.
- 15.5 Design personal leadership plan that includes opportunities for personal development through student, chapter, and community related activities.