Agriculture, Food and Natural Resources Cluster
Cluster (Foundation) Knowledge
and Skill Statements

The following Cluster (Foundation) Knowledge and Skill Chart provides statements that apply to all careers in the Agriculture, Food and Natural Resources Cluster. Persons preparing for careers in the Agriculture, Food and Natural Resources Cluster should be able to demonstrate these skills in addtion to those found on the Essential Knowledge and Skills Chart. The Pathway Knowledge and Skill Charts are available in separate documents.

Cluster Topic AGC01	**ACADEMIC FOUNDATIONS:** *Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.*
	No additional statements in thie topic beyond those found in the Essential Knowledge and Skills Chart.

Cluster Topic AGC02	**COMMUNICATIONS:** *Use oral and written communication skills in creating, expressing and interpreting information and ideas including technical terminology and information.*

AGC02.01   **Use oral and written communication skills in creating, expressing and interpreting information and ideas including technical terminology to communicate technical information within AFNR.**

AGC02.01.01	Write clearly to communicate written ideas, results and questions to all types of people.
Sample Indicators	Write with effective language to produce written communications for journals, newsletters, or other informative articles.
	Explain aspects of the industry to people not involved in it, and discuss its components.
AGC02.01.02	Model the use of strategies and techniques for enhancing the clarity and effectiveness of oral communication in order to engage in dialogue with members of an example career field.
Sample Indicators	Monitor different kinds of behavior in order to improve communication.
	Prepare presentations to explain to both large groups and individuals issues of concern to the industry.
	Discuss aspects of the industry competently to an audience of both professionals and people not involved in the industry.

AGC02.02   **Employ the use of technical information effectively to maintain and communicate records and reporting procedures commonly used in the AFNR cluster.**

AGC02.02.01	Document work and processes using technical communication methods and protocols.
Sample Indicators	Record technical information.
	Compose technical reports.
	Communicate documentation to others.

Cluster Topic AGC03	**PROBLEM-SOLVING AND CRITICAL THINKING:** *Solve problems using critical thinking skills (analyze, synthesize, and evaluate) independently and in teams. Solve problems using creativity and innovation.*

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AGC03.01   **Access and utilize suitable resources to identify and study public policies, issues and regulations impacting AFNR management.**

AGC03.01.01   Review regulations and major laws to evaluate their impact on AFNR management.

Sample Indicators   Describe the major impacts of AFNR legislation.

Describe the major regulations impacting the management of an individual resource.

Identify situations that violate regulations.

AGC03.01.02   Read appropriate written material to stay abreast of current issues impacting AFNR management.

Sample Indicators   Identify significant issues that impact work assignment.

AGC03.01.03   Gather public input for AFNR management decision-making.

Sample Indicators   Conduct a local survey of public perceptions and desires concerning AFNR issues.

AGC03.01.04   Use critical thinking skills to identify, organize alternatives, and evaluate public policy issues related to AFNR.

Sample Indicators   Identify alternatives to an issue's potential solution.

Evaluate alternatives for strengths and weaknesses.

Recommend a solution based on research and analysis.

Cluster Topic AGC04	**INFORMATION TECHNOLOGY APPLICATIONS:** *Use information technology tools specific to the career cluster to access, manage, integrate, and create information.*

AGC04.01   **Access, manage, integrate and create information using information technology tools specific to AFNR in order to facilitate people, machines, and logistics.**

AGC04.01.01   Use Geographic Information System/Global Positioning System (GIS/GPS) applications.

Sample Indicators   Create maps.

Locate people or things.

Identify best route for travel.

Cluster Topic AGC05	**SYSTEMS:** *Understand roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. Identify how key organizational systems affect organizational performance and the quality of products and services. Understand global context of industries and careers.*

AGC05.01   **Examine and summarize roles within teams, work units, departments, organizations, interorganizational systems, and the larger environment to understand the nature and scope of AFNR organizations and the AFNR industry.**

AGC05.01.01   Examine company performance and goals within AFNR organizations and the AFNR industry.

Examine the role and major functions of AFNR organizations to better utilize AFNR guidelines.

Sample Indicators

Explain the major guidelines used by AFNR organizations to manage and improve performance.

Examine economic, social and technological changes to spotlight their impact on AFNR organizations and the industry.

Explain technological changes to reveal their impact on information technology and transportation.

AGC05.02   **Identify how key organizational systems affect organizational performance and the quality of products and services to demonstrate an understanding of how AFNR systems are managed and improved.**

AGC05.02.01   Manage and improve organizational systems to better serve customers.

Sample Indicators   Evaluate customer needs to manage relationships with both internal and external customers.

Develop and manage plans and budgets to accomplish organizational goals and objectives.

Develop plans to improve organizational performance including customer satisfaction and service/operations performance.

Develop plans to maintain compliance with organizational policies and government laws and regulations.

AGC05.02.02   Summarize the components and maintenance requirements of each agricultural, natural resource, and environmental system.

Sample Indicators   Develop management plans to improve the agricultural and natural resource systems.

Determine goals and objectives for each system to manage organizational activities more effectively.

Prepare and operate systems and technical tools to access, manage, integrate, evaluate and create information.

AGC05.02.03   Research geographical data to recognize the types of systems used in various geographical areas.

Sample Indicators   Evaluate the effects of implementing practices to advance a system.

Explore multi-area trends to explain how systems differ across geographical areas.

Cluster Topic AGC06	**SAFETY, HEALTH AND ENVIRONMENTAL:** *Understand the importance of health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance. Follow organizational policies and procedures and contribute to continuous improvement in performance and compliance.*

AGC06.01   **Maintain safe and healthful working conditions and environment that adhere to employee rights and responsibilities and employer obligations in order to promote well-being in the AFNR workplace.**

AGC06.01.01   Assess workplace conditions with regard to safety and health.

Sample Indicators   Identify the types of risk of injury/illness at work.

Identify those who are susceptible to risk of injury/illness at work.

Describe ways to positively impact occupational safety and health.

Describe ways to positively impact occupational safety and health.

AGC06.01.02	Demonstrate application of rules and laws designed to promote safety and health.
Sample Indicators	Identify key rights of employees related to occupational safety and health.
	Identify the responsibilities of employers related to occupational safety and health.
	Explain the role of government agencies in providing a safe workplace.
AGC006.01.03	Apply safety/health precautions to participation in natural resource projects.
Sample Indicators	Wear personal protective equipment.
	Demonstrate how to avoid placing oneself in hazardous work situations.
AGC006.01.04	Demonstrate recognized first aid knowledge and procedures to show how they are used by natural resource industries.
Sample Indicators	Complete recognized industry-level first aid training program.
AGC006.01.05	Identify health/safety policies and procedures for natural resource occupations.
Sample Indicators	Participate in safety meetings.
	Describe the health and safety policies and procedures relevant to the worksite and assignment.

AGC06.02   Assess and control types and sources of workplace hazards common to the AFNR industry in order to demonstrate a working understanding of key health and safety concerns.

AGC06.02.01	Demonstrate methods to correct common hazards.
Sample Indicators	Identify and describe common hazards in the workplace.
	Identify and describe major sources of information about hazards in the workplace (e.g., MSDS, work procedures, exposure control plans, training materials, labels, and signage).
	Identify sources of combustible/flammable materials, fire and emergencies to establish a fire safe environment.
	Interpret safety signs and symbols.
AGC06.02.02	Demonstrate application of personal and group health and safety practices.
Sample Indicators	Identify procedures necessary for maintaining a safe work area.
	Identify methods to correct common hazards.
	Identify methods for disposing of hazardous materials.
	Demonstrate principals of safe physical movement to avoid slips, trips, and spills.
	Inspect and use protective equipment (PPE).

AGC06.03   Examine and summarize importance of health, safety, and environmental management systems in AFNR organizations to express their importance to organizational performance and regulatory compliance.

AGC06.03.01	Examine required regulations to maintain/improve safety, health and environmental management systems.
Sample Indicators	Study appropriate resources to identify the major regulatory areas (e.g., personal protective equipment) and government laws and regulations.
	Examine the major system components to realize benefits of health, safety and environmental management systems in AFNR organizations.

Measure or estimate benefits to explain how government agencies promote compliance and improved health, safety and environmental performance to AFNR organizations.

Examine logistics, distribution and transportation organizations to explain how AFNR organizations promote improved health, safety and environmental performance.

AGC06.03.02   Develop a plan to maintain and improve health, safety and environmental compliance and performance.

Sample Indicators   Make a personal commitment to safety, health and environmental policies and procedures.

Develop plans to improve health, safety and environmental performance.

Educate and orient other workers.

AGC06.03.03   State the importance of safety, health and environmental responsibilities in the workplace to provide operating guidelines.

Sample Indicators   Establish a set of safety, health and environmental principles to ensure a high level of performance.

Develop a pollution/waste prevention plan to contribute to the total productivity improvement.

AGC06.03.04   Examine health risks associated with a particular skill to better form personnel safety guidelines.

Sample Indicators   Define what level of possible contamination or injury is considered a risk in order to set safety priorities.

Assess mental and physical stresses to determine all aspects necessary to perform well and what health risks are associated with both the mental and physical aspects.

AGC06.03.05   Develop response plans to handle emergencies.
Sample Indicators   Identify various emergency response plan requirements for a facility.

Develop an emergency response plan for natural disasters.

AGC06.03.06   Identify hazards and acquire first aid skills to promote environmental safety.

Sample Indicators   Identify general workplace safety hazards.

Apply general workplace safety precautions/procedures.

Acquire and maintain first aid certification.

Acquire and maintain cardiopulmonary resuscitation (CPR) certification.

Respond to medical emergencies.

Explain purpose of pollution control systems.

Describe procedures to comply with environmental regulations.

Maintain environmental health and safety facilities.

Handle chemicals and safety equipment appropriately.

Explain ergonomic procedures.

Assess workplace safety.

Assess a safety-training plan.

Observe all regulatory and safety standards.

Cluster Topic AGC07	**LEADERSHIP AND TEAMWORK:** *Use leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.*

No additional statements in thie topic beyond those found in the Essential Knowledge and Skills Chart.

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Cluster Topic AGC08	ETHICS AND LEGAL RESPONSIBILITIES: *Know and understand the importance of professional ethics and legal responsibilities.*
AGC08.01	**Demonstrate workplace ethics specific to AFNR occupations in order to reflect effective stewardship of resources.**
AGC08.01.01	Demonstrate evidence of interest and concern for natural resource stewardship and ethics.
Sample Indicators	Explain how personal choices are related to natural resource sustainability.
AGC08.01.02	Exercise personal habits and actions to demonstrate workplace ethics.
Sample Indicators	Explain how personal workplace actions can affect the resource.

Cluster Topic AGC09	EMPLOYABILITY AND CAREER DEVELOPMENT: *Know and understand the importance of employability skills. Explore, plan, and effectively manage careers. Know and understand the importance of entrepreneurship skills.*
AGC09.01	**Explain written organizational policies, rules and procedures common the AFNR workplaces to ensure employees perform job functions effectively.**
AGC09.01.01	Locate appropriate information on organizational policies in handbooks and manuals.
Sample Indicators	Identify the contents of various organizational publications.
	Select the appropriate document(s) as reference for the situation.
AGC09.01.02	Discuss how specific organizational policies and rules influence a specific work situation.
Sample Indicators	Locate and identify specific organizational policy, rule or procedure to assist with a given situation.
	Explain specific organizational policy, rule or procedure to improve a given situation.
AGC09.02	**Select, research and examine critical aspects of career opportunities in one or more AFNR career pathways in order to gain an understanding of the breadth of occupations within this cluster.**
AGC09.02.01	Locate and identify career opportunities that appeal to personal career goals.
Sample Indicators	Locate and interpret career information for at lest one career cluster.
	Identify job requirements for career pathways.
	Identify educational and credentialing requirements for career cluster and pathways.
AGC09.02.02	Match personal interest and aptitudes to selected careers.
Sample Indicators	Identify personal interests and aptitudes.
	Identify job requirements and characteristics of selected careers.
	Compare personal interests and aptitudes with job requirements and characteristics of career selected.
	Modify career goals based on results of personal interests and aptitudes with career requirements and characteristics.

Cluster Topic AGC10	**TECHNICAL SKILLS:** *Use the technical knowledge and skills required to pursue the targeted careers for all pathways in the career cluster, including knowledge of design, operation, and maintenance of technological systems critical to the career cluster.*

AGC10.01.01   Use technological systems to accomplish objectives in transportation.

Sample Indicators
- Evaluate transportation needs to explain the role and function of critical transportation-related technological systems.
- Measure and manage the reliability and performance of technological systems to establish use and maintenance guidelines.
- Manage major health, safety and environmental risks to minimize their potential impact on technological systems.

AGC10.01.02   Select and improve utilization of technological systems to improve production and products.

Sample Indicators
- Develop acceptable criteria to evaluate and select technological systems.
- Participate in efforts to improve the utilization and performance of technological systems.

AGC10.01.03   Identify technical skills needed to run an industry efficiently.

Sample Indicators
- Identify types of skills needed to succeed in a desired industry.
- Explore methods available to develop technical skills.
- Correctly operate the tools associated with a specific skill.

AGC10.01.04   Establish criteria to identify areas that have special needs for technical skills.

Sample Indicators
- Classify workplace occupations to determine what types of skills are considered technical skills.
- Evaluate processes and products to determine what areas most often use technical skills.

AGC10.02   **Use tools, equipment, machinery and technology to work in areas related to AFNR.**

AGC10.02.01   Select the appropriate tool to perform a given task.

Sample Indicators
- Select tools and equipment.
- Identify standard tools, equipment, and safety procedures.
- Follow operating instructions.
- Set up/Adjust tools and equipment.
- Maintain tools.
- Store tools.

AGC10.02.02   Maintain the working order of natural resources and tools for efficient work use.

Sample Indicators
- Demonstrate how to check tool condition before use.
- Describe the characteristics of a tool in need of maintenance.
- Demonstrate how to replace tool parts and components as needed.

AGC10.02.03   Wear protective equipment and handle natural resource tools and equipment with skill to demonstrate safe use of tools and equipment.

Sample Indicators
- Wear appropriate personal protective equipment (PPE).
- Demonstrate proper spacing distance from others when using tools.
- Check tools for safety before using.
- Store tools with appropriate safety precautions.
- Demonstrate the proper usage of a tool or piece of equipment.
- Describe regulations for the use of tools and equipment.

AGC10.02.04	Use tools and technology devices to assist in expanding human capacity for natural resource tasks.
Sample Indicators	Use appropriate tools to assist in lifting and moving.
	Demonstrate use of knots, ropes, lines and attachments.
	Use geo-spatial and mapping techniques (GIS/GPS).

AGC10.03   Compare and contrast issues affecting the AFNR industry including biotechnology, employment, safety, environmental and animal welfare to demonstrate an understanding of the trends and issues important to careers in this industry.

AGC10.03.01	Select solutions for different environmental issues.
Sample Indicators	Identify issues affecting the industry.
	Research history and policies related to the issue.
	Identify conflicting points of view.
	Determine effects of the issue on the industry.
	Determine potential resolutions to the issue.
AGC10.03.02	Analyze solutions for different environmental issues.
AGC10.03.03	Present solutions for different environmental issues.
AGC10.03.04	Learn economic principles in order to apply them to natural resource systems (i.e., supply, demand and profit).

AGC10.04   Envision emerging technology and globalization and project its influence on widespread markets to demonstrate an understanding of technologies and trends that will impact the AFNR industry.

AGC10.04.01	Examine new technologies to project their impact in the global market of technology.
Sample Indicators	Convert drawings from US Standard to metric.
	Identify ways that global regulations impact system designs.
	Identify and discuss use of new technologies (such as lasers and robotics) and their impact on agricultural systems.
	Discuss the importance of new communication systems and how they impact ag systems.
AGC10.04.02	Discuss the relationship between the advancement of technology and the need for continuing education/ career development.
Sample Indicators	Research and discuss emerging technologies and the skills they require.
	Discuss history of systems over the last century and discuss how emerging technology and career training will be essential to meet market demands.