AFNR CLUSTER SKILLS

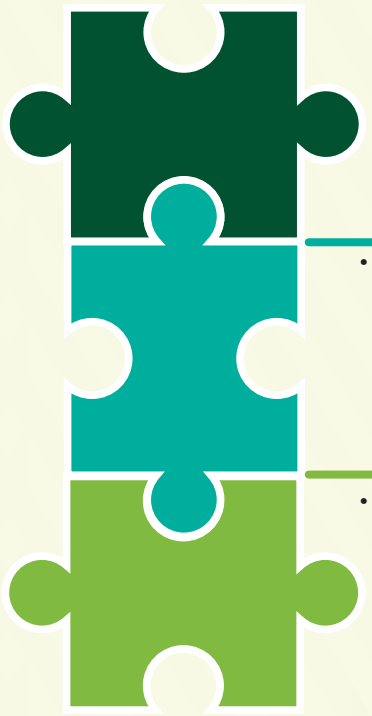
Agriculture, Food and Natural Resources Content Standards

Agriculture, Food, and Natural Resources Cluster Skill Content Standards

PURPOSE: The Cluster Skill Content Standards outline foundational technical knowledge and skills required for future success with all careers in the Agriculture, Food and Natural Resources (AFNR) Career Cluster®. The content standards are intended to provide state agricultural education leaders and educators with a guide for what students should know and be able to do after completing a program of study in any AFNR career pathway. State leaders and local educators are encouraged to use the standards as a basis for the development of well-planned curriculum and assessments for AFNR-related Career and Technical Education (CTE) programs. Adoption and use of these standards is voluntary, states and local entities are encouraged to adapt the standards to meet local needs.

SCOPE: The AFNR Cluster Skills (CS) encompasses the study of fundamental knowledge and skills related to all AFNR professions. Students completing a program of study in any AFNR career pathway will demonstrate fundamental knowledge of the nature, scope and relationships of AFNR systems and the skills necessary for analysis of current and historical issues and trends; application of technologies; safety, health and environmental practices; stewardship of natural resources; and exploration of career opportunities.

DEFINITIONS: Within each pathway, the standards are organized as follows:



- **Common Career Technical Core (CCTC) Standards** – These are the standards for Agriculture, Food and Natural Resources Career Cluster® (AG) from the 2012 version of the Common Career and Technical Core Standards, which are owned by the National Association of State Directors of Career and Technical Education/National Career Technical Education Foundation and are used here with permission. These statements define what students should know and be able to do after completing instruction in a program of study for this pathway.
- **Performance Indicators** –These statements distill each CCTC Standard into more discrete indicators of the knowledge and skills students should attain through a program of study in this pathway. Attainment of the knowledge and skills outlined in the performance indicators is intended to demonstrate an acceptable level of proficiency with the related CCTC Standard at the conclusion of a program of study in this area.
- **Sample Measurements** –The statements are ***sample*** measureable activities that students might carry out to indicate attainment of each performance indicator at three levels of proficiency – awareness (a), intermediate (b), and advanced (c). This is not intended to be an all-encompassing list; the sample measurements are provided as examples to demonstrate a logical progression of knowledge and skill development pertaining to one or more content areas related to the performance indicator. State and local entities may determine the most appropriate timing for attainment of each level of proficiency based upon local CTE program structures.

CONNECTIONS TO OTHER PATHWAYS:
For additional content standards on the topic of Careers, Career Planning and Career Exploration, see Career Ready Practices CRP.10.

CS.01. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster.

CS.01.01. Research, examine and discuss issues and trends that impact AFNR systems on local, state, national and global levels.

Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.

CS.01.01.01.a. Examine historical and current data to identify issues impacting AFNR systems.	**CS.01.01.01.b.** Analyze and summarize AFNR issues and their impact on local, state, national and global levels.	**CS.01.01.01.c.** Evaluate and explain AFNR issues and their impacts to audiences with limited AFNR knowledge.
CS.01.01.02.a. Research and summarize trends impacting AFNR systems.	**CS.01.01.02.b.** Analyze current trends in AFNR systems and predict their impact on local, state, national and global levels.	**CS.01.01.02.c.** Evaluate and explain emerging trends and the opportunities they may create within the AFNR systems.

CS.01.02. Examine technologies and analyze their impact on AFNR systems.

Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.

CS.01.02.01.a. Research technologies used in AFNR systems.	**CS.01.02.01.b.** Apply appropriate use of technologies in AFNR workplace scenarios.	**CS.01.02.01.c.** Solve problems in AFNR workplaces or scenarios using technology.
CS.01.02.02.a. Compare and contrast AFNR systems before and after the integration of technology.	**CS.01.02.02.b.** Analyze how technology is used in AFNR systems to maximize productivity.	**CS.01.02.02.c.** Evaluate the importance of technology use and how it impacts AFNR systems.

CS.01.03. Identify public policies and examine their impact on AFNR systems.

Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.

CS.01.03.01.a. Summarize public policies affecting AFNR systems.	**CS.01.03.01.b.** Analyze and assess at least two public policies that impact each AFNR system.	**CS.01.03.01.c.** Evaluate a public policy within AFNR systems and defend or challenge it.

CS.01.03.02.a. Identify influential historical and current public policies that impact AFNR systems.	**CS.01.03.02.b.** Create and propose a hypothetical policy that will impact current AFNR systems.	**CS.01.03.02.c.** Create a plan for implementing a new public policy that will positively impact AFNR systems.
 **CS.02. Evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster and the role of agriculture, food and natural resources (AFNR) in society and the economy.**		
 **CS.02.01. Research and use geographic and economic data to solve problems in AFNR systems.**		
 Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.		
CS.02.01.01.a. Research and describe different types of geographic data used in AFNR systems.	**CS.02.01.01.b.** Analyze and interpret AFNR related geographic data using a variety of systems and technologies (e.g., GIS, GPS, etc.).	**CS.02.01.01.c.** Evaluate geographic data and select necessary data sets to solve problems within AFNR systems.
CS.02.01.02.a. Identify and examine economic data related to AFNR systems (e.g., commodity markets, food marketing, food and nutritional assistance programs, etc.).	**CS.02.01.02.b.** Analyze and interpret a set of economic data and explain how it impacts an AFNR system.	**CS.02.01.02.c.** Devise a strategy to solve a problem in an AFNR system using a set of economic data.
 **CS.02.02. Examine the components of the AFNR systems and assess their impact on the local, state, national and global society and economy.**		
 Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.		
CS.02.02.01.a. Identify and summarize the components within AFNR systems (e.g., Animal Systems: health, nutrition, genetics, etc.; Natural Resources Systems: soil, water, etc.).	**CS.02.02.01.b.** Assess components within AFNR systems and analyze relationships between systems.	**CS.02.02.01.c.** Devise and implement a strategy for explaining components of AFNR systems to audiences with limited knowledge.
CS.02.02.02.a. Define and summarize societies on local, state, national and global levels and describe how they relate to AFNR systems.	**CS.02.02.02.b.** Assess how people within societies on local, state, national and global levels interact with AFNR systems on daily, monthly or yearly basis.	**CS.02.02.02.c.** Evaluate how society traditions, customs or policies have resulted from practices with AFNR systems.

CS.02.02.03.a. Examine and summarize the components of the agricultural economy (e.g., environmental, crops, livestock, etc.).	**CS.02.02.03.b.** Assess the economic impact of an AFNR system on a local, state, national and global level.	**CS.02.02.03.c.** Evaluate how positive or negative changes in the local, state, national or global economy impacts AFNR systems.
 **CS.03. Examine and summarize the importance of health, safety and environmental management systems in AFNR workplaces.**		
 **CS.03.01. Identify and explain the implications of required regulations to maintain and improve safety, health and environmental management systems.**		
 Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.		
CS.03.01.01.a. Research and explain the implications of regulatory, safety and health standards on AFNR systems (e.g., SDS, bio-terrorism, etc.)	**CS.03.01.01.b.** Execute health, safety and environmental procedures to comply with regulatory and safety standards.	**CS.03.01.01.c.** Evaluate how AFNR organizations/businesses promote improved health, safety and environmental management and determine steps to maintain compliance with regulatory and safety standards in AFNR situations.
CS.03.01.02.a. Summarize the importance of safety, health and environmental management in the workplace.	**CS.03.01.02.b.** Analyze existing required regulations within an AFNR workplace.	**CS.03.01.02.c.** Construct and implement methods to evaluate compliance with required safety, health and environmental management regulations.
 **CS.03.02. Develop and implement a plan to maintain and improve health, safety and environmental compliance and performance.**		
 Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.		
CS.03.02.01.a. Research and identify components required in health and safety performance plans.	**CS.03.02.01.b.** Analyze the effectiveness of health and safety performance plans of an AFNR workplace.	**CS.03.02.01.c.** Create and implement a plan to improve safety, health and environmental management regulations in an AFNR workplace.
CS.03.02.02.a. Examine and categorize examples of environmental compliance plans from AFNR workplace.	**CS.03.02.02.b.** Develop plans to improve environmental compliance and performance within an AFNR system.	**CS.03.02.02.c.** Devise and implement a strategy to educate employees on environmental compliance and performance in an AFNR workplace.

CS.03.03. Apply health and safety practices to AFNR workplaces.

Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.

CS.03.03.01.a. Research and summarize the purposes and objectives of health and safety policies and procedures relevant to AFNR careers.	**CS.03.03.01.b.** Analyze and evaluate the impact of current health and safety practices of AFNR workplaces.	**CS.03.03.01.c.** Create and implement a health and safety policy plan for AFNR workplaces.
CS.03.03.02.a. Identify emergency response procedures for health and safety issues at AFNR workplaces.	**CS.03.03.02.b.** Assess various emergency response plan requirements for an AFNR workplaces and/or facility.	**CS.03.03.02.c.** Create and implement a plan to communicate appropriate responses for health and safety situations within an AFNR workplace.
CS.03.03.03.a. Examine and categorize examples of how to avoid health or safety risks in AFNR workplaces.	**CS.03.03.03.b.** Assess and apply first aid knowledge and procedures relevant to AFNR workplaces.	**CS.03.03.03.c.** Conduct a survey and evaluate results of AFNR workplaces to identify structure of health and safety practices and number of employees certified in first aid training.
CS.03.03.04.a. Examine and categorize the risk level of contamination or injury as associated with AFNR tasks in the workplace.	**CS.03.03.04.b.** Assess the safety priorities and select appropriate responses for different levels of contamination or injury at an AFNR workplace.	**CS.03.03.04.c.** Create a plan to mitigate the level of contamination or injury identified as a risk in the workplace.

CS.03.04. Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.

Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.

CS.03.04.01.a. Identify and differentiate the appropriate protective equipment for the safe use and operation of specific tools and equipment (e.g. PPE, etc.).	**CS.03.04.01.b.** Analyze and demonstrate adherence to protective equipment requirements when using various AFNR tools and equipment.	**C3.06.04.01.c.** Design and implement plans to ensure the use of appropriate protective equipment when using various AFNR tools and equipment.
CS.03.04.02.a. Identify standard tools, equipment and safety procedures related to AFNR tasks.	**CS.03.04.02.b.** Complete the set up and adjustment for tools and equipment related to AFNR tasks.	**C3.06.04.02.c.** Evaluate and select appropriate tools and equipment to complete AFNR tasks.

CS.03.04.03.a. Read and interpret operating instructions related to operation, storage and maintenance of tools and equipment related AFNR tasks.	**CS.03.04.03.b.** Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.	**C3.06.04.03.c.** Devise and implement operation, storage and maintenance plans or schedules for AFNR tools and equipment.
CS.04. Demonstrate stewardship of natural resources in AFNR activities.		
CS.04.01. Identify and implement practices to steward natural resources in different AFNR systems.		
Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.		
CS.04.01.01.a. Define stewardship of natural resources and distinguish how it connects to AFNR systems.	**CS.04.01.01.b.** Analyze available practices to steward natural resources in AFNR systems (e.g., wildlife and land conservation, soil and water practices, ecosystem management, etc.).	**CS.04.01.01.c.** Devise strategies for stewarding natural resources at home and within community.
CS.04.01.02.a. Read and interpret the definition of sustainability and summarize how it relates to AFNR activities.	C**S.04.01.02.b.** Analyze and assess sustainability practices that can be applied in AFNR systems (e.g., energy efficiency, recycle/reuse/repurpose, green resources, etc.).	**CS.04.01.02.c.** Evaluate sustainability policies and plans and prepare summary of potential improvements for AFNR businesses or organizations.
CS.04.02. Assess and explain the natural resource related trends, technologies and policies that impact AFNR systems.		
Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.		
CS.04.02.01.a. Research and examine historical and current natural resources trends and technologies.	**CS.04.02.01.b.** Analyze natural resources trends and technologies and explain how they impact AFNR systems (e.g., climate change, green technologies, water resources, etc.).	**CS.04.02.01.c.** Defend or challenge natural resources trends and technologies based upon an assessment of their impact on AFNR systems.
CS.04.02.02.a. Research and summarize influential historical and current natural resources policies that impact AFNR systems.	**CS.04.02.02.b.** Create and defend a hypothetical natural resources policy that will impact current AFNR systems (e.g., for water resources, land use, air quality, etc.).	**CS.04.02.02.c.** Design and implement strategies for implementing a new natural resources policy that will positively impact AFNR systems.

CS.05. Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources career pathways.

CS.05.01. Evaluate and implement the steps and requirements to pursue a career opportunity in each of the AFNR career pathways (e.g., goals, degrees, certifications, resumes, cover letter, portfolios, interviews, etc.).

Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.

CS.05.01.01.a. Identify and summarize the steps to pursue a career in an AFNR pathway (e.g., self-assessment, set goals, etc.).	**CS.05.01.01.b.** Create a personal plan outlining goals and steps to obtain a career in an AFNR pathway.	**CS.05.01.01.c.** Evaluate progress toward AFNR career goals and identify opportunities for improvement and necessary adjustments to one's plan of action
CS.05.01.02.a. Examine the educational, training and experiential requirements to pursue a career in an AFNR pathway (e.g., degrees, certifications, training, internships, etc.).	**CS.05.01.02.b.** Analyze personal skillset and create a plan for obtaining the required education, training and experiences to obtain a career in an AFNR pathway.	**CS.05.01.02.c.** Implement one's personal plan of action for obtaining the required education, training and experiences and evaluate progress to identify opportunities for improvement and necessary adjustments.
CS.05.01.03.a. Research and summarize specific tools (e.g., resumes, portfolios, cover letters, etc.) and processes (e.g., interviews, applications, etc.) needed to pursue a career in an AFNR pathway.	**CS.05.01.03.b.** Assess personal goals, experiences, education and skillsets and organize them to produce the appropriate tools and develop the skills to effectively communicate about one's qualifications for an AFNR career.	**CS.05.01.03.c.** Evaluate, update and improve a set of personal tools to reflect current skills, experiences, education, goals, etc. and complete the processes needed to pursue and obtain a career in an AFNR pathway.

CS.05.02. Examine and choose career opportunities that are matched to personal skills, talents, and career goals in an AFNR pathway of interest.

Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.

CS.05.02.01.a. Examine and categorize careers in each of the AFNR pathways.	**CS.05.02.01.b.** Assess personal skills and align them with potential career opportunities in AFNR pathways.	**CS.05.02.01.c.** Interpret and evaluate the results of a personal career assessment and connect them to potential careers in AFNR pathways.

CS.05.02.02.a. Research and describe careers in each of the AFNR pathways and choose potential careers connecting to personal interests and skills.	**CS.05.02.02.b.** Assemble and analyze examples of careers and related statistics on a local, state, national and global level.	**CS.05.02.02.c.** Conduct interviews with career professionals within AFNR pathways and summarize the results.
CS.06. Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.		
CS.06.01. Examine and explain foundational cycles and systems of AFNR.		
Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.		
CS.06.01.01.a. Research and explain the foundational cycles in AFNR (e.g., water cycle, nutrient cycle, carbon cycle, etc.).	**CS.06.01.01.b.** Analyze and explain how foundational cycles affect production, processing and management of food, fiber and fuel.	**CS.06.01.01.c.** Teach others about the impact of foundational cycles within AFNR systems.
CS.06.01.02.a. Examine and describe examples of systems within AFNR (e.g., sustainability, gate-to-plate, etc.).	**CS.06.01.02.b.** Analyze AFNR systems and determine their impact on producing and processing food, fiber and fuel.	**CS.06.01.02.c.** Evaluate AFNR systems and predict how the systems may change or adapt in the future of food, fiber and fuel production based on current trends and data.
CS.06.02. Analyze and explain the connection and relationships between different AFNR systems on a national and global level.		
Sample Measurement: The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.		
CS.06.02.01.a. Summarize how AFNR systems connect and relate on a national and global level (e.g., soil, water, economic, etc.).	**CS.06.02.01.b.** Analyze differences between AFNR systems on a national and global scale.	**CS.06.02.01.c.** Evaluate how AFNR systems impact each other on a national and global level.
CS.06.02.02.a. Examine and summarize changes that happen in AFNR systems on a national and global level (e.g., using less irrigation water, reduction of inputs, etc.).	**CS.06.02.02.b.** Analyze the connections and relationships impacted when there is a change in an AFNR system on a national and global level.	**CS.06.02.02.c.** Evaluate how changes in one AFNR system can benefit cost components of other systems on a national and global level.