

Appendix A: AFNR Career Content Cluster Standards-Nursery

	Performance Measurement Levels	Event Activity Addressing Measurement	Related Academic Standards
NRS.01.02. Performance Indicator: Classify natural resources.			Science: F3
	NRS.01.02.01.b. Identify trees and other woody plants.	ID, general exam	
PS.01.01. Performance Indicator: Classify agricultural plants according to taxonomy systems.			Science: C3
	PS.01.01.01.c. Classify agricultural plants according to the hierarchical classification system, life cycles, plant use and as monocotyledons or cotyledons.	ID, general exam	
	PS.01.01.02.c. Identify agriculturally important plants by scientific names.	ID, general exam	
PS.01.02. Performance Indicator: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.			Science: B6, C3 and C5
	PS.01.02.02.c. Relate the active and passive transport of minerals into and through the root system to plant nutrition.	general exam	
	PS.01.02.03.c. Apply concepts associated with translocation to the management of plants.	general exam	
	PS.01.02.04.c. Explain the relationships between leaf structure and functions and plant management practices.	general exam	
	PS.01.02.05.c. Apply the knowledge of flower structures to plant breeding, production and use.	general exam	
	PS.01.02.06.c. Apply the knowledge of seed and fruit structures to plant culture and use.	general exam	
PS.01.03. Performance Indicator: Apply knowledge of plant physiology and energy conversion to plant systems.			Science: B6 and C5
	PS.01.03.01.b. Explain requirements necessary for photosynthesis to occur and identify the products and byproducts of photosynthesis.	general exam	
	PS.01.03.02.b. Explain factors that affect cellular respiration and identify the products and byproducts of cellular respiration.	general exam	
	PS.01.03.03.c. Relate the principles of primary and secondary growth to plant systems.	pruning/ propagation, exam, assessment	
PS.02.01. Performance Indicator: Determine the influence of environmental factors on plant growth.			Science: C6
	PS.02.01.01.c. Evaluate plant responses to varied light color, intensity and duration.	assessment and solution	
	PS.02.01.02.c. Design, implement and evaluate a plan to maintain optimal conditions for plant growth.	propagation, team activity	

PS.02.02. Performance Indicator: Prepare growing media for use in plant systems.		Science: B2
	PS.02.02.01.c. Formulate and prepare growing media for specific plants or crops.	assessment and solution
	PS.02.02.02.b. Discuss how soil drainage and water-holding capacity can be improved.	exam, assessment and solution
PS.02.03. Performance Indicator: Develop and implement a fertilization plan for specific plants or crops.		Math: 4B Science: A2
	PS.02.03.01.b. Describe nutrient deficiency symptoms and recognize environmental causes of nutrient deficiencies.	ID, general exam, assessment and solution
	PS.02.03.02.b. Contrast pH and cation exchange capacity between mineral soil and soilless growing media.	exam, assessment and solution
	PS.02.03.04.b. Calculate the amount of fertilizer to be applied and calibrate equipment to apply the prescribed amount of fertilizer.	assessment and solution
PS.03.01. Performance Indicator: Demonstrate plant propagation techniques.		Science: C2
	PS.03.01.01.b. Diagram the process of plant fertilization.	general exam
	PS.03.01.03.a. Describe optimal conditions for asexual propagation and demonstrate techniques used to propagate plants by cuttings, division, separation and layering.	propagation, production practices
	PS.03.01.04.a. Define micropropagation, discuss advantages associated with the practice and outline the four main stages of the process.	general exam
PS.03.02. Performance Indicator: Develop and implement a plant management plan for crop production.		Science: C5 and C6 Language Arts: 7
	PS.03.02.01.b. Inspect propagation material for evidence of pests or disease.	propagation
	PS.03.02.02.a. Explain the reasons for preparing growing media before planting.	general exam, potting
	PS.03.02.03.b. Apply pre-plant treatments required of seeds and plants and evaluate the results.	general exam, production practices
PS.03.03. Performance Indicator: Develop and implement a plan for integrated pest management.		Science: C4 and C6 Language Arts: 7
	PS.03.03.01.b. Identify major local weeds, insect pests and infectious and noninfectious plant diseases.	ID, general exam, assessment and solution
	PS.03.03.02.a. Describe damage caused by plant pests and diseases.	general exam
	PS.03.03.03.b. Describe types of pesticide controls and formulations.	general exam, assessment and solution
	PS.03.03.04.b. Explain procedures for the safe handling, use and storage of pesticides.	general exam, assessment and solution

PS.03.05. Performance Indicator: Harvest, handle and store crops.			Science: F5
	PS.03.05.01.a. Identify harvesting methods and harvesting equipment.	general exam	
	PS.03.05.03.a. Identify storage methods for plants and plant products.	general exam	
	PS.03.05.04.a. Explain the reasons for preparing plants and plant products for distribution.	general exam	
PST.01.03. Performance Indicator: Identify and use hand and power tools and equipment for service, construction and fabrication.			Science: E2
	PST.01.03.01.b. Select, maintain and use hand and power tools in service, construction and fabrication.	ID, general exam, assessment and solution	
PST.02.01. Performance Indicator: Perform service routines to maintain power units and equipment.			Science: E2
	PST.02.01.01.a. Identify and schedule power unit and equipment lubrication.	exam	
	PST.02.01.02.b. Adjust equipment, including belts and drives, chains and sprockets, and maintain fluid conveyance components, such as hoses, lines and nozzles.	ID, general exam, assessment and solution	
PST.04.01. Performance Indicator: Create sketches and plans of agricultural structures.			Math: 4A Science: A3 and E1
	PST.04.01.01.a. Identify symbols and drawing techniques used to develop plans and sketches.	estimating	
PST.04.04. Performance Indicator: Follow architectural and mechanical plans to construct and/or repair equipment, buildings and facilities.			Math: 1C, 4A and 4B Science: E2
	PST.04.04.05.b. Construct and/or repair with concrete, brick, stone or masonry units.	estimating, assessment and solution	
	PST.04.04.06.a. Measure and calculate fencing materials.	estimating, assessment and solution	
CS.01.01. Performance Indicator: Action: Exhibit the skills and competencies needed to achieve a desired result.			Social Studies: 4d and 4h
	CS.01.01.01.c. Work independently and in group settings to accomplish a task.	team activity, assessment and solution	
	CS.01.01.03.c. Implement an effective project plan.	team activity, assessment and solution	
	CS.01.01.04.b. Use appropriate and reliable resources to complete an action or project.	assessment and solution	
	CS.01.01.06.b. Assign project parts equitably amongst team members to achieve a given task.	team activity, assessment and solution	

CS.01.02. Performance Indicator: Relationships: Build a constituency through listening, coaching, understanding and appreciating others.			Language Arts: 12 Social Studies: 4h
	CS.01.02.01.c. Demonstrate human relation skills including compassion, empathy, unselfishness, trustworthiness, reliability and being friendly to co-workers.	team activity	
	CS.01.02.02.c. Engage others in conversations to respond to an obstacle when completing a task.	team activity	
	CS.01.02.04.c. Evaluate the effectiveness of team members.	team activity	
CS.02.03. Performance Indicator: Professional Growth: Develop awareness and apply skills necessary for achieving career success.			Language Arts: 12 Social Studies: 4a
	CS.02.03.01.a. Explore various career interests/options.	general exam	
	CS.02.03.03.c. Demonstrate employability skills for a specific career.	all event activities	
CS.02.04. Performance Indicator: Mental Growth: Demonstrate the effective application of reasoning, thinking and coping skills.			Math: 6C Science: A4 Language Arts: 4 and 8
	CS.02.04.01.c. Demonstrate critical and creative thinking skills while completing a task.	team activity, assessment and solution, verbal	
	CS.02.04.02.c. Implement effective problem solving strategies.	team activity	
	CS.02.04.03.c. Demonstrate the skills needed to negotiate with others.	team activity, verbal	
CS.03.01. Performance Indicator: Communication: Demonstrate oral, written and verbal skills.			Language Arts: 4, 5 and 12
	CS.03.01.01.c. Demonstrate technical and business writing skills to communicate effectively with co-workers and supervisors.	verbal and written	
	CS.03.01.03.c. Make effective business presentations.	team activity, verbal	
CS.03.02. Performance Indicator: Decision Making –Analyze situations and execute an appropriate course of action.			Science: A1 and A5 Social Studies: 1c and 4h
	CS.03.02.02.c. Use problem-solving skills.	all event activities	
CS.06.03 Performance Indicator: Provide health, safety and environmental operating guidelines.			Science: F4 and F5 Language Arts: 4 and 5
	CS.06.03.01.a. Demonstrate the importance of safety, health, and environmental practices in the work- place.	general exam, production practices	

Appendix B: Academic Standards Addressed- **Nursery**

National academic standards for mathematics, science, English language arts and social studies related to this event are reported below. The statements are based on information in reports of the respective associations/organizations in the academic areas. Some adjustment of numbering was done to facilitate the process of alignment with the standards that have been developed in the pathways of the Agriculture, Food and Natural Resources (AFNR) Career Cluster.

The approach was to determine the presence of alignment between the content standards, expectations or thematic strands of the four academic areas and the performance indicators of the AFNR Standards. Supporting statements have been included to clarify content of the respective content standards, expectations or thematic strands. The statements were initially developed independently by the respective organizations and, therefore, are not parallel in wording and presentation. Occasionally minor editing was done to adjust the background or stem of a statement but not the statement itself.

Math

1. Standard and Expectations: Number and Operations
 - 1C. Compute fluently and make reasonable estimates.
4. Standard and Expectations: Measurement
 - 4A. Understand measurable attributes of objects and the units, systems and processes of measurement.
 - 4B. Apply appropriate techniques, tools and formulas to determine measurements.
6. Standard and Expectations: Problem Solving
 - 6C. Apply and adapt a variety of appropriate strategies to solve problems.

Science

- A. Content Standard: Science as an Inquiry
 - A1. Identify questions and concepts that guide scientific investigation.
 - A2. Design and conduct scientific investigations.
 - A3. Use technology and mathematics to improve investigations and communications.
 - A5. Recognize and analyze alternative explanations and models.
- B. Content Standard: Physical Science
 - B2. Structure and properties of matter
 - B6. Interactions of energy and matter
- C. Content Standard: Life Science
 - C2. Molecular basis of heredity
 - C3. Biological evolution
 - C4. Interdependence of organisms
 - C5. Matter, energy and organization in living systems
 - C6. Behavior of organisms
- E. Content Standard: Science and Technology
 - E1. Abilities of technological design
 - E2. Understanding about science and technology

F. Content Standard: Science in Personal and Social Perspectives

F3. Natural resources

F4. Environmental quality

F5. Natural and human-induced hazards

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English Language Arts

4. Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.

5. Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.

7. Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.

12. Students use spoken, written and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion and the exchange of information).

Social Studies

1. Thematic Strand: Culture

1c. apply an understanding of culture and an integrated whole that explains the functions and interactions of language, literature, the arts, traditions, beliefs and values and behavior patterns;

4. Thematic Strand: Individual Development and Identity

4a. articulate personal connections to time, place and social/cultural systems;

4d. apply concepts, methods and theories about the study of human growth and development, such as physical endowment, learning, motivation, behavior, perception and personality;

4h. work independently and cooperatively within groups and institutions to accomplish goals;