



ND FFA Association

NURSERY/LANDSCAPE

CDE Handbook

Purpose

The purpose of the Nursery/Landscape CDE is to promote career interest in all aspects of the industry including producing, marketing, and maintaining landscape plants, as well as related production and landscaping products, equipment, and services including design.

Objectives

- Nursery/Landscape Principles: To apply nursery and landscape principles and practices as they impact residential, commercial, public and recreational applications.
- Plant Materials: To demonstrate the ability to identify, select and utilize nursery and landscape plants (interior/exterior), landscape materials and turf grasses commonly used in the United States.
- Plant Disorders: To demonstrate the ability to identify unhealthy plant conditions due to pests, nutritional/physiological disorders and mechanical/chemical injury.
- Design and Construction: To demonstrate knowledge of the principles and techniques of landscape design, estimating and construction.
- Supplies and Equipment: To demonstrate the ability to identify, select, use and maintain appropriate supplies and equipment for nursery and landscape operations, including equipment and procedures in mechanization and automation.
- Interpersonal Relations: To demonstrate skills in oral business communications.
- Business Management: To demonstrate an understanding of marketing principles and business management as well as proper sales and service skills.
- Records and Reports: To demonstrate the ability to prepare estimates and complete financial statements.

Awards

a. Individual

1. Individual scores will be tabulated and broken into gold, silver, and bronze award areas.
2. Individual ties will not be broken
3. The high individual receives the "baby bison" trophy and a \$250 stipend.

b. Team

1. Team scores will be the sums of the scores of the top three-(3) team members. They will be broken into gold, silver, and bronze.
2. The high team will receive the traveling trophy, travel stipends from the ND FFA Foundation and be eligible to represent North Dakota in the National Career Development Event.
3. Team Tie Breakers: 1) Team Plant ID Score; 2) Team Written Exam Score; 3) Landscape Practicum Team Score.

Rules

- a. A team will consist of three to five members from the same chapter, with the three highest scores compiled for the team score.
- b. Under no circumstances will any participant be allowed to touch or handle plant materials. Any infraction of this rule will be sufficient cause to eliminate the individual from the event.
- c. Any communication between the participants during the event will result in zero score on that phase of the event when said infraction occurred.
- d. Any individual caught cheating or in possession of an electronic device other than a calculator, in the event area will be disqualification.
- e. Students will use Universal Form C#705C-1 for all practicums.
- f. Each participant can have the following individual tools for the competition:

- A clean clipboard
- At least two No. 2 pencils
- A calculator
 - Calculators used in this event should be battery operated, nonprogrammable and silent with large keys and large displays. Calculators may have only these functions: addition, subtraction, multiplication, division, equals, percent, square root, +/- key and one memory register. No other calculators can be used during the event.
- A standard ruler
- An architect's scale
- An engineer's scale

North Dakota FFA Association – Artificial Intelligence (AI) Policy

The North Dakota FFA Association adopts and adheres to the National FFA Organization's official AI Policy in full. All North Dakota FFA members, chapters, advisors, and state staff are expected to follow the guidelines set forth by the National FFA Organization regarding the appropriate and responsible use of artificial intelligence (AI) tools in FFA activities, competitive events, and academic work.

For the complete and current National FFA AI Policy, including detailed guidelines on appropriate use, please visit:

<https://ffa.app.box.com/v/NFFAAIPolicy>

Questions regarding this policy should be directed to the North Dakota FFA Association state office.

Format

A. IDENTIFICATION OF PLANT MATERIALS (200 POINTS PER CONTESTANT)

Participants will identify forty (40) items selected from the provided list covering the following categories:

- Plant materials will be presented as intact, live specimens, photos, plant parts or any combination.
- Each specimen will be designated by a station number. When the participant identifies the item, its name is then located on the

identification list. The participant then records the number by that name on a scan form at the respective station number.

- Each participant will be provided a copy of the list at the event site. No specimens or items may be touched or handled in any way.

Participants will record their answers using the scan form. Participants will be given forty-five (45) minutes to complete the practicum. Each specimen will be worth five (5) points.

B. IDENTIFICATION OF PESTS, DISORDERS AND BENEFICIAL INSECTS (50 POINTS PER CONTESTANT)

Participants will identify ten (10) items selected from the provided list covering the following categories:

- Pests and disorders will be presented as a damaged specimen, photograph or preserved specimen, herbarium sheet, insect mount, etc. A "disorder" label will be with an item to designate identification of a problem rather than the plant.
- Beneficial insects and other organisms that benefit the landscape by feeding on harmful organisms.
- Each specimen will be designated by a station number. When the participant identifies the item, its name is then located on the identification list. The participant then records the number by that name on a scan form at the respective station number.
- Each participant will be provided a copy of the list at the event site. No specimens or items may be touched or handled in any way.

Participants will record their answers using the scan form. Participants will be given 10 minutes to complete the practicum. Each specimen will be worth 5 points.

C. IDENTIFICATION OF EQUIPMENT AND SUPPLIES (50 POINTS PER CONTESTANT)

Participants will identify ten (10) items selected from the provided list covering the following categories:

- Equipment and supplies will be either an intact item or photograph.

- Each specimen will be designated by a station number. When the participant identifies the item, its name is then located on the identification list. The participant then records the number by that name on a scan form at the respective station number.
- Each participant will be provided a copy of the list at the event site. No specimens or items may be touched or handled in any way.

Participants will record their answers using a scan form. Participants will be given ten (10) minutes to complete the practicum. Each item will be worth five (5) points.

D. VERBAL CUSTOMER ASSISTANCE (50 POINTS PER CONTESTANT)

This interpersonal relations practicum is designed to evaluate participant knowledge of and ability in:

- Verbal communication.
- Sales and customer assistance skills.
- Plant materials, plant culture and problems.
- Nursery and landscape supplies and equipment.

The participant will assume the role of a business customer service representative (garden center or other related business or an educational agency) responding to an assistance need of the customer or client (the judge). General themes will be on a rotation:

Rotation	Year	Selling
1	2024	Landscape Equipment – (chainsaw, lawnmower, string trimmer, etc.)
2	2025	Plant material – (Selection from Plant ID List)
3	2026	Treatments – (herbicide, pesticide, fertilizer, etc.,)

Basic product information will be provided to the chapters competing in the Nursery/Landscape Contest on May 1st. During the CDE, each participant will be located at a separate station with two minutes allotted to review the materials and information provided prior to arrival of the judge. There will be three (3) specific products to choose from that the participant will have to sell to the customer. These materials may be handled and referred to as appropriate for the

conversation with the judge. Scoring criteria are listed on the respective scorecard. There will be no order form that needs to be completed with the sale. Participants will have a total of ten (10) minutes to complete the sale.

****An example is located on the [ND FFA Website](#) under the Nursery/Landscape CDE . ****

E. GENERAL KNOWLEDGE EXAMINATION (150 POINTS PER CONTESTANT)

Fifty (50) objective questions will be prepared to evaluate the participant's knowledge and understanding of basic horticultural principles in producing, marketing, using and maintaining landscape plants and turf. Participants will record their answers on the scan form. Participants will be given forty-five (45) minutes to complete the practicum. Each question will be worth three (3) points.

F. LANDSCAPE ESTIMATING (100 POINTS PER CONTESTANT)

This practicum is designed to evaluate participant knowledge of and ability in:

- Evaluating a landscape design.
- Reading a landscape drawing.
- Determining materials needed to execute a landscape plan.
- Maintenance estimating and bidding.
- Evaluating factors that affect profitability of a landscape

business.

A landscape drawing and scratch paper will be provided to the participants. There will be twenty (20) objective questions about the landscape plan. Participants will record their answers using a scan form. Participants will be given forty-five (45) minutes to complete the practicum. Participants can bring and use standard rulers, engineer and architect scales, and a non-programmable calculator to complete the practicum. Each question will be worth five (5) points.

Resources

The following is a list of possible resources that will assist you in finding information that pertains to the Nursery Landscape Career Development Event:

1. The National FFA Nursery Landscape CDE guide/scorecards.
2. Introduction to Horticulture. Current edition. Charles B. Schroeder, Eddie Dean Seagle, Lorrie M. Felton, John M. Ruter, William Terry Kell, and Gerard Krewer. Prentice-Hall, Inc., Englewood Cliffs, NJ. ISBN 0130364134
3. Ornamental Horticulture. Current edition. Jack Ingels. Delmar Publishers Inc., Albany, NY. ISBN-13: 9781435498167
4. Landscaping Principles and Practices. Current edition. Jack Ingels. Delmar Publishers Inc., Albany, NY. ISBN 13: 9781428376410
5. Landscape Training Manuals for Installation, Irrigation, and Maintenance Technicians. Current edition. National Association of Landscape Professionals, 950 Herndon Pkwy, Suite 450, Herndon, VA 20170 <http://www.landscapetechnician.net>

Scoring

Activity	Individual Points	Team Points
ID of Plant Materials	200	600
ID of Pests, Disorders, and Beneficial Insects	50	150
ID of Equipment & Supplies	50	150
Verbal Customer Assistance	50	150
General Knowledge Exam	150	450
Landscape Estimating	100	300
Total	600	1800

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
ABS.01.03. Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner.		
ABS.01.03.01.a. Define and provide examples of management skills used to organize an AFNR business (e.g., management types, organizational structures, time management techniques, conducting business agreements, etc.).	General knowledge exam	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
ABS.02.02. Performance Indicator: Assemble, interpret and analyze financial information and reports to monitor AFNR business performance and support decision-making (e.g., income statements, balance sheets, cash-flow analysis, inventory reports, break-even analysis, return on investment, taxes, etc.).		
ABS.02.02.02.a. Identify and examine strategies for tracking, reporting and managing inventory in AFNR businesses (e.g., spreadsheets, databases, word processing, networked systems and the internet, etc.).	General knowledge exam	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2
ABS.03.01. Performance Indicator: Develop, assess and manage cash budgets to achieve AFNR business goals.		
ABS.03.01.01.a. Compare and contrast components of cash budgets used in AFNR businesses (e.g., anticipated revenue, production costs, overhead costs, profit, etc.).	General knowledge exam	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
ABS.03.01.02.a. Research and summarize factors that impact management of cash budgets in AFNR businesses (e.g., changes in price of inputs/outputs, financial investment performance, capital purchases, human resources, etc.).	General knowledge exam	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
ABS.04.01. Performance Indicator: Analyze characteristics and planning requirements associated with developing business plans for different types of AFNR businesses.		
ABS.04.01.02.a. Categorize the characteristics of the types of ownership structures used in AFNR businesses (e.g., sole proprietorships, cooperatives, partnerships and corporations).	General knowledge exam	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9
ABS.04.03. Performance Indicator: Identify and apply strategies to manage or mitigate risk.		
ABS.04.03.01.a. Research and classify sources of risk for an AFNR business.	General knowledge exam	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9
ABS.05.02. Performance Indicator: Assess and apply sales principles and skills to accomplish AFNR business objectives.		
ABS.05.02.01.a. Identify and explain components of the sales process for AFNR businesses (e.g., understanding needs, develop solutions, close sale, etc.).	Verbal customer assistance	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5
ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.		
ABS.05.03.01.a. Identify and explain marketing principles used in AFNR businesses (4 P's — product, place, price, promotion; attention, interest, desire, action, etc.).	Verbal customer assistance	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
		CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.		
CS.03.01.02.a. Summarize the importance of safety, health and environmental management in the workplace.	Skills	AFNR Career Cluster, Statement 6
CS.03.03. Performance Indicator: Apply health and safety practices to AFNR worksites.		
CS.03.03.03.a. Examine and categorize examples of how to avoid health or safety risks in AFNR worksites.	Skills	
CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.		
CS.03.04.01.a. Identify and differentiate the appropriate protective equipment for the safe use and operation of specific tools and equipment.	Skills	
CS.03.04.02.a. Identify standard tools, equipment and safety procedures related to AFNR tasks.	Identification Skills	
CS.03.04.03.a. Read and interpret operating instructions related to operation, storage and maintenance of tools and equipment related AFNR tasks.	Skills	
CS.03.04.03.b. Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.	Skills	
CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.		
CS.04.01.01.a. Define stewardship of natural resources and distinguish how it connects to AFNR systems.	General knowledge exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
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.).	General knowledge exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.		
CRP.02.01.01.a. Distinguish opportunities to apply academic learning to solve problems in the workplace (e.g., identify how to: increase productivity, reduce costs, lower inputs, etc.).	Team activity	
CRP.02.01.01.b. Assess workplace problems and identify the most appropriate academic knowledge and skills to apply.	Team activity	
CRP.02.01.02.a. Distinguish opportunities to apply academic learning to solve problems in the community (e.g., identify how to: stop businesses from closing, increase access to emergency services, eliminate hunger, reduce unemployment, etc.).	Team activity	
CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.		
CRP.02.02.01.a. Identify opportunities to apply technical concepts to solve problems in the workplace (e.g., identify how to: increase sales, better customer service, reduce inputs, reduce waste, ensure sustainability, etc.).	Team activity	
CRP.02.02.01.b. Assess workplace problems and distinguish the most appropriate technical concepts to apply.	Team activity	
CRP.02.02.02.a. Identify opportunities to apply technical concepts to solve problems in the community (e.g., identify how to: ensure safe routes to schools, reduce vandalism, reduce air pollution, etc.).	Team activity	
CRP.02.02.02.b. Assess community problems and identify the most appropriate technical concepts to apply.	Team activity	
CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.		
CRP.04.01.01.a. Identify and categorize strategies for ensuring clarity, logic, purpose and professionalism in verbal and non-verbal communication (e.g., vocal tone, organization of thoughts, eye contact, preparation, etc.).	Verbal customer assistance	
CRP.04.01.02.a. Examine and assess personal ability to speak with clarity, logic, purpose and professionalism in formal and informal settings (e.g., speeches, interviews, presentations, oral reports, etc.).	Verbal customer assistance	
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Verbal customer assistance	
CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.		
CRP.04.03.01.a. Research and summarize components of active listening (e.g., eye contact, have an open mind, restate, etc.).	General knowledge exam	
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Verbal customer assistance Team activity	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Verbal customer assistance Team activity	
CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.		
CRP.05.02.01.a. Examine areas in the workplace and community where decisions will make a positive impact.	Team activity	
CRP.05.02.01.b. Apply a structured decision-making process to improve workplace and community situations.	Team activity	
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Team activity	
CRP.05.02.02.a. Examine information about environmental, social and economic impacts when making decisions in the workplace and community.	Team activity	
CRP.05.02.02.b. Assess past decisions made in workplace and community and analyze their effects on environmental, social and economic situations.	Team activity	
CRP.05.02.02.c. Evaluate workplace and community situations and propose decisions to be made based upon the positive impact made on environment, social and economic areas.	Team activity	
CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.		
CRP.06.01.01.a. Identify and summarize steps for generating ideas used in the workplace and community.	Team activity	
CRP.06.01.01.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Team activity	
CRP.06.01.01.c. Evaluate workplace and community situations and devise strategies to apply original ideas.	Team activity	
CRP.06.01.02.a. Define "assumption" and identify different types and sources of assumptions that could impact effectiveness in workplace and community situations.	Team activity	
CRP.06.01.02.b. Analyze how assumptions can impact outcomes in a variety of workplace and community situations.	Team activity	
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information, etc.) to challenge common assumptions in workplace and community situations.	Team activity	
CRP.06.03. Performance Indicator: Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations.		
CRP.06.03.01.a. Examine workplace and community situations to identify opportunities for improvement through the introduction of new ideas and innovations.	Team activity	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CRP.06.03.01.b. Assess and communicate the risks and benefits of applying new ideas and innovations to the workplace and community.	Team activity	
CRP.06.03.01.c. Design a plan of action to introduce a new idea or innovation into the workplace and community.	Team activity	
CRP.06.03.02.a. Identify individuals and organizations (i.e., stakeholders) that need to provide input and feedback on new ideas or innovation prior to implementation in the workplace or community.	Team activity	
CRP.06.03.02.b. Elicit and assimilate input and feedback from individuals and organizations about new ideas or innovations for the workplace or community.	Team activity	
CRP.06.03.02.c. Evaluate and execute strategies for using stakeholder input and feedback to improve a plan of action for introducing a new idea or innovation into the workplace or community.	Team activity	
CRP.07.02. Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.		
CRP.07.02.02.a. Categorize potential technologies, practices and ideas that could be adopted by workplaces and community organizations.	Team activity	
CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Skills Team activity	
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Team activity	
CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.		
CRP.08.02.01.a. Investigate and summarize potential tools and resources used to solve problems in the workplace and community.	Team activity	
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Team activity	
CRP.08.02.02.a. Identify and summarize steps in the decision-making process to solve workplace and community problems.	Team activity	
CRP.08.02.02.b. Apply decision-making processes to generate possible solutions to solve workplace and community problems.	Team activity	
CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.		
CRP.08.03.02.a. Identify and analyze the elements of a plan for solving workplace and community problems (e.g., budget, timeline, etc.).	Team activity	
CRP.08.03.02.b. Create plans to solve workplace and community problems.	Team activity	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CRP.09.03. Performance Indicator: Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).		
CRP.09.03.02.c. Model respectful and purposeful behaviors that contribute to positive morale and culture in the workplace and community (e.g., effectively communicating, recognizing accomplishments of others, etc.).	Sales Team activity Written customer assistance	
CRP.12.01. Performance Indicator: Contribute to team-oriented projects and build consensus to accomplish results using cultural global competence in the workplace and community.		
CRP.12.01.01.a. Differentiate the strengths and talents of all team members needed to complete projects in the workplace and community.	Skills Team activity	
CRP.12.01.01.b. Formulate action plans to complete team-oriented projects in the workplace and community, including plans for personal contributions.	Skills Team activity	
CRP.12.01.02.b. Apply consensus building techniques to accomplish results in team-oriented situations.	Team activity	
CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).		
CRP.12.02.01.b. Assess team dynamics and match strategies to increase team member engagement.	Skills Team activity	
CRP.12.02.02.b. Select strategies to engage team members and apply in a variety of situations.	Skills Team activity	
NRS.01.02. Performance Indicator: Classify different types of natural resources in order to enable protection, conservation, enhancement and management in a particular geographical region.		
NRS.01.02.01.a. Research and examine the characteristics used to identify trees and woody plants.	General knowledge exam Identification	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
NRS.01.02.01.b. Apply identification techniques to determine the species of a tree or woody plant.	General knowledge exam Identification	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
		CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
NRS.01.02.02.a. Research and examine the characteristics used to identify herbaceous plants.	General knowledge exam Identification	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
NRS.01.02.02.b. Apply identification techniques to determine the species of an herbaceous plant.	Identification	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
NRS.01.02.03.a. Research and examine the characteristics used to identify wildlife and insects.	Identification	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
		CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
NRS.01.02.03.b. Apply identification techniques to determine the species of wildlife or insect.	Identification	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
NRS.01.05. Performance Indicator: Apply ecological concepts and principles to terrestrial natural resource systems.		
NRS.01.05.04.a. Compare and contrast techniques associated with soil management (e.g., soil survey and interpretation, erosion control, etc.).	General knowledge exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2
NRS.01.06. Performance Indicator: Apply ecological concepts and principles to living organisms in natural resource systems.		

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
NRS.01.06.02.a. Research and summarize examples of invasive species.	General knowledge exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 HS-LS4-4 HS-LS4-6 HS-ESS3-4
NRS.02.05. Performance Indicator: Communicate information to the public regarding topics related to the management, protection, enhancement, and improvement of natural resources.		
NRS.02.05.01.a. Examine ways in which a message regarding natural resources may be communicated to the public through standard media sources (e.g., press, radio, TV, public appearances, etc.).	Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.01.b. Assess the effectiveness of different methods for communicating natural resource messages.	Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.01.c. Devise a strategy for communicating a natural resources message through media.	Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.02.a. Research how social media and the Internet have changed how people perceive and utilize natural resources (e.g., greater awareness of conservation issues, calls to action, etc.).	Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.02.b. Assess how to most effectively communicate a message about the conservation, management, enhancement and improvement of natural resources via social media and the Internet.	Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
NRS.02.05.02.c. Anticipate and predict how messages about the conservation, management, enhancement and improvement of natural resources will change because of social media and the Internet.	Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.03.a. Examine how communication can be used to influence behavior, call people to action and instill a sense of civic behavior related to the conservation, management, enhancement and improvement of natural resources.	Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.03.b. Analyze and summarize examples of how communication can be used to influence behavior, call people to action and instill a sense of civic behavior related to the conservation, management, enhancement and improvement of natural resources.	Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.03.c. Create a communication plan to influence the behavior of people, call people to action and instill a sense of civic behavior related to the conservation, management, enhancement and improvement of natural resources.	Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.04.02. Performance Indicator: Diagnose plant and wildlife diseases and follow protocols to prevent their spread.		
NRS.04.02.01.b. Analyze a plant disease based on its symptoms, identify if the disease needs to be reported to authorities and determine which authorities it should be reported to.	Identification	CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7
NRS.04.03.01.a. Categorize harmful and beneficial insects, as well as signs of insect damage to natural resources.	Identification	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-LS2-7

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
		HS-LS4-6
NRS.04.03.01.b. Analyze signs of insect infestation, identify if it needs to be reported to authorities and determine which authorities it should be reported to.	Identification	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-LS2-7 HS-LS4-6
PS.01.01. Performance Indicator: Determine the influence of environmental factors on plant growth.		
PS.01.01.02.a. Identify and summarize the effects of air and temperature on plant metabolism and growth.	General knowledge exam	
PS.01.01.03.a. Identify and summarize the effects of water quality on plant growth, (e.g., pH, dissolved solids, etc.).	General knowledge exam	
PS.01.01.03.b. Analyze and describe plant responses to water conditions.	General knowledge exam	
PS.01.02. Performance Indicator: Prepare and manage growing media for use in plant systems		
PS.01.02.01.a. Identify the major components of growing media and describe how growing media support plant growth.	General knowledge exam Propagation or potting	
PS.01.02.01.b. Describe the physical and chemical characteristics of growing media and explain the influence they have on plant growth.	General knowledge exam Propagation or potting	
PS.01.02.02.a. Identify the categories of soil water.	General knowledge exam	
PS.01.02.02.b. Discuss how soil drainage and water-holding capacity can be improved.	General knowledge exam	
PS.01.03. Performance Indicator: Develop and implement a fertilization plan for specific plants or crops.		
PS.01.03.01.a. Identify the essential nutrients for plant growth and development and their major functions (e.g., nitrogen, phosphorous, potassium, etc.).	General knowledge exam Propagation Skills	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.01.b. Analyze the effects of nutrient deficiencies and symptoms and recognize environmental causes of nutrient deficiencies.	General knowledge exam Identification	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.02.a. Discuss the influence of pH and cation exchange capacity on the availability of nutrients.	General knowledge exam	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
PS.01.03.04.a. Identify fertilizer sources of essential plant nutrients; explain fertilizer formulations, including organic and inorganic; and describe different methods of fertilizer application.	General knowledge exam	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.04.b. Calculate the amount of fertilizer to be applied based on nutrient recommendation and fertilizer analysis.	Skills	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.04.c. Calibrate application equipment to meet plant nutrient needs.	Skills	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.06.a. Summarize the impact of environmental factors on nutrient availability (e.g., moisture, temperature, pH, etc.).	General knowledge exam	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.02.01. Performance Indicator: Classify plants according to taxonomic systems.		
PS.02.01.01.a. Identify and summarize systems used to classify plants based on specific characteristics.	General knowledge exam	
PS.02.02. Performance Indicator: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.		
PS.02.02.01.a. Identify structures in a typical plant cell and summarize the function of plant cell organelles.	General knowledge exam	HS-LS1-4
PS.02.02.02.a. Identify and summarize the components, the types and the functions of plant roots.	General knowledge exam Propagation	HS-LS1-4
PS.02.02.03.a. Identify and summarize the components and the functions of plant stems.	General knowledge exam	HS-LS1-4
PS.02.02.04.a. Research and summarize leaf morphology and the functions of leaves.	General knowledge exam	HS-LS1-4
PS.02.02.04.b. Analyze how leaves capture light energy and summarize the exchange of gases.	General knowledge exam	HS-LS1-4
PS.02.03. Performance Indicator: Apply knowledge of plant physiology and energy conversion to plant systems.		
PS.02.03.01.a. Summarize the importance of photosynthesis to plant life on earth and the process of photosynthesis, including the types (C ₃ , C ₄ , CAM), its stages (e.g., light-dependent and light-independent reactions), and its products and byproducts.	General knowledge exam	HS-LS1-5
PS.03.01. Performance Indicator: Demonstrate plant propagation techniques in plant system activities.		
PS.03.01.01.a. Identify examples of and summarize pollination, cross-pollination and self-pollination of flowering plants.	General knowledge exam	
PS.03.01.03.a. Summarize optimal conditions for asexual propagation and demonstrate techniques used to propagate plants by cuttings, division, separation, layering, budding and grafting.	General knowledge exam Propagation	
PS.03.02. Performance Indicator: Develop and implement a management plan for plant production		
PS.03.02.01.a. Research and summarize the importance of starting with pest- and disease-free propagation material.	Propagation	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
		CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
PS.03.02.01.b. Inspect propagation material for evidence of pests or disease.	Propagation	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
PS.03.02.02.a. List and summarize the reasons for preparing growing media before planting.	General knowledge exam	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
PS.03.02.05.a. Summarize the stages of plant growth and the reasons for controlling plant growth.	General knowledge exam	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
PS.03.02.06.a. Identify and categorize structures and technologies used for controlled atmosphere production of plants.	General knowledge exam	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
PS.03.03. Performance Indicator: Develop and implement a plan for integrated pest management for plant production.		
PS.03.03.01.a. Identify and categorize plant pests, diseases and disorders.	Identification	
PS.03.03.01.b. Identify and analyze major local weeds, insect pests and infectious and noninfectious plant diseases.	Identification	
PS.03.03.03.a. Identify and summarize pest control strategies associated with integrated pest management and the importance of determining economic threshold.	General knowledge exam	
PS.03.03.04.a. Distinguish between risks and benefits associated with the materials and methods used in plant pest management.	General knowledge exam (nursery/turf) Skills	
PS.03.05. Performance Indicator: Harvest, handle and store crops according to current industry standards.		

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
PS.03.05.04.a. Identify and categorize plant preparation methods for storing and shipping plants and plant products.	General knowledge exam	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
PS.03.05.05.a. Summarize the reasons for preparing plants and plant products for distribution.	General knowledge exam	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
PS.04.01. Performance Indicator: Evaluating, identifying and preparing plants to enhance an environment.		
PS.04.01.01.a. Identify and categorize plants by their purpose (e.g., floral plants, landscape plants, house plants, etc.).	General knowledge exam Identification	
PS.04.01.02.a. Summarize the applications of design in agriculture and ornamental plant systems.	General knowledge exam	
PS.04.02. Performance Indicator: Create designs using plants.		
PS.04.02.02.a. Identify and categorize tools used for design (e.g., computer landscape software, drawing tools, florist tools, etc.).	General knowledge exam	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 AFNR Career Cluster – Plant Systems Pathway, Statement 2 STEM Career Cluster, Statement 4
PS.04.02.02.a. Identify and categorize tools used for design (e.g., computer landscape software, drawing tools, florist tools, etc.).	General knowledge exam	
PST.01.02. Performance Indicator: Apply physical science and engineering principles to design, implement and improve safe and efficient mechanical systems in AFNR situations.		
PST.01.02.02.a. Identify the tools, machines and equipment needed to construct and/or fabricate a project in AFNR.	General knowledge exam Identification Skills	HS-PS3-1 HS-PS3-3
PST.01.02.02.b. Calculate the maintenance and purchase cost of tools, machines and equipment used in AFNR.	Skills	HS-PS3-1 HS-PS3-3
PST.01.02.03.a. Examine owner's manuals to classify the types of safety hazards associated with different mechanical systems used in AFNR (e.g., caution, warning, danger, etc.).	Skills	HS-PS3-1 HS-PS3-3
PST.01.02.03.b. Select, maintain and demonstrate the proper use of tools, machines and equipment used in different AFNR related mechanical systems.	Skills	HS-PS3-1 HS-PS3-3
PST.01.02.03.c. Conduct a safety inspection of tools, machines and equipment used in different AFNR related mechanical systems.	Skills	HS-PS3-1 HS-PS3-3
PST.02.01. Performance Indicator: Perform preventative maintenance and scheduled service to maintain equipment, machinery and power units used in AFNR settings.		
PST.02.01.01.a. Maintain the cleanliness and appearance of equipment, machinery and power units used in AFNR power, structural and technical systems to assure proper functionality.	Skills	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
PST.02.01.02.a. Examine operator's manuals to determine recommendations for servicing filtration systems and maintaining fluid levels on equipment, machinery and power units used in AFNR power, structural and technical systems.	Skills	
PST.02.02. Performance Indicator: Operate machinery and equipment while observing all safety precautions in AFNR settings.		
PST.02.02.02.a. Examine and identify safety hazards associated with equipment, machinery and power units used in AFNR power, structural, and technical systems (e.g., caution, warning, danger, etc.).	Skills	
PST.02.02.02.b. Apply safety principles and applicable regulations to operate equipment, machinery and power units used in AFNR power, structural and technical systems.	Skills	
PST.02.02.02.c. Adjust equipment, machinery and power units for safe and efficient operation in AFNR power, structural and technical systems.	Skills	
PST.04.01. Performance Indicator: Create sketches and plans for AFNR structures.		
PST.04.01.01.a. Interpret and explain the meaning of symbols used in sketches of agricultural structures.	Estimate General knowledge exam	
PST.04.01.01.b. Apply scale measurement and dimension to develop sketches of agricultural structures.	Estimate General knowledge exam	
PST.04.01.02.a. Read and interpret the parts and/or views of plans for agricultural structures.	Estimate General knowledge exam	
PST.04.04.02.b. Construct plans for agricultural structures using current technology (e.g., drafting software, computer-aided design, etc.).	Estimate	
PST.04.02. Performance Indicator: Determine structural requirements, specifications and estimate costs for AFNR structures.		
PST.04.02.01.a. Summarize and categorize the information needed to complete a bill of materials and cost estimate for an AFNR structure.	Estimate	
PST.04.02.01.b. Analyze a project plan to prepare a bill of materials and an estimate of material costs.	Estimate	
PST.04.02.01.c. Create a project cost estimate, including materials, labor and management for an AFNR structure.	Estimate	