



ND FFA Association

FLORICULTURE

CDE Handbook

Purpose

The Floriculture CDE is designed to create an interest in career preparation for all current and future aspects of the Floriculture industry.

Objectives

- a. Identify plant materials, supplies, and equipment utilized in the industry.
- b. Demonstrate the principles of design and develop related skills.
- c. Demonstrate interpersonal skills necessary for successful employment in the industry.

Rules

- a. Each chapter may enter up to four participants. The team score will include all four scores.
- b. Under no circumstances will any participant be allowed to touch or handle plant materials during the event except in the practicum. Any violation of this rule will result in the participant's disqualification.
- c. No team, team member, or team coach shall visit the event facilities to observe plant materials a week prior to the event. Any team, team member or team coach reported and proven to do so will cause the disqualification of that team.
- d. Students will use Universal Form C #705C-1 for most practicums. Any participant caught cheating will be dismissed from that phase of the event.
- e. To facilitate the holding of scorecards during the event, participants are urged to bring and use clean un-marked clipboards. All participants must bring their own #2 hardness lead pencil(s).
- f. Participants may bring their own floral cutters, clippers, ribbon shears and wire cutters for the event.

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. A \$250 stipend is awarded by the ND FFA Foundation.

b. Team

1. Team scores will be tabulated by adding the four-member scores. They will be broken into gold, silver, and bronze.
2. The high team shall be eligible to represent North Dakota in the National FFA Floriculture career development event. The high team receives the Traveling Trophy and travel stipends from the ND FFA Foundation to participate in the National Event.
3. Team Tie Breakers:
 - a. Team Plant ID
 - b. Team Written Exam Score
 - c. Corsage Team Score

Format

a. Plant/Equipment Identification – National FFA list(s) adopted in 2021.

1. Sixty specimens (50 plants and 10 equipment) from the Floral ID and Equipment ID lists will be displayed to be identified. Each specimen will be designated by a number.
2. This section is split into two rotations with each having 30 specimens for identification. Participants will be allowed 30 minutes to complete each section.
Maximum time of one minute per specimen to identify.
3. No plants or equipment may be touched or handled in any way.
4. Five points will be awarded for each specimen that is correctly identified. (Total 300 points.)
5. Universal Form C will be used to record answers.

b. Customer Assistance/Sales Practicum

1. This practicum in interpersonal relations is designed to evaluate the participant’s knowledge and ability in verbal communications, salesmanship, customer relations, and completion of business forms and knowledge of plant materials, floral selection and design.

2. Individuals will be provided an order form plus any other materials appropriate for the practicum.
3. The participant will assume the role of an employee of a small flower shop/greenhouse - "Campus Florals". An event official will assume the role of a customer desiring to place an order. Interaction between the employee and the customer may be by telephone or face to face by "point of sale" definition. At the point of sale, the merchant calculates and indicates the amount owed, prepares an invoice, and indicates the options for the customer to make payment. Limited information will be provided by the customer upon placing the order, the remaining required information must be gathered through interaction with the customer.
4. A maximum of five minutes will be allowed for taking the order. An additional five minutes may be used for completion of the order form.
5. The order form will be the only material used. Participants will use the "Campus Florals" order form. The resulting written order form will be evaluated and scored as a part of this phase.
6. This practicum is worth 100 points.
7. Each rotation will have 30 minutes.

c. Corsage and Boutonniere Practicum

1. Participants will be given thirty (30) minutes in which to complete a corsage and matching/complimentary boutonniere.
2. All plant and non-plant materials needed to complete these practicums shall be provided.
3. The corsage shall be three miniature carnations and must have a bow or other such appropriate condiments. This corsage should be of the design to be worn or pinned on a dress.
4. The completed corsage should be placed in the corsage box with the corsage scorecard.
5. The corsage is worth 100 pts.
6. The boutonniere shall be a single large flower carnation with appropriate condiment and no ribbon should be used.
7. The completed boutonniere should be placed in a plastic bag with the boutonniere scorecard and pin the bag. Participants are not to mist or seal the bag.

8. The boutonniere is worth 100 pts.

d. Written Test

1. Fifty objective type multiple-choice questions will be selected from the areas on the following list:

1. Plant Materials	2. Planting or Growing Media	3. Diagnosis of Plant Disorders	4. Materials: growth regulators, fertilizer, etc.
5. Propagation	6. Safety	7. Cultural Instructions	8. Floral marketing

2. This phase of the event will test knowledge and understanding of the basic principles relating to the following areas of horticulture (for example: questions for the plant materials area may deal with such features as anatomy of a flower or leaf, physiology of specific types of plants important to the horticulture industry, etc.).
3. Individuals will be allowed 30 minutes to complete this phase.
4. Each answer has a value of 4 points for a total of 200 points.

e. Problem Solving

1. Each participant will solve 10 problems related to the various aspects of the floriculture industry using commonly accepted standards and available information to solve a problem specific to a particular area of floriculture production or retailing.
2. See the National FFA Career Development Events Guide for examples.
3. Participants will be allowed 30 minutes to complete this phase.
4. Each correct solution has a value of 10 points for a total of 100 points.

Scoring

Part	Minutes/Part	Individual Points	Team Points
Written Test	30	200	800
Problem Solving	30	100	400
Corsage & Boutonniere	30	200	800

Customer assistance/sales	30	100	400
Plant/Equipment ID	60	300	1200
Total	180	900	3600

Resources

- a. National FFA Floriculture CDE Handbook.

Sample Customer Service/Sales Problems

1. A single sided arrangement for a 14-year-old boy in the hospital with a broken leg from a football game.
2. A small tabletop arrangement for a coffee table, to be used at a spring meeting of the neighborhood social committee.
3. A full arrangement to be used at the dinner table for Thanksgiving.
4. A small funeral arrangement for an elderly acquaintance.
5. An end-table arrangement for the Christmas season.
6. A friendship arrangement for a classmate.
7. A Valentine arrangement for a Grandmother living in a retirement home.
8. A "bunch" of roses for a spouse on their birthday.
9. A Mother's Day arrangement.
10. Long-stem roses for a high school coronation.
11. A corsage for a prom date.
12. An alter arrangement for the church Easter services.

Example Customer Service/ Sales Problem

Information given when placing the order

1. Arrangement is needed for presentation to the Queen at a High School Homecoming Coronation.
2. Price range is \$20-\$25.

Information to be provided through questions

1. Location of the coronation - Anytown High School, 1111 11th Ave. North, Fargo
2. Date - June 15, 1:30 pm
3. Delivery - by 1:00 pm

4. School Colors - Blue, Yellow and White
5. School Logo - Rockets
6. Flower Preference - Mums and Carnations
7. Type of Arrangement - Single sided
8. Card - "Congratulations from the Anytown Alumni!"
9. Billing - Credit Card Number 0123 4321 6789 6543 or other payment by the point of sale.

Frank Smith, Box 222, Fargo, ND 58100 - Phone - 237-7777

Information Given to the Participant

1. Greenhouse - "Campus Florals"
2. Location - North Fargo
3. Delivery policy - free in-town delivery
4. Pricing - All prices include applicable taxes
5. Flowers available - Pom Pom Mum, Spider Mum, Daisy, Gladioli, Carnation, Rose.

Agriculture, Food and Natural Resources Content Standards

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
ABS.01.01. Performance Indicator: Apply micro- and macroeconomic principles to plan and manage inputs and outputs in an AFNR business.		
ABS.01.01.01.b. Apply microeconomic principles to calculate values associated with different inputs and outputs in AFNR businesses (e.g., price, point of equilibrium, opportunity costs, marginal costs, etc.).	Exam Problem solving/decision making Selling one-on-one Floral design Mixed combo planter Corsage	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.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
ABS.04.03.02.a. Research and summarize examples that illustrate the importance of risk and uncertainty within AFNR businesses.	Selling one-on-one	Financial Investing: Benchmarks: Grade 12, Statement 11 Protecting and Insuring: Benchmarks: Grade 12, Statements 2 Protecting and Insuring: Benchmarks: Grade 12, Statements 3 Protecting and Insuring: Benchmarks: Grade 12, Statements 4
ABS.05.02.02.b. Assess different responses/customer reactions that could be presented during different types of sales calls used in AFNR businesses (e.g., competitor prices, competing products, post-sale service, complaints about product, etc.).	Selling one-on-one	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.05.03.02.a. Examine and categorize strategies used in marketing programs for AFNR businesses (e.g., Internet, direct to customer, social media, etc.).	Selling	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

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
		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
BS.02.02. Performance Indicator: Implement standard operating procedures for the proper maintenance, use and sterilization of equipment in a laboratory.		
BS.02.02.03.c. Perform sterilization techniques for equipment in a laboratory using standard operating procedures.	Growing procedures (asexual propagation)	HS-ETS1-2
BS.02.04. Performance Indicator: Safely manage and dispose of biological materials, chemicals and wastes according to standard operating procedures.		
BS.02.04.01.b. Assess the need for personal protective equipment and select the appropriate equipment to wear when working with biological and chemical materials.	Equipment list	CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.RST.11-12.4
CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.		
CS.01.01.01.b. Analyze and document AFNR issues and their impact on local, state, national and global levels.	Problem solving	
CS.01.01.02.b. Analyze current trends in AFNR systems and predict their impact on local, state, national and global levels.	Problem solving	
CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.		
CS.01.02.01.b. Apply appropriate use of technologies in AFNR workplace scenarios.	Growing procedures Written exam	
CS.01.02.02.b. Analyze how technology is used in AFNR systems to maximize productivity.	Growing procedures Written exam	
CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.		
CS.02.01.02.c. Devise a strategy to solve a problem in an AFNR system using a set of economic data.	Problem solving Team activity – media selling	
CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.		

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CS.02.02.01.c. Devise a strategy for explaining components of AFNR systems to audiences with limited knowledge.	Team activity Written exam	
CS.02.02.02.c. Evaluate how society traditions, customs or policies have resulted from practices with AFNR systems.	Written exam	
CS.02.02.03.b. Assess the economic impact of an AFNR system on a local, state, national and global level.	Selling one-on-one Written exam	
CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.		
CS.03.01.01.c. Evaluate how AFNR organizations/businesses promote improved health, safety and environmental management.	Plant disorders Written exam	
CS.03.01.02.c. Construct and implement methods to evaluate compliance with required safety, health and environmental management regulations.	Problem solving Plant disorders Written exam	
CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.		
C3.03.04.01.c. Design plans to ensure the use of appropriate protective equipment when using various AFNR tools and equipment.	Plant and tool identification Written exam	
C3.03.04.02.c. Evaluate and select appropriate tools and equipment to complete AFNR tasks.	Plant and tool identification Written exam	
CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different 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.).	Growing procedures Plant and tool identification	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
CS.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.).	Growing procedures Plant and tool identification Written exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
CS.04.02. Performance Indicator: Assess the natural resource related trends, technologies and policies that impact AFNR systems.		
CS.04.02.01.b. Analyze natural resources trends and technologies and document how they impact AFNR systems (e.g., climate change, green technologies, water resources, etc.).	Written exam	AFNR Career Cluster, Statement 7
CS.05.01. Performance Indicator: Evaluate 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.).		
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.	Asexual propagation Corsage Floral arrangement Media selling	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
	Team activity Selling one-on-one	
CS.06.01. Performance Indicator: Explain foundational cycles and systems of AFNR.		
CS.06.01.01.c. Teach others about the impact of foundational cycles within AFNR systems.	Team activity Written exam	
CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.		
CRP.01.01.01.c. Evaluate past workplace and community situations and determine how personal responsibility positively or negatively impacted outcomes.	Team activity	
CRP.01.01.02.c. Model personal responsibility in workplace and community situations.	Selling Team activity	
CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.		
CRP.01.02.01.c. Make and defend personal decisions after analyzing their near- and long-term impacts on self and others.	Problem solving	
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.c. Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved.	Media selling Plant disorders Problem solving Team activity	
CRP.02.01.02.c. Apply academic knowledge and skills to solve problems in the community and reflect upon results achieved.	Media selling	
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.b. Assess workplace problems and distinguish the most appropriate technical concepts to apply.	Plant disorders Problem solving	
CRP.03.01. Performance Indicator: Design and implement a personal wellness plan.		
CRP.03.01.02.b. Analyze the relationship between personal wellness and workplace performance.	Floral design	
CRP.03.02. Performance Indicator: Design and implement a personal financial management plan.		
CRP.03.02.01.a. Research and examine components in a personal financial management plan (e.g., income, expense, budgeting, savings, credit, etc.).	Asexual propagation Corsage Floral arrangement	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CRP.03.02.02.a. Examine and categorize personal financial practices (e.g., earning, spending, use of management tools, credit, etc.).	Asexual propagation Corsage Floral arrangement	
CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.		
CRP.04.01.01.c. Evaluate other's verbal and non-verbal communications (e.g., speeches, presentations, oral reports, etc.) and propose recommendations for improvement in clarity, logic, purpose and professionalism.	Growing procedure Selling one-on-one Team activity	
CRP.04.01.02.c. Evaluate personal strengths and areas for growth with regard to speaking formally and informally with clarity, logic, purpose and professionalism, and identify ways to improve.	Growing procedure Selling one-on-one Team activity	
CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.		
CRP.04.02.01.c. Evaluate the effectiveness of different forms of written communication for achieving their intended purpose.	Media selling	
CRP.04.02.02.c. Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Media selling	
CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.		
CRP.04.03.01.c. Evaluate personal effectiveness and devise a plan to improve active listening skills.	Selling one-on-one	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Selling one-on-one	
CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.		
CRP.05.01.01.c. Evaluate workplace and community decision-making processes and devise strategies for improvement.	Team activity	
CRP.05.01.02.c. Evaluate workplace and community situations and recommend the information and resources needed to support good decisions.	Team activity	
CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	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.c. Evaluate and defend decisions applied in the workplace and community situations.	Team activity	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
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.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Team activity	
CRP.06.02. Performance Indicator: Assess a variety of workplace and community situations to identify ways to add value and improve the efficiency of processes and procedures.		
CRP.06.02.02.b. Predict and communicate potential gains in efficiency and value-added from implementing an improved process or procedure.	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.06.03.02.b. Elicit and assimilate input and feedback from individuals and organizations about new ideas or innovations for the workplace or community.	Team activity	
CRP.07.01. Performance Indicator: Select and implement reliable research processes and methods to generate data for decision-making in the workplace and community.		
CRP.07.01.01.c. Evaluate businesses' and organizations' use of research methods and processes and propose recommendations for improvement.	Plant disorders	
CRP.07.01.02.b. Assess the positives and negatives of using different research strategies and methods to generate data for workplace and community decisions.	Plant disorders	
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.b. Assimilate data to assist in making a decision about the adoption of a new technology, practice or idea by workplaces and community organizations.	Plant disorders	
CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.		
CRP.08.01.01.c. Evaluate how applying critical thinking skills can impact workplace and community situations.	Problem solving Team activity	
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Plant disorders	
CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.		

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CRP.08.02.01.c. Devise strategies to evaluate the effectiveness of solutions for resolving workplace and community problems.	Problem solving Team activity	
CRP.08.02.02.c. Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Problem solving Team activity	
CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.		
CRP.08.03.01.c. Evaluate the effectiveness of different problem-solving models for reaching a solution to workplace and community issues.	Problem solving	
CRP.08.03.02.c. Implement and evaluate plans to solve workplace and community problems.	Problem solving	
CRP.09.01. Performance Indicator: Model characteristics of ethical and effective leaders in the workplace and community (e.g. integrity, self-awareness, self-regulation, etc.).		
CRP.09.01.01.c. Evaluate ethical and effective leadership characteristics demonstrated by others.	Team activity	
CRP.09.02.01.c. Evaluate opportunities to apply personal management skills into daily tasks and responsibilities.	Team activity	
CRP.09.02.02.c. Model personal management skills and identify opportunities for continuous improvement.	Team activity	
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.09.03.01.b. Analyze the relationship between demonstrating respectful and purposeful behaviors (e.g., collaborative, clear expectations, etc.) and increased influence in the workplace and community.	Team activity	
CRP.09.03.02.b. Devise strategies for continuation and improvement of respectful and purposeful behaviors that contribute to positive morale and culture in workplace and community (e.g., recognize others' skills, promote collaboration, etc.).	Team activity	
CRP.10.04. Performance Indicator: Identify, prepare, update and improve the tools and skills necessary to pursue a chosen career path.		
CRP.10.04.01.c. Select and use appropriate tools to pursue career advancement opportunities and assimilate feedback from the process to identify improvements for the future.	Entire event	
CRP.10.04.02.c. Apply skills to complete common processes involved in pursuing a career and assimilate input and feedback from experts (e.g., mentors, teachers, business persons, etc.) to improve.	Entire event	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CRP.11.01. Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.		
CRP.11.01.01.b. Analyze advantages and disadvantages of new technologies, tools and applications to maximize productivity in the workplace and community.	Plant disorders Written exam	
CRP.11.01.02.b. Select, apply and use new technologies, tools and applications in workplace and community situations to maximize productivity.	Plant disorders Written exam	
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.c. Evaluate the effectiveness of team-oriented projects at work and in the community and make recommendations for future improvements.	Team activity	
CRP.12.01.02.c. Devise and implement methods to obtain feedback from team members on their experiences after completing workplace and community projects.	Team activity	
CRP.12.01.03.c. Evaluate personal level of cultural and global competence and implement plans for growth and improvement in workplace and community 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.c. Create novel strategies to engage team members based on the situation.	Team activity	
CRP.12.02.02.c. Evaluate the effectiveness of strategies to engage team members in a variety of workplace and community situations.	Team activity	
ESS.01.01. Performance Indicator: Analyze and interpret laboratory and field samples in environmental service systems.		
ESS.01.01.01.c. Collect and prepare sample measurements using appropriate data collection techniques.	Asexual propagation Growing process	CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 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.2 CCSS.MATH.CONTENT.HSS.ID.B.5 HS-ESS2-2
ESS.01.02. Performance Indicator: Properly utilize scientific instruments in environmental monitoring situations (e.g., laboratory equipment, environmental monitoring instruments, etc.).		
ESS.01.02.02.a. Identify basic environmental monitoring instruments and explain their uses.	Equipment identification	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
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.01.02.02.b. Apply identification techniques to determine the species of an herbaceous plant.	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.b. Apply identification techniques to determine the species of wildlife or insect.	Plant disorders	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.01.02.05.a. Research and examine the characteristics used to identify non-living resources (e.g., soil types, climate, geography, etc.).	Equipment 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

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
		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.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.	Plant disorders	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
PS.01.01. Performance Indicator: Determine the influence of environmental factors on plant growth.		
PS.01.01.01.c. Analyze plant responses to varied light color, intensity and duration and recommend modifications to light for desired plant growth.	Plant disorders	
PS.01.01.02.c. Design, implement and evaluate a plan to maintain optimal air and temperature conditions for plant growth.	Growing practicum Plant disorders Written exam	
PS.01.01.03.c. Analyze plant responses to water conditions and recommend modifications to water for desired plant growth.	Growing practicum Plant disorders Written exam	
PS.01.02. Performance Indicator: Prepare and manage growing media for use in plant systems.		
PS.01.02.01.c. Formulate and prepare growing media for specific plants or crops.	Growing practicum Mixed combo planter	
PS.01.02.02.c. Determine the hydraulic conductivity for soil and how the results influence irrigation practices.	Growing practicum Written exam	
PS.01.03. Performance Indicator: Develop and implement a fertilization plan for specific plants or crops.		
PS.01.03.01.c. Monitor plants for signs of nutrient deficiencies and prepare a scouting report to correct elements negatively affecting plant growth in a field or greenhouse.	Growing practicum Plant disorders Written 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.01.03.02.c. Adjust the pH of growing media for specific plants or crops.	Plant disorders Written exam	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.03.c. Prescribe fertilizer applications based on the results of a laboratory analysis of soil and plant tissue samples.	Plant disorders Problem solving Written exam	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.05.b. Assess production methods for their short- and long-term effects on soil.	Plant disorders Written exam	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.06.c. Devise a plan to meet plant nutrient needs based on environmental factors present.	Plant disorders Written 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.02.01.02.c. Identify and describe important plants to agricultural and ornamental plant systems by scientific names.	Plant identification Written 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.b. Compare and contrast mitosis and meiosis.	Written exam	HS-LS1-4
PS.02.02.03.c. Evaluate the function of the xylem, phloem and cambium tissues and the impact on plant systems.	Written exam	HS-LS1-4
PS.02.02.04.c. Devise a plan for plant management practices that takes into account leaf structure and functions.	Team activity – crop schedule	HS-LS1-4
PS.02.02.05.c. Evaluate flower structures and analyze the impact of plant structure on plant breeding, production and use.	Written exam	HS-LS1-4
PS.02.02.06.b. Analyze and categorize the major types of seeds and fruit.	Written exam	HS-LS1-4
PS.02.03. Performance Indicator: Apply knowledge of plant physiology and energy conversion to plant systems.		
PS.02.03.01.c. Evaluate the impact of photosynthesis and the factors that affect it on plant management, culture and production problems.	Plant disorders Problem solving Team activity – crop schedule Written exam	HS-LS1-5
PS.02.03.02.c. Evaluate the impact of plant respiration on plant growth, crop management and post-harvest handling decisions.	Floral arrangement Problem solving Team activity Written exam	HS-LS1-5
PS.03.01. Performance Indicator: Demonstrate plant propagation techniques in plant system activities.		
PS.03.01.01.b. Examine and describe the process of plant pollination and/or fertilization.	Written exam	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
PS.03.01.03.c. Evaluate asexual propagation practices based on productivity and efficiency.	Growing procedures	
PS.03.02. Performance Indicator: Develop and implement a management plan for plant production.		
PS.03.02.01.b. Inspect propagation material for evidence of pests or disease.	Growing procedures Plant disorders	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.b. Prepare soil and growing media for planting with the addition of amendments.	Growing procedures Team activity	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.c. Prepare plant production schedules utilizing plant growth knowledge to get plants to their optimal growth stage at a given time.	Team activity	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.b. Compare and contrast the types of technologies used for controlled atmosphere production.	Equipment identification Written 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.03.02.07.b. Compare and contrast the types of systems used in hydroponic and aquaponic plant production.	Equipment identification Written 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.c. Devise solutions for plant pests, diseases and disorders.	Plant disorders Written exam	
PS.03.03.02.b. Predict pest and disease problems based on environmental conditions and life cycles.	Plant disorders Problem solving	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
	Written exam	
PS.03.05. Performance Indicator: Harvest, handle and store crops according to current industry standards.		
PS.03.05.01.b. Assess the stage of growth to determine crop maturity or marketability and demonstrate proper harvesting techniques.	Mixed combo planter	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
PS.03.05.03.b. Research and analyze practices used to maintain a safe product through harvest, processing, storage and shipment (e.g., Food Safety Modernization Act, Good Agricultural Practices, etc.).	Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
PS.03.05.04.b. Analyze the proper conditions required to maintain the quality of plants and plant products held in storage and during shipping.	Team activity	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.b. Demonstrate techniques for grading, handling and packaging plants and plant products for distribution.	Team activity	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.c. Implement a design that uses the proper plants based on the situation and environment.	Corsage Floral arrangement Growing procedures Mixed combo planter Team activity	
PS.04.01.02.c. Evaluate a design and provide feedback and suggestions for improvement (e.g., a floral arrangement, a landscape or a landscape plan, etc.).	Corsage Floral arrangement Mixed combo planter Team activity	
PS.04.02. Performance Indicator: Create designs using plants.		
PS.04.02.01.c. Analyze designs to identify use of design principles and elements.	Corsage Floral arrangement Growing procedures Mixed combo planter Team activity	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.c. Evaluate the proper use of design tools in creating designs.	Corsage Floral arrangement Growing procedures Mixed combo planter Team activity	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 AFNR Career Cluster – Plant Systems Pathway, Statement 2 STEM Career Cluster, Statement 4