Floriculture

Purpose

The National FFA Floriculture Career Development Event is designed to create an interest in career preparation for all current and future aspects of the floriculture industry through leadership development and hands on technical skill development using industry standards that are delivered through the agricultural education curriculum.

Floriculture is a discipline of horticulture concerned with the cultivation of flowering and ornamental plants for gardens and the floral industry.

The floriculture industry encompasses the following areas:

- Greenhouse and field production and management.
- Garden center and floral shop management.
- Floral design and management.

Objectives

- Identify plants, plant materials, supplies and equipment utilized in the floriculture industry.
- Demonstrate an understanding of the biological and scientific principles of plant growth and development. Develop the skills underlying propagation, variety development, growth requirements, growing techniques, harvesting, marketing and maintenance of established floriculture plants.
- Identify and recommend solutions for plant disorders.
- Demonstrate the use of elements and principles of design and develop related skills.
- Evaluate marketable floral products for quality and cultural perfection for use in the retail floral industry.
- Identify, select, operate and maintain appropriate supplies and equipment for floriculture production, design and marketing.
- Demonstrate the use of safety procedures and practices in floriculture operations.
- Understand the operation, management and maintenance of facilities for floriculture operations.
- Demonstrate interpersonal skills necessary for successful employment in the floriculture industry.
- Demonstrate proper sales and customer service skills.
- Demonstrate general business practices appropriate to the floriculture industry.
- Effectively work together as a team.

Event Rules

~~The complete rules, policies and procedures relevant to all National FFA Career and Leadership Development Events may be found in the Guide to CDE and LDE Policies and Procedures.~~

Each team will be comprised of four members.

- All four scores will be used to determine the total team score.
- It is highly recommended that participants wear FFA Official Dress for this event. Participants may also bring an apron and/or a tool belt and towels.
- Under no circumstances will any participant be allowed to touch or handle plant material during the event except when instructed by the event staff.
- Any communication between participants during the event will be sufficient cause to eliminate the team from the event. The exception to this is the team activity.
- Any participant caught cheating during the event will be expelled from the event.
- ~~All participants are expected to be prompt at their stations throughout the event. No provision will be made for tardiness, which will in most cases cause the late participant to lose event points.~~
- The event superintendent will assign the participants to group leaders who will escort them to various event staging sites. Participants must know their participant number and stay in their assigned group at all times or until told to change leaders by the event superintendent.
- Any assistance given to a participant from any source during the event, other than a floriculture official, will be sufficient cause to eliminate the team from the event.
- All participants will be given an identification number by which they will be designated throughout the event.
- Various computer applications may be utilized throughout the floriculture event.
- Any participant in possession of an electronic and/or communication device in the event area is subject to disqualification.

Event Format

MATERIALS STUDENTS NEED TO PROVIDE:

- Clean clipboard, free of notes.
- Two sharpened No. 2 pencils.
- ~~Prepared resume.~~
- ~~Completed Job Application, blank applications will be provided at the team orientation meeting.~~
- Floral cutters/clippers.
- Ribbon shears.
- Wire cutters.
- Calculator — Should be battery operated, non-programmable and non-scientific (basic five function only). No other calculators can be used during the event.
- All references to time limits are approximate. The committee reserves the right to adjust to the practicum and anticipated skill of the students

TEAM ACTIVITY (800 POINTS)

Each team will perform an assignment routinely performed in some phase of the floriculture industry that requires teamwork. These tasks will be described in situational terms for presentation to each team. Forty-five minutes will be allowed for completing the activity. If a presentation to the judges is required, the presentation portion of the event will take place after the 45 minute time period has ended. Presentation times may vary depending on the assigned task but will not exceed 10 minutes. There will be an additional time allowed after judging is complete for team clean up. All materials, with the exception of floral tools, needed to complete the assignment will be provided. The type of activity and information about the specific tasks will be announced at the beginning of the practicum by the event assistant in charge.

The type of assignments that may be used in this phase of the event include, but are not limited to, the following:

- Prepare floral products for an event.
- Prepare and pack floral products for shipping and updating inventory.
- Create a floral product display.
- Create a greenhouse production and task schedule to meet the needs of a given customer.
- Prepare and display plant material found in a garden center.
- Scoring criteria for the team preparation and presentation are on the Team Activity Rubric, which will be recorded by a judge.

INDIVIDUAL ACTIVITIES

Identification of plant materials and equipment (200 points)

Fifty specimens from the floriculture plant and equipment identification list will be displayed for participants to identify by technical and common names. A number will designate each specimen. Four points will be awarded for each specimen that is correctly identified. Each participant will be allowed 25 minutes to complete this phase of the event.

General Knowledge Examination (200 points)

Participants will answer 50 multiple choice questions to test all areas of the floriculture industry as reflected in the event objectives including flowers and material from the wholesaler and how they are handled, stored, and used in the flower shop; knowledge of floral design (arrangement) and marketing of floral products from the floral shop as well as participants' knowledge and understanding of basic biological and scientific principles of producing and marketing flowers, plants and foliage. Each participant will be allowed 50 minutes to complete the exam. Each answer has a value of four points.

Test questions will come from the last five years of available National Floriculture CDE Tests. Each year the latest test will be added and the oldest test removed from the pool of questions to be used. National exams can be accessed at FFA.org

Problem-Solving/Decision-Making (200 points)

Each participant will solve 10 problems related to the various aspects of the floriculture industry identified in the event objectives. Each problem will describe the situation or create the problem and list four possible solutions to the problem. The participant must decide on the best possible solution to the problem. All materials and information necessary to solve the problem will be available to the participant as he or she solves the problem. Each participant will be allowed 50 minutes to complete this phase of the event. Each correct solution has a value of 20 points.

Annual Practicums (200 points)

Each participant will complete two annual practicums:

- Floral arrangement
- ~~Job interview~~
- Growing procedures

Floral Arrangement (100 points)

Make a $55 retail priced floral arrangement in compliance with the scenario provided. (The $55 cost will include tax as well as retail mark up for fresh and hard goods and be within fifty cents either way of the $55.) The event superintendent will announce the type of arrangement during the team orientation meeting. Using the materials provided, participants will be allowed 20 minutes to complete their arrangements and itemized bills. The event assistant at the beginning of the practicum will provide participants with the retail price of the flowers and foliage that they will use in their arrangements. The participant will determine the total arrangement cost using the pricing form provided plus 20% labor on their design. Retail cost of flowers and foliage given to the participant will be determined after polling florists to determine their current retail prices on the flowers and foliage used in the event. Scoring criteria are presented on the Floral Arrangement Practicum scorecard, which will be recorded by a judge.

EXPLANATION OF FLORAL ARRANGEMENT TERMS

Design: Category interpretation: design follows objective/scenario given
Balance: Physical and visual
Creativity: Artistic inventiveness
Depth: Placement of materials at different levels throughout the arrangement
Focal Emphasis: Design has one area of design that attracts the eye to it
Line: Movement
Mechanics: Professional techniques and application
Scale: Proportion
Unity: Cohesiveness of design
Color: harmonious use of color

~~*Job Interview (100 points)*~~

~~Each participant will appear before an employer (judge) to interview for a position available in the employer's business. The event superintendent will announce specific information about the job for which the participant is applying at the team orientation meeting. Participants will be given two job descriptions, one with a greenhouse skills focus and one with a floral skills focus at the team orientation meeting along with application forms to complete. Participants will be allowed to choose the job they wish to interview for and blank applications will be provided at the team orientation meeting so participants may prepare their applications prior to participating in the practicum. Participants will be expected to prepare, prior to the event, a resume of their experiences and background to present to the judge at the time of the interview. Ten minutes will be allowed for this practicum. Participants will be allowed five minutes to complete the interview and five minutes for judges to score the interview. Scoring criteria are presented on the Job Interview Practicum Rubric, which will be recorded by a judge.~~

Growing Procedures (100 points)

One of the three activities listed below will be demonstrated on an annual basis. Ten minutes will be allowed for this section including questions from the judges. Seven (7) minutes to complete the assigned task, 1 minute for judges' questions, and 2 minutes for judges scoring.

POTTING OF YOUNG PLANTS (PLUGS OR LINERS)

Participants will be asked to plant young plants in the pots provided. Each participant will be given a group of young plants from which to select their transplants from; an appropriate pot or pots; potting medium; and ID stake and a marking pencil. Scoring criteria are presented on the Potting of Young Plants Practicum Rubric, which will be recorded by a judge.

ASEXUAL PROPAGATION OF PLANTS

Each participant will be provided the parent plant materials and all other materials needed to propagate plants asexually. Using the available materials, participants will take cuttings from the plant before them and stick them in the correct media, best for rooting. Participants should sanitize all equipment and use it appropriately in a safe manner. Scoring criteria are presented on the Asexual Plant Propagation Rubric, which will be recorded by a judge.

PINCHING PLANTS

A plant will be placed before each participant. Participants will be judged on the procedures they follow in pinching the plant in compliance with the scenario provided. Scoring criteria are presented on the Pinching Plants Rubric, which will be recorded by a judge.

Rotational Practicums (75 Points)

In addition to the two annual practicums, ONE practicum will be selected from the list below for each noted year. ~~The three to be used will be identified by the event superintendent in the annual team orientation packet that is available prior to convention on the CDE webpage~~.

~~❖ SELLING PRACTICUM (75 POINTS) (ONE WILL BE CHOSEN)~~

~~Selling One-on-One~~

~~Each participant will assume the role of a sales person in a floriculture business (grower, florist shop, garden center, etc.) A customer (judge) with a specific need will approach the participant. The participant will help the customer meet his or her need by using sales skills. All supplies, information and the business setting in which the participant works will be provided. Ten minutes will be allowed for this practicum. Of the 10 minutes, participants will be allowed one minute to review the given scenario, five minutes for dialogue with the customer and completion of the sales form. Judges will be allowed four minutes to score the participant. Scoring criteria are presented on the selling One-on-One Practicum Rubric, which will be recorded by a judge.~~

~~Media Selling~~

~~Each participant will be asked to create or evaluate advertising from the following media sources:~~

- ~~Newspaper/catalog ad~~
- ~~Radio script~~
- ~~Newsletter~~
- ~~Brochure/flyer~~
- ~~Email~~
- ~~Social media~~
- ~~Facebook~~
- ~~Twitter~~
- ~~Video – YouTube~~
- ~~Web homepage~~

~~All information and materials needed to develop the advertisement will be provided. Up to Fifteen minutes will be allowed for this practicum depending on the task assigned. Scoring criteria are presented on the Media Selling Practicum Rubric, which will be recorded by a judge.~~

~~❖ MAKE A MIXED PLANTER COMBINATION (75 POINTS)~~

~~Each participant will make a $35 retail priced mixed combination planter. All plant materials, growing media and containers will be provided. Twenty (20) minutes will be allowed for each participant to make their mixed combination planter and complete the itemized listing of costs. At the beginning of the practicum, the participant will be provided with the retail price of plants and other materials to be used in their mixed combination planter. The markup is built into the retail price. Selection of materials should be combined to create a floral display according to the acceptable retail practices, using appropriate elements and principles of design within the floral industry. Scoring criteria are presented on the Making a Mixed Combination Planter Rubric, which will be recorded by a judge.~~

❖ MAKE AND PACKAGE A CORSAGE (75 POINTS)

Each participant will make and package a $25 retail priced corsage including 20% labor. The type of corsage and information about the corsage will be provided to the participants through a given scenario at the beginning of the practicum by the event assistant in charge. All

plant and non-plant materials needed to construct and package the corsage will be provided. The selection of materials should be combined to create a floral display according to the acceptable retail purposes, using appropriate elements and principles of design. Each participant will be allowed 20 minutes to complete the construction of the corsage and complete an itemized listing of costs for the corsage constructed. Scoring criteria are presented on the Making and Packing a Corsage Rubric, which will be recorded by a judge.

❖ IDENTIFYING AND CONTROLLING PLANT DISORDERS (75 POINTS)

Pest and disorder items may be presented as an intact specimen, photograph or preserved specimen (herbarium sheet, insect mount, etc.). Each specimen will be designated by a station number. The participant must identify the item and its classification (nutritional/environmental, insect/pest or disease). The participant must then determine the damage location as well as chemical and culture controls for the disorder. Each participant will identify 15 specimens total for this event.

No specimens or items may be touched or handled in any way. Fifteen (15) minutes will be allowed for this event. Refer to the Disorder Practicum Scorecard for additional details.

The plant disorders will come from the following list of disorders.

NUTRITIONAL AND ENVIRONMENTAL DISORDERS

- Cold temperature (freeze)
- Cold water damage
- Ethylene damage
- Iron deficiency
- Insufficient water damage
- Nitrogen deficiency
- Phosphorus deficiency

DISEASES

- Botrytis – Gray mold
- Damping-off
- Downy mildew
- Leaf spot (Black)
- Powdery mildew
- Root rot
- Rust
- Stem rot
- Tospovirus (INSV and TSWV)

INSECTS AND PESTS

- Aphids
- Fungus gnats
- Leaf miner
- Leafhopper
- Mealybugs
- Scale
- Shore flies
- Snails/Slugs
- Spider mites
- Thrips
- Whiteflies

❖ HANDLING A HAZARDOUS SITUATION (75 POINTS)

Each participant will be presented with a hazardous situation that could develop in a floriculture business. The participant will be asked to explain how to resolve the problem. The participant will be evaluated on their understanding of the problem and procedures and practices followed in resolving the problem. Ten minutes will be allowed for this practicum. Scoring criteria are presented on the Hazardous Situation Rubric, which will be recorded by a judge.

Scoring

Phase	Individual Points	Team Points
Plant and Equipment Identification	200	800
General knowledge	200	800
Problem solving	200	800
Annual practicums - 100 points each * Floral arrangement ~~* Job interview~~ * Growing procedures	200	800
Rotational practicums – 1 selected * ~~Selling~~ ~~* Make a Mixed Planter Combination~~ * Make and Package a Corsage * Identifying/Controlling Plant Disorders * Handling a Hazardous Situation	75	300
~~Team activity~~	~~0~~	~~800~~
TOTAL	875	3,500

TIEBREAKERS

Individual

If ties occur, the following events will be used in the listed order to determine award recipients:

1. Written exam
2. ~~Plant and equipment identification~~
3. Floral arrangement practicum
4. ~~Growing procedures~~

Team

If ties occur, the following events will be used in the listed order to determine award recipients:

1. ~~Team activity~~
2. ~~Written exam~~
3. Plant and equipment identification
4. Total score for Floral Arrangement Practicum

Awards

Awards will be presented at an awards ceremony to individuals and/or teams based upon their rankings. ~~Awards are sponsored by cooperating industry sponsors as a special project and/or by the general fund of the National FFA Foundation.~~

References

This list of references is not intended to be all-inclusive.

- Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.
- National FFA— Past CDE Q&A's, https://www.ffa.org/resources/cde/questions-and-answers
- Principal of Floral Design, Pat Diehl Scace, James M. DelPrince – Goodheart Wilcox Publisher. www.g-w.com
- The AIFD Guide to Floral Design: Terms, Techniques, and Traditions – The American Institute of Floral Design.
- Introduction to Horticulture Science and Technology. 5th edition, 2015. Schroeder, Seagle Felton, Ruter, Inter- state Publishers, Inc.
- Introductory Horticulture. Carroll Shry, Edward Reiley. Eighth Edition.
- Greenhouse Operation and Management. Paul V. Nelson. Seventh Edition. (Specific reference for the disorders rotational practicum)
- Ball Publishing: Ball Redbook, Volume 1&2, 18th Edition.
- FFA Resume Generator©, resumegenerator.FFA.org

Floriculture Plant Identification List

101	*Aechmea fasciata cv.*	Silver Vase Bromeliad
102	*Ageratum houstonianum*	Ageratum
103	*Alstroemeria hybrid cv.*	Peruvian Lily
104	*Anemone coronaria*	Anemone
105	*Anethum graveolens cv.*	Dill
106	*Angelonia hybrid cv.*	Angelonia
107	*Anthurium x andraeanum cv.*	Flamingo Plant
108	*Antirrhinum majus cv.*	Snapdragon
109	*Aphelandra squarrosa cv.*	Zebra Plant
110	*Araucaria heterophylla*	Norfolk Island Pine
111	*Asparagus densiflorus*	Sprengeri Fern
112	*Aster pringlei*	Monte Cassino Aster
113	*Astilbe hybrid cv.*	Astilbe
114	*Begonia x semperflorens – cultorum*	Wax Begonia
115	*Begonia x tuberhybrida cv.*	Tuberous Begonia
116	*Caladium x hortulanum cv.*	Caladium
117	*Calibrachoa hybrid cv.*	Million Bells
118	*Callistephus chinensis cv.*	China Aster
119	*Campanula hybrid cv.*	Campanula
120	*Canna x generalis cv.*	Garden Canna
121	*Capsicum annuum*	Ornamental Pepper Plant
122	*Catharanthus roseus*	Vinca
123	*Celosia argentea cv.*	Cockscomb
124	*Chamaedorea elegans*	Parlor Palm
125	*Chamelaucium uncinatum*	Waxflower
126	*Cholorophytum comosum cv.*	Spider Plant
127	*Chrysanthemum x morifolium*	Florist's Chrysanthemum
128	*Clematis hybrid cv.*	Clematis
129	*Codiaeum variegatum pictum*	Croton
130	*Crassula argentea*	Jade Plant
131	*Cycas revoluta cv.*	Sago Palm
132	*Cyclamen x persicum cv.*	Florist's Cyclamen
133	*Cymbidium cv.*	Cymbidium Orchid
134	*Cymbopogon cv.*	Lemongrass (herb)
135	*Dahlia hybrid cv.*	Dahlia
136	*Delphinium consolida cv.*	Larkspur
137	*Dendrobium cv.*	Dendrobium Orchid
138	*Dianthus caryophyllus cv.*	Carnation
139	*Dracaena cincta*	Red Edge Dracaena
140	*Echinocactus cv.*	Barrel Cactus
141	*Epipremnum aureum cv.*	Golden Pothos
142	*Erica carnea cv.*	Spring Heather
143	*Eucalyptus polyanthemos*	Silver Dollar Eucalyptus
144	*Euphorbia pulcherrima cv.*	Poinsettia
145	*Eustoma grandiflorum*	Lisianthus
146	*Exacum affine*	Persian Violet
147	*Ficus benjamina cv*	Benjamin Fig
148	*Ficus elastica cv*	Rubber Plant
149	*Fragaria x ananassa cv.*	Strawberry Plant
150	*Freesia x hybrida*	Freesia
151	*Gardenia jasminoides*	Gardenia
152	*Gerbera jamesonii*	Gerbera Daisy
153	*Gladiolus x hortulanus cv.*	Garden Gladiolus
154	*Gomphrena hybrid cv.*	Globe Amaranths
155	*Gypsophila elegans cv.*	Baby's Breath
156	*Hedera helix cv.*	English Ivy
157	*Helianthus annuus*	Sunflower
158	*Hemerocallis cv.*	Daylily
159	*Hippeastrum hybrid cv.*	Amaryllis
160	*Hosta cv.*	Hosta
161	*Hoya carnosa*	Wax Plant
162	*Hyacinthus orientalis cv.*	Hyacinth
163	*Hydrangea macrophylla*	Big Leaf Hydrangea
164	*Impatiens hybrid cv.*	Impatiens
165	*Impomoea batatas cv.*	Ornamental Sweet Potato
166	*Iris x xiphium cv.*	Dutch Iris
167	*Senecio cineraria*	Dusty Miller
168	*Justica brandegeana*	Shrimp Plant
169	*Kalanchoe x blossfeldiana cv.*	Kalanchoe
170	*Leucanthemum x superbum*	Shasta Daisy
171	*Leucospermum hybrid cv.*	Pin Cushion Protea
172	*Liatris spicata*	Liatris
173	*Lilium hybrid cv.*	Asiatic or Oriental Lily
174	Limonium sinuatum	Statice
175	Lobularia maritima	Alyssum
176	Maranta leuconeura	Prayer Plant
177	Matthiola incana cv.	Stock
178	Monstera deliciosa	Split Leaf Philodendron
179	Narcissus hybrid cv.	Daffodil or Narcissus
180	Nephrolepis exaltata cv.	Boston Fern
181	Ocimum basilicum cv.	Basil
182	Opuntia cv.	Cactus
183	Paeonia cv.	Peony
184	Paphiopedilum hybrid cv.	Ladyslipper Orchid
185	Pelargonium x hortorum cv.	Zonal Geranium
186	Pelargonium peltatum cv.	Ivy Geranium
187	Pentas hybrid cv.	Pentas
188	Petroselinum crispum cv.	Parsley
189	Petunia x hybrida cv.	Petunia
190	Phalaenopsis cv.	Moth Orchid
191	Philodendron scandens oxycardium	Heartleaf Philodendron
192	Pilea cadierei	Aluminum Plant
193	Portulaca oleracea cv.	Portulaca
194	Primula malacoides cv.	Primrose
195	Ranunculus hybrid cv.	Ranunculus
196	Rhododendron simsii cv.	Florist Azalea
197	Rosa hybrid cv	Hybrid Tea Rose
198	Rumohra adiantiformis	Leatherleaf Fern
199	Saintpaulia ionantha cv.	African Violet
200	Salvia splendens cv.	Salvia
201	Sansevieria trifasciata cv.	Snake Plant
202	Schefflera arboricola	Dwarf Schefflera
203	Schlumbergera bridgesii	Christmas Cactus
204	Sempervivum hybrid cv.	Hens and Chicks
205	Senecio x hybridus cv.	Cineraria
206	Sinningia speciosa Fyfiana Group cv.	Florist Gloxinia
207	Solidago hybrid cv	Solidago
208	Solenostemon scutellarioides	Coleus

209	Spathiphyllum	Peace Lily
210	Stephanotis floribunda	Stephanotis
211	Strelitzia reginae	Bird of Paradise
212	Syngonium podophyllum	Nephthytis
213	Tagetes species cv.	Marigold
214	Tradescantia zebrine	Wandering Jew
215	Tulipa cv.	Tulip
216	Verbena hybrid cv.	Verbena
217	Viola x wittrockiana cv.	Pansy
218	Zantedeschia hybrid cv.	Calla Lily
219	Zinnia cv.	Zinnia

Floriculture Equipment and Supply Identification List

301	#100 Ribbon (satin, sheer, wired)
302	#3 Ribbon (satin, sheer, wired)
303	#40 Ribbon (satin, sheer, wired)
304	#9 Ribbon (satin, sheer, wired)
305	18-Gauge floral wire
306	28-Gauge floral wire
307	Anvil-and-blade pruner
308	Backflow preventer
309	Bouquet sleeve
310	Bulb planter
311	Cardette
312	Cell pack containers
313	Ceramic container
314	Chemical resistant gloves
315	Chenille stem
316	Coconut coir
317	Compressed air sprayer
318	Corsage box
319	Corsage pin
320	Corsage snips
321	Drip emitter, irrigation
322	Dry foam
323	Dust mask
324	Duster
325	Ellepot propagation cubes
326	Enclosure card
327	Fern greening pins
328	Fertilizer injectors
329	Floral adhesive
330	Floral foam
331	Floral knife
332	Floral preservative
333	Floral stem tape
334	Fogger
335	Gas mask
336	Glass vase
337	Glue gun
338	Glue pan
339	Glue sticks
340	Granular fertilizer
341	Greenhouse thermostat
342	Hanging basket
343	Hearing protection
344	Hook-and-blade pruners (bypass pruners)
345	Hose punch
346	Hose repair coupling
347	Hose-end repair fitting
348	Hose-end sprayer
349	Hose-end washer
350	Impulse sprinkler
351	Drip Irrigation tape
352	Irrigation timer
353	Mist nozzle (mist bed)
354	Nosegay holder
355	Nursery container
356	Oscillating sprinkler
357	Peat moss
358	Peat pots
359	Pest strips
360	pH testing meter
361	Polyethylene film
362	Polyethylene pipe
363	Pot covers
364	Propagation mat
365	Propagation trays
366	PVC (polyvinylchloride) pipe
367	PVC pipe cutter
368	Resin-coated fertilizer
369	Respirator
370	Ribbon shears
371	Rice hulls
372	Rockwool propagation cubes
373	Rose and stem flower stripper
374	Safety goggles
375	Sand
376	Scoop shovel
377	Shade fabric
378	Sharpening stone
379	Sheet moss
380	Siphon injector
381	Soil moisture meter
382	Solenoid valve
383	Spaghetti tubing (1/4" diameter or less)
384	Spanish moss
385	Sphagnum moss
386	Spray suit
387	Square point (flat) shovel
388	Styrofoam
389	Surestik cling
390	Tulle
391	Vermiculite
392	Water breaker
393	Water picks
394	Water soluble fertilizer
395	Water tubes
396	Waterproof container tape
397	Wire cutter
398	Wooden pick
399	Wrist corsage holder

Floral Arrangement Practicum Rubric

100 POINTS

Name	Member Number	Chapter/State	Team Number
Judge Name	**Judge's Signature**		**Date**

	Excellent	Good	Needs Improvement	Member Score
Arrangement	**85**			
Category interpretation	**4-5 points** Design follows given scenario within provided parameters and correlates to the appropriate style, shape and design	**2-3 points** Design slightly followed given scenario but is somewhat lacking in appropriate style, shape, or design	**0-1 points** Design does not follow given scenario and/or lacks in following the given style, shape, or design	
Balance	**7–10 points** Design is both visually and physically balanced	4–**6 points** Design is slightly off balanced	**0–3 points** Design is not balanced visually or physically	
Creativity	**7–10 points** Design expresses advanced creative ability and advanced design techniques	**4–6 points** Design expresses some creative ability and minimal advanced design techniques	**0–3 points** Design lacks creative ability and Demonstrates limited design techniques	
Depth	**7-10 points** Placement of materials at different levels is evenly distributed throughout	**4-6 points** Placement of materials are somewhat distributed evenly	**0-3 points** Placement of items are not distributed evenly	
Color	**7-10 points** Color is used evenly/harmoniously throughout	**4-6 points** Color is used somewhat correctly	**0-3 points** Color is not used correctly	
Focal emphasis	**7-10 points** Design has one area of design that attracts the eye	**4-6 points** Design somewhat has a clear focal point	**0-3 points** Design does not have a clear focal point	
Line / Rhythm	**7-10 points** Design has a clear sense of movement created visually by the placement of floral materials	**4-6 points** Design has a somewhat clear sense of movement created visually by the placement of floral materials	**0-3 points** Design has no clear sense of movement created visually by the placement of floral materials	
Mechanics	**7-10 points** Techniques used to keep floral material secure and stable are hidden or done neatly	**4-6 points** Techniques used to keep floral material secure and stable are somewhat hidden or done neatly	**0-3 points** Techniques used to keep floral material secure and stable are not hidden or done neatly	
Scale / Proportion	**4-5 points** Design is the correct size based on container given	**2-3 points** Design is slightly out of proportion	**0-3 points** Design is not in proportion with container given	
Unity	**4–5 points** All principles of designs are present and executed well	**2–3 points** Some principles of design are executed well	**0–1 points** None or few principles of design are executed well	
ITEMIZED LIST OF COSTS	**15**			
Bill of Sale Completion	**4–5 points** Bill of Sale is completed entirely with a complete list of all items used and totaled	**2–3 points** Bill of Sale is not entirely complete or missing some items used in the design	**0–1 point** Bill of Sale is missing a lot of detail and/or missing several items used in the design	
Individual Pricing and Quantity Used	**4–5 points** All items used in the design are individually listed with correct individual price and quantity totally accurately	**2-3 points** Some items added incorrectly, or quantity used listed incorrectly.	**0–1 point** Significant number of items added or listed incorrectly	
Total Bill of Sale Pricing Accuracy	**4–5 points** Overall bill is legible with labor calculated correctly, and total price is listed accurately within +/- $0.50 of $55.00	**2-3 points** Overall bill includes minor errors, includes parts that are difficult to read or final price slightly off target goal of $55.00	**0-1 points** Overall bill includes major errors, difficult to read, or well off target goal of $55.00.	
			TOTAL SCORE (100 points possible)	

Floral Arrangement Itemized List of Costs

Name	Member Number	Chapter/State	Team Number
Judge Name	**Judge's Signature**		**Date**

Quantity	Flower/Foliage	Unit Cost	Total
	TOTAL FLOWER/FOLIAGE MATERIAL COST		

Quantity	Material Used	Unit Cost	Total
	TOTAL HARD GOODS COST		

Total Plant Material Cost	
Total Hard Goods Cost	
Sub Total	
Labor 20%	
TOTAL ARRANGEMENT COST*	

**Participants will be provided the retail price of flowers and foliage that they will use in their arrangement by the event official at the beginning of the practicum. The markup is built into the retail price of the flowers and the foliage used in the arrangement.*

Asexual Plant Propagation Rubric

100 POINTS

Name	Member Number	Chapter/State	Team Number

Judge Name	Judge's Signature	Date

	Excellent	Good	Needs Improvement		Member Score
Proper sanitation and equipment use	**4–5 points** Thoroughly covering cutting instrument with a sterile solution	**2–3 points** Cleaning cutting instrument with solution	**0–1 point** No sanitation procedures followed or not followed properly	(X2)	
Selection of cuttings	**4–5 points** Small uniform terminal shoot cuttings	**2–3 points** Used some cuttings of the same size and type	**0–1 point** too large, nonterminal shoots, or not uniform in size	(X2)	
Making cuttings	**5–6 points** Straight, flush even cut of the basal end	**3–4 points** Some cuttings cut properly and some incorrectly cut	**0–2 points** basal end cut at angle or damaged	(X2)	
Preparation of cuttings for sticking in growing media	**5–6 points** Selected/ prepared cuttings that did not require further preparation	**3–4 points** Selected cuttings that required removal of damaged and/or unneeded foliage	**0–2 points** left damaged and/or unnecessary foliage on plant	(X2)	
Use of rooting hormone	**4–5 points** Poured correct amount of rooting hormone into separate container, applied hormone & tapped off excess amount	**2–3 points** Too much or too little put in separate container, applied correctly but did not tap off extra hormone	**0–1 point** applied directly from source container and/or did not use rooting hormone	(X2)	
Selection of growing media	**5–6 points** Select best rooting medium for optimum rooting	**3–4 points** Select moderate but not best choice for optimum rooting	**0–2 points** selected incorrect rooting medium	(X2)	
Sticking of cuttings in growing media	**5–6 points** Creating a dibble in media prior to placing cutting, placing at proper depth, firming media correctly	**3–4 points** Correctly demonstrated at least 1 or 2 of the correct principles	**0–2 points** no prior hole made, planted too deep, or left unstable	(X2)	
Cuttings labeled correctly	**4–5 points** Labeled with date propagated, plant name, and cultivar	**2–3 points** Labeled with some but not all information required	**0–1 point** no label present or labeled with incorrect information	(X2)	
Response to questions	**5–6 points** Answered judges questions correctly	**3–4 points** Answered some questions correctly	**0–2 points** Did not or incorrectly answered questions	(X2)	
				TOTAL SCORE (100 POINTS POSSIBLE)	

Pinching Plants Rubric

100 POINTS

Name	Member Number	Chapter/State	Team Number

Judge Name	Judge's Signature	Date

	Excellent 8–10 points	Good 4–7 points	Needs Improvement 0–3 points		Member Score
Selection of plant part to pinch	Followed given scenario to determine correct pinch	Some pinches were made in incorrect places on plant	Most all pinches were made on incorrect places	(x2)	
Use of proper procedures in making pinches	Used proper tools and/or techniques in making pinches	Used some but not all proper tools and/or techniques in making pinches	Used few or not any of proper tools and/or techniques in making pinches	(x2)	
Made proper pinches	Plant pinched correctly to get desired effect per instructions	Some pinches were too little or too much to get desired effect per instructions	Most or all of plant pinches would not allow the plant to reach desired effect per instructions	(x2)	
Overall effect of making pinches	The plant will reach desired outcome after pinching, no damage to plant parts left after pinch, and pinches correctly done	The plant will have some difficulty achieving desired outcome, some plant parts left have damage, and some pinches not done correctly	The plant will not be able to achieve desired outcome, much damage to plant part left, and most pinches not done correctly	(x2)	
Answered questions correctly	Answered questions correctly	Answered some questions correctly	Did not or incorrectly answered questions	(x2)	
				TOTAL SCORE (50 POSSIBLE POINTS)	

Potting of Young Plants Practicum Rubric

100 POINTS

Name	Member Number	Chapter/State	Team Number

Judge Name	Judge's Signature	Date

	Excellent	Good	Needs Improvement		Member Score
Potting Process					
Selection of plugs or liners	5–6 points Plugs/liners are uniform in size and shape, correct number selected based on pot size provided	3–4 points Plugs/liners are somewhat uniform in size and shape, just slightly off in selecting the correct number	0–2 points Plugs/liners are not uniform in size and shape, correct number not selected based on pot size provided	(x2)	
Proper planting depth	5–6 points Hole is made prior to placing plant in soil, the entire root system is covered, leaving proper stem length visible	3–6 points minor amount of roots are showing, planted slightly too deep	0–2 points A large amount of roots are showing or plant stem is covered with soil	(x2)	
Labeling of plant/pot	5–6 points Labeled with date planted, plant name, and cultivar	3–4 points Labeled with some but not all information required	0–2 points no label present or labeled with incorrect information	(x2)	
Correct growing medium level in pot	5–6 points Growing media is filled to the inner lip of the pot, leaving enough room to water the plant	3–4 points Growing media is filled slightly too high or too low	0–2 points Growing media is left very low or completely fills up the pot	(x2)	
Plug or liner arrangement and angle	5–6 points Plugs/Liners evenly spaced for pot size given and plugs/liners planted in upright position	3–4 points plugs/liners planted slightly too close or too far apart, planting slightly tilting	0–2 points Plugs/liners not spaced corrected and not planted upright	(x2)	
Firmness of growing medium	5–6 points After planting, growing media is tapped/ pressed firmly around each plant leaving the plant upright	3–4 points Growing media is left slightly loose or left slightly too firm restricting plant growth	0–2 points Growing media is not firmed after planting or left entirely too firm restricting plant growth	(x2)	
General appearance (free from handling damage)	5-6 points Final product presented to the judge with plants upright, pot clean, and in sellable condition	3-4 points Final product presented to the judge in slightly sellable condition	0-2 points Final product presented to judge in non-sellable condition	(x2)	
Response to questions	5–6 points Answered questions correctly	3–4 points Answered some questions correctly	0–2 points Did not or incorrectly answered questions	(x2)	
				TOTAL (100 POINTS POSSIBLE)	

Making and Packing a Corsage Rubric

75 POINTS

Name	Member Number	Chapter/State	Team Number
Judge Name	**Judge's Signature**		**Date**

	Excellent	Good	Needs Improvement	Member Score
Mechanical Application	**11–15 points** Techniques used to keep floral material secure and stable are hidden or done neatly	**6–10 points** Techniques used to keep floral material secure and stable are somewhat hidden or done neatly	**0–5 points** Techniques used to keep floral material secure and stable are not hidden or done neatly	
Color	**7–10 points** Color is used evenly/harmoniously throughout	**4–6 points** Color is used somewhat correctly	**0–3 points** Color is not used correctly	
Creativity	**11–15 points** Design expresses a high level of creative ability and advanced design techniques.	**6–10 points** Design expresses some creative ability and minimal advanced design techniques	**0–3 points** Design lacks creative ability and demonstrated limited design techniques	
Balance	**7–10 points** Design is physically and visually balanced	**4–6 points** Design is slightly off balance	**0–3 points** Design does not follow the principles of design regarding balance	
Design & Category Interpretation	**4–5 points** Design follows scenario given for an overall cohesive design	**2–3 points** Design somewhat follows scenario given and overall design is somewhat cohesive	**0–1 points** Design does not follow given scenario	
Bill of Sale Completion	**7–10 points** Bill of Sale is completed entirely with a complete list of all items used	**5–8 points** Bill of Sale is not entirely complete or missing some items used in the design	**0–4 points** Bill of Sale is missing a lot of detail and/or missing several items used in the design	
Pricing Accuracy (accuracy of pricing identification)	**7–10 points** All items used in the design are listed with correct price, totally accurately, labor calculated corrected, within 50 cents up or down of $25.00	**4–6 points** Some items added incorrectly and/or final price slightly off target goal of $25.00	**0–3 points** Significant number of items added incorrectly or way off target goal of $25.00.	
			TOTAL SCORE (75 POINTS POSSIBLE)	

Corsage Itemized List of Costs

Name	Member Number	Chapter/State	Team Number

Judge Name	Judge's Signature	Date

Quantity	Flower/Foliage Used	Unit Cost	Total
	TOTAL FLOWER/FOLIAGE MATERIAL COST		

Quantity	Material Used	Unit Cost	Total
	TOTAL HARD GOODS COST		

Total Flower/Foliage Material Cost	
Total Hard Goods Cost	
Subtotal	
Labor 20 %	
TOTAL CORSAGE COST	

Disorder Practicum Scorecard

75 POINTS

Name **Member Number** **Chapter/State** **Team Number**

		Member Answer	Possible Points	Member Score
1.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
2.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
3.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
4.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
5.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
6.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
7.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
8.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	

		Member Answer	Possible Points	Member Score
9.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
10.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
11.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
12.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
13.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
14.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
15.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/Biological Control #:		1	
	TOTAL POINTS		75	

CLASSIFICATION

1 Diseases
2 Insects/Pests /Mites
3 Nutritional/Environmental

IDENTIFICATION

01 Aphids
02 Black Leaf Spot
03 Botrytis – Grey Mold
04 Cold Temperature (freeze)
05 Cold Water Damage
06 Damping-off
07 Downy Mildew
08 Ethylene Damage
09 Fungus Gnats
10 Insufficient Watering
11 Iron Deficiency
12 Leaf Miner
13 Leafhopper
14 Mealybugs
15 Nitrogen Deficiency
16 Phosphorus Deficiency
17 Powdery Mildew
18 Root Rot
19 Rust
20 Scale
21 Shore Flies
22 Snails/ Slugs
23 Spider Mites
24 Stem Rot
25 Thrips
26 Tospovirus (INSV and TSWV)
27 Whiteflies

CHEMICAL CONTROL

1 Fungicide
2 Insecticide
3 Miticide
4 Mulluscicide
5 No Treatment Listed

CULTURAL CONTROL

1 Apply Complete Fertilizer
2 Correct/Adjust Temperature
3 Correct/Adjust Watering
4 Ladybird Beetles
5 Nematodes
6 Parasitic Wasps
7 Predatory Mites
8 Reduce Relative Humidity
9 No Treatment Listed

Hazardous Situation Rubric

75 POINTS

Name	Member Number	Chapter/State	Team Number
Judge Name	**Judge's Signature**		**Date**

	Excellent 4-5 points	Good 2-3 points	Needs Improvement 0-1 points	Weight	Member Score
Utilize proper personal safety precautions	Was able to identify /demonstrate all proper PPE.	Missed only 1 piece of PPE	Did not know or excluded much of the PPE	X 4	
Utilize proper safety procedures in clearing up the situation	All necessary safety hazards including appropriate handling of materials and equipment discussed	Most necessary safety hazards including appropriate handling of materials and equipment discussed	Safety hazards and handling considerations not addressed	X 5	
Proper disposal of problem materials	Understood and demonstrated the procedures for disposal of the contaminant.	Understood and demonstrated most of the necessary procedures for disposal	Disposal procedures lacked completeness	X 4	
Utilize proper follow-up procedures	Provided follow-up procedures for contaminant and to address prevention.	Provided some follow-up procedures for contaminant and some to address prevention.	Follow up procedures and prevention were missing	X 2	
			TOTAL SCORE (75 POSSIBLE POINTS)		

HORTICULTURE

CDE# 105482

Incorrect Marks ✓ ✗ ▬ • Correct Mark ●

Team Name

This sheet is for demonstration and practice only. You must use a real scan sheet for actual competition.

Team Number

State

Last Name

First Name

Code

Placing Classes

	Place	Class 1 2 3 4 5 6 7 8 9	Place	
1	1234		1234	1
2	1243		1243	2
3	1324		1324	3
4	1342		1342	4
5	1423		1423	5
6	1432		1432	6
7	2134		2134	7
8	2143		2143	8
9	2314		2314	9
10	2341		2341	10
11	2413		2413	11
12	2431		2431	12
13	3124		3124	13
14	3142		3142	14
15	3214		3214	15
16	3241		3241	16
17	3412		3412	17
18	3421		3421	18
19	4123		4123	19
20	4132		4132	20
21	4213		4213	21
22	4231		4231	22
23	4312		4312	23
24	4321		4321	24

Team Activity

Team	Ind.

Practicums (Judges)

1	2	3	4	5	6

Exam

1	A B C D	26	A B C D
2	A B C D	27	A B C D
3	A B C D	28	A B C D
4	A B C D	29	A B C D
5	A B C D	30	A B C D
6	A B C D	31	A B C D
7	A B C D	32	A B C D
8	A B C D	33	A B C D
9	A B C D	34	A B C D
10	A B C D	35	A B C D
11	A B C D	36	A B C D
12	A B C D	37	A B C D
13	A B C D	38	A B C D
14	A B C D	39	A B C D
15	A B C D	40	A B C D
16	A B C D	41	A B C D
17	A B C D	42	A B C D
18	A B C D	43	A B C D
19	A B C D	44	A B C D
20	A B C D	45	A B C D
21	A B C D	46	A B C D
22	A B C D	47	A B C D
23	A B C D	48	A B C D
24	A B C D	49	A B C D
25	A B C D	50	A B C D

Exam 2/Team

1	A B C D
2	A B C D
3	A B C D
4	A B C D
5	A B C D
6	A B C D
7	A B C D
8	A B C D
9	A B C D
10	A B C D
11	A B C D
12	A B C D
13	A B C D
14	A B C D
15	A B C D
16	A B C D
17	A B C D
18	A B C D
19	A B C D
20	A B C D
21	A B C D
22	A B C D
23	A B C D
24	A B C D
25	A B C D

Assessment and Solution

1	A	B	C	D	6	A	B	C	D	11	A	B	C	D	16	A	B	C	D	21	A	B	C	D
2	A	B	C	D	7	A	B	C	D	12	A	B	C	D	17	A	B	C	D	22	A	B	C	D
3	A	B	C	D	8	A	B	C	D	13	A	B	C	D	18	A	B	C	D	23	A	B	C	D
4	A	B	C	D	9	A	B	C	D	14	A	B	C	D	19	A	B	C	D	24	A	B	C	D
5	A	B	C	D	10	A	B	C	D	15	A	B	C	D	20	A	B	C	D	25	A	B	C	D

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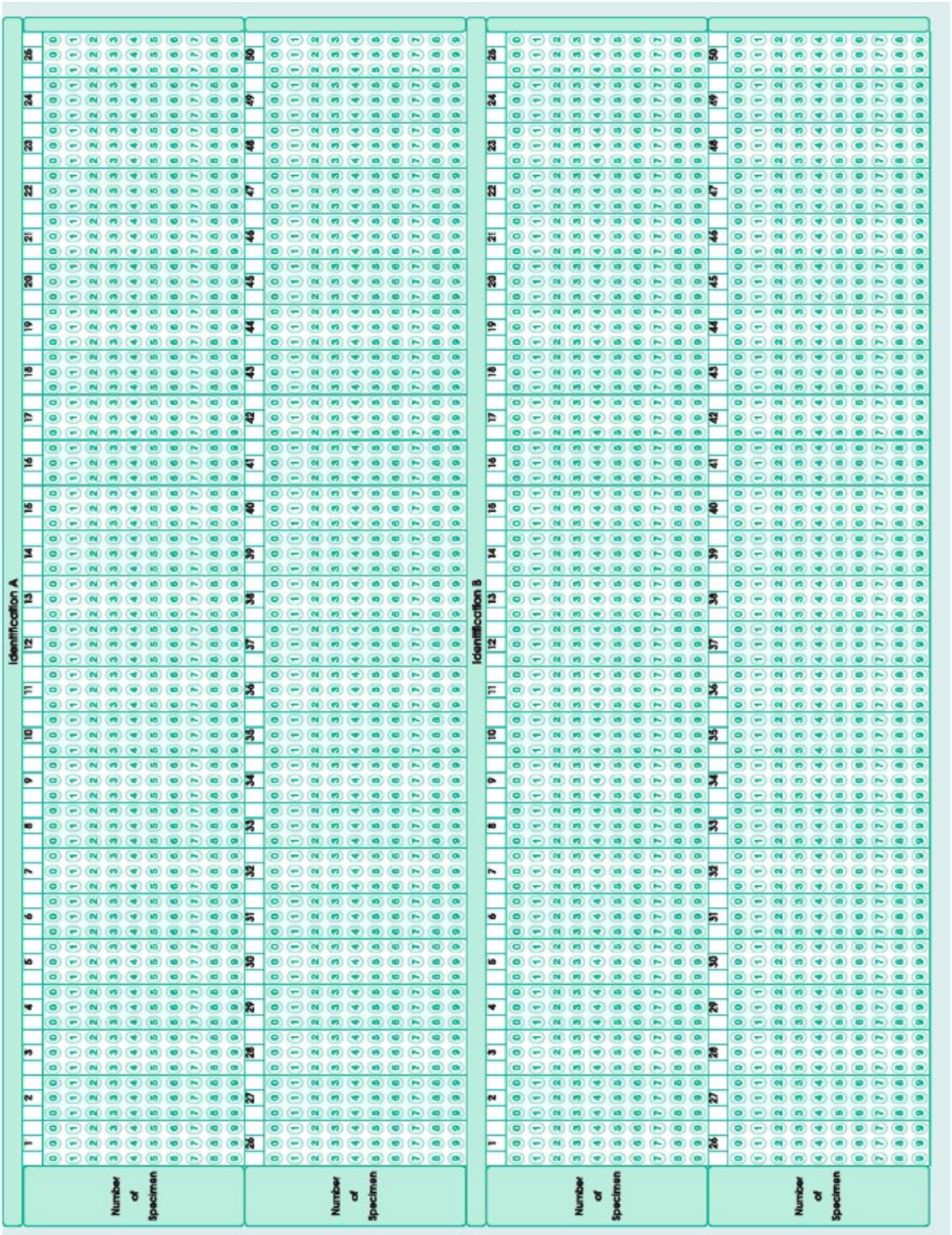
Identification A
Number of Specimen
Identification B
Number of Specimen

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 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.		

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
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 Handling a hazardous situation	CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.RST.11-12.4
BS.02.04.02.a. Classify and describe hazards associated with biological and chemical materials.	Handling a hazardous situation	CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.RST.11-12.4
BS.02.04.03.a. Summarize what happens to waste after it leaves the laboratory and examine opportunities to reduce waste and unnecessary costs.	Handling a hazardous situation	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.		
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.	Handling a hazardous situation 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 Handling a hazardous situation Plant disorders Written exam	
CS.03.02. Performance Indicator: Develop a plan to maintain and improve health, safety and environmental compliance and performance.		

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CS.03.02.01.c. Create a plan to improve safety, health and environmental management regulations in an AFNR business.	Handling a hazardous situation	AFNR Career Cluster, Statement 6
CS.03.02.02.c. Devise a strategy to educate employees on environmental compliance and performance in an AFNR business.	Handling a hazardous situation	AFNR Career Cluster, Statement 6
CS.03.03. Performance Indicator: Apply health and safety practices to AFNR worksites.		
CS.03.03.01.b. Analyze and summarize current health and safety practices of AFNR business.	Handling a hazardous situation	
CS.03.03.02.c. Create a plan to communicate appropriate responses for health and safety situations within an AFNR business.	Handling a hazardous situation	
CS.03.03.03.b. Assess first aid knowledge and procedures relevant to AFNR worksites.	Handling a hazardous situation Written exam	
CS.03.03.04.c. Create a plan to mitigate the level of contamination or injury identified as a risk in the workplace.	Handling a hazardous situation	
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.	Handling a hazardous situation Plant and tool identification Written exam	
C3.03.04.02.c. Evaluate and select appropriate tools and equipment to complete AFNR tasks.	Handling a hazardous situation Plant and tool identification Written exam	
CS.03.04.03.b. Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.	Handling a hazardous situation	
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.).		

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CS.05.01.01.c. Evaluate progress toward AFNR career goals and identify opportunities for improvement and necessary adjustments to one's plan of action.	Job interview	
CS.05.01.02.c. Implement one's personal plan of action for obtaining the required education, training and experiences and evaluate progress to identify opportunities for improvement and necessary adjustments.	Job interview	
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 Team activity Selling one-on-one	
CS.05.02. Performance Indicator: Examine careers in each of the AFNR pathways.		
CS.05.02.01.c. Interpret and evaluate the results of a personal career assessment and connect them to potential careers in AFNR pathways.	Job interview	
CS.05.02.02.c. Conduct interviews with career professionals within AFNR pathways and summarize the results.	Job interview	
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.	Job interview 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.	Job interview Problem solving	
CRP.01.02.02.c. Make and defend professional decisions after evaluating their near- and long-term impacts on employers and community.	Job interview	
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.	Handling a hazardous situation Media selling Plant disorders Problem solving Team activity	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
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 Job interview	
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	
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 Job interview 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 Job interview 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.	Job interview 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.	Job interview 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.	Job Interview 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.		

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
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	
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	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
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.	Job interview Plant disorders	
CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.		
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.	Handling a hazardous situation Problem solving	
CRP.08.03.02.c. Implement and evaluate plans to solve workplace and community problems.	Handling a hazardous situation 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.	Job interview 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.10.01. Performance Indicator: Identify career opportunities within a career cluster that match personal interests, talents, goals and preferences.		
CRP.10.01.01.c. Plan a career path based on personal interests, goals, talents and preferences.	Job interview	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
CRP.10.01.02.c. Match potential career opportunities in career clusters with personal interests, talents, goals and preferences.	Job interview	
CRP.10.02. Performance Indicator: Examine career advancement requirements (e.g., education, certification, training, etc.) and create goals for continuous growth in a chosen career.		
CRP.10.02.01.c. Devise and implement plans to complete the requirements for career advancement.	Job interview	
CRP.10.02.02.b. Create goals for personal improvement and continuous growth in a career area.	Job interview	
CRP.10.03. Performance Indicator: Assimilate input and/or advice from experts (e.g., counselors, mentors, etc.) to plan career and personal goals in a chosen career area.		
CRP.10.03.01.b. Assess career and personal goals and determine additional information career area experts could provide.	Job interview	
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	
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	

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
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	
ESS.04.01. Performance Indicator: Use pollution control measures to maintain a safe facility and environment.		
ESS.04.01.03.c. Construct a plan for handling hazardous waste in given situations.	Handling a hazardous situation	HS-ETS1-2
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

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
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 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	
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

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.03.02.02.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 Written exam	
PS.03.03.04.b. Examine and apply procedures for the safe handling, use and storage of pesticides including personal protective equipment and reentry interval.	Handling a hazardous situation	
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.).	Handling a hazardous situation 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

Measurements Assessed	Event Activities Addressing Measurements	Related Academic Standards
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