



PA FFA Turfgrass Science Career Development Event



Chairperson Information

CDE Chairperson	Chase Straw
Email	straw@psu.edu
Best Contact Number	502-229-9838
Contest Date/Times	TBA 2026
Contest Location	Day 1 – Classroom; Day 2 – Valentine Turfgrass Research Center
CDE Review Time	At the end of the CDE
CDE Review Location	Valentine Turfgrass Research Center

Basic CDE Guidelines

Event Type: Individual/Team	# of Team Members: 4
<u>Individual Materials List</u> Students are responsible for bringing the following: <ul style="list-style-type: none"> • Calculator • Clean clipboard • Two or more sharpened pencils. 	<u>Group Materials List</u> <ul style="list-style-type: none"> •
<u>Attire</u> <ul style="list-style-type: none"> • Day 1, Classroom – Official Dress • Day 2, Valentine Turfgrass Research Center - Work appropriate attire 	<u>CDE At-A-Glance (List of major components)</u> <ul style="list-style-type: none"> • Day 1 – Individual - Classroom • General Knowledge Exam – 100 points • Day 2 – Team – Valentine Turfgrass Research Center • Practicum 1 – 200-400 points • Practicum 2 – 50-150 points
<u>Pre-State CDE Expectations</u> <ul style="list-style-type: none"> • None 	
<u>CDE Changes from Previous Years?</u> <ul style="list-style-type: none"> • Chase Straw, Assistant Professor of Turfgrass Soils at Penn State, is the new chairperson. • Practicums may change year to year. 	

CDE Rules

CDE Component	Points	Component Description
General Knowledge Exam	100 points	<p>Fifty (50) to one hundred (100) question exam to evaluate the participant's knowledge. The exam will test student knowledge in the following areas:</p> <ul style="list-style-type: none"> • Turfgrass Identification, Selection, and Morphology • Cultural practices including mowing, fertility, irrigation, aeration, topdressing, etc. • Soils • Drainage • Turfgrass Mathematics • Pest Management • Golf course management • Sports field management for turf and non-turf areas • Equipment operation
Practicum 1 - Stations	200-400 points	<p>Team members work together at each station. Teams should be prepared for the following stations:</p> <ul style="list-style-type: none"> • Turfgrass seed ID, interpreting a seed label, and Pure Live Seed calculation • Fertilizer calculation • Interpreting a pesticide label • Irrigation case study • Interpreting a soil test • Pesticide calculation • Turfgrass disease identification • Equipment case study • Turfgrass insect identification • Programming an irrigation controller • Interpreting blueprints • Using a transit • Equipment operation • Irrigation construction • Baseball mound repair • Fertilizer/pesticide calibration • Turfgrass ID • Broadleaf and grass weed ID • Soil ID • Equipment ID

Practicum 2 - Scenarios	50-150 points	<p>Team members work together to solve problems commonly encountered in the turfgrass industry. It is designed to evaluate individual and group contributions in coordination and cooperation of knowledge, evaluation, and decision-making. These can include:</p> <p>Site evaluation – Teams must evaluate a sports field area for problems and make recommendations for how to improve.</p> <p>Fertilizer calibration – Teams work through calibration of fertilizer application equipment to determine the correct amount of product to be applied to an area.</p> <p>Consultation scenario – Teams receive a common turfgrass problem they must solve. The team gives a verbal presentation to the customers/turfgrass managers (judges) on their solution.</p>
<p>Causes for Disqualification: 1. Any participant in possession of an electronic device in the event area is subject to disqualification.</p>		
<p>Tie-breaker: If needed in the case of tied individual or team total scores, final placings will be determined by comparing, in order, scores for the following:</p> <p style="padding-left: 40px;">Team and Individual</p> <p style="padding-left: 80px;">1. Written Exam</p> <p style="padding-left: 80px;">2. Practicum 2 Scores</p>		

Resources

<ul style="list-style-type: none"> • Turgeon and Kaminski (2019). Turfgrass Management (Current Edition) • Christians and Agnew (2008). The Mathematics of Turfgrass Maintenance (Fourth Edition). • Emmons and Rossi (2015). Turfgrass Science and Management (Fifth Edition). • Puhalla, Krans, and Goatley (2010). Sports Fields: Design, Construction, and Maintenance. • Walker (2009). The Field Guide: The Layout and Dimensions of Sports Fields. • Smiley, Dernoeden, and Clarke (2005) Compendium of Turfgrass Diseases (Third Edition) • Uva, Neal, and DiTomaso (1997). Weeds of the Northeast. • Penn State Center for Turfgrass Science – Plant ID - https://plantscience.psu.edu/research/centers/turf/extension/plant-id • Brandenburg and Villani (1995). Handbook of Turfgrass Insect Pests. • Penn State Center for Turfgrass Science – Resources on Professional Turfgrass Management - https://plantscience.psu.edu/research/centers/turf/extension/professional-turf
<p>Specimen Lists</p> <p><u>Turfgrass Species and Seed</u></p> <ul style="list-style-type: none"> • Creeping Bentgrass (<i>Argrostis palustris</i>)

- Velvet Bentgrass (*Agrostis canina*)
- Kentucky Bluegrass (*Poa pratensis*)
- Rough Bluegrass (*Poa trivialis*)
- Annual Bluegrass (*Poa annua*)
- Perennial Ryegrass (*Lolium perenne*)
- Annual Ryegrass aka. Italian Ryegrass (*Lolium multiflorum*)
- Tall Fescue (*Festuca arundinacea*)
- Fine Fescue (includes: *Festuca rubra* ssp. *rubra*, *Festuca rubra* ssp. *Cummutata*)
- Bermudagrass (*Cynodon dactylon*)
- Buffalograss (*Bouteloua dactyloides*)
- Centipedegrass (*Eremochloa ophiuroides*)
- St. Augustinegrass (*Stenotaphrum secundatum*)
- Seashore Paspalum (*Paspalum vaginatum*)
- Zoysiagrass (*Zoysia japonica*)

Broadleaf and Grassy Weeds

- *Poa annua* Annual Bluegrass
- *Echinochloa crusgalli* Barnyardgrass
- *Agrostis* sp. Bentgrass
- *Cynodon dactylon* Bermudagrass
- *Digitaria* Sp. Crabgrass
- *Setaria* sp. Foxtail
- *Eleusine indica* Goosegrass
- *Muhlenbergia scherberi* Nimblewill
- *Dactylis glomerata* Orchardgrass
- *Agropyron repens* Quackgrass
- *Festuca arundinacea* Tall Fescue
- *Cyperus esculentus* (yellow) Nutsedge
- *Cyperus rotundus* (purple) Nutsedge
- *Allium vineale* Wild Garlic/Onion
- *Medicago lupulina* Black Medic
- *Plantago rugelii* and *P. major* Broadleaf Plantain
- *Plantago lanceolata* Buckhorn Plantain
- *Cirsium vulgare* Bull Thistle
- *Cirsium arvense* Canada Thistle
- *Mollugo verticillata* Carpetweed
- *Stellaria media* Common Chickweed
- *Cerastium vulgatum* Mouseear Chickweed
- *Taraxacum officinale* Dandelion
- *Kyllinga brevifolia* Green kyllinga
- *Glecoma hederacea* Ground Ivy
- *Oxalis montana* Common groundsel
- *Hieracium pratense* *H. aurantiacum* Yellow/Orange Hawkweed
- *Prunella vulgaris* Healall
- *Lamium amplexicaule* Henbit
- *Microstegium vimineum* Japanese stiltgrass
- *Polygonum aviculare* Knotweed

- *Malva neglecta* Mallow
- *Verbascum thapsus* Mullien
- *Polygonum pensylvanicum* Pennsylvania smartweed
- *Hydrocotyle* sp. Pennywort (Dollarweed)
- *Portulaca oleracea* Purslane
- *Poa trivialis* Rough Bluegrass
- *Rumex acetosella* Sheep Sorrel
- *Capsella bursa-pastoris* Shepherds purse
- *Veronica filiformis*, *V. officinalis*, *V. serpyllifolia* Creeping Speedwell
- *Veronica arvensis* Corn Speedwell
- *Euphorbia maculata* & *E. supina* Spurge
- *Holcus lanatus* Velvetgrass
- *Trifolium repens* White Clover
- *Daucus carota* Wild Carrot
- *Oxalis stricta* Yellow Woodsorrel
- *Achillea millefolium* Yarrow
- *Barbarea vulgaris* Yellow Rocket

Turfgrass Soils

- Brick Dust
- Calcined Clay
- Clay Rootzone
- Compost
- Crumb Rubber
- Diatomaceous Earth
- Drainage Stone
 - Pea gravel
- Expanded Shale
- Infield Mix
- Limestone
- Mound Clay
- Native Soil Rootzone
 - Heavy clay
 - Loam
- Peat
- Sand
 - Topdressing Sand
 - Sand Rootzone
 - Silica sand
- Topsoil
- Vitrified Clay
- Warning Track Material
- Zeolite

Turfgrass equipment

- Aeration Equipment
 - Air Injection
 - Deep Drill

- Fraise Mower
- Hollow tines
- Hollow tine aerator
- Solid tines
- Solid tine aerator
- Spiker/Slicer
- Vertical Mower/Verticutter
- Water Injection
- Air Filter
- Blower
- Broom
- Diaphragm Pump
- Drag Mat
- Edger
- Fertilizer Spreader
 - Drop
 - Rotary
 - Tractor Mounted
- Front End Loader
- Fuel Filter
- Fuel Tank
- Grader/Laser Level
- Groomer
- Hydraulic Filter
- Hydraulic Line
- Hydraulic Pump
- Hydraulic Reservoir
- Mowers
 - Flail
 - Reel
 - Rotary
- Oil Filter
- Painter
- Reel Mower HOC Gauge/Accu-Gage
- Reel Mower Components
 - Spider
 - Reel cylinder
 - Reel blade
 - Shaft
 - Bedbar
 - Bedknife
 - Bedknife adjuster
 - Roller
 - Roller adjuster
- Rotary Mower Components
 - Mulching blades
 - Bench grinder
 - Balancer
- Roller

- Seeder
- Skid-Steer
- Sod cutter
- Soil Probe
- Sprayers
 - Backpack
 - Boom
- Sweeper
- Tamp
- Topdresser
- Tractor
- Transit
- Trencher
- Trimmer - Line trimmer/weed whacker
- Utility Vehicle
- York Rake

Turfgrass diseases

- Anthracnose
- Brown Patch
- Dollar Spot
- Fairy Ring
- Gray Leaf Spot
- Gray Snow Mold
- Helminthosporium Leaf Spot
- Necrotic Ring Spot
- Nematodes
- Pink Snow Mold
- Powdery Mildew
- Pythium Blight
- Red Thread
- Rust
- Spring Dead Spot
- Summer Patch
- Take-all Patch

Turfgrass insects

- Annual Bluegrass Weevil
- Armyworms
- Asiatic Garden Beetle
- Black Turfgrass Ataenius Beetle
- Bluegrass Billbugs
- Chinchbugs
- Cutworms
- Fall Armyworm
- Fire Ants
- Green June Beetle

- Japanese Beetle
- May and June Beetles
- Masked Chafer
- Mites
- Mole Crickets
- Oriental Beetle
- Sod Webworms
- White Grubs