

Forestry

Senior Division



Overview

Revised:11/24

The Forestry Career Development Event is designed to stimulate student interest and to promote forestry instruction in the agricultural education curriculum and to provide recognition for those who have demonstrated skills and competencies as a result of forestry instruction.

Eligibility

This event is open to all high school FFA chapters and FFA members in good standing. Members that have participated in a previous national event or previous state winning teams in this area are ineligible. This event will be held during the June CDE Week at Brecknock County Park in Camden, Delaware, with registration at 9:30am and the event beginning at 10:00am. There is also a middle school portion to this CDE that occurs simultaneously as the high school CDE. Middle school students will do the following components: Tree Identification, Equipment Identification, and Disorder Identification individually. The Middle School team event will be map interpretation.

Event Procedure

- The team will consist of four individuals and all four scores will count toward the team score. The team score is comprised of the combined scores of each individual and the team activity in which all team members will participate.
- Participants must come to the event prepared to work in adverse weather conditions. The event will be conducted regardless of weather. Participants should have rain gear, FFA T-shirt, jeans or long pants, and closed-toed shoes— sneakers okay. Students will not be able to participate if they are wearing shorts, flipflops, sandals, or other open toed shoes.
- Students must bring their own pencils, non-programmable calculator, clipboard—clean, compass, tree/Biltmore stick, water bottle, and insect spray.
- Under no circumstances will any participant be allowed to touch or handle equipment or plant material during the event. Any infraction of this rule will be sufficient to eliminate the team from the event.
- Observers will not be permitted in the event area while the event is in progress.
- No team, team member or team coach shall visit the event facilities to observe plant materials and facilities two weeks prior to the CDE. Any team, team member or coach reported and proven to do so will cause the elimination of the team from the Delaware FFA Forestry CDE.

- Participants will be assigned to group leaders who will escort them to various event-staging sites. Each participant is to stay with his/her assigned group leader throughout the event or until told to change leaders by the event superintendent. Leaving the event area or rotation and moving to another before assigned will result in disqualification of individual or team.
- All participants will be given an identification number by which they will be designated throughout the event.
- Written Materials: All written materials will be furnished for the event. No written materials such as tests, problems and worksheets shall be removed from the event site.
- Any communication, verbal or non-verbal, between participants during the event will be sufficient cause to eliminate the team member involved from the career development event.
- Event chairs may stop any participant if they deem their manner hazardous to themselves or others. Such stoppage shall deem the individuals disqualified for that section of the event.
- Participants will not be allowed to possess any personal electronic devices (i.e. cell phones, smart watches, air pods, etc) other than those approved by event officials. Participants who possess personal electronic devices without prior approval of the event officials will be disqualified from the event.

Event Format

Please note: The event format will be impacted by the number of teams participating in the event.

A. Individual Activities

General Knowledge Exam - 100 points

a. Fifty (50) multiple-choice questions will be selected from areas of the forestry industry reflected in the event objectives. This phase of the event will test the participant's knowledge and understanding of basic principles of forestry. The test will be comprised of questions from the last three (3) years of National FFA Forestry CDE questions.

b. Scoring: Each answer has a value of 2 points for a total maximum score of 100 points.

Tree Identification - 100 points

a. Twenty (20) tree specimens, pressed samples, fresh leaf samples and/or standing trees, from the list below will be displayed for participants to identify by common names. A number will designate each specimen.

b. Scoring: Five points will be given for each specimen that is correctly identified for a maximum of 100 points.

Forestry Practicums - 100 points each for total of 300 points per individual

1. Tree/Forest Disorders Practicum

a. Symptoms of at least ten (10) and not more than twenty (20) disorders from the

list at the end of this chapter will be displayed for participants to identify by common names. The symptoms will be presented in one or more of the following forms:

- Actual sample
- Pictures/slides

iii. Written description

iv. Written case history

b. A number will designate each set of symptoms representing a disorder.

c. Scoring: A total of 100 points are possible for this practicum.

2. Equipment Identification Practicum 100 points

a. Twenty (20) pieces of equipment from the list below will be displayed for participants to identify by technical names. Each piece of equipment will be designated by number.

b. Scoring: Five points will be given for each piece of equipment identified correctly for a total of 100 points.

3. Compass Practicum— 100 points

a. The participant will use a hand compass and pacing to the nearest full foot to simulate the determination of the property lines on a tract of timber. The participant will start at any point and record the compass reading and distance to the next point. Azimuth readings shall be recorded.

b. Scoring: Partial credit will be given with a deduction of one point for each two degrees or two feet the participant is off the correct answer.

4. Map Interpretation Practicum—100 points

a. Participants will answer questions using a furnished United States Geological Survey topographic map. The participant should know legal description, recognize topographic map symbols, understand the meaning of map symbols, size and location of 40 acres or more in a parcel.

b. Examples:

i. What is the legal description of the boxed area?

ii. What is the item located at this point?

iii. What is the acreage of the area enclosed?

iv. In what section is the city of Marshall located?

v. What is the elevation at this point?

c. Legal descriptions will be written or described according to the public land survey system.

d. Example: SE $\frac{1}{4}$ of NW $\frac{1}{4}$ of Section 3, T3N, R1E

5. Forest Products Practicum— 100 points

a. 10 to 20 wood products/samples will be displayed for participants to evaluate and identify its tree species source from the tree identification specimen list. The wood products/samples will be presented in one or more of the following forms:

i. Actual sample.

ii. Pictures/slides.

iii. Written description

C. Team Activity - 300 points

A sampling of practicums will be incorporated into the team activity which may include map interpretation (see description above), compass and pacing (see description above) timber stand improvement, and measuring board foot volume (Middle School activity).

1. Forest Management Evaluation - Timber Stand Improvements (TSI) and/or Thinning Practicum.— 100 points

a. The trees selected and designated for use in this part of the event may be all of one species or a mixture of species.

b. An area will be selected and identified by ribbons, paint, rope, etc. It will contain 20 marked trees within a timber stand that needs thinning or some TSI work. All trees in the selected area will be considered as a forest management site, and the participants will score each marked tree using one of the following options:

i. Harvest - utilize the tree

ii. Leave - the tree should remain in stand for a good reason

iii. Deaden - Undesirable tree, not merchantable or beneficial to wildlife, should be deadened or cut down and left in woods

c. The participants will be given a situation concerning the forest management objectives of the stand selected. This information will be given to participants at the site before they start. Information that will be needed to help participants in their decisions will include:

i. Markets available

ii. Wildlife considerations

iii. Present condition of stand

iv. Management plan

2. Tree Measurement—Timber Cruising for Board Volume (Middle School team activity)- 100 points

a. Using the provided tree measurement tools, each participant will measure ten pre-numbered trees on a plot for board foot volume. The participant must record the DBH (Diameter Breast Height) to the nearest one-inch class and the merchantable height of each tree height rounded down to the nearest ½ log. Volume tables will be provided at the event.

b. The following minimum diameters and log length will be:

c. Minimum Saw Timber DBH

10 inches

Top Diameter

10 inches DIB

Height

16 feet

Points for tree measurement will be broken down as:

*Diameter Breast Height– 30 points

* Height– 30 points

* Volume– 40 points

d. Merchantable height stops are estimated to the upper point on a tree where it becomes 10 inches in diameter or where a major fork in a tree stem occurs or where a limb has a diameter equal to $\frac{1}{2}$ of the diameter of the tree at that point.

Time: Each participant will be allowed 30 minutes to complete this phase.

SCORING

Phase	Individual	Team
General Exam	100	400
Tree Identification	100	400
Forestry Practicums (3)	300	1200
Team Activity	N/A	300
Total	500	2,300

Phase	Individual	Team
Tree Identification	100	400
Equipment Identification	100	400
Disorder Identification	100	400
Team Activity (BFV)	N/A	100
Total	300	1,300

Tie Breaker

Tiebreakers for high school individual scores will be 1) Knowledge Exam, 2) Tree Identification, 3) Total Rotational Practicum Score. For Middle School individual scores will be 1) Tree Identification, equipment, disorders. Tie Breaker for teams will be the team activity.

Awards

Awards will be presented to individuals and/or teams based up on their rankings at the State Fair FFA Awards Breakfast. The first place team will represent Delaware at National Convention. The second place team will represent Delaware at the Big E.

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:

GENERAL KNOWLEDGE EXAM

- Forests and Forestry. Rolfe et al., Interstate Publishers. 0-8134-3240-5
- Introduction to Forestry Science. Burton, Delmar Publications. 0-8273-8010-0
- Science of Forestry Management. Irwin. AAVIM. 0-8960-6383-6

TREE IDENTIFICATION

- Dendrology at Virginia Tech, <https://dendro.cnre.vt.edu/dendrology/factsheets.cfm>
- W. H. Harlow, E. S. Harrar, and F. M. White. Textbook of Dendrology, current edition. New York, NY:

McGraw-Hill Book Company.

- Silvics of North America, Handbook #654, volume one and two, U.S. Forest Service, https://www.srs.fs.usda.gov/pubs/misc/ag_654/table_of_contents.htm

TREE MEASUREMENT

- https://www.americanforests.org/wp-content/uploads/2014/12/AF-Tree-Measuring-Guidelines_LR.pdf
- Measuring Woodland Timber <https://www.extension.purdue.edu/extmedia/FNR/FNR-4.pdf>

FOREST MANAGEMENT

- Forests and Forestry. Rolfe et al., Interstate Publishers. 0-8134-3240-5
- Introduction to Forestry Science. Burton, Delmar Publications. 0-8273-8010-0
- Science of Forestry Management. Irwin. AAVIM. 0-8960-6383-6
- One Less Thing—Lessons, <https://www.onelessting.net/collections/lesson-plans>

EQUIPMENT IDENTIFICATION

- <https://www.forestry-suppliers.com/>
- [https://www.forestryequipmentguide.com/National FFA Organization | Career and Leadership](https://www.forestryequipmentguide.com/National_FFA_Organization_I_Career_and_Leadership)

MAP INTERPRETATION

- The U.S. Department of Interior Geological Survey Topographic Map Information and Symbols Key, Map Distribution, U. S. Geological Survey.
- <https://pubs.usgs.gov/gip/TopographicMapSymbols/topomapsymbols.pdf>
- <https://www.honolulu.hawaii.edu/instruct/natsci/geology/brill2/TopoMaps.pdf>
- <https://paleoind.sitehost.iu.edu/Resources/Guide%20to%20Topographic%20Maps.pdf>
- <https://training.nwcg.gov/pre-courses/s290/S-290%20Student%20CD/Map%20and%20Compass.pdf>

COMPASS

- https://courses.washington.edu/esrm304a/lectures/LAB%201/RangerCompass_UserGuide.2000_2-up.pdf
- <https://training.nwcg.gov/pre-courses/s290/S-290%20Student%20CD/Map%20and%20Compass.pdf>

CHAINSAW PARTS AND IDENTIFICATION

- https://www.aces.edu/wp-content/uploads/2020/11/FOR-2084-ChainsawSafetyIMaintenance_111120aL-G.pdf
- <https://www.ctahr.hawaii.edu/oc/freepubs/pdf/res-092.pdf>
- https://www.stihl.com/p/media/download/uk-en/STIHL_Chain_Saw_Safety_Manual.pdf
- [https://fingerlakestrail.org/FLTC/BOM/REF/TrailManagementTeam/Maintenance/CHAINSAW%20MAINTENANCE%20--HOWDENSaw%20maintenance%20file\(1\).pdf](https://fingerlakestrail.org/FLTC/BOM/REF/TrailManagementTeam/Maintenance/CHAINSAW%20MAINTENANCE%20--HOWDENSaw%20maintenance%20file(1).pdf)

FOREST PRODUCTS

- www.home-extension.co.uk/timber.pdf
- <https://www.weyerhaeuser.com/woodproducts/>
- <https://www.octaneseating.com/types-of-wood-for-furniture>
- <https://www.columbiaforestproducts.com/resources/forestry/common-timber-resources/>
- <https://www.americanhardwood.org/en/american-hardwood>
- <https://woodidentification.net/softwood-species-descriptions/>

FOREST BUSINESS MANAGEMENT

- Forests and Forestry. Rolfe et al., Interstate Publishers. 0-8134-3240-5
- Introduction to Forestry Science. Burton, Delmar Publications. 0-8273-8010-0
- Science of Forestry Management. Irwin. AAVIM. 0-8960-6383-6

Tree Identification List

1. Alder, Red (*Alnus rubra*)
2. Ash (*Fraxinus* sp.)
3. Aspen, Bigtooth (*Populus grandidentata*)
4. Aspen, Quaking (*Populus tremuloides*)
5. Baldcypress (*Taxodium distichum*)
6. Basswood (*Tili americana*)
7. Beech, American (*Fagus americana*)
8. Birch, Black (*Betula lenta*)
9. Birch, White (*Betula papyrifera*)
10. Birch, Yellow (*Betula alleghaniensis*)
11. Cherry, Black (*Prunus serotina*)
12. Cottonwood, Eastern (*Populus deltoides*)
13. Elm (*Ulmus* sp.)
14. Fir, Balsam (*Abies balsamea*)
15. Fir, Douglas (*Pseudotsuga menziesii*)
16. Hackberry (*Celtis occidentalis*)
17. Hemlock, Eastern (*Tsuga canadensis*)
18. Hemlock, Western (*Tsuga heterophylla*)
19. Hickory (*Carya* sp.)
20. Larch (*Larix* sp.)
21. Maple, Red (*Acer rubrum*)
22. Maple, Sugar (*Acer saccharum*)
23. Oak, Black (*Quercus velutina*)
24. Oak, Chestnut (*Quercus montana*)
25. Oak, Northern Red (*Quercus rubra*)
26. Oak, Scarlet (*Quercus coccinea*)
27. Oak, Southern Red (*Quercus falcata*)
28. Oak, White (*Quercus alba*)
29. Pecan (*Carya illinoensis*)
30. Pine, Eastern White (*Pinus strobus*)
31. Pine, Loblolly (*Pinus taeda*)
32. Pine, Lodgepole (*Pinus contorta*)
33. Pine, Longleaf (*Pinus palustris*)
34. Pine, Ponderosa (*Pinus ponderosa*)
35. Pine, Red (*Pinus resinosa*)
36. Pine, Shortleaf (*Pinus echinata*)
37. Poplar, Yellow (*Liriodendron tulipifera*)
38. Red Cedar, Eastern (*Juniperus virginiana*)
39. Red Cedar, Western (*Thuja plicata*)
40. Sassafras (*Sassafras albidum*)
41. Spruce, Red (*Picea rubens*)
42. Spruce, Sitka (*Picea sitchensis*)
43. Spruce, White (*Picea glauca*)
44. Sweetgum (*Liquidambar styraciflua*)
45. Sycamore (*Platanus* sp.)
46. Walnut, Black (*Juglans nigra*)
47. Willow, Black (*Salix nigra*)

Equipment, Disorders and Products Identification List

EQUIPMENT

101	Abney Level	137	Hand Compass
102	Altimeter	138	Hand Lens
103	Angle Gauge	139	Harvester
104	Ascender	140	Hip Chain
105	Axe	141	Hypo-Hatchet
106	Backpack Fire Pump	142	Increment Borer
107	Bark Gauge	143	Jacob Staff
108	Bulldozer	144	Log Rule
109	Canthook	145	Logger's Tape
110	Carabiner	146	Lopper
111	Chainsaw	147	Maul
112	Chainsaw Chaps	148	Peavy
113	Chipper	149	pH Meter
114	Climbing Harness	150	Planimeter
115	Clinometer	151	Plant Press
116	Cruising Vest	152	Plastic Flagging
117	Data Recorder	153	Pole Saw
118	Densiometer	154	Pruning Saw
119	Delimber	155	Pulley
120	Diameter Tape	156	Relaskop
121	Dot Grid	157	Safety Glasses
122	Drip Torch	158	Safety Hard Hat
123	Ear Protection	159	Scale Stick
124	Endloader	160	Skidder
125	Feller Buncher	161	Staff Compass
126	Felling Wedge	162	Stereoscope
127	Fiberglass Measuring Tape	163	Stump Grinder
128	Fire Rake	164	Tally Book
129	Fire Shelter	165	Tally Meter
130	Fire Weather Kit	166	Timber Tongs
131	Fire-Swatter	167	Tree Caliper
132	First Aid Kit	168	Tree Climbers
133	Flow/current Meter	169	Tree Marking Gun
134	Foot Ascender	170	Tree Planting Hoe or Bar
135	Gas Tank	171	Wedge Prism
136	GPS Receiver	172	Yarder

TREE DISORDERS

201	Aphid	219	Lightning Damage
202	Asian Longhorn Beetle	220	Mechanical Damage
203	Black Knot	221	Mistletoe
204	Butt or Heart Rot	222	Mountain Pine Beetle
205	Canker	223	Needle Cast
206	Chemical Damage	224	Nematode
207	Cicada	225	Rust
208	Climatic Injury (snow, wind, frost, drought, hail)	226	Sawfly
209	Damping Off	227	Scale
210	Douglas Fir Beetle	228	Spongy Moth
211	Dutch Elm Disease	229	Spruce Beetle
212	Eastern Larch Beetle	230	Spruce Budworm
213	Emerald Ash Borer	231	Sudden Oak Death
214	Fir Engraver Beetle	232	Sunscald
215	Fir Tussock Moth	233	Tent Caterpillar
216	Fire Damage	234	Western Pine Beetle
217	Hemlock Woolly Adelgid	235	Wetwood or Slime Flux
218	Ips Engraver Beetle	236	Wildlife/Livestock Damage

FOREST PRODUCTS*Species*

- 301 Alder (*Alnus sp.*)
- 302 Ash (*Fraxinus sp.*)
- 303 Aspen/Cottonwood (*Populus spp.*)
- 304 Baldcypress (*Taxodium distichum*)
- 305 Basswood (*Tili americana*)
- 306 Beech, American (*Fagus americana*)
- 307 Birch (*Betula sp.*)
- 308 Cherry, Black (*Prunus serotina*)
- 309 Elm (*Ulmus sp.*)
- 310 Fir, Balsam (*Abies balsamea*)
- 311 Fir, Douglas (*Pseudotsuga menziesii*)
- 312 Hackberry (*Celtis occidentalis*)
- 313 Hemlock (*Tsuga sp.*)
- 314 Hickory/Pecan (*Carya spp.*)
- 315 Larch (*Larix sp.*)
- 316 Maple (*Acer sp.*)
- 317 Oak, Red
- 318 Oak, White
- 319 Pine, White
- 320 Pine, Red
- 321 Pine, Southern Yellow
- 322 Pine, Western Yellow - Ponderosa or Lodgepole
- 323 Poplar, Yellow (*Liriodendron tulipifera*)
- 324 Red Cedar, Eastern (*Juniperus virginiana*)
- 325 Red Cedar, Western (*Thuja plicata*)
- 326 Sassafras (*Sassafras albidum*)
- 327 Spruce (*Picea sp.*)
- 328 Sweetgum (*Liquidambar styraciflua*)
- 329 Sycamore (*Platanus sp.*)
- 330 Walnut, Black (*Juglans nigra*)
- 331 Willow, Black (*Salix nigra*)

Engineered and Processed Materials

- 332 Chips, Shavings, or Mulch – [*New 2026](#)
- 333 Corrugated Paper Packaging – [*New 2026](#)
- 334 Crosstie – [*New 2026](#)
- 335 Finger Joint Material – [*New 2026](#)
- 336 Glued Laminated Timber – [*New 2026](#)
- 337 Laminated Veneer Lumber
- 338 Medium Density Fiberboard – [*New 2026](#)
- 339 Molding and Millwork – [*New 2026](#)
- 340 Oriented Strand Board – [*New 2026](#)
- 341 Paperboard Packaging – [*New 2026](#)
- 342 Particle Board
- 343 Pellets – [*New 2026](#)
- 344 Pole or Piling
- 345 Primed Boards
- 346 Plywood
- 347 Tongue and Groove
- 348 Treated Dimensional Lumber – [*New 2026](#)
- 349 Untreated Dimensional Lumber – [*New 2026](#)
- 350 Veneer