

Forestry CDE

(February, 2025)



PURPOSE

The Forestry Career Development Event is designed to create an interest in career preparation for all current and future aspects of the forestry industry through leadership development and hands-on technical skill development using industry standards which are delivered through the agriculture education curriculum.

ELIGIBILITY

The participant must be an active member of a chartered West Virginia FFA Chapter and enrolled in grades 9, 10, 11, or 12. Each chapter may enter one team.

EVENT PROCEDURE

The event will be a team event consisting of four students. All 4 team members' scores will be calculated in the team total. A team may compete with less than 4 members. FFA members will wear outdoor official dress. Participants must come to the event prepared to work in adverse weather conditions. The event will be conducted regardless of weather. Participants should have rainwear, warm clothes, and appropriate footwear.

Under no circumstances will any participants be allowed to handle any of the items in the identification portion of the practicums. Any infraction of this rule will result in team elimination from the event.

No FFA advisors/coaches will be allowed in the area of the contest, but arrangements will be made to view the specimens following the contest.

EVENT MATERIALS

MATERIALS STUDENTS MUST PROVIDE

- Pencils
- Clipboards
- Electronic Calculator (if needed)- standard four-function battery operated
- Industry Equipment: Hard hats, Azimuth compass, tree sticks



INDIVIDUAL PRACTICUMS

GENERAL KNOWLEDGE EXAMINATION

A fifty multiple choice and true/false question exam will be given that covers all areas of forest industry and forest management. Each question is worth 2 points. Participants will have a maximum of 30 minutes to complete the exam.

TREE IDENTIFICATION (90 pts)

Fifteen specimens from the Tree Identification List will be displayed for participants to identify by technical and common names. Each specimen is worth 6 points. A number will designate each specimen. Specimens may be presented either in live or picture form. Participants will have a maximum of 30 minutes to complete this practicum.

EQUIPMENT IDENTIFICATION (100pts)

Twenty pieces of equipment from the Equipment Identification List will be displayed for the contestants to identify by technical names. A number will designate each piece of equipment. Contestants will have 30 minutes to complete this practicum. Each piece of equipment will be worth 3 points. Equipment (20) (2pts each), Disease (10) (3pts each), Products (10) (3pts each)

SAWTIMBER CRUISING (100 pts)

Participants will use a Biltmore Tree Stick to measure the DBH and merchantable height in 8-foot half-logs or 16-foot logs for 10 designated saw timber trees. Using the provided volume table, the contestants will calculate the total volume of the 10 trees. Participants will be given 30 minutes to complete this practicum.

Diameter Measurement Criteria:

- Diameter breast height (DBH) must be 11.0 inches or greater.
- Record all trees in 1-inch diameter classes.

Height Measurement Criteria

Merchantable sawtimber height is measured from a 1-foot stump to a 10-inch top

diameter (inside bark).

Hollow trees or curved trunks (sweep) are not considered as a defect for this

contest. Measure to the nearest half-log by interpolating between the full log

markings or stick.

Scoring

Three points will be given for the correct DBH and three points for the correct height. Forty (40) points will be given for the correct volume per acre. Five points will be deducted for each five percent plus or minus from the correct

measured volume.

COMPASS AND PACING (50 pts)

The participant will use a hand compass and pacing to simulate the determination of the property lines on a tract of timber for cruising timber. The compass course will consist of 5 separate lines. The participants can start at any of the 5 starting points and will record the **azimuth** bearing (to the nearest full degree). A total of 50 points are possible with a deduction of 1 point for every 2 degrees of bearing of distance from the correct answer. A maximum deduction of 10 points will be deducted from any line.

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. One point deduction for every two feet the participant is off from the correct answer up to 10 points for each one for a total of 50 points.

The Compass and Pacing section will be worth 50 points total

Rotating Practicums

FOREST MANAGEMENT EVALUATION-TIMBER STAND IMPROVEMENTS

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

An area will be selected and identified by ribbons, paint, rope, etc. It will contain 20 marked trees within a timber stand. 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:

- Harvest — utilize the tree.
- Leave — the tree should remain in stand for a good reason.
- Deaden-Undesirable trees, not merchantable or beneficial to wildlife, should

be deadened or cut down and left in the woods.

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 the following:

- Markets available
- Wildlife considerations
- Present condition of stand
- Management plan

MAP INTERPRETATION

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

Examples:

- What is the legal description of the boxed area?
- What is the item located at this point?
- What is the acreage of the area enclosed?
- In what section is the city of Marshall located?
- What is the elevation at this point?

Legal descriptions will be written or described according to the public land survey system. • Example: SE $\frac{1}{4}$ of NW $\frac{1}{4}$ of Section 3, T3N, R1E

CHAINSAW PART IDENTIFICATION

This practicum will consist of one or more of the parts listed below. Parts may utilize photos, video, demonstration, actual parts, written situations, and/or problems. This is not an all-inclusive list.

- Chainsaw parts identification: Each participant will identify parts of a chainsaw (does not include internal engine components).
- Troubleshooting: The participant will identify chainsaw problems or troubles.
- Safety: The participant will identify safety hazards, unsafe practices, and/or proper safety equipment.

FOREST BUSINESS MANAGER

This section is designed to determine the participant's ability to apply economic

principles and concepts of management to the decision-making process by actual problem analysis and to defend the decisions made. This will involve a model forest operation with possible calculations on profit/loss, cost of operation, taxes, depreciation, marketing product, stumpage cost, record keeping, etc.

A maximum of ten problems or questions will be used.

Scoring

Activities	Individual Points	Team Points
General Knowledge Exam	100	400
Tree Identification	90	360
Sawtimber Cruising	100	400
Compass and Pacing	50	200
Other ID (100pts) <ul style="list-style-type: none"> Equipment (20) (2pts each) Disease (10) (3pts each) Products (10) (3pts each) 	40 30 30	160 120 120
Rotating Practicums- (1) <ul style="list-style-type: none"> Timber Stand Improvement (TSI) Map Interpretation Chainsaw Part ID Forest Business Manager 	50	200
Total	490	1,960

TIE BREAKERS

In the event of a tie in individual scores, the following events will be used in order to determine award recipients:

Individual Tie Breaker:

- 1) Tree ID,
- 2) Knowledge Exam,
- 3) Timber Cruising,
- 4) Total Rotational Practicum Score

Team Tie Breaker:

- 1) Total Tree ID Score

IDENTIFICATION SPECIMEN LIST

ID NUMBER	BOTANTICAL NAME	COMMON NAME
001	<i>Alnus rubra</i>	Adler, Red
002	<i>Fraxinus sp.</i>	Ash
003	<i>Populus grandidentata</i>	Aspen, Bigtooth
004	<i>Populus tremuloides</i>	Aspen, Quaking
005	<i>Taxodium distichum</i>	Baldcypress
006	<i>Fagus Americana</i>	Beech, American
007	<i>Betula lenta</i>	Birch, Black
008	<i>Betula papyrifera</i>	Birch, White
009	<i>Prunus serotina</i>	Cherry, Black
010	<i>Populus deltoides</i>	Cottonwood, Eastern
011	<i>Ulmus sp.</i>	Elm
012	<i>Abies balsamea</i>	Fir, Balsam
013	<i>Pseudotsuga menziesii</i>	Fir, Douglas
014	<i>Tsuga canadensis</i>	Hemlock, Eastern
015	<i>Tsuga heterophylla</i>	Hemlock, Western
016	<i>Carya sp.</i>	Hickory
017	<i>Acer rubrum</i>	Maple, red
018	<i>Acer saccharum</i>	Maple, Sugar
019	<i>Quercus velutina</i>	Oak, Black
020	<i>Quercus Montana</i>	Oak, Chestnut
021	<i>Quercus rubra</i>	Oak, Northern red
022	<i>Quercus coccinea</i>	Oak, Scarlet
023	<i>Quercus falcata</i>	Oak, Southern Red
024	<i>Quercus alba</i>	Oak, White

025 *Carya illinoensis*
 026 *Pinus strobus*
 027 *Pinus taeda*
 028 *Pinus contorta*
 029 *Pinus palustris*
 030 *Pinus rigida*
 031 *Pinus ponderosa*
 032 *Pinus resinosa*
 033 *Pinus echinate*
 034 *Liriodendron tulipifera*
 035 *Thuja plicata*
 036 *Juniperus virginiana*
 037 *Picea rubens*
 038 *Picea sitchensis*
 039 *Picea glauca*
 040 *Liquidambar styraciflua*
 041 *Platanus sp.*
 042 *Juglans nigra*

Pecan
 Pine, Easter White
 Pine, Loblolly
 Pine, Lodgepole
 Pine, Longleaf
 Pine, Pitch
 Pine, Ponderosa
 Pine, Red
 Pine, Shortleaf
 Poplar, Yellow
 Red Cedar, Western
 Red Cedar, Eastern
 Spruce, red
 Spruce, Sitka
 Spruce, White
 Sweetgum
 Sycamore
 Walnut Black

EQUIPMENT

ID NUMBER	EQUIPMENT	ID NUMBER	EQUIPMENT
01	Altimeter	36	Hypo-Hatchet
02	Angle Gauge	37	Increment Borer
03	Ascender	38	Jacob Staff
04	Automatic Level	39	Log Rule
05	Backpack Fire Pump	40	Logger's Tape
06	Bark Gauge	41	Maul
07	Bulldozer	42	Peavy
08	Canthook	43	pH Meter
09	Carabiner	44	Planimeter
10	Chainsaw	45	Plant Press
11	Chainsaw chaps	46	Plastic Flagging
12	Clinometer	47	Pole Saw
13	Combination tool	48	Pruning Saw
14	Data recorder	49	Pulaski Axe
15	Densitometer	50	Relaskop
16	Diameter Tape	51	Safety Glasses
17	Dot Grid	52	Safety Hard Hat
18	Drip Torch	53	Scale Stick
19.	Ear Protection	54	Secchi Disc
20	Endloader	55	Soil Sampler
21	Feller Buncher	56	Soil Test Kit
22	Felling Wedge	57	Staff Compass
23	Fiberglass Measuring Tape	58	Stereoscope
25	Fire Rake	59	Tally book
26	Fire Shelter	60	Tally meter
27	Fire Weather Kit	61	Timber tongs
28	Fire Swatter	62	Tree caliper
29	First aid kit	63	Tree harvester
30	Flow/Current Meter	64	Tree marking gun
31	GPS Receiver	65	Tree planting hoe or bar
32	Hand Compass	66	Tree skidder
33	Hand Lens/Field	67	Water sampler
34	Microscope	68	Water test kit
35	Hip Chain	69	Wedge prism
		70	Tree marking gun

DISORDERS

ID NUMBER	DISORDER
01	Aphid
02	Asian longhorn beetle
03	Butt or heart rot
04	Canker
05	Chemical Damage
06	Cicada
07	Climatic injury: snow, wind frost, drought, hail
08	Damping Off
09	Douglas fir tussock moth
10	Emerald ash borer
11	Fir engraver beetle
12	Fire damage
13	Gypsy moth
14	Hemlock wooly adelgid
15	Ipps engraver beetle
16	Landscape equipment damage
17	Lightning damage
18	Mechanical damage
19	Mistletoe
20	Mountain pine beetle
21	Nematode
22	Rust
23	Sawfly
24	Scale
25	Spruce budworm
26	Sunscald
27	Tent caterpillar
28	Wetwood or slime flux
29	Wildlife/Livestock Damage

Bd Ft Volume Estimation Worksheet

Tree Number	DBH	Number of Logs	Volume
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		Total Volume	

Forest Products

Species		Engineered and Processed Materials	
01	Alder (<i>Alnus</i> sp.)	32	Chips, Shavings, or Mulch
02	Ash (<i>Fraxinus</i> sp.)	33	Corrugated Paper Packaging
03	Aspen/Cottonwood (<i>Populus</i> spp.)	34	Crosstie
04	Baldcypress (<i>Taxodium distichum</i>)	35	Finger Joint Material
05	Basswood (<i>Tili americana</i>)	36	Glued Laminated Timber
06	Beech, American (<i>Fagus americana</i>)	37	Laminated Veneer Lumber
07	Birch (<i>Betula</i> sp.)	38	Medium Density Fiberboard
08	Cherry, Black (<i>Prunus serotina</i>)	39	Molding and Millwork
09	Elm (<i>Ulmus</i> sp.)	40	Oriented Strand Board
10	Fir, Balsam (<i>Abies balsamea</i>)	41	Paperboard Packaging
11	Fir, Douglas (<i>Pseudotsuga menziesii</i>)	42	Particle Board
12	Hackberry (<i>Celtis occidentalis</i>)	43	Pellets
13	Hemlock (<i>Tsuga</i> sp.)	44	Pole or Piling
14	Hickory/Pecan (<i>Carya</i> spp.)	45	Primed Boards
15	Larch (<i>Larix</i> sp.)	46	Plywood
16	Maple (<i>Acer</i> sp.)	47	Tongue and Groove
17	Oak, Red	48	Treated Dimensional Lumber
18	Oak, White	49	Untreated Dimensional Lumber
19	Pine, White	50	Veneer
20	Pine, Red		
21	Pine, Southern Yellow		
22	Pine, Western Yellow - Ponderosa or Lodgepole		
23	Poplar, Yellow (<i>Liriodendron tulipifera</i>)		
24	Red Cedar, Eastern (<i>Juniperus virginiana</i>)		
25	Red Cedar, Western (<i>Thuja plicata</i>)		
26	Sassafras (<i>Sassafras albidum</i>)		
27	Spruce (<i>Picea</i> sp.)		
28	Sweetgum (<i>Liquidambar styraciflua</i>)		
29	Sycamore (<i>Platanus</i> sp.)		
30	Walnut, Black (<i>Juglans nigra</i>)		
31	Willow, Black (<i>Salix nigra</i>)		

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

- Introduction to Forestry Science. Burton, Delmar Publications.
- Science of Forestry Management. Kris Irwin. University of Georgia, AAVIM. Please call 706-742-5355 or email sales@aavim.com. Request Item #400. Cost is ~ \$25 plus \$10.50 shipping. Please leave your name, Item, number of copies, shipping and billing address, and phone number. They will respond to secure payment information.

TREE IDENTIFICATION

- Dendrology at Virginia Tech, <http://dendro.cnre.vt.edu/dendrology/main.htm>
 - “FFA Georgia State and National Tree Lists,” available from www.amazon.com • 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, P. O. Box 2417, 12th and Independence Avenue SW, Washington, DC 20013.

TREE MEASUREMENT

- https://www.americanforests.org/wp-content/uploads/2014/12/AF-TreeMeasuring_Guidelines_LR.pdf

FOREST MANAGEMENT

- Introduction to Forestry Science. Burton, Delmar Publications.
- Science of Forestry Management. Kris Irwin. University of Georgia, AAVIM. . Please call 706-742-5355 or email sales@aavim.com. Request Item #400. Cost is ~ \$25 plus \$10.50 shipping. Please leave your name, Item, number of copies, shipping and billing address, and phone number. They will respond to secure payment information.

EQUIPMENT IDENTIFICATION

- Current Catalog of Forestry Suppliers, Inc., 205 West Rankin Street, Jackson, MS 39204 • <http://www.husqvarna.com/us/accessories/>
- www.deere.com/en_US/industry/forestry/forestry.page?
- www.treestuff.com

MAP INTERPRETATION

- The U.S. Department of Interior Geological Survey Topographic Map Information and Symbols Key, Map Distribution, U. S. Geological Survey, Box 25286, Federal Center, Denver CO. <https://pubs.usgs.gov/gip/TopographicMapSymbols/topomapsymbols.pdf>
- Map Interpretation: <https://www.norfolk.gov.uk/-/media/norfolk/downloads/jobs-trainingvolunteering/volunteering/map-readingguide.pdf> Map Interpretation: https://d28rz98at9flks.cloudfront.net/102240/Map_reading_guide_v4.pdf
 - Reading and Interpreting Topographic Maps: paste the following url into your browser ftp://ftp.bpcrc.osu.edu/downloads/outreach/Watersheds/01_Exercise3.5v1.pdf

COMPASS

- https://georgia4h.org/wp-content/uploads/2018/05/manual_compassranger.pdf

CHAINSAW PARTS AND IDENTIFICATION

Husqvarna How to and safety training videos, Training videos include stance, safety gear, maintenance and how to execute a tree felling plan.

<https://www.youtube.com/playlist?list=PL0VcazyXHqErUd8ib-0Ks6sZkfGFQ5shu>

FOREST PRODUCTS

- www.fpl.fs.fed.us/products/publications/several_pubs.php?grouping_id=100&header_id=p
- https://www.dec.ny.gov/docs/lands_forests_pdf/woodproducts.pdf • www.home-extension.co.uk/timber.pdf
- <https://www.octaneseating.com/types-of-wood-for-furniture>
- <https://www.columbiaforestproducts.com/resources/forestry/commontimberresources/>

FOREST BUSINESS MANAGEMENT

- Introduction to Forestry Science. Burton, Delmar Publications.
- Science of Forestry Management. Kris Irwin. University of Georgia, AAV