

FORESTRY

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 rain wear, 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.

IDENTIFICATION PRACTICUM

TREE IDENTIFICATION

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

Twenty pieces of equipment from the Equipment Identification List will be displayed for the contestants to identify by technical names. Each piece of equipment will be designated by a number. Contestants will have 30 minutes to complete this practicum. Each piece of equipment will be worth 3 points.

SKILLS PRACTICUM

SAWTIMBER CRUISING

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 sawtimber 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.

PULPWOOD CRUISING

Participants will use the Biltmore Tree Stick to measure the DBH and merchantable height in 8-foot blots of 10 designated pulpwood-sized trees and calculate the standard cord volume of 10 trees.

Diameter Measurement Criteria:

- Diameter breast height (DBH) must be 5 inches or greater.
- Tally all trees in 1-inch diameter classes.
- Any tree that measures at the exact half-inch point will become the next highest full inch.

Height Measurement Criteria

- Merchantable sawtimber height is measured from a 1-foot stump to a 4-inch top diameter (inside bark).
- Measure to the nearest 8-foot bolt (stick) by interpolating between the 16-foot 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

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

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 tree, 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 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.

TREE/FOREST DISORDERS

Symptoms of at least 10, but not more than 20, disorders from the Tree Disorders Identification List 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
- Written description
- Written case history

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

FORESTS PRODUCTS PRACTICUM

Ten 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:

- Actual sample.
- Pictures/slides.
- Written description.

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 calculation 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

Practicum	Activity	Individual	Team
General Knowledge	Written Exam	100	400
Tree Identification	ID	100	400
Tree Measurements- Timber Cruising	Practicum	100	400
Individual Practicum (2)	Hands On	150	600
TOTAL		450	1800

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

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-Tree-Measuring-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-reading-guide.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-OKs6sZkfGFQ5shu>

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/common-timber-resources/>

FOREST BUSINESS MANAGEMENT

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

IDENTIFICATION SPECIMEN LIST

ID NUMBER	BOTANTICAL NAME	COMMON NAME
001	<i>Alnus rubra</i>	Adler, Red
002	<i>Fraxinus</i> sp.	Ash
003	<i>Populus grandidentat</i>	Aspen, Bigtooth
004	<i>Populus termuloides</i>	Aspen, Quaking
005	<i>Anethum graveolens</i> cv.	Baldcypress
006	<i>Anthurium x andraeanum</i> cv.	Beech, American
007	<i>Antirrhinum majus</i> cv.	Birch, Black
008		Birch, White
009		Cherry, Black
010	<i>Populus deltoides</i>	Cottonweed, Easter
011	<i>Ulmus</i> sp.	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</i> sp.	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	<i>Carya illinoinesis</i>	Pecan
026	<i>Pinus strobus</i>	Pine, Easter White
027	<i>Pinus taeda</i>	Pine, Loblolly
028	<i>Pinus contorta</i>	Pine, Lodgepole
029	<i>Pinus palustris</i>	Pine, Longleaf
030	<i>Pinus resinosa</i>	Pine, Red
031	<i>Pinus echinate</i>	Pine, Shortleaf
032	<i>Liriodendron tulipifera</i>	Poplar, Yellow
033	<i>Thuja plicata</i>	Red Cedar, Western
034	<i>Juniperus virginiana</i>	Red Cedar, Eastern
035	<i>Picea rubens</i>	Spruce, red
036	<i>Picea sitchensis</i>	Spruce, Sitka
037	<i>Picea glauca</i>	Spruce, White
038	<i>Liquidambar styraciflua</i>	Sweetgum039
039	<i>Platanus</i> sp.	Sycamore
040	<i>Juglans nigra</i>	Walnut Black

EQUIPMENT

ID NUMBER	EQUIPMENT
121	Altimeter
122	Angle Gauge
123	Ascender
124	Automatic Level
125	Backpack Fire Pump
126	Bark Gauge
127	Bulldozer
128	Canthook
129	Carabiner
130	Chainsaw
131	Chainsaw chaps
132	Clinometer
133	Combination tool
134	Data recorder
135	Densimeter
136	Diameter Tape
137	Dot Gride
138	Drip Torch
139.	Ear Protection
140	Endloader
141	Feller Buncher
142	Felling Wedge
143	Fiberglass Measuring
144	Tape
145	Fire Rake
146	Fire Shelter
147	Fire Weather Kit
148	Fire Swatter
149	First aid kit
150	Flow/Current Meter
151	GPS Receiver
152	Hand Compass
153	Hand Lens/Field
154	Microscope
155	Hip Chain
156	Hypo-Hatchet
157	Increment Borer
158	Jacob Staff
159	Log Rule
160	Logger's Tape
161	Maul
162	Peavy
163	pH Meter

164	Planimeter
165	Plant Press
166	Plastic Flagging
167	Pole Saw
168	Pruning Saw
169	Pulaski Axe
170	Relaskop
171	Safety Glasses
172	Safety Hard Hat
173	Scale Stick
174	Secchi Disc
175	Soil Sampler
176	Soil Test Kit
177	Staff Compass
178	Stereoscope
179	Tally book
180	Tally meter
181	Timber tongs
182	Tree caliper
183	Tree harvester
184	Tree marking gun
185	Tree planting hoe or bar
186	Tree skidder
187	Water sampler
188	Water test kit
189	Wedge prism

DISORDERS

ID NUMBER	DISORDER
190	Aphid
191	Asian longhorn beetle
192	Butt or heart rot
193	Canker
194	Chemical Damage
195	Cicada
196	Climatic injury: snow, wind frost, drought, hail
197	Damping Off
198	Douglas fir tussock moth
199	Emerald ash borer
200	Fir engraver beetle
201	Fire damage
202	Gypsy moth
203	Hemlock wooly adelgid
204	Ipps engraver beetle
205	Landscape equipment damage
206	Lightning damage
207	Mechanical damage
208	Mistletoe
209	Mountain pine beetle
210	Nematode
211	Rust
212	Sawfly
213	Scale
214	Spruce budworm
215	Sunscald
216	Tent caterpillar
217	Wetwood or slime flux
218	Wildlife/Livestock Damage

Bd Ft Volume Estimation Worksheet

Contestant Name

Chapter

Member Number

Team Number

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

1

2

3

4

5

6

7

8

9

10

11

12

13

14