Forestry

Contest Description and Rules

Please Direct Questions to:

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Materials Needed

Contestants must provide their own:
- Gear appropriate for weather conditions (jackets, rain gear, footwear)
- Clipboards
- No. 2 pencils (no pens, please)
- Calculators
- One Silva Ranger compass or one of comparable quality

Event Format

The contest is organized into 2 exams: a written exam conducted inside and a field exam conducted outside. The contest will be conducted regardless of weather. Contestants are advised to bring jackets, rain gear and adequate footwear. We anticipate that it will take 1.5 hours to complete both exams.

All written materials will be provided, as well as forest measurement tools other than those listed below.

Indoor Exam – Individual (50 points)

General Knowledge and Forest Business Management: Format of the exam will be multiple choice, true/false, and short answer. Individuals should be prepared to answer questions related to the objectives of the event listed above. Expect questions that will require knowledge of forestry-related calculations such as per-acre, per-total area, and per-event values based on typical forestry measurements (e.g., total board feet, seedling survivability, total planting cost per acre, etc.)

Field Exam – Team (50 points)

Each team will be asked to conduct an inventory of a forest plot. This section of the exam may include some or all of the following skills: establishing a plot of given area or radius, compass and pace, tree identification, tree measurement [DBH, merchantable height, board foot or cord volume, Basal area]. The “objectives” section above includes other skills that may be included in this section of the exam.
The merchantable height measurement will be to the nearest 1/2 log (8 feet) for saw log and nearest stick for pulpwood. Volume tables will be provided for both saw timber and pulpwood.

**The following minimum diameters will be in effect:**

<table>
<thead>
<tr>
<th></th>
<th>Pulpwood</th>
<th>Timber</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DBH</strong></td>
<td>5 inches</td>
<td>12 inches</td>
</tr>
<tr>
<td><strong>Top Diameter</strong></td>
<td>4 inches</td>
<td>8 inches</td>
</tr>
</tbody>
</table>

In preparing and competing in this event, students will develop the skills and knowledge needed to:

- Identify the defining characteristics of a tree
- Explain the function of the parts of the tree (roots, trunk, leaves, wood, cambium, phloem, xylem, bark)
- Identify by common name the following tree and shrub species by bark, leaves, and branching pattern:
  - Ash
  - Balsam Fir
  - Basswood
  - Bigtooth Aspen
  - Black Locust
  - Black Spruce
  - Black walnut
  - Boxelder
  - Bur Oak
  - Butternut
  - Eastern Cottonwood
  - Eastern Hemlock
  - American Elm
  - Hazelnut
  - Jack Pine
  - Paper/white Birch
  - Quaking Aspen
  - Red Maple
  - Northern Red Oak
  - Red Pine
  - Red-osier dogwood
  - Scotch Pine
  - Silver Maple
  - Sugar Maple
  - Tamarack/Eastern Larch
  - White Oak
  - Eastern White Pine
  - White Spruce
  - Willow sp.
  - Norway Maple
  - Honey Locust
  - Norway Spruce
  - Catalpa
  - Ginko
  - Colorado Blue Spruce

- Measure a tree’s dbh using a Biltmore stick and diameter tape
- Calculate a stand’s Basal area.
- Be able to calculate basal area of a stand using a 10 BAF prism.
- Measure a tree’s merchantable and total height using both a Merritt hypsometer and a clinometer/surveying tape.
- Use dbh and merchantable height to determine board foot and pulpwood volume using respective volume tables
- Establish a plot of a given size and inventory the trees within that plot
- Determine direction (azimuth) between two points using a compass
- Determine distance by pacing between two points
- Calculate acreage from given dimensions of land
- Determine number of trees to be planted in a given area of land provided the planting density
- Calculate the cost of planting trees provided the cost per tree
- Explain the impacts of invasive species on forests
- Provide characteristics of early and late succession tree species
- Describe and differentiate common management practices of selection (single tree and group) harvest, clear cutting, planting, shelterwood harvest, seed tree harvest, prescribed burning.
- Describe common products made from Wisconsin trees.
- Identify wood characteristics of common Wisconsin trees (above).
- Select appropriate management options to meet landowner goals.
- Describe common Wisconsin tree pests and diseases (gypsy moth, forest tent caterpillar, jack pine bud worm, emerald ash borer, oak wilt, Dutch elm disease)
- Describe important forest ecological processes and characteristics of nutrient cycle, water cycle, succession, disturbance, energy flow, and biodiversity.
- Describe the effects of fire on a forest.
- Describe the common threats to an urban tree.
- Describe the benefits of an urban forest and an urban tree.
- Identify land ownership patterns in Wisconsin.
- Identify agencies and organizations involved with Wisconsin’s forests.
- Describe the Managed Forest Law.

Define the following forestry-related terms:

- Allelopathy
- Forest certification
- Rotation
- Board Foot
- GIS
- Basal Area
- Broadleaf
- GPS
- Stumpage
- Conifer
- Harvest
- Succession
- Cord
- High-grading
- Sustainable Forestry
- DBH
- Infiltration
- Transpiration
- Deciduous
- Invasive Species
- Urban Forestry
- Disturbance
- Photosynthesis
- Vegetative Reproduction
- Ecosystem
- Riparian Zone
- Veneer
- Evergreen
- Root Girdle
- Windbreak
Be able to identify and describe the use of the following forest related tools:

- Adz
- Angle gauge
- Backpack
- Sprayer
- Basal area
- Prism
- Cant hook
- Chain saw
- Safety features
- Clinometer
- Diameter tape
- Loggers tape
- Safety Chaps
- Tree borer
- Tree scale stick
- Wedge
- Compass
- Hypsometer

Suggested References

General knowledge

UW River Falls Forestry
Frequently Asked Questions about Wisconsin’s Forests (from the Wisconsin Forestry website)

Wisconsin's Council on Forestry

Tree Identification

LEAF Tree Identification Key
Twig identification photographs

Forestry Tools

Forestry Suppliers  □  Forestry, Firefighting, and Tree Planting Equipment and Tools

Compass Course

Navigation with Map and Compass (from Geocities Outdoor Recreation Resources Directory) www.geocities.com/Yosemite/Falls/9200/navigation_map_compass.html

Forest Management and Measurements

Bring on the Biltmore (from Purdue University) www.agriculture.purdue.edu/fnr/stoutwoods/act_biltmore.html

Forest Fact Publications

No. 38 What Will a Forest Tree Earn?
No. 39 What’s a Forest Tree Worth?
No. 42 What is a Board Foot?
No. 43 What is Basal Area?
No. 44 What is a Cord?


Quizlet:

Forestry Equipment Flashcards
Forestry Leaf ID Flashcards
Forestry Tree and Twig Flashcards