

Massachusetts Technical Teacher Testing Program Horticulture Content Outline

Written and Performance Exam General Overview

- The intent of this exam is to assess your ability to teach the skills found in the Massachusetts Technical Education Framework.
- This exam is aligned to the frameworks which can be accessed [here](#).
- Many questions and tasks require a synthesis of knowledge based on experience in the field and may not be found in any book.
- Candidates are encouraged to prepare for their exam by reviewing textbooks and reference material which has been listed as part of this exam outline. These resources can be found using online search tools, online vendors, and websites.
- Contact the Technical Teacher Testing Office if you need further assistance in locating resources listed in the exam outline.
- Use this exam outline and the Massachusetts Technical Education Framework to focus your preparation for the exam.

Written Exam

- Number of Questions: 100
- Administration Time: 3 hours
- Administration Method: Remote Proctoring Online Session

Written Exam Content Coverage

10%	Fundamentals of Health and Safety <ul style="list-style-type: none"> • Health and Safety Regulations • Practices 	<ul style="list-style-type: none"> • Pesticide Application License (CORE)
15%	Botany <ul style="list-style-type: none"> • Plant Classification • Cell Biology 	<ul style="list-style-type: none"> • Plant Anatomy and Physiology • Plant Reproduction
15%	Plant Health Care <ul style="list-style-type: none"> • Entomology • Pathology 	<ul style="list-style-type: none"> • Nutrients • IPM
5%	Soils <ul style="list-style-type: none"> • Characteristics 	<ul style="list-style-type: none"> • Fertility

- 12% Greenhouse Management and Production**
 - Greenhouse Structure
 - Growing Media Fertilizers
 - Fertilization
 - Watering
 - Propagation
 - Plant Production
 - Pest Control
 - Calculate Material Costs and Amount
- 23% Landscaping Design and Construction**
 - Plant Types
 - Maintenance
 - Pruning
 - Construction Costs
- 5% Arboriculture and Landscape Equipment**
 - Commercial Mower Maintenance
- 5% Floriculture**
 - Floral Design and Interior Landscape
- 10% Turfgrass Management**
 - Grass Types
 - Lawn Renovations
 - Pest Control

Written Exam Reference Materials (Reference Current Edition)

- **Ornamental Horticulture: Science, Operations & Management** by Jack E Ingels
- **Landscaping Principles and Practices** by Jack E. Ingels
- **Introductory Horticulture** by Edward H. Reiley and Carroll L. Shry, Jr.
- **FFA Plant Identification List**
- **Horticulture Today** by Jodi Songer Riedel and Elizabeth Driscoll (Goodheart-Willcox)
- **University of Massachusetts Soil and Plant Tissue Testing Laboratory**
(www.umass.edu/plsoils/soiltest/)
- **Umass Extension Fact Sheet: Planting and Maintaining Trees and Shrubs**
(www.umassgreeninfo.org/fact_sheets/plantculture.html)

Materials Needed for the Written Exam

- A four-function calculator is included in the online testing system. No other calculators are permitted.
- Scrap paper and pencil/pen are permitted.

Written Exam Sample Items

Each question on the exam consists of one incomplete sentence or question followed by four choices. Some items reference an image or diagram. A few sample items are included below; the correct answer is designated with an asterisk (*).

The mower type that gives the best cut is the:

- a. rotary.
- *b. reel.
- c. flail.
- d. all cut the same if sharpened according to specifications.

Which tree group does not have opposite branching?

- a. Maple
- b. Dogwood
- c. Ash
- *d. Oak

Performance Exam

- Administration Time: 4 hours
- Administration Method: Onsite at an approved Teacher Testing Location

Performance Exam Content Coverage

11% Plant Science

- Identify Plants
- Identify Leaf Types and Arrangements

17% Maintaining Plants

- Prepare Soil Samples for Testing
- Prune and Trim Trees and Shrubs
- Mix and Prepare Liquid Fertilizer

29% Plant Production

- Select and Plant Seeds Following Planting Directions
- Calculate Lawn Area for Seed or Fertilizer Requirements
- Transplant Seedlings, Plugs, and Cuttings
- Perform Asexual Propagation using Cuttings
- Install Small Tree or Shrub

26% Horticulture Equipment

- Demonstrate Pre-operation 4 Cycle Engine Check
- Identify Components of Small Engines
- Operate a Power Line Trimmer, Chainsaw, Non-Powered Broadcast Granular Spreader or Hand Pump Sprayer (**see note below)
- Identify Standard Tools, Equipment, and Safety
- Use Operator’s Manual to Determine Equipment Information

17% Health and Safety

- Read, identify, and record elements of a Pesticide Label
- Use SDS to determine hazardous material information
- Use appropriate PPE.
- Demonstrate safety practices throughout procedures.
- Use tools safely and according to manufacturer's specifications.
- Use and dispose of chemicals and biohazardous materials.
- Leave the work area clean and according to industry and OSHA standards

Note: Candidate must indicate which piece of equipment listed in the Horticulture Equipment sub-test will be used on the registration form when registering.

Materials Required for the Performance Exam (Candidate Must Supply)

- Face mask (cotton face covering or respirator which fully cover the nose and mouth)
- ANSI-approved safety glasses or goggles
- Ear muffs or disposable ear plugs
- Disposable gloves – vinyl/latex (3 to 4 pair)
- Industry-Approved Work Boots/Work Shoes (no sneakers)
- Industry-Approved Attire (Clothing appropriate for outdoor work and weather conditions))
- Work gloves
- Pens/pencils
- Permanent Marker
- Calculator
- Clipboard
- Pocket or Utility Knife

Note: No loose clothing or jewelry; long hair must be pulled back. No books or notes will be allowed. Cell phones are prohibited during the exam administration.

Onsite Performance Exam Requirements

- Candidate must practice social distancing and wear the appropriate face covering that covers the nose and mouth while at the exam site.
- Testing sites may have individual requirements based on location and the current guidance from the Center for Disease Control and Prevention (CDC).

Performance Exam Reference Materials (Reference Current Edition)

- **Ornamental Horticulture: Science, Operations & Management** by Jack E Ingels
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- **Introductory Horticulture** by Edward H. Reiley and Carroll L. Shry, Jr.
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- **Umass Extension Fact Sheet: Planting and Maintaining Trees and Shrubs**
(www.umassgreeninfo.org/fact_sheets/plantculture.html)
- **Safety Orientation** by NCCER (Pearson Prentice Hall) www.crafttraining.com
- **OSHA Regulations** www.osha.gov
 - [1910.1200 - Hazard Communication](#)
 - [1910 Subpart I - Personal Protective Equipment](#)