Apprenticeship Manitoba

Manitoba

# Landscape Horticulturist
# Level 2

Sept 2018

Apprenticeship Manitoba

# Landscape Horticulturist

## Unit: B1 Tools and Equipment 2

**Level:** Two

**Duration:** 20 hours

Theory: 15 hours

Practical: 5 hours

**Overview:**

Upon completion of this unit of instruction the apprentice will demonstrate knowledge of hand, power, measuring tools and equipment, vehicles/trailers, equipment and machinery, and their applications, maintenance and procedures for use. This unit also serves as a review and continuation of the content in *Tools and Equipment 1* in Level One.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Identify hazards and describe safe work practices pertaining to hand, power, measuring tools and equipment, vehicles/trailers, equipment and machinery.** | **5%** |
| **2. Describe the implications of hand, power, measuring tools and equipment, vehicles/trailers, equipment and machinery selection and use on the practice of environmental stewardship.** | **5%** |
| **3. Identify types of vehicles/trailers, equipment, machinery and components, and describe their applications, limitations and procedures for use.**<br>a. Components/attachments<br>b. Drive and brake systems<br>c. Control and safety systems | **50%** |
| **4. Identify types of engines, and describe their characteristics, applications, and operation.**<br>a. Gasoline<br>• Two cycle engine<br>• Four cycle engine<br>b. Propane<br>c. Diesel<br>d. Electric | **15%** |
| **5. Describe the daily/seasonal operating procedures used to inspect, clean, maintain and store tools and equipment.**<br>a. Safety checks<br>b. Manufacturer's specifications/operators equipment manual (OEM) | **10%** |
| **6. Demonstrate the operation, cleaning, maintenance and storage of hand and power tools, measuring equipment, engines, vehicles/trailers, equipment and machinery.** | **15%** |

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# Landscape Horticulturist

## Unit: B2 Plant Identification 2

**Level:** Two

**Duration:** 24 hours

Theory: 20 hours

Practical: 4 hours

**Overview:**

Upon completion of this unit the apprentice will demonstrate knowledge of additional plants, their characteristics and cultural requirements. This unit also serves as a review and continuation of the content in *Plant Identification 1* in Level One.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Use plant morphology to categorize a plant to the family, genus and species levels.**<br>a. Leaves/needles<br>b. Flowers/fruits/seeds<br>c. Buds<br>d. Bark<br>e. Growth habits | **25%** |
| **2. Describe the cultural requirements of these additional plants (see partial list below. Additional plant list to be supplied by instructor).**<br>a. Moisture<br>b. Light<br>c. Soil type<br>d. Hardiness<br>e. Nutrients<br>f. Propagation<br>g. Salt tolerance | **25%** |
| **3. Identify the considerations for the selection of these additional plants for specific uses.**<br>a. Residential applications<br>b. Commercial applications<br>c. Reclamation/restoration<br>d. Location and environment | **25%** |
| **4. Select plants for specific applications.** | **25%** |

**Landscape Horticulturist Plant List by Family**

| | FAMILY | Latin name | Common name | Character |
|---|---|---|---|---|
| 1 | AMARYLLIDACEAE | Narcissus spp. | Daffodil | Perennial |
| 2 | ANACARDIACEAE | Rhus typhina | Staghorn Sumac | Tree / Shrub |
| 3 | APOCYNACEAE | Vinca minor | Periwinkle | Perennial |
| 4 | BALSMINACEAE | Impatiens wallerania | Impatiens | Annual |
| 5 | BORAGINACEAE | Brunnera macrophylla | Siberian Bugloss | Perennial |
| 6 | BORAGINACEAE | Pulmonaria saccharata | Lungwort | Perennial |
| 7 | CAMPANULACEAE | Campanula carpatica | Canterbury Bells | Perennial |
| 8 | CORNACEAE | Cornus canadensis | Bunchberry | Tree / Shrub |
| 9 | CORNACEAE | Cornus sericea | Red Osier Dogwood | Tree / Shrub |
| 10 | EUPHORBIACEAE | Euphorbia polychroma | Golden Spurge | Perennial |
| 11 | FABACEAE | Lupinus polyphyllus | Lupines | Annual |
| 12 | IRIDACEAE | Crocus spp. | Crocus | Perennial |
| 13 | IRIDACEAE | Iris sibirica | Siberian Iris | Perennial |
| 14 | LAMIACEAE | Ajuga reptans | Carpet Bugleweed | Perennial |
| 15 | LILIACEAE | Tulipa spp. | Tulip | Perennial |
| 16 | LILIACEAE | Muscari spp. | Grape Hyacinth | Perennial |
| 17 | LOBELIACEAE | Lobelia erinus | Lobelia | Annual |
| 18 | PAEONIACEAE | Paeonia lactiflora | Common Garden Peony | Perennial |
| 19 | PAPAVERACEAE | Papaver nudicaule | Icelandic Poppy | Perennial |
| 20 | POACEAE | Festuca ovina var. glauca | Blue Sheep's Fescue | Perennial |
| 21 | POACEAE | Helictotrichon sempervirens | Blue Oat Grass | Perennial |
| 22 | POLEMONIACEAE | Phlox subulata | Creeping Phlox | Perennial |
| 23 | PRIMULACEAE | Primula spp. | Primrose | Perennial |
| 24 | ROSACEAE | Potentilla fruticosa | Potentilla | Tree / Shrub |
| 25 | SAXIFRAGACEAE | Heuchera sanguinea | Coral Bells | Perennial |
| 26 | SAXIFRAGACEAE | Hydrangea paniculata | Hydrangea | Tree / Shrub |
| 27 | SOLANACEAE | Petunia x hybrida | Petunia | Annual |
| 28 | VERBENACEAE | Verbena x hybrida | Verbena | Annual |
| 29 | VERBENACEAE | Lantana camara | Lantana | Annual |
| 30 | VIOLACEAE | Viola x wittrockiana | Pansy | Annual |

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# Landscape Horticulturist

## Unit: B3 Trade-Related Documents

**Level:** Two

**Duration:** 28 hours

Theory: 28 hours

Practical: 0 hours

**Overview:**

Upon completion of this unit the apprentice will demonstrate knowledge of trade-related documents and their use, and of the procedures used to prepare documentation.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|

**1. Identify types of trade-related documents and describe their applications.** **40%**

a. Specifications
- General conditions
- Supplementary conditions
- Contract personnel

b. Blueprints and landscape drawings

c. Guidelines, codes and standards

d. Contracts and proposals
- Tenders/tendering
- Guarantees/warranties

e. Product instructions

f. Site locates

**2. Identify types of documents and describe their importance and the procedures used to prepare them.** **40%**

a. Safety records
- Accident reports
- Tag-outs
- Safety meeting records

b. Work records
- Training records
- Work orders
- Daily time sheets
- Change orders
- Site assessments

c. Shipping and receiving information
   - Inventory adjustments
   - Regulatory documentation
   - Phytosanitary certificates
   - Waybills

**3. Demonstrate the ability to prepare and complete trade-related forms and documents.** **20%**

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# Landscape Horticulturist

## Unit: B4 Site Assessment, Layout and Surveying

**Level:** Two

**Duration:** 38 hours

Theory: 31 hours

Practical: 7 hours

**Overview:**

Upon completion of this unit of instruction the apprentice will demonstrate knowledge of the procedures used to perform site assessment, layout and surveying.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Define terminology associated with site assessment, layout and surveying.** | **5%** |
| **2. Identify hazards and describe safe work practices pertaining to site assessment, layout and surveying.** | **10%** |
| **3. Describe the implications of site assessment, layout and surveying on the practice of environmental stewardship.** | **5%** |
| **4. Interpret documentation pertaining to site assessment, layout and surveying.**<br>a. Plans<br>b. specifications<br>c. Contracts<br>d. Surveys | **15%** |
| **5. Identify specific tools and equipment relating to site assessment, layout and surveying, and describe their applications and procedures for use.** | **10%** |
| **6. Identify the methods and procedures used to stake out points when performing site assessment and layout.**<br>a. Grade levels and stake interpretation<br>b. Grid system<br>c. Triangulation | **25%** |
| **7. Demonstrate the ability to perform site layout.** | **10%** |
| **8. Demonstrate the set-up and use of surveying equipment.** | **10%** |
| **9. Interpret and extract information from landscape plans and documentation.** | **10%** |

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# Landscape Horticulturist

## Unit: B5 Grading and Drainage 2

**Level:** Two

**Duration:** 19 hours

Theory: 12 hours

Practical: 7 hours

**Overview:**

Upon completion of this unit the apprentice will demonstrate knowledge of the procedures used to protect features on the site, to perform grading, and to maintain drainage systems and erosion control materials. This unit also serves as a review and continuation of the content in *Grading and Drainage 1* in Level One.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Define terminology associated with site protection, grading and drainage systems.** | **5%** |
| **2. Identify hazards and describe safe work practices pertaining to site protection, grading and drainage.** | **5%** |
| **3. Describe how drainage system maintenance protects the site features.** | **15%** |
| **4. Interpret codes, CLS and regulations pertaining to site protection, grading and drainage.** | **5%** |
| **5. Interpret documentation pertaining to site protection, grading and drainage.**<br>a. Grading plans<br>• Existing grades<br>• Proposed grades<br>• Rough grades<br>b. Drainage plans<br>c. Specifications | **20%** |
| **6. Describe winterization procedures for drainage systems.**<br>a. Cleaning<br>b. Flushing<br>c. Installing heating cables | **10%** |
| **7. Describe the procedures used to maintain site grading.** | **10%** |

**8. Describe the procedures used to install drainage systems. 30%**

a. Sub-surface drainage
b. Surface drainage

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# Landscape Horticulturist

## Unit: B6 Plant Installation

**Level:** Two

**Duration:** 25 hours

Theory: 21 hours

Practical: 4 hours

**Overview:**

Upon completion of this unit the apprentice will demonstrate knowledge of the procedures used to install and transplant herbaceous and woody (exterior) plants and plant materials.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Identify hazards and describe safe work practice pertaining to the installation of woody plants.** | **5%** |
| **2. Describe the implications of plant installation on the practice of environmental stewardship.** | **5%** |
| **3. Identify specific tools and equipment relating to plant and plant material installation/transplanting and describe their applications and procedures for use.** | **5%** |
| **4. Identify the considerations for determining suitability of planting site for plant materials.**<br>a. Sun and wind exposure<br>b. Water availability and site drainage<br>c. Quality of growing medium<br>d. Site accessibility<br>e. Proximity to buildings and utility services<br>f. Air quality and pollutants | **10%** |
| **5. Describe the installation procedures for a variety of root preparations and stock types.**<br>a. Bare root<br>b. Ball and burlap/wire basket<br>c. Containerized<br>d. Caliper stock | **10%** |
| **6. Describe the procedures used to prepare planting site for tree installation.**<br>a. Planting pit dimensions<br>b. Installing growing media<br>c. Soil amendment | **10%** |

**7. Describe the procedures used to install trees.** **15%**

a. Placement
b. Loosening of root containment
c. Root placement
d. Backfilling
e. Mulching
f. Machine-planting
g. Stabilizing
h. fertilizing
i. Protecting tree

**8. Describe the procedures used for post-planting care of trees.** **10%**

a. Irrigation
b. Pruning
c. Fertilizing
d. Protecting
e. Stabilizing
f. mulching

**9. Describe the procedures used to prepare planting beds for herbaceous and woody plants and plant material installation.** **10%**

a. Bed cultivation
b. Incorporating soil amendment
c. Removal of weeds/debris
d. Bed edging
e. Grading and drainage

**10. Describe the procedures used to install herbaceous and woody plants and plant materials.** **10%**

a. Bed layout
b. Plant placement
c. Loosening of root containment
d. Root placement
e. Backfilling
f. Irrigation
g. Fertilizing
h. mulching

**11. Identify the considerations required and describe the procedures used for transplanting plants.** **10%**

a. Factors for viability
b. Post-planting care

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# Landscape Horticulturist

## Unit: B7 Environmental Practices 2

**Level:** Two

**Duration:** 18 hours

Theory: 15 hours

Practical: 3 hours

**Overview:**

Upon completion of this unit of instruction the apprentice will demonstrate knowledge of the procedures to identify and apply environmental best practices to develop, conserve, preserve**,** protect and reclaim natural habitats and ecosystems to sustain a healthy environment. This unit also serves as a review and continuation of the content in *Environmental Practices 1* in Level One.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Describe the difference between good soil structure and poor soil structure.** | **5%** |
| **2. Describe the impact of cultivation on the soil structure, health and microbiome.** | **5%** |
| **3. Identify situations in which cultivating is required.** | **5%** |
| **4. Describe how minimum tillage and other methods of cultivation minimize harm to soil structure, health and soil organisms.** | **5%** |
| **5. Explain the economic and environmental reasons for conserving soil and preserving soil health.** | **20%** |
| **6. Describe site protection measures that minimize environmental impact.** | **10%** |
| **7. Explain bulk soil storage procedures that minimize environmental impact.** | **5%** |
| **8. Identify erosion and sediment control materials and describe their characteristics and applications.**<br>a. Cover cropping<br>b. Silt fencing<br>c. Mulching<br>d. Groundcovers<br>e. Bales<br>f. Erosion control mats<br>g. Gabion baskets | **20%** |
| **9. Describe the procedures used to maintain materials used to control erosion and sedimentation.** | **5%** |

| | | |
|---|---|---|
| **10.** | **Explain the reasons for using the cut and fill method.** | **5%** |
| **11.** | **Participate in industry educational conferences related to environmental trends and best practices.** | **15%** |

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# Landscape Horticulturist

## Unit: B8 Fertilizers

**Level:** Two

**Duration:** 18 hours

Theory: 15 hours

Practical: 3 hours

**Overview:**

Upon completion of this unit of instruction the apprentice will demonstrate knowledge of the codes and regulations pertaining to fertilizers, the characteristics of fertilizers, and of the procedures and equipment used for the application, handling, transport, storage and disposal of fertilizers.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Define terminology associated with fertilizers.** | **5%** |
| **2. Identify hazards and describe safe work practices pertaining to fertilizers and their use.** | **5%** |
| **3. Describe the implications of fertilizer management on the practice of environmental stewardship.** | **5%** |
| **4. Identify types of fertilizers and describe their characteristics and applications.**<br>a. Foliar feed<br>b. Injection<br>c. Liquid and granular applications | **25%** |
| **5. Describe and interpret codes and jurisdictional regulations pertaining to fertilizers.** | **5%** |
| **6. Describe the analysis and formulation of fertilizers.** | **15%** |
| **7. Describe the procedures and equipment used and calibration for the application of fertilizers.** | **25%** |
| **8. Describe the procedures and equipment used to store, dispose and transport fertilizers.** | **5%** |
| **9. Calibrate application equipment.** | **10%** |

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# Landscape Horticulturist

## Unit: B9 Surface Materials

**Level:** Two

**Duration:** 56 hours

Theory: 28 hours

Practical: 28 hours

**Overview:**

Upon completion of this unit the apprentice will demonstrate knowledge of the procedures used to install and maintain concrete features and surface materials.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Define terminology associated with surface material installation and maintenance.** | **5%** |
| **2. Identify hazards and describe safe work practices pertaining to surface material installation and maintenance.** | **5%** |
| **3. Describe the implications of surface materials on the practice of environmental stewardship.** | **5%** |
| **4. Interpret codes, regulations and manufacturer's specifications pertaining to surface material installation and maintenance.** | **5%** |
| **5. Interpret documentation pertaining to surface material installation and maintenance.**<br>a. Plans/drawings<br>b. Contracts and manufacturer's specifications<br>c. Shipping documents | **5%** |
| **6. Identify specific tools and equipment relating to surface material installation and maintenance and describe their applications and procedures for use.** | **5%** |
| **7. Identify types of surface material and describe their characteristics and applications.**<br>a. Natural stones<br>b. Concrete<br>c. Paving stones<br>d. Aggregate<br>e. Permeable pavement<br>f. Synthetic materials (artificial turf) | **10%** |
| **8. Describe the procedures used to prepare for the installation of surface materials.** | **10%** |

| | | |
|---|---|---|
| **9.** | **Describe the procedures used to establish quantities of materials required to install surface materials.** | **10%** |
| **10.** | **Describe the procedures used to install surface materials.** | **20%** |
| **11.** | **Describe the procedures and products used to maintain surface materials.** | **5%** |
| **12.** | **Demonstrate the ability to install surface materials**. | **15%** |

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# Landscape Horticulturist

## Unit: B10 Landscape Walls and Steps

**Level:** Two

**Duration:** 30 hours

Theory: 20 hours

Practical: 10 hours

**Overview:**

Upon completion of this unit of instruction the apprentice will demonstrate knowledge of the procedures used to install and maintain landscape walls and steps.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Define terminology associated with landscape wall and step installation and maintenance.** | **5%** |
| **2. Identify hazards and describe safe work practices pertaining to landscape wall and step installation and maintenance.** | **5%** |
| **3. Describe the implications of landscape walls on the practice of environmental stewardship.** | **5%** |
| **4. Interpret codes, regulations and manufacturer's specifications pertaining to landscape wall and step installation and maintenance.** | **5%** |
| **5. Interpret documentation pertaining to landscape wall installation and maintenance.**<br>a. Plans<br>b. Contract specifications<br>c. Shipping documents | **5%** |
| **6. Identify specific tools and equipment relating to landscape wall installation and maintenance and describe their applications and procedures for use.** | **5%** |
| **7. Identify types of materials used in landscape walls and steps construction and describe their characteristics and applications.**<br>a. Timber<br>b. Natural stone<br>c. Manufactured stone<br>d. Concrete | **10%** |
| **8. Describe the procedures used to establish quantities of materials required to install landscape walls and steps.** | **10%** |

| | | |
|---|---|---|
| **9.** | **Describe the procedures used to prepare for installation of landscape walls and steps.** | **10%** |
| **10.** | **Describe the procedures used to install landscape walls and steps.** | **20%** |
| **11.** | **Describe the procedures and products used to maintain landscape walls and steps.** | **5%** |
| **12.** | **Demonstrate the ability to install landscape walls and steps**. | **15%** |

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# Landscape Horticulturist

## Unit: B11 Plant Propagation

**Level:** Two

**Duration:** 14 hours

Theory: 10 hours

Practical: 4 hours

**Overview:**

Upon completion of this unit the apprentice will demonstrate knowledge of the procedures associated with plant propagation.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Define terminology associated with plant propagation.** | **5%** |
| **2. Identify hazards and describe safe work practices relating to plant propagation.** | **5%** |
| **3. Describe the implications of plant propagation on the practice of environmental stewardship.** | **5%** |
| **4. Identify specific tools and equipment relating to plant propagation and describe their applications and procedures for use.** | **5%** |
| **5. Identify the considerations used when selecting stock/parent plants for propagation purposes.**<br>a. Vigor<br>b. Health<br>c. Propagation methods<br>d. Timing | **10%** |
| **6. Identify the methods and describe the procedures used for plant propagation and describe their characteristics and applications.**<br>a. Seeding<br>b. Cutting<br>c. Layering<br>d. Division/separation | **30%** |
| **7. Describe the procedures used to maintain post-propagated plants.** | **15%** |
| **8. Demonstrate the ability to perform plant propagation.** | **25%** |

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# Landscape Horticulturist

**Unit:** **B12 Pruning 1** (RSOS: B-6.03, p 54)

**Level:** Two

**Duration:** 15 hours

Theory: 11 hours

Practical: 4 hours

**Overview:**

Upon completion of this unit of instruction the apprentice will demonstrate knowledge of the procedures used to inspect, maintain, store and transport pruning tools and equipment, of the procedures for pruning, and for the disposal of diseased and infested plant parts.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Define terminology associated with pruning and pruning related to the removal of diseased and infested plant parts.** | **5%** |
| **2. Identify hazards and describe safe work practices pertaining to pruning and pruning related to the removal of diseased and infested plant parts.** | **5%** |
| **3. Interpret and prepare documentation pertaining to pruning and pruning related to the removal of diseased and infested plant parts.** | **5%** |
| **4. Identify specific tools and equipment relating to pruning and pruning related to the removal of diseased plant parts and describe their applications and procedures for use.** | **5%** |
| **5. Describe the procedures used to clean and sanitize pruning tools and equipment.** | **5%** |
| **6. Describe the procedures used to inspect, maintain, store and transport pruning tools and equipment.** | **5%** |
| **7. Explain the purpose of pruning shrubs.**<br>a. Plant appearance<br>b. Plant growth requirements<br>• Coniferous<br>• Deciduous<br>c. Plant health<br>d. Structure<br>e. Unwanted growth<br>f. Prevention of winter damage | **15%** |

**8. Identify pruning methods and techniques and describe their associated procedures.** **25%**

a. Heading
b. Clearing/thinning
c. Crown raising
d. reduction
e. restoration
f. Specialized methods
g. 3-cut method
h. Flush cut
i. Removal

**9. Identify factors that affect pruning times.** **5%**

a. Dormancy
b. Flower period
c. Growth response
d. Wind and frost damage
e. Scorch

**10. Describe procedures for removing plant parts and disposal of diseased and infested plant parts.** **5%**

**11. Describe methods to organize debris for efficient handling.** **5%**

**12. Demonstrate the ability to perform basic pruning techniques and to clean and sanitize pruning tools and equipment.** **15%**

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# Landscape Horticulturist

## Unit: B13 Plant Care and Maintenance 2

**Level:** Two

**Duration:** 10 hours

Theory: 7 hours

Practical: 3 hours

**Overview:**

Upon completion of this unit of instruction the apprentice will demonstrate knowledge of the procedures to care and maintain herbaceous and woody plant materials and exterior plants. This unit also serves as a review and continuation of the content in *Plant Care and Maintenance 1* in Level One.

| **Objectives and Content:** | **Percent of Unit Mark (%)** |
|---|---|
| **1. Identify hazards and describe safe work practices pertaining to the care and maintenance of exterior plants.** | **5%** |
| **2. Describe the implications of exterior plant care and maintenance on the practice of environmental stewardship.** | **5%** |
| **3. Identify specific tools and equipment relating to exterior plant care and maintenance and describe their applications and procedures for use.** | **5%** |
| **4. Describe the procedures used to maintain all exterior plant materials.** | **10%** |
| **5. Describe the procedures used for winterization of plant materials.**<br>a. Wrapping/screening<br>b. Rodent protection<br>c. Bed cleaning<br>d. Cutting back<br>e. Mulching | **50%** |
| **6. Demonstrate the ability to winterize plant materials.** | **25%** |