PROGRAM OUTLINE
Landscape Horticulturist
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LANDSCAPE HORTICULTURIST

PROGRAM OUTLINE

APPROVED BY INDUSTRY
SEPTEMBER 2017

BASED ON
RSOS 2017

Developed by
Industry Training Authority
Province of British Columbia
TABLE OF CONTENTS

Section 1 INTRODUCTION ................................................................................................................ 3
Foreword ....................................................................................................................................... 4
Acknowledgements ...................................................................................................................... 5
How to Use this Document ......................................................................................................... 6

Section 2 PROGRAM OVERVIEW .................................................................................................... 8
Program Credentialing Model ....................................................................................................... 9
Occupational Analysis Chart ....................................................................................................... 10
Training Topics and Suggested Time Allocation: Level 1 ........................................................... 14
Training Topics and Suggested Time Allocation: Level 2 ........................................................... 16
Training Topics and Suggested Time Allocation: Level 3 ........................................................... 18
Training Topics and Suggested Time Allocation: Level 4 ........................................................... 20

Section 3 PROGRAM CONTENT .................................................................................................... 21
Level 1 Landscape Horticulturist ................................................................................................. 22
Level 2 Landscape Horticulturist ................................................................................................. 65
Level 3 Landscape Horticulturist ................................................................................................. 111
Level 4 Landscape Horticulturist ................................................................................................. 155

Section 4 ASSESSMENT GUIDELINES ....................................................................................... 183
Assessment Guidelines – Level 1................................................................................................. 184
Assessment Guidelines – Level 2................................................................................................. 185
Assessment Guidelines – Level 3................................................................................................. 186
Assessment Guidelines – Level 4................................................................................................. 187

Section 4 TRAINING PROVIDER STANDARDS .......................................................................... 188
Facility Requirements .................................................................................................................. 189
Tools and Equipment ................................................................................................................... 197
Reference Materials ...................................................................................................................... 202
Instructor Requirements ................................................................................................................ 210

Appendices ................................................................................................................................... 214
Appendix A Previous Contributors .............................................................................................. 215
Section 1

INTRODUCTION

Landscape Horticulturist
Foreword

The revised Landscape Horticulturist Program Outline is intended as a guide for instructors, apprentices and employers of apprentices as well as for the use of industry organizations, regulatory bodies, and provincial and federal governments. It reflects updated standards based on the new Landscape Horticulturist Occupational Analysis (2017) and British Columbia industry and instructor subject matter experts.

Practical instruction by demonstration and student participation should be integrated with the classroom session. Safe working practices, even though not always specified in each operation or topic, are an implied part of the program and should be stressed throughout the apprenticeship.

Practical exercises are included for those competencies that require a practical component. The intent of including practical exercises is to ensure consistency in training across the many training institutions in British Columbia. Their purpose is to reinforce the theory and to provide a mechanism for evaluation of the learner’s ability to apply the theory to practice. It is important that these performances be observable and measureable and that they reflect the skills spelled out in the competency as those required of a competent journeyperson. The conditions, under which these performances will be observed, as well as the criteria by which the learner will be evaluated and measured, must be clear to the learner. The learner must also be given the level of expectation of success.

SAFETY ADVISORY

Be advised that references to the WorkSafe BC safety regulations contained within these materials do not/may not reflect the most recent Occupational Health and Safety Regulation (the current Standards and Regulation in BC can be obtained on the following website: http://www.worksafebc.com). Please note that it is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulation pertaining to his/her work.
Introduction

Acknowledgements

Industry and Instructor Subject Matter Experts retained to assist in the development of the Occupational Analysis Chart:

• Jeff Foley   Para Space Landscaping Inc.
• Betty Cunnin  Kwantlen Polytechnic University
• Heike Stippler  Heike Designs Ltd.
• Catherine Dale  Burnaby School District

Industry and Instructor Subject Matter Experts retained to assist in the development of Program Outline and Program Profile content:

• Jeff Foley   Para Space Landscaping Inc.
• Betty Cunnin  Kwantlen Polytechnic University
• Heike Stippler  Heike Designs Ltd.
• Kevin Jones   Vancouver Island University
• Anne Kadwell  Horticulture Consultant
• Laura Principe  City of Vancouver Parks Department
• Laura Biggs   Pacific Horticulture College

The Industry Training Authority would like to acknowledge the dedication and hard work of all the industry representatives appointed to identify the training requirements of the Landscape Horticulture occupation.
How to Use this Document

This Program Outline has been developed for the use of individuals from several different audiences. The table below describes how each section can be used by each intended audience.

<table>
<thead>
<tr>
<th>Section</th>
<th>Training Providers</th>
<th>Employers/Sponsors</th>
<th>Apprentices</th>
<th>Challengers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Credentialing Model</td>
<td>Communicates program length and structure, and all pathways to completion</td>
<td>Understand the length and structure of the program</td>
<td>Understand the length and structure of the program, and pathway to completion</td>
<td>Understand challenger pathway to Certificate of Qualification</td>
</tr>
<tr>
<td>OAC</td>
<td>Communicates the competencies that industry has defined as representing the scope of the occupation</td>
<td>Understand the competencies that an apprentice is expected to demonstrate in order to achieve certification</td>
<td>View the competencies they will achieve as a result of program completion</td>
<td>Understand the competencies they must demonstrate in order to challenge the program</td>
</tr>
<tr>
<td>Training Topics and Suggested Time Allocation</td>
<td>Shows proportionate representation of general areas of competency (GACs) at each program level, the suggested proportion of time spent on each GAC, and percentage of time spent on theory versus practical application</td>
<td>Understand the scope of competencies covered in the technical training, the suggested proportion of time spent on each GAC, and the percentage of that time spent on theory versus practical application</td>
<td>Understand the scope of competencies covered in the technical training, the suggested proportion of time spent on each GAC, and the percentage of that time spent on theory versus practical application</td>
<td>Understand the relative weightings of various competencies of the occupation on which assessment is based</td>
</tr>
<tr>
<td>Program Content</td>
<td>Defines the objectives, learning tasks, high level content that must be covered for each competency, as well as defining observable, measureable achievement criteria for objectives with a practical component</td>
<td>Identifies detailed program content and performance expectations for competencies with a practical component; may be used as a checklist prior to signing a recommendation for certification (RFC) for an apprentice</td>
<td>Provides detailed information on program content and performance expectations for demonstrating competency</td>
<td>Allows individual to check program content areas against their own knowledge and performance expectations against their own skill levels</td>
</tr>
<tr>
<td>Section</td>
<td>Training Providers</td>
<td>Employers/Sponsors</td>
<td>Apprentices</td>
<td>Challengers</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>--------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Training Provider</td>
<td>Defines the facility requirements, tools and equipment, reference materials (if</td>
<td>Identifies the tools and equipment an</td>
<td>Provides information on the training facility, tools and equipment provided</td>
<td>Identifies the tools and equipment a tradesperson is expected to be</td>
</tr>
<tr>
<td>Standards</td>
<td>any) and instructor requirements for the program</td>
<td>apprentice is expected to have access to;</td>
<td>by the school and the student, reference materials they may be expected to</td>
<td>competently in using or operating; which may be used or provided in a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>which are supplied by the training</td>
<td>acquire, and minimum qualification levels of program instructors</td>
<td>practical assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>provider and which the student is</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>expected to own</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendix – Glossary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of Acronyms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 2

PROGRAM OVERVIEW

Landscape Horticulturist
Program Credentialing Model

Apprenticeship Pathway

This graphic provides an overview of the Landscape Horticulturist apprenticeship pathway.

C of Q = Certificate of Qualification
C of A = Certificate of Apprenticeship
C of C = Certificate of Completion
WBT = Work-Based Training

CROSS-PROGRAM CREDITS

Individuals who hold the credentials listed below are entitled to receive partial credit toward the completion requirements of this program:

- Landscape Horticulturist Level 3
  - Technical Training: 180 hours
  - Work-Based Training: Accumulate hours
  - ITA Standardized Written Exam

- Landscape Horticulturist Level 2
  - Technical Training: 180 hours
  - Work-Based Training: Accumulate hours
  - ITA Standardized Written Exam

- Landscape Horticulturist Level 1
  - Technical Training: 180 hours
  - Work-Based Training: Accumulate hours
  - ITA Standardized Written Exam

- Landscape Horticulturist Level 4
  - Technical Training: 180 hours
  - Work-Based Training: 5,280 hours total
  - Interprovincial Red Seal Exam

- Horticulture Technician Foundation
  - Technical Training: 1,080 hours
  - ITA Standardized Written Exam

- Landscape Industry Certified Technician (CLT) in Ornamental Maintenance PLUS one other module within the Landscape Industry Certified Technician certification

- Technical Training: None
- Work-Based Training: 1,000 hours

Recommendation for Certification:
- C of Q
- C of A
- C of C

APPRENTICESHIP - DIRECT ENTRY
Occupational Analysis Chart

LANDSCAPE HORTICULTURIST

**Occupation Description:** “Landscape Horticulturists” identify, propagate, cultivate, grow and maintain plants, and manage injured and diseased trees and plants. They create and modify landscapes by measuring, designing, and interpreting plans. They construct and maintain gardens, parks, golf courses and other landscape environments. Landscape horticulturists install and maintain hard landscape elements such as retaining walls, patios, walkways and water features. In addition, they advise clients on issues related to horticulture and landscape construction. They are employed by landscape designers, architects and contractors, lawn service and tree care establishments, recreation facilities, golf courses, parks, nurseries, greenhouses, and municipal, provincial and federal governments. They may also be self-employed.

<table>
<thead>
<tr>
<th>PERFORM SAFETY-RELATED FUNCTIONS</th>
<th>USE TOOLS, EQUIPMENT AND VEHICLES</th>
<th>ORGANIZE WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use personal protective equipment (PPE) and safety equipment</td>
<td>Use hand tools</td>
<td>Perform site assessments</td>
</tr>
<tr>
<td>Maintain safe work environment</td>
<td>Use power tools</td>
<td>Use documentation and reference material</td>
</tr>
<tr>
<td>A1</td>
<td>B1</td>
<td>C1</td>
</tr>
<tr>
<td>A2</td>
<td>B2</td>
<td>C2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
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</table>

<table>
<thead>
<tr>
<th>B3</th>
<th>B4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use measuring equipment</td>
<td>Use vehicles and motorized equipment, trailers and attachments</td>
</tr>
<tr>
<td>123</td>
<td>123</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C3</th>
<th>C4</th>
<th>C5</th>
<th>C6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain records</td>
<td>Participate in job planning activities</td>
<td>Order materials</td>
<td>Organize materials and equipment</td>
</tr>
<tr>
<td>1234</td>
<td>34</td>
<td>3</td>
<td>23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C7</th>
<th>C8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport materials</td>
<td>Transport equipment</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>
Program Overview

**PARTICIPATE IN MARKETING AND SALES**

- Participate in marketing and sales
  - Control inventory 1
  - Sell products and services 2
  - Maintain customer relations 3
  - Prepare estimates 4

**USE COMMUNICATION AND MENTORING TECHNIQUES**

- Use communication techniques 1
- Use mentoring techniques 2

**APPLY HORTICULTURAL PRACTICES**

- Practice basic plant science 1
- Identify plants and plant requirements 2
- Manage plant health and growing conditions 3
- Prune plant materials 4
- Manage pests, diseases and invasive species

**APPLY ENVIRONMENTAL PRACTICES**

- Practice environmental stewardship 1
- Practice biodiversity enhancement 2
- Practice soil stewardship 3
- Practice water stewardship 4

**PERFORM PRE-CONSTRUCTION ACTIVITIES**

- Participate in landscape design activities 1
- Prepare construction site 2
- Perform grading 3
- Install drainage systems 4

**INSTALL HARDSCAPE**

- Install landscape structures 1
- Install surface materials 2
- Install steps and retaining walls 3
- Install irrigation systems 4
- Install water features 5
- Install low voltage landscape lighting 6
Program Overview

INSTALL SOFTSCAPE

Install growing media

Install exterior landscape plants

Transplant plants

Install mulch

Install turf from seed

Install sod

INSTALL GREEN INFRASTRUCTURE SYSTEMS

Select green infrastructure

Install green roofs and walls

Install rainwater and stormwater management systems

Install erosion control

Install biodiverse plantings and natural areas

MAINTAIN HARDSCAPE

Maintain drainage systems

Maintain landscape structures

Maintain surface materials

Maintain steps and retaining walls

Maintain irrigation systems

Maintain water features

Maintain landscape lighting

Practice snow and ice control

Repair hardscape

MAINTAIN SOFTSCAPE

Maintain exterior softscape

Maintain interior softscape

Maintain turfgrass

Propagate plant materials

Repair softscape
<table>
<thead>
<tr>
<th>MAINTAIN GREEN INFRASTRUCTURE</th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>N4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain green roofs and walls</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Maintain rainwater and stormwater management systems</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Maintain erosion control</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Maintain biodiverse plantings and natural areas</td>
<td>4</td>
<td>4</td>
<td>4</td>
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</tbody>
</table>
Training Topics and Suggested Time Allocation: Level 1

LANDSCAPE HORTICULTURIST – LEVEL 1

<table>
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<th>Line</th>
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<th>Practical</th>
<th>Total</th>
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<tr>
<td></td>
<td>% of Time Allocated to:</td>
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<tr>
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<td></td>
<td>2%</td>
<td>40%</td>
<td>60%</td>
<td>100%</td>
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<td>Line A</td>
<td>PERFORM SAFETY-RELATED FUNCTIONS</td>
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<tr>
<td>A1</td>
<td>Use personal protective equipment (PPE) and safety equipment</td>
<td>2%</td>
<td>40%</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>A2</td>
<td>Maintain safe work environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line B</td>
<td>USE TOOLS, EQUIPMENT AND VEHICLES</td>
<td>8%</td>
<td>30%</td>
<td>70%</td>
<td>100%</td>
</tr>
<tr>
<td>B1</td>
<td>Use hand tools</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2</td>
<td>Use power tools</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B3</td>
<td>Use measuring equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B4</td>
<td>Use vehicles and motorized equipment, trailers and attachments</td>
<td>8%</td>
<td>30%</td>
<td>70%</td>
<td>100%</td>
</tr>
<tr>
<td>Line C</td>
<td>ORGANIZE WORK</td>
<td>6%</td>
<td>70%</td>
<td>30%</td>
<td>100%</td>
</tr>
<tr>
<td>C1</td>
<td>Perform site assessments</td>
<td></td>
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<td></td>
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<tr>
<td>C2</td>
<td>Use documentation and reference material</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>C3</td>
<td>Maintain records</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>C7</td>
<td>Transport materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C8</td>
<td>Transport equipment</td>
<td></td>
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</tr>
<tr>
<td>Line E</td>
<td>USE COMMUNICATION AND MENTORING TECHNIQUES</td>
<td>3%</td>
<td>80%</td>
<td>20%</td>
<td>100%</td>
</tr>
<tr>
<td>E1</td>
<td>Use communication techniques</td>
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<tr>
<td>Line F</td>
<td>APPLY HORTICULTURAL PRACTICES</td>
<td>28%</td>
<td>60%</td>
<td>40%</td>
<td>100%</td>
</tr>
<tr>
<td>F1</td>
<td>Practice basic plant science</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2</td>
<td>Identify plants and plant requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F3</td>
<td>Manage plant health and growing conditions</td>
<td></td>
<td></td>
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<tr>
<td>Line G</td>
<td>APPLY ENVIRONMENTAL PRACTICES</td>
<td>17%</td>
<td>90%</td>
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<td>100%</td>
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<tr>
<td>G1</td>
<td>Practice environmental stewardship</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>G3</td>
<td>Practice soil stewardship</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line H</td>
<td>PERFORM PRE-CONSTRUCTION ACTIVITIES</td>
<td>12%</td>
<td>40%</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>H3</td>
<td>Perform grading</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>H4</td>
<td>Install drainage systems</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Line J</td>
<td>INSTALL SOFTSCAPE</td>
<td>7%</td>
<td>30%</td>
<td>70%</td>
<td>100%</td>
</tr>
<tr>
<td>J1</td>
<td>Install growing media</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J5</td>
<td>Install turf from seed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J6</td>
<td>Install sod</td>
<td></td>
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</tr>
</tbody>
</table>
## Program Overview

### % of Time Allocated to:

<table>
<thead>
<tr>
<th>Line M</th>
<th>Task Description</th>
<th>% of Time</th>
<th>Theory</th>
<th>Practical</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>Maintain exterior softscape</td>
<td>17%</td>
<td>✔️</td>
<td>✔️</td>
<td>100%</td>
</tr>
<tr>
<td>M3</td>
<td>Maintain turfgrass</td>
<td>80%</td>
<td>✔️</td>
<td>✔️</td>
<td>100%</td>
</tr>
</tbody>
</table>

Total Percentage for Landscape Horticulturist Level 1: 100%
## Training Topics and Suggested Time Allocation: Level 2

### LANDSCAPE HORTICULTURIST – LEVEL 2

<table>
<thead>
<tr>
<th>Line</th>
<th>Topic Description</th>
<th>% of Time Allocated to</th>
<th>Theory</th>
<th>Practical</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>USE TOOLS, EQUIPMENT AND VEHICLES</td>
<td>7%</td>
<td>30%</td>
<td>70%</td>
<td>100%</td>
</tr>
<tr>
<td>B1</td>
<td>Use hand tools</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>B2</td>
<td>Use power tools</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>B3</td>
<td>Use measuring equipment</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>B4</td>
<td>Use vehicles and motorized equipment, trailers and attachments</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>C</td>
<td>ORGANIZE WORK</td>
<td>8%</td>
<td>60%</td>
<td>40%</td>
<td>100%</td>
</tr>
<tr>
<td>C1</td>
<td>Perform site assessments</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>C2</td>
<td>Use documentation and reference material</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>C3</td>
<td>Maintain records</td>
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<td>✔</td>
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<td>✔</td>
</tr>
<tr>
<td>C6</td>
<td>Organize materials and equipment</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>C7</td>
<td>Transport materials</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>C8</td>
<td>Transport equipment</td>
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<td>38%</td>
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</tr>
<tr>
<td>F1</td>
<td>Practice basic plant science</td>
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<td>✔</td>
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</tr>
<tr>
<td>F2</td>
<td>Identify plants and plant requirements</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>F3</td>
<td>Manage plant health and growing conditions</td>
<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>F4</td>
<td>Prune plant materials</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>G3</td>
<td>Practice soil stewardship</td>
<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>G4</td>
<td>Practice water stewardship</td>
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<td>✔</td>
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<tr>
<td>H</td>
<td>PERFORM PRE-CONSTRUCTION ACTIVITIES</td>
<td>3%</td>
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<td>H2</td>
<td>Prepare construction site</td>
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<td>✔</td>
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<td>INSTALL HARDSCAPE</td>
<td>13%</td>
<td>30%</td>
<td>70%</td>
<td>100%</td>
</tr>
<tr>
<td>I2</td>
<td>Install surface materials</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>I3</td>
<td>Install steps and retaining walls</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>J</td>
<td>INSTALL SOFTSCAPE</td>
<td>7%</td>
<td>20%</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>J2</td>
<td>Install exterior landscape plants</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
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<tr>
<td>J3</td>
<td>Transplant plants</td>
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<td>✔</td>
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<tr>
<td>J4</td>
<td>Install mulch</td>
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<tr>
<td>L</td>
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<td>40%</td>
<td>100%</td>
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<tr>
<td>L1</td>
<td>Maintain drainage systems</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
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<tr>
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<td>Maintain surface materials</td>
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### Program Overview

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**Total Percentage for Landscape Horticulturist Level 2**: 100%
### Training Topics and Suggested Time Allocation: Level 3

**LANDSCAPE HORTICULTURIST – LEVEL 3**

<table>
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<tr>
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<tr>
<td>Line B</td>
<td>USE TOOLS, EQUIPMENT AND VEHICLES</td>
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<tr>
<td>B1</td>
<td>Use hand tools</td>
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<td>B2</td>
<td>Use power tools</td>
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<td>✓</td>
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<td>B3</td>
<td>Use measuring equipment</td>
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<td>B4</td>
<td>Use vehicles and motorized equipment, trailers and attachments</td>
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<td>C1</td>
<td>Perform site assessments</td>
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</tr>
<tr>
<td>C2</td>
<td>Use documentation and reference material</td>
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<td>✓</td>
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</tr>
<tr>
<td>C3</td>
<td>Maintain records</td>
<td>✓</td>
<td>✓</td>
<td></td>
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</tr>
<tr>
<td>C4</td>
<td>Participate in job planning activities</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>C5</td>
<td>Order materials</td>
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<tr>
<td>C6</td>
<td>Organize materials and equipment</td>
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<tr>
<td>D1</td>
<td>Control inventory</td>
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<tr>
<td>D2</td>
<td>Sell products and services</td>
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<td>D3</td>
<td>Maintain customer relations</td>
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<td>Identify plants and plant requirements</td>
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<td>✓</td>
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<tr>
<td>F4</td>
<td>Prune plant materials</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>F5</td>
<td>Manage pests, diseases and invasive species</td>
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<td>G1</td>
<td>Practice environmental stewardship</td>
<td>✓</td>
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<td>G4</td>
<td>Practice water stewardship</td>
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<tr>
<td>I1</td>
<td>Install landscape structures</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>I4</td>
<td>Install irrigation systems</td>
<td>✓</td>
<td>✓</td>
<td></td>
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</tr>
<tr>
<td>I5</td>
<td>Install water features</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>I6</td>
<td>Install low voltage landscape lighting</td>
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<td>✓</td>
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<tr>
<td>Line J</td>
<td>INSTALL SOFTSCAPE</td>
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<tr>
<td>J7</td>
<td>Install interior landscape plants</td>
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<tr>
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### Program Overview

#### % of Time Allocated to:

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<th>Practical</th>
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<tr>
<td><strong>L7</strong> Maintain landscape lighting</td>
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<td><strong>L8</strong> Practice snow and ice control</td>
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<td>✓</td>
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<tr>
<td><strong>L9</strong> Repair hardscape</td>
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<td><strong>M2</strong> Maintain interior softscape</td>
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<td><strong>M5</strong> Repair softscape</td>
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**Total Percentage for Landscape Horticulturist Level 3**

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### Program Overview

**Training Topics and Suggested Time Allocation: Level 4**

**LANDSCAPE HORTICULTURIST – LEVEL 4**

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<tr>
<td>C1</td>
<td>Perform site assessments</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>C2</td>
<td>Use documentation and reference material</td>
<td>✓</td>
<td>✓</td>
<td></td>
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</tr>
<tr>
<td>C3</td>
<td>Maintain records</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C4</td>
<td>Participate in job planning activities</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>D</td>
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<td>E</td>
<td>USE COMMUNICATION AND MENTORING TECHNIQUES</td>
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<tr>
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<td>Manage pests, diseases and invasive species</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
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<td>G2</td>
<td>Practice biodiversity enhancement</td>
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<td>✓</td>
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<td>H</td>
<td>PERFORM PRE-CONSTRUCTION ACTIVITIES</td>
<td>13%</td>
<td>60%</td>
<td>40%</td>
<td>100%</td>
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<tr>
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<td>Participate in landscape design activities</td>
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<td>Select green infrastructure</td>
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<tr>
<td>K2</td>
<td>Install green roofs and walls</td>
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<td>K3</td>
<td>Install rainwater and stormwater management systems</td>
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<tr>
<td>K4</td>
<td>Install erosion control</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
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<td>Install biodiverse plantings and natural areas</td>
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<td>✓</td>
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<td>100%</td>
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<tr>
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<tr>
<td>N3</td>
<td>Maintain erosion control</td>
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<td>✓</td>
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Section 3

PROGRAM CONTENT

Landscape Horticulturist
Level 1

Landscape Horticulturist
Program Content
Level 1

Line (GAC): A PERFORM SAFETY-RELATED FUNCTIONS
Competency: A1 Use personal protective equipment (PPE) and safety equipment

Objectives
To be competent in this area, the individual must be able to:
• Demonstrate personal safety in the workplace.
• Demonstrate proper use of PPE.
• Describe the procedure for using a fire extinguisher.
• Identify jurisdictional regulations.

LEARNING TASKS
1. Select and use PPE as required for task, tools, equipment, machinery and environment

2. Inspect PPE prior to use

3. Store PPE to maintain its integrity

4. Describe the process to check PPE inventory

5. Recognize damaged and expired PPE

6. Check and replace PPE components

7. Recognize PPE requirements for chemical handling

8. Describe the procedure for using a fire extinguisher

9. Demonstrate knowledge of regulatory requirements pertaining to PPE and safety equipment

CONTENT
• Ear protection
• Eye protection
• Hand protection
• Foot protection
• Safety vests
• Respiratory protection
• Fall protection
• Operation
• Condition
• Dry
• Protected
• Clean
• Ready supply
• Expiration dates
• Integrity of PPE
• According to manufacturers’ specifications
• According to workplace requirements
• According to jurisdictional regulations
• Goggles
• Rubber gloves
• Face shields
• Chemical protection suits
• Conditions to support a fire
• Classes of fires
• Extinguisher selection
• Use
• Jurisdictional regulations
Achievement Criteria

Performance: The learner will select PPE for specified tasks.

Conditions: The learner will have access to PPE commonly used in the trade.

Criteria: The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:

- Selected correct PPE required for specified tasks as designated by the instructor
Objects
To be competent in this area, the individual must be able to:

- Assess site hazards and potential risks.
- Follow specified safety procedures.
- Follow WHMIS procedures.

LEARNING TASKS
1. Assess site hazards and potential risks

- Motorized equipment
- High voltage
- Working at heights
- Overhead
- Ergonomic
- Gravitational
  - Slips
  - Trips
  - Falls
- Public
- Personnel
  - Fatigue
  - Rushing
  - Complacency
  - Stress
  - Substance abuse
  - Ignorance
  - Frustration
  - Heat and cold stress
- Chemical
  - Tanks
  - Hazardous and toxic debris
- Environmental
  - Insects
  - Plants
  - Weather
  - Hazardous trees

2. Coordinate task with other workers

- Injury avoidance
  - Self
  - Co-workers
  - Others

3. Maintain worksite to avoid injuries to self and others

- Clean
- Tidy
<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
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<tbody>
<tr>
<td>4. Use safety barriers when working in traffic areas</td>
<td>• Flagging</td>
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<td></td>
<td>• Pylons</td>
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<td>• Signage</td>
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<td>5. Participate in safety meetings and discussion</td>
<td>• Information recorded and distributed to</td>
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<td></td>
<td>all team members</td>
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<td>6. Report unsafe conditions to supervisor</td>
<td>• Recognizing</td>
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<td>• Reporting</td>
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<td>7. Recognize safety warning signals</td>
<td>• Back-up signals</td>
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<td></td>
<td>• Back-up alarms</td>
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<td>• Warning lights</td>
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<td>• Universal hand signals</td>
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<td>8. Recognize safety symbols</td>
<td>• Workplace and job-site safety signage</td>
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<td>• Truck signage</td>
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<td>• Product labels</td>
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<td>9. Describe considerations to coordinate with other agencies</td>
<td>• Private and public line locators</td>
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<td></td>
<td>• Emergency response teams</td>
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<td>10. Describe how to mitigate the risks of workplace accidents and injuries</td>
<td>• Visual assessments</td>
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<td>• Safe work plan</td>
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<td>• Post-job inspection</td>
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<td>11. Describe WHMIS requirements</td>
<td>• Certification</td>
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<td></td>
<td>• Symbols</td>
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<td></td>
<td>• Labels</td>
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<td>12. Handle hazardous materials in accordance with government regulations and</td>
<td>• Contain</td>
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<tr>
<td>WHMIS procedures</td>
<td>• Dispose</td>
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<td></td>
<td>• Label</td>
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<td>• PPE</td>
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<tr>
<td>13. Identify relevant WorkSafeBC regulations</td>
<td>• Lock-out/tag-out</td>
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<td></td>
<td>• Confined spaces</td>
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<td>• Reporting</td>
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<td>• Responsibilities of employer and supervisor</td>
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</table>

Program Content
Level 1
Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B1 Use hand tools

Objectives
To be competent in this area, the individual must be able to:
- Use and maintain hand tools.
- Store hand tools.

LEARNING TASKS
1. Select and use hand tools

2. Perform hand tool maintenance (for level appropriate tools)
   - Cleaning and disinfecting
   - Lubricating
   - Damage
   - Excessive wear
   - Proper operation
   - Sharpening
   - Replacing components

3. Store hand tools (for level appropriate tools)
   - Organization
   - Safety
   - Security
   - Preservation
Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B2 Use power tools

Objectives
To be competent in this area, the individual must be able to:

- Use and maintain power tools.
- Store power tools.

LEARNING TASKS
1. Select and use power tools

2. Perform power tool maintenance (for level appropriate tools)

CONTENT
- See the general list of Tools and Equipment and the tool list that is specific for Level One, detailed in the Training Provider Standards of this Program Outline
- Adjusting
- Manufacturer’s specifications
- Environmental implications
- Removal from service
  - Company policy
- Safety features
- Operational maintenance
  - Cleaning and disinfecting
  - Lubricating
  - Fluid levels
  - Tire pressure
  - Adjusting
  - Damage
  - Excessive wear
  - Malfunction
  - Proper operation
  - Sharpening
  - Balancing
  - Replacing components
  - Cooling fins
  - Maintenance schedule
  - Manufacturers’ specifications
  - Safety features
- Preventative maintenance
  - Fuel
  - Filters
    - Air
    - Fuel
  - Lubrication
    - Oil
    - Grease
LEARNING TASKS

3. Store power tools (for level appropriate tools)

CONTENT

- Spark plug
- Controls and drive mechanisms
- Bolts, belts, fittings, hoses
- Tire pressure
- Batteries

- Organization
- Safety
- Security
- Preservation
Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B3 Use measuring equipment

Objectives
To be competent in this area, the individual must be able to:

- Use and maintain measuring equipment.
- Store measuring equipment.

LEARNING TASKS
1. Select and use measuring equipment

2. Perform maintenance on measuring equipment (for level appropriate equipment)
   - Cleaning and disinfecting
   - Proper operation
   - Contaminants
   - Calibrating
   - Batteries
   - Damage
   - Excessive wear
   - Proper operation

3. Store measuring equipment (for level appropriate equipment)
   - Organization
   - Safety
   - Security
   - Manufacturer’s specifications
Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B4 Use vehicles and motorized equipment, trailers and attachments

Objectives
To be competent in this area, the individual must be able to:
- Identify basic engine systems.
- Discuss pre-operation checks, maintenance and repair.
- Clean and inspect vehicles, motorized equipment, attachments and trailers.
- Operate vehicles and motorized equipment.

LEARNING TASKS
1. Identify basic engine systems
   - Diesel
   - Electric
   - Two-cycle
   - Four-cycle

2. Inspect vehicles, motorized equipment, attachments and trailers
   - Equipment
     - Turfgrass maintenance
     - Utility vehicles
   - Defects
   - Damage
   - Wear
   - Safety features

3. Operate vehicles and motorized equipment
   - Equipment
     - Turfgrass maintenance
       - Cutting height
     - Utility vehicles
   - Jurisdictional regulations
   - Manufacturer’s specifications
   - Company policy
   - Three point contact

4. Clean vehicles, motorized equipment, attachments and trailers
   - Disinfection
   - Appearance
   - Leaks
   - Sanitation
   - Site conditions
   - Jurisdictional regulations

5. Discuss the procedures for pre-operation check and maintenance
   - Safety features
     - Lock-out devices
     - Chutes
     - Guards
     - Rollover protection devices (ROP)
LEARNING TASKS

6. Discuss equipment maintenance and repairs

CONTENT

- Operator presence switches
- Jurisdictional regulations
- Maintenance checks
- Circle checks
- Cold starts
- Changing seasonal tires
- Fluid levels
- Lubricants
- Components
- Air pressure
- Connections, fittings and hoses
- Manufacturer’s specifications
- Company policy
- Damaged and worn components
  - Spark plugs
  - Belts
  - Hoses
  - Pull cords
  - Bushings
  - Blades
  - Tines
Line (GAC): C ORGANIZE WORK
Competency: C1 Perform site assessments

Objectives
To be competent in this area, the individual must be able to:
- Inspect site and determine requirements.
- Assess soils.
- Examine soil compaction.
- Identify existing and proposed grading and drainage patterns.

LEARNING TASKS

1. Select and use specific tools and equipment as directed
   - Tools
     - Soil probe
     - Shovels
     - Rakes

2. Perform visual inspection
   - Site
   - Neighbouring properties
   - Site restrictions
   - Challenges for work
   - Theft protection
   - Risk of vandalism
   - Human health and safety
   - Wildlife
   - Soil or growing media depth
   - Soil quality concepts
   - Impact of compaction
     - Soil permeability
     - Drainage

3. Assess access points
   - Site restrictions
   - Challenges for work
   - Theft protection
   - Risk of vandalism
   - Human health and safety
   - Wildlife

4. Identify security requirements
   - Theft protection
   - Risk of vandalism
   - Human health and safety
   - Wildlife
   - Soil or growing media depth
   - Soil quality concepts
   - Impact of compaction
     - Soil permeability
     - Drainage
   - Visual inspection
     - Positive drainage
     - Slope

5. Assess landscape site soils

6. Examine soil compaction and drainage
   - Impact of compaction
     - Soil permeability
     - Drainage

7. Identify existing and proposed grading and drainage patterns
   - Visual inspection
     - Positive drainage
     - Slope
Program Content
Level 1

Line (GAC): C  ORGANIZE WORK
Competency: C2 Use documentation and reference material

Objectives
To be competent in this area, the individual must be able to:
• Reference and interpret relevant documentation.

LEARNING TASKS

1. Reference documentation pertaining to worker safety
   • WHMIS
     • SDS
   • WorkSafeBC
   • Company policy
   • Jurisdictional regulations
     • Employment standards

2. Reference documentation pertaining to industry standards
   • CLS
   • Material specifications

3. Reference additional information resources
   • Textbooks
   • Fieldbooks
   • Operator equipment manuals
   • Internet
     • Resource credibility

4. Interpret location documentation
   • Locate utility lines (BC One Call)
   • Other services
Line (GAC): C ORGANIZE WORK
Competency: C3 Maintain records

Objectives
To be competent in this area, the individual must be able to:
- Describe the types of tool and equipment records.
- Describe the purpose of completing safety records.

LEARNING TASKS
1. Describe the types of tool and equipment records
   - Sign-out records
   - Training sign-off sheets
   - Maintenance records
   - Calibration records

2. Describe the purpose of completing safety records
   - Company accountability
     - Accident reports
     - Lock out/ tag out
     - Safety meeting sheets
   - Regulations
     - Governmental
     - Industry
     - Company

CONTENT
Line (GAC): C  ORGANIZE WORK
Competency: C7  Transport materials

Objectives
To be competent in this area, the individual must be able to:
• Describe the procedure to cover and secure materials.
• Describe the procedure to load/unload materials.

LEARNING TASKS
1. Describe the protection of plant materials
   • Tarps
   • Anti-desiccants
   • Enclosed trailers
   • CLS

2. Describe the procedure to secure materials
   • Approved tie-downs
   • Jurisdictional regulations
   • Loose materials
   • Hazardous materials
   • Spillage prevention

3. Describe the procedure to load/unload materials
   • Tools and equipment
     o Dollies
     o Forklifts
   • Optimal transport
   • Sequence
   • Direction
   • Weight distribution
   • Jurisdictional regulations
     o Gross vehicle weight ratings

4. Describe the procedure to cover materials
   • Jurisdictional regulations
   • Company policy
Objectives
To be competent in this area, the individual must be able to:
• Describe the procedure to secure loads.
• Describe the procedure to load and unload equipment.

LEARNING TASKS

1. Describe the selection of vehicle/trailer type
   • Equipment
     o Attachments
   • Weight restrictions
   • Licensing requirements

2. Describe the procedure to secure loads
   • Approved tie-downs
   • Jurisdictional regulations
   • Shifting

3. Describe the procedure to load equipment
   • Flags and signs
   • Ramps
   • Traffic cones
   • Blocks
   • Company policy
   • Jurisdictional regulations

4. Describe the procedure to unload equipment
   • Location
   • Proximity to work area
   • Level ground
   • Vehicle/trailer stabilization
     o Traffic cones
     o Blocks
   • Company policy
   • Jurisdictional regulations
Line (GAC): E USE COMMUNICATION AND MENTORING TECHNIQUES

Competency: E1 Use communication techniques

Objectives
To be competent in this area, the individual must be able to:
• Describe effective group functioning.
• Use effective verbal and written communication.

LEARNING TASKS

1. Describe characteristics of an effective team
   • High performing crew/team
   • Ineffective work crews
   • Supervisory role

2. Participate in safety and information meetings
   • Preparation
   • Attendance
   • Participation

3. Describe conflict management
   • Defining conflict
   • Sources of conflict
   • Basic styles for managing conflict
   • Conflict management strategies
   • Guidelines of managing interpersonal conflict

4. Use effective verbal and written communication techniques
   • Basic communication skills
     o Listening
     o Speaking
     o Reading
     o Writing
   • Active listening
   • Mirroring
   • Repeating back
   • Reporting discrepancies and seeking direction from supervisor
   • Non-verbal communication
   • Barriers to communication
   • Relaying information
     o Co-workers
     o Clients
     o Suppliers
     o Office staff
   • Relaying information in laypersons’ terms
     o Clients
     o Public

5. Describe effective feedback
   • Giving
LEARNING TASKS

6. Describe the use of communication equipment

7. Use universal hand signals

CONTENT

- Receiving
- Responding
- Two-way radios
- Computers
- Cell phones
- Other tradespeople
  - Machine operators
  - Truckers
  - Crane operators
- Jurisdictional regulations
Program Content
Level 1

Line (GAC): F APPLY HORTICULTURAL PRACTICES
Competency: F1 Practice basic plant science

Objectives
To be competent in this area, the individual must be able to:
- Explain plant morphological characteristics, life cycles, and adaptations as they apply to plant identification, plant propagation, arboriculture and turf maintenance.

LEARNING TASKS

1. Describe the external anatomy of stems

2. Describe leaf morphology and external anatomy
   - Woody
   - Herbaceous
   - Parts of a simple leaf
   - Leaf shapes
   - Leaf tips
   - Leaf margins
   - Leaf surfaces
   - Pattern of veins within the leaf blade
   - Simple and compound leaves

3. Describe parts of the flower
   - Flower structure
     - Complete and incomplete flowers
     - Perfect vs. imperfect flowers
     - Monoecious vs. dioecious plants
     - Flower symmetry

4. Identify typical inflorescences

5. Identify fruit types
   - Fleshy
   - Dry
     - Dehiscent and indehiscent

6. Describe seed characteristics and development
   - Parts of a seed
   - Germination requirements
     - Basic
     - Special treatments
   - Monocot vs. dicot germination
   - Dormancy and viability

7. Identify organ modifications
   - Stems, leafs, roots
   - Reasons
     - Storage
     - Protection
     - Propagation
     - Stressors
     - Environmental
Line (GAC): F APPLY HORTICULTURAL PRACTICES
Competency: F2 Identify plants and plant requirements

Objectives
To be competent in this area, the individual must be able to:
• Identify plant and plant requirements for 50 woody and non-woody plants.
• Identify morphological characteristics, growing requirements, use and availability.

LEARNING TASKS
1. Classify a range of plant materials commonly used in horticulture
   • Life cycle of a plant
   • Plant growth patterns
     o Annuals
     o Biennials
     o Perennials
     o Herbaceous perennials
     o Woody perennials
   • Deciduous and evergreen plants
     o Deciduous plants
     o Evergreens
     o Broadleaf evergreens
     o Coniferous evergreens
   • Climbing plants
     o Stems specialized for climbing
     o Monocarpic plants

2. Employ correct naming and plant identification terminology
   • Origin of plant naming systems
     o Common names
     o Nomenclature
     o Binomial system for naming plants
     o Plant taxonomy
     o Writing botanical names

3. Name the plant family for each plant identified
   • Plant families
   • Plant families commonly found in British Columbia
     o ASTERACEAE – Aster Family
     o CARYOPHYLLACEAE – Pink Family
     o ERICACEAE – Heath Family
     o LAMIACEAE – Mint Family
     o LILIACEAE – Lily Family
     o RANUNCULACEAE – Buttercup Family
     o ROSACEAE – Rose Family
     o SAPINDACEAE – Soapberry Family
LEARNING TASKS

4. Describe bud, bark, foliage, flower and fruit characteristics

5. Use a dichotomous key for plant identification

6. Identify and describe 50 woody and non-woody plants

CONTENT

- Plant morphology
- Morphology descriptors for leaves
- Leaf arrangement
- Needles
- Scales and awls
- Patterns of inflorescence
- Descriptors for flowers
- Plant types
- Descriptors for fruit
- Woody stems
- Visual, touch and other senses
- Health and vigour

- Limitations of plant keys
- Conifer key
- Deciduous key

- Using botanical terms
- According to its cultural and maintenance requirements
Line (GAC): F APPLY HORTICULTURAL PRACTICES
Competency: F3 Manage plant health and growing conditions

Objectives
To be competent in this area, the individual must be able to:
• Describe the conditions and practices that affect plant health.
• Examine plant organs for signs of stress.

LEARNING TASKS

1. Select and use tools and equipment
   • Hand lens
   • Soil probe
   • Light meter
   • pH meter
   • Tensiometer
   • Spreaders

2. Describe the conditions that affect plant health
   • Environmental
     o Air quality
       – Ozone
       – Pollutants
     o Light
     o Humidity
     o Wind
     o HVAC systems
     o Temperature
     o Moisture
     o Reflective heat load
   • Growing
     o Microclimate
     o Available space
     o Plant hardness
     o Topography
     o Soil type
     o Depth
     o pH level
     o Water availability

3. Recognize basic practices that affect plant health
   • IPM principles
   • Maintenance practices
   • Installation practices
   • Canadian Standards for Nursery Stock (CSNS)

4. Visually inspect growing media
   • Signs of and symptoms of health
   • Determining needs of growing media
LEARNING TASKS

5. Use appropriate terminology to describe plant stress

6. Examine plant organs for evidence of stress

CONTENT

- Signs
- Symptoms
- Abiotic
  - Nutrient deficiencies
  - Environmental conditions
- Biotic
  - Diseases
  - Pests
Line (GAC): G  APPLY ENVIRONMENTAL PRACTICES
Competency: G1  Practice environmental stewardship

Objectives
To be competent in this area, the individual must be able to:

• Define environmental stewardship.
• Discuss standards and opportunities for stewardship related to site assessment and preparation.

LEARNING TASKS
1. Define environmental stewardship
   • Natural and urban habitats and ecosystems
     o Conservation
     o Preservation
     o Reclamation
     o Protection
     o Function
     o Purpose
     – Psychosocial health
     o Structure

2. Describe standards for environmental protection
   • Silt fencing
   • Environmental construction practices
   • Material storage
   • Sourcing appropriate information relative to environmental protection

3. Discuss opportunities for stewardship related to site assessment and preparation
   • Tools
   • Equipment
   • Plants
   • Materials
   • Disposal
   • Organized work flow
   • Site protection
   • Maintenance practices
   • Installation practices
   • Non-sustainable versus sustainable practices

4. List benefits of plants
   • Carbon sequestration
   • Symbiotic relationships
   • Pollution mitigation
   • Cost savings
   • Aesthetics
   • Psychosocial health
   • Medicinal
   • Food source
Program Content
Level 1

LEARNING TASKS

CONTENT
• Wildlife habitat
• Building materials
Line (GAC): G APPLY ENVIRONMENTAL PRACTICES
Competency: G3 Practice soil stewardship

Objectives
To be competent in this area, the individual must be able to:

- Recognize soil and soil management as keys to the successful practice of horticulture.
- Describe the physical properties and behaviour of soil.

LEARNING TASKS

1. Describe factors of soil formation

   • Natural soils
     - Parent material
     - Biotic – living organisms
     - Topography
     - Time
   - Manufactured soils

2. Define soil quality

   • Human health
   • Environmental quality
   • Plant and animal productivity

3. Distinguish between soil profile horizons

   • LFH horizon
   • A horizon
   • E horizon
   • B horizon
   • C horizon
   • R horizon

4. Explain the physical properties of soil and soilless media

   • Texture
   • Structure
     - Density
     - Porosity
     - Impact of cultivation
     - Soil compaction
       – Remediation

5. Describe the behaviour of water in soil

   • Soil water holding capacity
   • Available water
   • Water movement through soil
     - Gravity
     - Capillary action
   • Wetting front
   • Hydraulic conductivity of soil
   • Water retention and flow in layered soils
   • Water movement in urban soils
   • Remediation of drainage and infiltration issues
     - Subsurface drainage
LEARNING TASKS

CONTENT
- Mounded plant beds
- Raised plant beds
- Subsoil sculpturing

Achievement Criteria

Performance: The learner will perform soil tests.
Conditions: The learner will be given the necessary materials, tools and equipment.
Criteria: The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Performed tests on soil:
  - Percolation
  - Texture tests
  - Topsoil depth
Program Content
Level 1

Line (GAC): H PERFORM PRE-CONSTRUCTION ACTIVITIES
Competency: H3 Perform grading

Objectives
To be competent in this area, the individual must be able to:
• Perform site grading.
• Describe the effects of grading.

LEARNING TASKS

1. Select and use tools and equipment

   CONTENT
   • Tools
     o Builder’s level
     o Spirit level
     o String level
     o Water level
     o Landscape rakes
   • Equipment
     o Excavators
     o Trenchers
     o Skid steers

2. Describe the considerations for grading

3. Perform calculations

4. Describe the procedure to strip and stockpile topsoil

5. Perform site grading

6. Describe the effects of grading

   CONTENT
   • Tools
   • Equipment
   • Terminology
   • Hazards
   • Site function
   • Specifications
   • Jurisdictional regulations
   • Grading plans
     o Existing grades
     o Proposed grades (finished)
     o Contour plans
   • Verification
   • Elevation
   • Slope
   • Cut and fill
   • Plans and specifications
   • CLS
   • Jurisdictional regulations
   • Cut and fill
   • Rough grading
   • Grading for drainage
   • Finish grading
   • Environmental stewardship
   • Soils
     o Erosion
     o Compaction
LEARNING TASKS

CONTENT

- Site hydrology

Achievement Criteria

Performance  The learner will perform grading to achieve a specified slope.

Conditions  The learner will be given a plan, tools, equipment and materials.

Criteria  The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
  
  • Performed calculations
  • Proper set up of equipment
  • Measurement of distance intervals
  • Perform rod readings
  • Determine elevations for grade
  • Setup and marked grade stakes
  • Perform grading
**Program Content**  
**Level 1**

**Line (GAC):**  
H  PERFORM PRE-CONSTRUCTION ACTIVITIES

**Competency:**  
H4  Install drainage systems

### Objectives

To be competent in this area, the individual must be able to:

- Install a sub system drainage system using the correct tools, equipment and materials, as per specifications.

### LEARNING TASKS

1. **Select and use tools and equipment**
   - **Tools**
     - Trenching shovels
     - Picks
     - Wheelbarrows
     - Pipe cutter
     - Glue
   - **Equipment**
     - Excavators
     - Trenchers

2. **Describe the considerations for drainage system selection**
   - **Hydrologic cycle**
     - Precipitation
       - Rain
       - Snow
   - **Runoff**
     - Overland flow
     - Sub-surface flow
     - Saturated overland flow
     - Urbanization runoff
   - **Soil texture and structure**
   - **Benefits of good drainage**
     - Plant health
     - Root development
     - Nutrient uptake
     - Plant tolerance
     - Pathogenic organisms
   - Over drained soils
   - General water table changes
   - Environmental stewardship
   - Topography
   - Jurisdictional regulations

3. **Describe types of drainage systems**
   - **Surface drainage systems**
     - Retention/detention ponds
     - Rain gardens
     - Open channels
LEARNING TASKS

4. Describe drainage components and their function
   • Ditches
   • Swales
   • Subsurface drainage systems
     o French drain
     o Perimeter drain
   • Surface drainage system components
     o Storm drains
     o Utility hole covers
     o Drain outlets
     o Catch basins
   • Subsurface drainage system components
     o Pipes
     o Pipe envelope fabrics
     o Blind inlets
     o Bedding material
     - Drain rock
     - Washed sand

5. Describe drainage system planning and design considerations
   • Plans
     o Drainage
     o Grading
   • Drainage system capacity
   • Subsurface drainage
     o Drain depth and spacing
     o Drain diameter
     o Grades for drains
     o Installation of sub-surface drains
   • Surface drainage
     o Land grading
   • Velocities
   • CLS
   • Jurisdictional regulations
   • Site protection

6. Perform drainage system installation
   • Elevation and slope calculations
   • Subsoil excavation
   • Storage or removal of excavated materials
   • Layout, assembly and placement of drainage components
   • Verification of drainage system operation
   • Drainage system backfilling
   • Verification that installation meets
LEARNING TASKS

CONTENT specifications
- CLS
- Jurisdictional regulations

Achievement Criteria

Performance  The learner will install a sub-surface drainage system.

Conditions  The learner will be given a plan, tools, equipment and materials.

Criteria  The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Sub grade properly prepared
- Drain installed at proper grade
- Correct size drain and type of aggregate used
- Drain placed to correct depth
- Filter fabric properly installed
Line (GAC): J  INSTALL SOFTSCAPE
Competency: J1  Install growing media

Objectives
To be competent in this area, the individual must be able to:
• Install growing media using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

1. Select and use hand tools
   CONTENT
   • Tools
     o Shovels
     o Picks
     o Rakes
     o Wheelbarrows

2. Select and use equipment
   CONTENT
   • Equipment
     o Skid steers
     o Loaders
     o Excavators
     o Truck blowers

3. Verify functioning of drainage systems

4. Scarify subsoil

5. Add growing media
   CONTENT
   • Drawings and specifications
   • Lifts
   • Standards for compaction
   • Irrigation
   • Soil and soilless media
   • Depth

6. Add and incorporate amendments
   CONTENT
   • Fertilizers
   • Composts
   • Peat moss
   • Mycorrhizae
   • Soil test results

7. Shape and grade growing media
   CONTENT
   • Standards, drawings and specifications
Line (GAC): J INSTALL SOFTSCAPE
Competency: J5 Install turf from seed

Objectives
To be competent in this area, the individual must be able to:
• Install turf from seed using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

1. Select and use hand tools

2. Select and use equipment

3. Describe turfgrass functions and standards for quality

4. Describe turfgrass nutrition and application technology

5. Describe turfgrass and water use

CONTENT

• Tools
  o Rollers
  o Landscape rakes
  o Seed spreaders

• Equipment
  o Hydro-seeders
  o Seed drills
  o Tractors and attachments

• Functions of lawns
  o Recreational use
  o Aesthetic use
  o Environmental function

• Turf quality
  o Visual turf quality
  o Functional turf quality

• Nutrition and soil amendments
  o Roles of nitrogen, phosphorous and potassium

• Selection of fertilizer products
  o Coated fertilizers
  o Synthetic organic sources/natural organic sources

• Fertilizer calculations
  o Cost of nutrient/product and cost of nutrient/site
  o Application technology
  o Calibration of drop rotary spreaders

• Water use
  o Water use characteristics in common turfgrass
  o Turfgrass with drought resistance ranking

• Symptoms of water stress
• Irrigation monitoring strategies
LEARNING TASKS

6. Describe turfgrass selection and identification

7. Prepare seedbed

8. Verify seed variety and seeding rate

9. Apply seed to prepared area

CONTENT

- Common turfgrass species and blends
  - Perennial ryegrass
  - Annual ryegrass
  - Annual bluegrass
  - Kentucky bluegrass
  - Fine fescues
  - Creeping bentgrass
  - Colonial bentgrass

- Standards for species selection
  - The national turfgrass evaluation program
  - Certified and common seed
  - Jurisdictional regulations
  - Standards
  - Seed germination
  - Seed purity
  - Calculating pure live seed (PLS)

- Seed quality
  - Lime
  - Peat moss
  - Mycorrhizae

- Irrigation

- Scarify

- Amendments
  - Soil depth
  - Compaction

- Standards and specifications

- Manufacturer’s specifications
  - Application rate
  - Seed variety

- Calibration

- Landscape rollers

- Seed distribution

- Uniform and targeted application

- Weather conditions
  - Wind
  - Temperature
  - Precipitation

- Organic matter application
  - Moisture retention
10. Describe procedures for post-seeding care

- Irrigation
- Weeding
- Reapplication
- Establishment
Line (GAC): J INSTALL SOFTSCAPE
Competency: J6 Install sod

Objectives
To be competent in this area, the individual must be able to:
• Install sod using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS
1. Select and use hand tools
   • Tools
     o Rollers
     o Landscape rakes
     o Sod knives

2. Select and use equipment
   • Equipment
     o Rollers
     o Tractors and attachments

3. Describe turfgrass functions and characteristics for quality
   • Functions of lawns
     o Recreational use
     o Aesthetic use
     o Environmental function
   • Turf quality
     o Visual turf quality
     o Functional turf quality

4. Prepare the area to be sodded
   • Grading
   • Debris removal
   • Utility marking
   • Soil depth
   • Compaction
   • Amendments
     o Lime
     o Peat moss
     o Mycorrhizae
     o Fertilizers
   • Irrigation
   • Scarify
   • Standards and specifications

5. Verify sod
   • Variety
   • Quality
     o Standards
     o Contract documents
   • Quantity

6. Lay sod
   • Procedures
     o Seams
LEARNING TASKS

7. Describe procedures for post-sod care

8. Dispose of or recycle excess materials

CONTENT

- Orientation of sod
  - Grade
  - Shape and features
  - Minimal cuts

- Landscape rollers
- Drawings and specifications
- Establishment
  - Root attachment
  - Plant health
  - Deficiencies
    - Pooling
- Standards and specifications
- Irrigation
- Pest control
- Jurisdictional regulations
- First mow
- Jurisdictional regulations
- Industry standard

Achievement Criteria

Performance The learner will install sod.

Conditions The learner will be given the necessary materials, tools and equipment.

Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:

- Verified area to be sodded is prepared according to specifications
- Verified selected sod meets specifications
- Laid according to specifications
Line (GAC): M MAINTAIN SOFTSCAPE
Competency: M1 Maintain exterior softscape

Objectives
To be competent in this area, the individual must be able to:
• Describe the purpose of exterior softscape maintenance.
• Describe the procedure for exterior softscape maintenance.
• Create a basic maintenance plan for an exterior softscape.

LEARNING TASKS

1. Select and use tools and equipment
   • Rakes
   • Hoes
   • Spades
   • Shovels
   • Edgers
   • Hand pruners
   • Broom
   • Blowers
   • Hoses
   • Watering wand
   • Forks

2. Describe the purpose of softscape maintenance
   • Landscape function
   • Landscape integrity
   • Design intent
   • Contract documents
   • Site specific
   • Plant preservation
   • Structure preservation

3. Perform visual inspection
   • Plant health
   • Appearance
   • Maintenance levels
   • Contract documents

4. Describe plant irrigation
   • Plant requirements
   • Water soil relationship
   • Annual
   • Automatic
   • Overhead
   • Drip
   • Jurisdictional regulations

5. Describe cultivation of growing media
   • Soil structure and biota
   • Aesthetics
   • Ease of planting
<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
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</table>
| 6. Describe hardening-off practices | • Aeration  
• Weeding  
• Plant hardiness  
• Season  
• Weather  
• Standards |
| 7. Perform bed edging | • Contract documents  
• Definition  
• Weed control |
| 8. Describe inspection and maintenance of natural and manufactured edge | • Contract documents  
• Definition  
• Weed control  
• Aesthetics  
• Edges  
  • Plastic  
  • Wood  
  • Metal  
  • Brick  
  • Stone |
| 9. Remove weeds and debris | • Plant life cycles  
• Contract documents  
• Maintenance levels  
• IPM  
• Disposal  
• Jurisdictional regulations |
| 10. Perform deadheading | • Contract documents  
• Appearance  
• Plant life cycles |
| 11. Perform site cleanup | • Contract documents  
• Litter pickup  
• Removal of excess clippings  
• Surface cleaning  
• Jurisdictional regulations |
Achievement Criteria

Performance: The learner will create a basic maintenance plan for an exterior softscape.

Conditions: The learner will be given the necessary materials, tools and equipment.

Criteria: The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:

- Assessed the site
- Identified problems
- Created a maintenance plan
Line (GAC): M MAINTAIN SOFTSCAPE
Competency: M3 Maintain turfgrass

Objectives
To be competent in this area, the individual must be able to:
• Describe the maintenance of grass/turf according to specifications.
• Mow and trim turfgrass.
• Create a maintenance plan for grass/turf.

LEARNING TASKS

1. Select and use tools and equipment
   • Power raking equipment
   • Reel and rotary mowers
   • Blade edgers
   • String trimmers
   • Core aerators
   • Verticutters
   • Slice seeders
   • Spreaders

2. Describe turfgrass cultivation
   • Aeration
   • Topdressing
   • Overseeding
     o Repair
     o Rejuvenation
     o Introduce new species
   • Thatch removal (de-thatching)
   • Soil test recommendations
     o pH level
     o Fertility

3. Describe maintenance scheduling
   • Mowing frequency and height of cut
   • Length of maintenance season
   • Site use
   • Maintenance level
   • Fertilization

4. Describe the monitoring of turfgrass
   • Visual inspection
     o Colour
     o Thinning
     o Grades
     o Drainage
     o Pests and diseases
     o Divots
     o Patching
     o Poor mowing quality
     o Root zone concerns
LEARNING TASKS

5. Describe turfgrass irrigation

6. Perform mowing and trimming of turfgrass

7. Describe pest and disease management of turfgrass

8. Describe turfgrass repair

CONTENT

- Water management
  - Timing
  - Coverage
  - Usage
  - Species
  - Environment conditions
  - Jurisdictional regulations
  - Contract documents

- Cutting heights
- Mower sanitation
- Frequency
- Procedure
  - Cutting patterns
- Site use
- Topography
- Weather conditions
- Contract documents
- Standards and specifications

- IPM
- Biotic pests
- Abiotic factors
- Jurisdictional regulations
- Standards and specifications

- Seed
- Sod

Achievement Criteria

Performance The learner will create a maintenance plan for grass/turf.

Conditions The learner will be given the necessary materials, tools and equipment.

Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:

- Assessed the site
- Identified problems
- Created a maintenance plan
Level 2

Landscape Horticulturist
Program Content
Level 2

Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B1 Use hand tools

Objectives
To be competent in this area, the individual must be able to:
• Use and maintain hand tools.
• Store hand tools.

LEARNING TASKS

1. Select and use hand tools

2. Perform hand tool maintenance (for level appropriate tools)
   • See the general list of Tools and Equipment and the tool list that is specific for Level Two, detailed in the Training Provider Standards of this Program Outline
   • Environmental implications
   • Cleaning and disinfecting
   • Lubricating
   • Damage
   • Excessive wear
   • Proper operation
   • Sharpening
   • Replacing components

3. Store hand tools (for level appropriate tools)
   • Organization
   • Safety
   • Security
   • Preservation
Objectives
To be competent in this area, the individual must be able to:
- Use and maintain power tools.
- Store power tools.

Learning Tasks
1. Select and use power tools

2. Perform power tool maintenance (for level appropriate tools)

Content
- See the general list of Tools and Equipment and the tool list that is specific for Level One, detailed in the Training Provider Standards of this Program Outline
- Adjusting
- Manufacturer’s specifications
- Environmental implications
- Removal from service
  - Company policy
- Safety features
- Operational maintenance
  - Cleaning and disinfecting
  - Lubricating
  - Fluid levels
  - Tire pressure
  - Adjusting
  - Damage
  - Excessive wear
  - Malfunction
  - Proper operation
  - Sharpening
  - Balancing
  - Replacing components
  - Cooling fins
  - Maintenance schedule
  - Manufacturers’ specifications
  - Safety features
- Preventative maintenance
  - Fuel
  - Filters
    - Air
    - Fuel
  - Lubrication
    - Oil
    - Grease
3. Store power tools (for level appropriate tools)

CONTENT
- Spark plug
- Controls and drive mechanisms
- Bolts, belts, fittings, hoses
- Tire pressure
- Batteries

- Organization
- Safety
- Security
- Preservation
Program Content
Level 2

Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B3 Use measuring equipment

Objectives
To be competent in this area, the individual must be able to:
• Use and maintain measuring equipment.
• Store measuring equipment.

LEARNING TASKS
1. Select and use measuring equipment
   CONTENT
   • See the general list of Measuring Equipment and the specific list of Measuring Equipment for Level One, detailed in the Training Provider Standards of this Program Outline

2. Perform maintenance on measuring equipment (for level appropriate equipment)
   • Cleaning and disinfecting
   • Proper operation
   • Contaminants
   • Calibrating
   • Batteries
   • Damage
   • Excessive wear
   • Proper operation

3. Store measuring equipment (for level appropriate equipment)
   • Organization
   • Safety
   • Security
   • Manufacturer’s specifications
Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B4 Use vehicles and motorized equipment, trailers and attachments

Objectives
To be competent in this area, the individual must be able to:

- Identify basic vehicle systems and components.
- Describe the procedure to attach a trailer to a vehicle.
- Inspect and consider factors for the selection of vehicles, motorized equipment, attachments and trailers.
- Operate vehicles and motorized equipment.

LEARNING TASKS

1. Identify basic vehicle systems and components
   - Drive systems
   - Brakes
   - Control/safety systems
   - Carburetor
   - Ignition system
   - Starter components
   - Piston

2. Consider factors for the selection of vehicles, motorized equipment, attachments and trailers
   - Characteristics
   - Applications
   - Operation
   - Equipment types
     - Trucks
     - Turfgrass maintenance equipment
     - Skid steers
     - Utility vehicles
     - Tractors
     - Buckets
     - Aerators
     - Rototiller
     - Trailers
       - Flatbed
       - Dump

3. Describe the procedure to attach a trailer to a vehicle

4. Inspect vehicles, motorized equipment, attachments and trailers
   - Jurisdictional regulations
   - Equipment and attachments
     - Skid steers
     - Vehicle/trailer
   - Defects
   - Damage
LEARNING TASKS

5. Operate vehicles and motorized equipment

CONTENT

- Wear
- Safety features
- Equipment and attachments
  - Skid steer
- Jurisdictional regulations
  - Licencing requirements
- Manufacturer’s specifications
- Company policy
- Three point contact
- Safe equipment operation
  - Starting, speed and slopes
- Power take-off precautions
Line (GAC): C  
Competency: C1  Perform site assessments

Objectives
To be competent in this area, the individual must be able to:
• Identify and mark public and private utilities.
• Examine soil conditions.
• Examine soil compaction and drainage.
• Perform soil analysis and identify existing plants.

LEARNING TASKS

1. Select and use specific tools and equipment independently

2. Identify markings for public and private utilities

3. Mark locations of private utilities

4. Identify existing plants

5. Assess landscape site soils

6. Examine soil compaction and drainage

7. Recognize soil erosion

CONTENT

• Tools
  o Soil probe
  o Shovels
  o Rakes

• BC One Call
  o Cable
  o Natural gas
  o Power
  o Telephone

• Irrigation lines
• Drainage systems
• Landscape lighting components
• Locate septic components if necessary

• Health
• Vigour
• Maintenance practices
• Indicator plants

• Sampling and testing for quality
• Collecting samples
  o Nutrient analysis
  o Chemical analysis
  o Textural analysis

• Samples for soil layering
• Soil layering or horizons
• Impact of soil layers on water movement

• Characteristics
  o Gullies
  o Rills
  o Topsoil depth
  o Displaced soil
Program Content
Level 2

LEARNING TASKS

8. Perform soil tests

CONTENT

- Exposed roots
  - Environmental conditions
    - Wind
    - Rain
- Percolation
- Core sampling
- Texture tests
Objectives
To be competent in this area, the individual must be able to:
• Interpret project specifications.
• Read plans.
• Identify relevant legislation and policies.

LEARNING TASKS
1. Interpret symbols and abbreviations to determine the scope of work
2. Interpret project specifications
3. Interpret specified scale
4. Read plans
5. Identify current government legislation and company policies

CONTENT
• Property lines
• Grades
• Elevations
• Hardscape and softscape elements
• Utilities
• Planting plan
• Softscape and hardscape details
• Contract documentation
• Site layout
• Job planning activities
• Title block
• Construction and landscape plans
  o Site plan
  o Layout plan
  o Grading plan
  o Planting plan
  o Lighting plan
• Detailed drawings
  o Section view
  o Exploded view
• Relevant legislation
  o Federal
  o Municipal
  o Provincial
• Transportation
• Water
• Habitat and wildlife preservation
Objectives

To be competent in this area, the individual must be able to:

- Describe examples of additional records.
- Describe the purpose of comparing packing slips with original orders.

LEARNING TASKS

1. Describe examples of additional records

   - Vehicle log
     - Mileage
   - Fertilizer/Lime application rates
   - Test results
   - Way bills

2. Describe the purpose of comparing packing slips with original orders

   - Quoted pricing
   - Quantities
   - Species
Objectives
To be competent in this area, the individual must be able to:

- Describe the purpose of inspection and verification of plants and materials.
- Describe storage area specifications for equipment and hazardous materials.

LEARNING TASKS

1. Describe the purpose of inspection and verification of plants and materials
   - Accuracy
   - Quality
   - Quantity

2. Describe storage area specifications for equipment and hazardous materials
   - Jurisdictional regulations
   - Company policy
   - CLS
Line (GAC): C ORGANIZE WORK
Competency: C7 Transport materials

Objectives
To be competent in this area, the individual must be able to:
• Describe the transportation of materials.
• Describe the procedure to perform circle checks.

LEARNING TASKS
1. Describe the transportation of materials
   • Weight and height restrictions
   • Load distribution requirements
   • Jurisdictional regulations
   • Company policy

2. Describe the procedure to perform circle checks
   • Log book
   • Vehicle
   • Towed equipment
   • Jurisdictional regulations
   • Company policy
Line (GAC): C  ORGANIZE WORK
Competency: C8  Transport equipment

Objectives
To be competent in this area, the individual must be able to:
• Describe considerations in determining route.
• Describe the procedure to perform circle checks.
• Describe the transportation of equipment and attachments.

LEARNING TASKS

1. Describe considerations in determining route
   • Heavy hauling
   • Weight and height restrictions
   • Road closures
   • Weather
   • Efficiency

2. Describe the procedure to perform circle checks
   • Log book
   • Vehicle
   • Towed equipment
   • Jurisdictional regulations
   • Company policy

3. Describe the transportation of equipment and attachments
   • Weight and height restrictions
   • Load distribution requirements
   • Jurisdictional regulations
   • Company policy
Line (GAC): F APPLY HORTICULTURAL PRACTICES
Competency: F1 Practice basic plant science

Objectives
To be competent in this area, the individual must be able to:

- Examine the internal anatomy of stems, roots and leaves as they relate to photosynthesis, respiration, and transpiration.

**LEARNING TASKS**

1. **Describe the microscopic anatomy of plants**
   - Generalized plant cell
   - Cell division
   - Cell types, tissues, and their functions

2. **Describe plant organ internal anatomy**
   - Herbaceous and woody stems
   - Herbaceous and woody roots
   - Leaves
   - Monocots versus dicots

3. **Describe plant growth**
   - Primary
   - Secondary

4. **Describe stages in the life cycle of angiosperms and gymnosperms**
   - Gamete production
   - Pollination
   - Double fertilization

5. **Describe water movement through a plant**
   - Diffusion
   - Osmosis
   - Active transport
   - Transpiration
     - Capillary attraction
     - Adhesion and cohesion
     - Environmental effects

6. **Describe basic principles of photosynthesis**
   - Light and dark reactions
   - Chlorophyll
   - Translocation
   - Storage
   - Respiration
   - Environmental effects

7. **Explain the influence of environmental factors on plant physiology**
   - Light
   - Water
   - Air quality
     - Pollution
     - Carbon dioxide availability
   - Temperature
   - Nutrient availability
LEARNING TASKS

8. Describe the growth response to external stimuli
   • Photoperiod and flower production
   • Photoperiod
     o Tropisms and plant growth

9. Describe basic growth responses to plant hormones
   • Hormone groups
     o Auxins
     o Gibberellins (GA)
     o Cytokinins
     o Ethylene
     o Abscisic acid (ABA)
Objectives
To be competent in this area, the individual must be able to:
• Identify plant and plant requirements for 75 woody and non-woody plants.
• Identify plants used in all segments of horticulture.
• Identify weed and invasive plants.

LEARNING TASKS
1. Recognize a range of plant materials commonly used in horticulture
   • Natural habitat
     o Alpine plants
     o Woodland understory plants
     o Mediterranean plants
     o Bog plants
     o Native plants
   • Plant use characteristics
     o Bedding plants
     o Cut flowers
     o Trees and shrubs
     o Groundcovers
     o Climbers
   • Characteristics of individual plants and plant groups
   • Plant size
   • Texture
   • Plant form
   • Provenance

2. Explain plant hardiness zones
   • Plant hardiness zones
   • Relationship between plant health and hardiness zones

3. Identify weeds
   • Annual
   • Biennial
   • Woody
   • Perennial

4. Describe the characteristics of weeds
   • Invasive
   • Noxious
   • Nuisance

5. Recognize and describe bud, bark, foliage, flower, and fruit characteristics
   • Bud characteristics such as
     o Morphology
     o Type (vegetative or flower)
     o Arrangement
   • Bark characteristics
LEARNING TASKS

6. Identify and describe 75 woody and non-woody plants

CONTENT

- Furrowed
- Smooth
- Plate-like

- Describing leaves using botanical terminology and distinguishing a range of inflorescence type and fruit to aid in plant identification
- Using botanical terms
- According to its cultural and maintenance requirements
**Line (GAC):**  F  **APPLY HORTICULTURAL PRACTICES**  
**Competency:**  F3  Manage plant health and growing conditions

### Objectives
To be competent in this area, the individual must be able to:

- Describe tests and interpret results.
- Determine factors for plant selection and placement.
- Amend growing conditions.
- Apply fertilizers and amendments.

### LEARNING TASKS

<table>
<thead>
<tr>
<th>TASK</th>
<th>CONTENT</th>
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</thead>
</table>
| 1. Collect samples to prepare for testing | - Growing media  
- Foliar samples  
- Water samples  
- On site  
- Lab |
| 2. Describe types of tests | - Growing media  
- Foliar samples  
- Water samples  
- On site  
- Lab |
| 3. Interpret test results | - Growing media  
- Foliar samples  
- Water samples  
- On site  
- Lab |
| 4. Develop a plan for implementing corrective measures | - Fertilizing  
- Liming  
- Irrigation  
- Mulching  
- Maintenance procedures |
| 5. Determine factors for plant selection and placement | - Plant requirements  
- Plant health  
- Plant materials  
- ‘Right plant right place’ |
| 6. Amend growing conditions to meet plant requirements | - Microclimate  
- Available space  
- Topography  
- Soil type  
- Soil fertility  
- Soil depth  
- pH level |
LEARNING TASKS
7. Measure and apply fertilizer and amendments

CONTENT
- Water availability
- Lime
- Equipment calibration
- Plant life cycle
- Product labels
  - Grade
  - Analysis
- Application rate
- Fertilizer formulations
  - Foliar feed
  - Liquid
  - Granular

Achievement Criteria
Performance: The learner will apply fertilizer/lime.
Conditions: The learner will be given the necessary materials, tools and equipment.
Criteria: The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Safely performed tasks
- Calculate product quantity
- Calibrate equipment
- Apply product uniformly
Line (GAC): F  APPLY HORTICULTURAL PRACTICES
Competency: F4  Prune plant materials

Objectives
To be competent in this area, the individual must be able to:

• Demonstrate pruning techniques for shrubs, groundcovers, and vines.
• Use common arboricultural hand tools to prune shrubs, groundcovers, and vines.

LEARNING TASKS
1. Describe shrub, vine and groundcover pruning considerations

CONTENT
• Reasons for pruning shrubs, vines and groundcover
  o Health and vigour
  o Direct, control, or modify growth
  o Enhancing fruit and flower production
  o Dead, disease, damage and interfering (D,D,D,I)
  o Aesthetics
• Factors affecting the pruning of shrubs, vines and groundcover
  o Plant form
  o Function
  o Age
  o Location
  o Timing
  o Pre-pruning treatments
  o Severe pruning
  o Alternatives to pruning
• Efficiencies while pruning
  o Hand pruning vs. mechanical tools
  o Efficiencies and maintenance standard

2. Select and use tools and equipment

CONTENT
• Secateurs
• Hand saw
• Loppers
• Shears
  o Manual
  o Power
• Types of ladders
  o Orchard
  o Extension
  o Step
• Rakes
LEARNING TASKS

3. Demonstrate pruning techniques for young and established shrubs, groundcovers and vines

4. Describe timing of pruning shrub, vine and groundcover

5. Demonstrate safe working practices and operation of common pruning equipment and tools

6. Organize and dispose of pruned material

CONTENT

- String levels
- Pruning cuts
- General pruning techniques
  - Cleaning
  - Thinning
  - Raising
  - Reduction
  - Renovation
  - Hedging
  - Removal
- Plant groups according to growth and flowering habits
- Factors that affect pruning time
  - Dormant season
  - Growth response
  - Wind and frost damage
  - Non-dormant pruning
  - Scorch
  - Site activities
- Safe working practices
  - PPE required
  - Safe working environment
  - Ergonomics
  - Lifting and carrying safety
  - Safely operating power equipment
  - General procedures when operating power equipment
  - Jurisdictional regulations
- Maintenance of tools
  - Tool cleaning procedures
  - Pruning equipment
  - Ladders
- Jurisdictional regulations
- Efficiencies
Line (GAC): G       APPLY ENVIRONMENTAL PRACTICES
Competency: G1 Practice environmental stewardship

Objectives
To be competent in this area, the individual must be able to:

- Discuss opportunities for stewardship relating to landscape maintenance and installation.

LEARNING TASKS
1. Identify opportunities for stewardship relating to landscape maintenance and installation

CONTENT
- Tools
- Equipment
- Plants
- Materials
- Disposal
- Organized work flow
- Site protection
- Maintenance practices
- Installation practices
Line (GAC): G APPLY ENVIRONMENTAL PRACTICES
Competency: G3 Practice soil stewardship

Objectives
To be competent in this area, the individual must be able to:

• Examine soil formation, the physical, chemical and biological properties of soils and soilless media as they relate to use, soil quality, and plant growth.
• Collect soil samples for lab testing.
• Discuss interpretation of lab testing results and amendments to growing media.

LEARNING TASKS

1. Examine the types and functions of soil biota

   • Types
   o Bacteria
   o Fungi
   o Protozoa
   o Nemotodes
   o Arthropods
   o Earthworms
   o Plants

   • Role in soil quality
   • Promoting beneficial soil organisms

2. Explain the role of organic matter in soil

   • Composition
   • Chemical and physical behaviour
   • Carbon cycle

3. Describe composting considerations

   • Processes
   o Aerobic vs. anaerobic microorganisms
   o Food web of the compost pile

   • Systems
   • Maintenance
   • Use of finished compost
   • Jurisdictional regulations

4. Describe how soil colloids determine soil chemical properties

   • Soil pH and colloidal material
   • Cations and plant roots

5. Describe mineral nutrients in soil

   • Essential nutrients
   o Primary macronutrients
   o Secondary macronutrients
   o Micronutrients

   • Availability
   • Nutrient uptake
   • Nitrogen cycle

6. Describe the effect of pH on soil properties

   • Definitions
   • Measurement
7. Describe the effect of salinity and sodicity on soil properties

8. Summarize nutrient management

9. Discuss site remediation

10. Sample soils
<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Discuss the importance of preserving soil health</td>
<td>• Reasons</td>
</tr>
<tr>
<td></td>
<td>o Economic</td>
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<td></td>
<td>o Environmental</td>
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<td>− Erosion</td>
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<td>− Soil organisms</td>
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<td>− Pollution</td>
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<td>− Carbon sequestration</td>
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<td>− Plant health</td>
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<td>12. Identify the considerations when selecting soil amendments</td>
<td>• Considerations</td>
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<td>o Construction practices</td>
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<td></td>
<td>o Fertilizer selection</td>
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<td>o Amendment selection</td>
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<td>o Cultivation</td>
</tr>
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<td></td>
<td>• Maintaining optimum growing conditions</td>
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<td>• Minimize environmental impacts</td>
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</table>
Line (GAC): G APPLY ENVIRONMENTAL PRACTICES
Competency: G4 Practice water stewardship

Objectives
To be competent in this area, the individual must be able to:

- Describe water stewardship.
- Describe procedures for environmental water sampling.

LEARNING TASKS

1. Describe elements of water stewardship

- Protection of endangered species in waterway
- Water retention
- Water conservation
- Pollution prevention
- Infiltration promotion
- Riparian restoration
- Prevention of invasive species spread in waterways
- Preservation of tree canopy

2. Describe procedures for environmental water sampling

- Collection
- Labelling
- Shipping
- Interpretation
  - pH
  - Contaminants
  - Nutrient levels
Program Content
Level 2

Line (GAC): H PERFORM PRE-CONSTRUCTION ACTIVITIES
Competency: H2 Prepare construction site

Objectives
To be competent in this area, the individual must be able to:
• Plan and prepare the site according to plans and specifications and jurisdictional regulations.

LEARNING TASKS
1. Select and use tools and equipment
   - Tools
     - Levels
     - Transits
     - Hammers
   - Equipment
     - Skid steers
     - Loaders
     - Excavators

2. Interpret and extract information
   - Plans
     - Grading plans
     - Planting plans
     - Layout plans
   - Site conditions
   - Discrepancies
   - Communication

3. Describe site preparation and protection of existing site elements
   - Existing plant material
   - Existing hard features
   - CLS

4. Remove unwanted materials
   - Hazards
   - Debris
   - Invasive species
   - CLS

5. Create site access
   - Efficiency
   - Security
   - Site conditions
   - Markers
   - Utility hazards
     - Underground
     - Overhead

6. Locate utilities
   - Environmental considerations
   - Plans and specifications
   - Environmental mitigation mechanisms
     - Filters
     - Silt fencing

7. Locate and cordon off areas to minimize environmental impact
LEARNING TASKS

8. Lay out site

9. Establish grade

10. Verify site is prepared and ready for the next phase

CONTENT

- Storm sewer guards
  - Marking and staking elements to be installed
  - Positive drainage
  - CLS
  - Rough grade
  - Finished grade
  - Communication with trades on site
Program Content
Level 2

Line (GAC): I INSTALL HARDSCAPE
Competency: I2 Install surface materials

Objectives
To be competent in this area, the individual must be able to:
- Install walkway, patio, driveway and parking lot materials using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS
1. Select and use hand and power tools

   CONTENT
   - Tools
     - Shovels
     - Picks
     - Chisels
     - Diamond saw
     - Guillotine
     - Wheelbarrows
     - Brooms
     - Power blowers

2. Select and use equipment

   CONTENT
   - Equipment
     - Excavators
     - Plate compactors
     - Skid steers

3. Describe the properties and use of surface materials

   CONTENT
   - Surface materials
     - Natural stones
     - Concrete
     - Aggregates
     - Permeable pavement
     - Synthetic materials (artificial turf)
     - Paving stones

4. Prepare for installation

   CONTENT
   - Layout
   - Excavation
   - Subgrade compaction
   - Storage of excavated materials
   - Removal of excavated materials
   - Standards and specifications

5. Install walkway, patio, driveway and parking lot materials

   CONTENT
   - Sleeving
   - Geotextiles
   - Aggregate base
     - Lifts
   - Grade
   - Positive drainage
   - Edge restraints
LEARNING TASKS

CONTENT

- Bedding materials
  - Sand
  - Limestone screening
  - High performance bedding materials
  - Concrete base
- Screeding
- Dimensions
  - Measure
  - Cut
  - Fit
- Surface cleaning
- Joint materials
  - Mortars
  - Sand
  - Polymeric sand
- Cleaners and sealants
- Standards and specifications

6. Clean-up site

Achievement Criteria

Performance  The learner will construct a small surface area such as a patio or walkway.
Conditions  The learner will be given the necessary materials, tools and equipment.
Criteria  The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
  - Performed tasks safely
  - Installed according to plans
Program Content
Level 2

Line (GAC): I INSTALL HARDSCAPE
Competency: I3 Install steps and retaining walls

Objectives
To be competent in this area, the individual must be able to:

• Install steps and retaining walls using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

1. Select and use hand and power tools

   • Tools
     - Shovels
     - Picks
     - Diamond saw
     - Stone chisels
     - Wheelbarrows
     - Brooms
     - Power blowers
     - Mechanical sweepers

2. Select and use equipment

   • Equipment
     - Excavators
     - Plate compacters
     - Skid steers
     - Vibrator plate tampers
     - Hand tampers

3. Perform safe work practices

   • PPE
   • Recognizing work hazards
   • Moving materials

4. Lay out and mark construction area

   • Layout
     - Drawings and specifications
     - Horizontal and vertical measurements
     - Treads and risers
     - Staking

5. Prepare to install steps and retaining walls

   • Layout
   • Excavation
   • Subgrade compaction
   • Storage of excavated materials
   • Removal of excavated materials
   • Standards and specifications

6. Install steps and retaining walls

   • Geotextile materials
   • Aggregate base
   • Bedding materials
     - Sand
     - Limestone screening
LEARNING TASKS

CONTENT

• Concrete footing
• Screeding
• Procedures
• Stacking and assembling courses
• Batter
• Staggering seams
• Geogrid
• Drainage systems
• Backfill
• Adhesives and mortar
• Cleaners and sealants
• Standards and specifications

7. Cleanup site

Achievement Criteria

Performance The learner will construct a small retaining wall (optional: with steps).

Conditions The learner will be given a plan, tools, equipment and materials.

Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:

• Performed tasks safely
• Installed retaining wall (with steps), according to plans
Line (GAC): J INSTALL SOFTSCAPE
Competency: J2 Install exterior landscape plants

Objectives
To be competent in this area, the individual must be able to
- Install exterior landscape plants using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

1. Select and use hand tools

2. Select and use equipment

3. Prepare plant materials

4. Monitor and maintain plant health

5. Lay out plant materials

6. Plant, stake and guy plant materials

7. Prune plant materials

CONTENT

- Tools
  - Tree dollies
  - Shovels
  - Rakes

- Equipment
  - Tree spade
  - Boom trucks
  - Skid steers and attachments

- Stock types
  - Container
  - Ball and burlap
  - Bare root
  - Caliper stock

- Dessication

- Storage

- Placement

- Drawings and specifications

- Contract documents

- Industry standards
  - Root flare
  - Depth and width of planting hole

- Wind exposure

- Roots

- Dead, diseased and damaged
LEARNING TASKS

8. Verify moisture content

9. Dispose of or recycle excess materials

10. Describe procedures for post-planting care

CONTENT

- Appearance
- Growing media
- Irrigation
- Plant material
- Jurisdictional regulations
- Industry standard
- Mulching
- Protection
- Stabilizing
- Irrigation

Achievement Criteria

Performance The learner will install and or transplant exterior landscape plants. (See J3)

Conditions The learner will be given appropriate materials, tools and equipment.

Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:

- Performed all tasks in a safe manner
- Selected and used appropriate tools and equipment
- Monitored plant health throughout installation process
- Dug planting holes
- (For transplanting, plant material is excavated as directed)
- Moved plant materials to desired location
- Laid out plant materials as per plan
- Planted, staked and guyed plant materials as specified
- Pruned plant materials as required
- Verified moisture content of growing media to ensure adequate irrigation
- Verified plant installation meets specifications
Objectives
To be competent in this area, the individual must be able to:

- Perform basic planting and transplanting techniques.
- Use common arboricultural hand tools to prune trees, shrubs, groundcovers, and vines.

LEARNING TASKS

1. Select and use hand tools and equipment
   - Shovels
   - Tree dolly
   - Tree spades
   - Axes

2. Describe reasons for transplanting plants
   - Growth control
   - Prevention of root girdling
   - Relocation
   - Infrastructure conflicts

3. Verify plant is viable for transplant
   - Plant type
     - Woody perennial
     - Herbaceous perennial
   - Health
   - Transpiration rate
   - Plant growth stage
     - Dormancy
   - Weather conditions
     - Humidity
     - Temperature
     - Precipitation
     - Wind

4. Prepare plant for transplantation
   - Root pruning
   - Irrigation
   - Plant size
   - Tying branches

5. Dig plant material
   - Irrigation
   - Industry standard
     - International Society of Arborists (ISA) caliper guidelines
     - Canadian Nursery Landscape Association (CNLA) Standards for nursery stock
     - Root mass
   - Protection
**LEARNING TASKS**

6. Transplant plants

7. Install plant material

8. Prune plant material

9. Verify moisture content

10. Dispose of or recycle excess materials

11. Describe procedures for post-transplanting care

**CONTENT**

- Ball and burlap
- Boxing
- Bare root

- Timing
  - Dormant vs. non-dormant transplanting

- Plant protection during transport

- Root ball size

- Height relationship to calliper by types

- Planting techniques
  - Site drainage characteristics
  - Planting
  - Air pocket prevention
  - Plant staking
  - Methods of staking
  - One vs. two stakes
  - Guyed staking
  - Duration
  - Materials

- Depth and width of planting hole

- Stabilization

- Irrigation

- Site drainage characteristics

- Backfill
  - Growing media
  - Air-pocket prevention

- Roots

- Dead, diseased and damaged

- Appearance

- Growing media

- Irrigation

- Plant material
  - Transplant shock
  - Flagging

- Jurisdictional regulations

- Industry standard

- Mulching

- Protection

- Stabilizing

- Irrigation
Achievement Criteria
Performance: The learner will install and or transplant exterior landscape plants. (See J2)
Conditions: The learner will be given the necessary materials, tools and equipment.
Criteria: The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Performed all tasks in a safe manner
- Selected and used appropriate tools and equipment
- Monitored plant health throughout installation process
- Dug planting holes
- (For transplanting, plant material is excavated as directed)
- Moved plant materials to desired location
- Laid out plant materials as per plan
- Planted, staked and guyed plant materials as specified
- Pruned plant materials as required
- Verified moisture content of growing media to ensure adequate irrigation
- Verified plant installation meets specifications
Objectives
To be competent in this area, the individual must be able to:
• Install mulch using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

1. Select and use hand tools

2. Select and use equipment

3. Describe properties and purpose of mulch

4. Prepare the area to be mulched

5. Apply mulch

CONTENT

Tools
• Wheelbarrows
• Landscape rakes
• Pitchforks
• Shovels

Equipment
• Skid steers
• Blower trucks
• Loaders

Types
• Wood
• Bark
• Aggregates
• Composts

Purposes
• Weed suppression
• Water retention
• Soil amending
• Erosion prevention
• Compaction prevention
• Temperature regulation

Storage
• Fire prevention
• Standards and specifications
• Jurisdictional regulations

Standards and specifications
• Contracts
• Grades
• Soil compaction
• Landscape fabric

Depth
• Timing
  • Soil temperature
  • Soil moisture
• Distribution
LEARNING TASKS

6. Verify mulch installation

CONTENT

- Proximity
  - Plant material
  - Structures
- Plant health
- Standards and specifications
- Contract documents

Achievement Criteria

Performance
The learner will install mulch.

Conditions
The learner will be given the appropriate materials, tools and equipment.

Criteria
The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:

- Performed all tasks in a safe manner
- Selected and used appropriate tools and equipment
- Verified area to be mulched was prepared according to specifications
- Verified mulch materials meet specifications
- Applied mulch according to specifications
Objectives
To be competent in this area, the individual must be able to:
• Describe maintenance requirements for drainage systems.

LEARNING TASKS
1. Describe maintenance requirements of drainage systems

2. Describe indicators of failure
   • Surface
   • Sub-surface
   • Ponding
   • Blowouts
   • Washouts
   • Erosion at drain outlet
   • Sediment blockage
   • Root blockage
   • Iron oxide blockage

3. Describe drainage components
   • Drains
   • Catch basins
   • Retention ponds

4. Describe optimal flow
   • Filters
   • Screens
   • Debris removal
   • Flushing
   • Grades
   • Standards and specifications

5. Describe securing of drain covers
   • Jurisdictional regulations

6. Describe winterizing of drainage systems
   • Heating cables
   • Hydroflush
Program Content
Level 2

Line (GAC): L MAINTAIN HARDSCAPE
Competency: L3 Maintain surface materials

Objectives
To be competent in this area, the individual must be able to:

- Describe maintenance requirements for walkways, patios, driveways and parking lots.

LEARNING TASKS

1. Describe surface defects and hazards

   - Peeling paint
   - Rotting wood
   - Heaving and settling
   - Debris
   - Undesirable growth

2. Describe maintenance procedures for surfaces

   - Debris removal
   - Undesirable growth removal
   - Jointing sand top up
   - Blow
   - Sealants
   - Paint
   - Stain
   - Clean
     - Pressure washer
     - Broom
   - Specifications and standards
Program Content
Level 2

Line (GAC): L
Competency: L4 Maintain steps and retaining walls

Objectives
To be competent in this area the individual must be able to:

• Describe maintenance requirements for steps and retaining walls.

LEARNING TASKS

1. Describe defects and hazards for steps and retaining walls
   - Capstones
   - Treads
   - Debris
   - Undesirable growth
   - Drainage system
     - Scuppers

2. Describe maintenance procedures for steps and retaining walls
   - Debris removal
   - Undesirable growth removal
   - Jointing sand top up
   - Blow
   - Sealants
   - Adhesives
   - Paint
   - Stain
   - Clean
     - Pressure washer
     - Broom
   - Specifications and standards
Line (GAC): M MAINTAIN SOFTSCAPE
Competency: M1 Maintain exterior softscape

Objectives
To be competent in this area, the individual must be able to:
• Describe seasonal planting and protection practices.
• Describe fertilization of plants.
• Describe mulching of beds and containers.

LEARNING TASKS
1. Select and use tools and equipment
   • Hand tools
   • Hand pruners
   • Spreaders
   • Scales
   • Gators
   • Wheelbarrows
   • Tarps

2. Describe seasonal planting and removal of plants
   • Annuals
   • Biennials
   • Perennials
   • Bulbs
   • Weeds
   • Planting plans
   • Contract documents

3. Describe seasonal protection practices
   • Anti-dessicants
   • Burlap wrapping
   • Binding with twine
   • Flax straw
   • Standards and specifications
   • Weather
     o Snow
     o Frost
     o Heat
     o Sun
     o Wind
     o Ice
   • Structures
     o Overwintering
   • Ground cover
     o Fabric
     o Mulch

4. Describe removing staking and guying materials
   • Standards and specifications
LEARNING TASKS

5. Describe fertilization of plants

6. Describe mulching of beds and containers

CONTENT

• Plant stabilization
• According to soil test recommendations
• Application rates
• Calibration
• N-P-K
• Environmental considerations
• Methods
  o Manual
  o Automated
• Jurisdictional regulations
• Types
  o Organic
  o Inorganic
• Depth
• Appearance
• Re-distribution
• Plant protection
• Standards and regulations
Program Content
Level 2

Line (GAC): M MAINTAIN SOFTSCAPE
Competency: M4 Propagate plant materials

Objectives
To be competent in this area, the individual must be able to:
• Describe the harvesting and dividing of storage organs.
• Describe propagation methods.

LEARNING TASKS
1. Select and use hand tools and materials
   • Tools
     o Digging forks
     o Shovels
     o Spades
     o Saws
     o Knives
     o Hand pruners
   • Materials
     o Rooting hormones
     o Growing media
     o Grafting tape

2. Identify considerations used when selecting stock/parent plants
   • Vigour
   • Health
   • True to type
   • Age
   • Timing
   • Propagation methods

3. Describe the harvesting and dividing of storage organs
   • Rhizomes
   • Tubers
   • Bulbs
   • Corms
   • Crowns
   • Roots
   • Layering
   • Dividing
   • Cutting
   • Seeding
   • Grafting

4. Describe propagation methods
Level 3

Landscape Horticulturist
Program Content
Level 3

Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B1 Use hand tools

Objectives
To be competent in this area, the individual must be able to:
• Use and maintain hand tools.
• Store hand tools.

LEARNING TASKS
1. Select and use hand tools

2. Perform hand tool maintenance (for level appropriate tools)
   • See the general list of Tools and Equipment and the tool list that is specific for Level Three, detailed in the Training Provider Standards of this Program Outline
   • Environmental implications
   • Cleaning and disinfecting
   • Lubricating
   • Damage
   • Excessive wear
   • Proper operation
   • Sharpening
   • Replacing components

3. Store hand tools (for level appropriate tools)
   • Organization
   • Safety
   • Security
   • Preservation
Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B2 Use power tools

Objectives
To be competent in this area, the individual must be able to:
- Use and maintain power tools.
- Store power tools.

LEARNING TASKS
1. Select and use power tools

2. Perform power tool maintenance (for level appropriate tools)

CONTENT
- See the general list of Tools and Equipment and the tool list that is specific for Level One, detailed in the Training Provider Standards of this Program Outline
- Adjusting
- Manufacturer’s specifications
- Environmental implications
- Removal from service
- Company policy
- Safety features
- Operational maintenance
  - Cleaning and disinfecting
  - Lubricating
  - Fluid levels
  - Tire pressure
  - Adjusting
  - Damage
  - Excessive wear
  - Malfunction
  - Proper operation
  - Sharpening
  - Balancing
  - Replacing components
  - Cooling fins
  - Maintenance schedule
  - Manufacturers’ specifications
  - Safety features
- Preventative maintenance
  - Fuel
  - Filters
    - Air
    - Fuel
  - Lubrication
    - Oil
    - Grease
Program Content
Level 3

LEARNING TASKS

3. Store power tools (for level appropriate tools)

CONTENT

- Spark plug
- Controls and drive mechanisms
- Bolts, belts, fittings, hoses
- Tire pressure
- Batteries

- Organization
- Safety
- Security
- Preservation
Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B3 Use measuring equipment

Objectives
To be competent in this area, the individual must be able to:
• Use and maintain measuring equipment.
• Store measuring equipment.

LEARNING TASKS
1. Select and use measuring equipment
2. Perform maintenance on measuring equipment (for level appropriate equipment)
3. Store measuring equipment (for level appropriate equipment)

CONTENT
• See the general list of Measuring Equipment and the specific list of Measuring Equipment for Level One, detailed in the Training Provider Standards of this Program Outline

- Cleaning and disinfecting
- Proper operation
- Contaminants
- Calibrating
- Batteries
- Damage
- Excessive wear
- Proper operation

- Organization
- Safety
- Security
- Manufacturer’s specifications
Line (GAC): B USE TOOLS, EQUIPMENT AND VEHICLES
Competency: B4 Use vehicles and motorized equipment, trailers and attachments

Objectives
To be competent in this area, the individual must be able to:

- Describe the environmental considerations of selecting and using vehicles, motorized equipment, attachments and trailers.
- Describe the maintenance of equipment attachments.

LEARNING TASKS
1. Describe the environmental considerations of selecting and using vehicles, motorized equipment, attachments and trailers

   - Fuel type
   - Lubricants
   - Longevity
   - Emissions
   - Noise
   - Site conditions
   - Site type
   - Idling
   - Jurisdictional regulations

2. Describe the maintenance of equipment attachments

   - Grease fittings
   - Lock-out and tag-out
   - Hydraulic fluids
   - Cleaning and disinfecting
   - Damage and wear
   - Safety features
Line (GAC): C ORGANIZE WORK
Competency: C1 Perform site assessments

Objectives
To be competent in this area, the individual must be able to:
- Interpret documentation pertaining to site assessment.
- Assess site conditions for protection.
- Identify existing and proposed grading and drainage patterns.

LEARNING TASKS
1. Interpret documentation pertaining to site assessment

2. Assess existing site conditions for protection
   - Soil
   - Structures
   - Plants

3. Assess landscape site soils
   - Construction impact
   - Change in site conditions

4. Identify growing media conditions and properties
   - Contamination
   - Viability
   - Tilth

5. Identify existing and proposed grading and drainage patterns
   - Grading plan
   - Topography
Line (GAC): C ORGANIZE WORK  
Competency: C2 Use documentation and reference material

Objectives
To be competent in this area, the individual must be able to:
• Apply relevant legislation and policies.
• Use reference materials.

LEARNING TASKS
1. Apply current government legislation and company policies

2. Use catalogues

3. Use text and field books for referencing

CONTENT
• Transportation
• Water
• Habitat and wildlife preservation
• Pest control
• Plant identification
• Comparing products among suppliers
• Ordering
  o Tools
  o Equipment
• Plant materials
• Identifying
  o Pests
  o Diseases
  o Methods of control
Program Content
Level 3

Line (GAC): C
Competency: C3 Maintain records

Objectives
To be competent in this area, the individual must be able to:

- Describe examples of additional records.
- Describe types of shipping and receiving information.

LEARNING TASKS

1. Describe examples of additional records
   - Temperatures
   - Client communications

2. Describe types of shipping and receiving information
   - Inventory adjustments
   - Regulatory documentation
   - Phytosanitary Certificates
Program Content
Level 3

Line (GAC): C ORGANIZE WORK
Competency: C4 Participate in job planning activities

Objectives
To be competent in this area, the individual must be able to:
• Identify and prioritize tasks.
• Verify practices adhere to industry standards.

LEARNING TASKS

1. Identify and prioritize tasks
   • Time management
   • Performance efficiency

2. Consider safety requirements
   • Safety plan
   • Site conditions
   • Contract documents
   • Jurisdictional regulations

3. Locate utilities
   • Private
   • Public
   • Site plan

4. Verify materials
   • Plans and specifications
   • Schedule

5. Verify practices adhere to industry standards
   • Safe-work
   • Horticultural
   • Construction

6. Identify and schedule clean-up
   • Daily
   • End of contract
Line (GAC): C ORGANIZE WORK
Competency: C5 Order materials

Objectives
To be competent in this area the individual must be able to:
• Describe the considerations for ordering materials.
• Describe the process for keeping records.

LEARNING TASKS

1. Identify required materials

   • Types
   • Size
   • Quality
   • Quantity
   • CLS
   • Jurisdictional requirements
   • Contract documents

2. Describe the considerations when ordering materials

   • Accuracy of ordering
     o Botanical nomenclature
     o Industry terminology
   • Budget
     o Price comparisons
   • Delivery and pick up schedules
     o Site staging
     o Sequence of tasks
     o Coordination with on site contractors
   • Size and weight

3. Describe the process for keeping records

   • Order number
   • Tracking number
   • Supplier contact information

4. Identify required documents to prevent delays

   • Movement certificates
   • Permits
   • Plans
   • Specifications
   • Jurisdictional regulations
   • Purchase orders
Line (GAC): C ORGANIZE WORK
Competency: C6 Organize materials and equipment

Objectives
To be competent in this area, the individual must be able to:
• Receive plants and materials.
• Handle substandard plants and materials.

LEARNING TASKS

1. Receive plants and materials

   • Unloading
   • Recording
   • Protection
   • Storage
     - Size and species groupings
     - Designated areas
       - Product quality
       - Contamination

2. Handle substandard plants and materials

   • Quarantine
   • Rejection
   • Disposal
   • CLS
     - Jurisdictional regulations
     - Company policy
     - Site specifications

Achievement Criteria

Performance: The learner will organize plant materials and equipment onsite.

Conditions: The learner will be given the necessary materials, tools and equipment.

Criteria: The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
• Confirmed order
• Performed final check
• Properly handled plants and materials when unloading
• Organized and stored materials according to size, type and requirements
• Reported and processed substandard materials
Line (GAC): D  PARTICIPATE IN MARKETING AND SALES
Competency: D1  Control Inventory

Objectives
To be competent in this area, the individual must be able to:
• Describe the considerations for controlling inventory as per company policies and procedures.

LEARNING TASKS

1. Describe the process for identifying and counting inventory
   • Manual
   • Electronic systems
   • Inventory records
   • Company policy

2. Describe the process for sorting and managing inventory
   • Type
   • Age
   • Quality
   • Size
   • Efficiency
   • Cost effectiveness
   • Safe disposal
   • Jurisdictional regulations

3. Describe the considerations for restocking orders
   • Quantities
   • Expiration dates
   • Seasonal needs
   • Availability
**Program Content**

**Level 3**

**Line (GAC):** D

**PARTICIPATE IN MARKETING AND SALES**

**Competency:** D2 Sell products and services

**Objectives**

To be competent in this area the individual must be able to:

- Describe selling products and services.

**LEARNING TASKS**

1. Describe considerations for client education and advising

2. Describe merchandizing and marketing of products and services

3. Describe considerations for handling payments for products and services

**CONTENT**

- Client needs
- Plants
- Products
- Seasonal purchases
- Environmental stewardship
- Services
- Jurisdictional regulations
- Up-selling
  - Additional products
  - Special offers
- Visual display
  - Attractiveness
  - Visibility
  - Professional image
- Digital advertising
  - Social media
  - On-line presence
- Print media
  - Brochures
  - Business cards
- Company policy
- Contracts
  - Scope of work
  - Materials
  - Timelines
  - Costs
- Invoices
  - Calculating taxes
- Receipts
Line (GAC): D  PARTICIPATE IN MARKETING AND SALES
Competency: D3  Maintain customer relations

Objectives
To be competent in this area, the individual must be able to:
• Describe methods of maintaining good customer relations.

LEARNING TASKS

1. Describe methods of maintaining customer relations
   • Addressing concerns
     o Tact
     o Politeness
     o Timing
   • Professional image
     o Dress
     o Equipment
     o Social media
     o Behaviour
   • Public relations
     o On site
     o In transit
   • After-service follow-up
     o Customer satisfaction

2. Describe methods of maintaining customer records
   • Names
   • Title
   • Address
   • Phone number
   • Email
   • Product preferences
   • Current records
   • Accurate records
   • Company policy
   • Jurisdictional regulations

3. Identify stakeholders for future inquiries
   • Property owners
   • Designers
   • Engineers
Program Content
Level 3

Line (GAC): F APPLY HORTICULTURAL PRACTICES
Competency: F2 Identify plants and plant requirements

Objectives
To be competent in this area, the individual must be able to:

- Identify plant and plant requirements for 90 woody and non-woody plants.
- Recognize plants suitable for common tropical, floral and interior landscape situations.
- Identify plants suitable for planting in difficult situations.

LEARNING TASKS

1. Recognize plants suitable for common tropical, floral and interior landscape situations

2. Recognize plants suitable for planting in difficult situations
   - Sunny arid conditions
   - Shade
   - Dry shade
   - Dry soil conditions
   - Wetlands
   - Compacted soils
   - Slopes

3. Identify and describe 90 woody and non-woody plants
   - Using botanical terms
   - According to its cultural and maintenance requirements
Program Content
Level 3

Line (GAC): F APPLY HORTICULTURAL PRACTICES
Competency: F4 Prune plant materials

Objectives
To be competent in this area, the individual must be able to:
• Demonstrate pruning techniques for trees.
• Use common arboricultural hand tools to prune trees.

LEARNING TASKS

1. Select and use tools and equipment
   • Pole saw
   • Pole pruner
   • Hand saw

2. Describe tree pruning considerations
   • Reasons for pruning trees
     o Health and vigour
     o Direct, control, or modify growth
     o Enhancing fruit and flower production
     o Dead, disease, damage and interfering (D,D,D,I)
     o Aesthetics
   • Factors affecting the pruning of trees
     o Plant form
     o Function
     o Age
     o Location
     o Timing
     o Pre-pruning treatments
     o Severe pruning
     o Alternatives to pruning
   • Efficiencies while pruning
     o Hand pruning vs. mechanical tools
     o Efficiencies and maintenance standard

3. Recognize factors contributing to tree failure
   • Structural defects
   • Plant species
   • Size
   • Age
   • Site conditions
   • Past maintenance practices
   • Risks associated with trees

4. Describe basic plant morphology, anatomy, and physiology with regard to pruning trees
   • Plant morphology
     o Roots
LEARNING TASKS

5. Perform pruning techniques for young and established trees

6. Describe training techniques for young trees

7. Describe timing of pruning trees

8. Describe compartmentalization

CONTENT

- Pruning cuts
- General pruning techniques
  - Crown cleaning
  - Canopy thinning
  - Canopy raising
  - Canopy reduction
  - Removal
  - Crown balancing
  - Canopy restoration
  - Pinching
  - Pollarding
  - Espalier
- Developing trunk calliper
- Scaffold spacing
- Co-dominant stems
- Root pruning and training
- Factors
  - Dormant season
  - Growth response
  - Wind and frost damage
  - Non-dormant pruning
  - Scorch
  - Site activities
- Compartmentalization of decay in trees (CODIT): Resisting decay in trees
- Callus and wound wood

Achievement Criteria

Performance The learner will demonstrate tree pruning techniques.

Conditions The learner will be given the necessary materials, tools and equipment.

Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:

- Safely performed tasks
- Pruned trees according to industry standards
Objectives
To be competent in this area, the individual must be able to:
- Describe conditions that cause plant stress.
- Examine characteristics of pests, diseases and invasive species.
- Apply treatment methods for pests.

LEARNING TASKS

1. Select and use tools and equipment

   • Traps
   • Hand lens
   • Microscope
   • Nets
   • Application equipment
   • Weed control equipment
   • Secateurs

2. Describe conditions that contribute to plant stress

   • Abiotic factors
     o Light
     o Temperature
     o Humidity
     o Air quality
     o Water supply
     o Mechanical damage
     o Nutrition
     o pH
     • Biotic factors
       o Insects
       o Weeds
       o Pathogens
       o Vertebrates
       o Molluscs
     • Susceptibility to abiotic and biotic stress factors

3. Describe basic arthropod biology

   • Morphology
   • Life cycles
   • Taxonomy
   • Eight orders of insects

4. Describe basic pathogen biology

   • Morphology and life cycles
     o Fungi
     o Bacteria
     o Viruses
     o Nematodes
5. Describe the characteristics of weeds

- Defining weeds
- Common characteristics
  - Prolific seeding
  - Rapid growth
  - Vegetative propagation
- Impacts of weeds
  - Competition
  - Human and animal health
  - Structural damage
  - Economic
- Classification of weeds by life cycle
  - Annuals
  - Biennials
  - Herbaceous perennials
  - Woody perennials

6. Describe established methods for controlling pests (IPM)

- Integrated Pest Management (IPM)
- Six steps of IPM
  - Prevention
  - Identification
  - Monitoring
  - Thresholds
  - Maintenance levels and classes
  - Treatments
  - Evaluation
- Documentation
  - Jurisdictional regulations
- Establishing methods for controlling pests
  - Cultural
  - Biological
  - Chemical

7. Describe the damage and management of vertebrate pests

- Wildlife management
- Vertebrate plant-feeding pests
  - Birds
  - Deer
  - Rodents
  - Moles
  - Raccoons

8. Describe the characteristics of invertebrate pests

- Ecology
- Pest success
- Signs of damage
- Common pests
9. Describe the characteristics of pathogens

- Pest success
- Disease triangle
- Disease development cycle
- Common categories
  - Bacterial
    - Galls
    - Blights
    - Canker
  - Fungal
    - Rots
    - Molds
    - Mildews
    - Rusts
    - Wilts
  - Nematode
    - Foliar
    - Root
    - Viral
    - Mosaic

10. Describe the integrated strategies for pest control

- Viruses
- Bacteria
- Invertebrates
- Fungi
- Nematodes
- Weeds

11. Identify the factors for selecting and applying treatment methods

- Pest identification and life cycle stage
- Site conditions
  - Proximity to sensitive areas
  - Weather
  - Site use
  - Topography
LEARNING TASKS

12. Apply treatment methods

13. Describe safe disposal of products and materials

CONTENT

- Availability
  - Product
  - Resources
- Perishability
- Jurisdictional regulations
- Contracts documents
- Cultural
- Biological
- Chemical
- Pest and disease ridden plant material
- Invasive species
- Products and containers
- Jurisdictional regulations
Line (GAC): G  APPLY ENVIRONMENTAL PRACTICES
Competency: G1  Practice environmental stewardship

Objectives
To be competent in this area, the individual must be able to:

• Discuss opportunities for stewardship related to pest and disease management.

LEARNING TASKS
1. Identify opportunities for stewardship related to pest and disease management

CONTENT
• Tools
• Equipment
• Plants
• Materials
• Disposal
• Organized work flow
• Site protection
• Maintenance practices
• Installation practices
Line (GAC): G  APPLY ENVIRONMENTAL PRACTICES
Competency: G4  Practice water stewardship

Objectives
To be competent in this area, the individual must be able to:
• Describe practices that promote water stewardship.
• Describe irrigation system auditing and scheduling procedures.

LEARNING TASKS
1. Describe practices that promote water stewardship

CONTENT
• Low impact development (LID)
  o Rain barrels
  o Infiltration trenches
  o Bioswales
  o Bioretention cells
  o Rain gardens
  o Green roofs
• Efficient irrigation systems
• Erosion prevention
• Responsible chemical use
• Jurisdictional regulations
• Waterwise principles
  o Xeriscaping
• Scheduling
  o Irrigation Industry Association of BC worksheets
  o Controller programs
  o Effects on plant health
  o Jurisdictional regulations
• Auditing
  o Benefits of irrigation system efficiency
  o Lower quarter distribution uniformity
  o Scheduling coefficient
  o Basic auditing kit requirements
  o Procedures to determine sprinkler head pressure on site
  o Practical auditing procedures including head spacing and levelling

2. Describe irrigation system auditing and scheduling procedures
Program Content
Level 3

Line (GAC): I INSTALL HARDSCAPE
Competency: I1 Install landscape structures

Objectives
To be competent in this area, the individual must be able to:

• Construct landscape structures using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

1. Select and use hand and power tools

2. Select and use equipment

3. Identify products and materials used in feature construction

4. Prepare for the installation of landscape structures

5. Construct landscape structures

6. Describe protective products

7. Clean up site

CONTENT

• Tools
  o Power saws
  o Power drills
  o Hammers
  o Brooms
  o Water and power blowers

• Equipment
  o Excavators
  o Skid steers and attachments

• Wood
• Lumber grades
• Composite
• Stone
• Segmented block
• Concrete

• Layout
• Area excavation
• Foundation preparation
• Specifications and drawings

• Structures
  o Decks
  o Pergolas
  o Gazebos
  o Fences
  o Outdoor kitchens

• Installation verification
• Jurisdictional regulations

• Preservatives
• Stains
• Sealants

• Surfaces
• Damage repairs
• Waste material disposal

• Surfaces
• Damage repairs
• Waste material disposal
Line (GAC): I INSTALL HARDSCAPE
Competency: I4 Install irrigation systems

Objectives
To be competent in this area, the individual must be able to:
• Install irrigation systems using the correct tools, equipment and materials, as per specifications.

Learning Tasks

1. Select and use hand and power tools

2. Select and use equipment

3. Apply irrigation terminology

4. Examine factors that affect irrigation design

Content

• Tools
  o Pipe cutters
  o Crimping tools
  o Trenching shovels
  o Wheelbarrows

• Equipment
  o Excavators
  o Trenchers
  o Skid steers and attachments

• Gallons per minute (GPM)
• Matched precipitation
• Balance precipitation
• Static pressure
• Dynamic pressure
• Feet of head
• Pounds per square inch (PSI)
• Evapotranspiration (ET)
• Head to head spacing

• Soil related terminology
  o Soil texture
  o Saturation point
  o Field capacity
  o Wilting point
  o Available water storage capacity (AWSC)
  o Infiltration rate
  o Slope
  o Soil-water budget

• Soil moisture content
  o Observation of soil and plants
  o Tensiometers
  o Electrical resistance measurements
  o Satellite imaging

• Landscape and Environmental requirements
LEARNING TASKS

5. Identify irrigation systems

6. Identify irrigation components

7. Prepare for installation

CONTENT

- Effective crop rooting depth
- Availability coefficient
- Maximum soil water deficit
- Evapotranspiration rate
- Reference evapotranspiration rate
- Crop coefficient

- Irrigation intervals
- Basic water hydraulics
- Main pressure
  - Pipe friction loss
  - Design flow rate
  - Pipe size
  - Water velocity
  - Surge pressure concerns
- Design considerations
  - Sun and shade problems
  - Head selection
  - Precipitation rate
  - Hydro-zones
  - Jurisdictional regulations

- Water meters
- Manual
- Automatic
- Drip
- Overhead spray
- Sprinkler

- Sprinkler heads
- Valves
  - Pressure regulator valves
  - Solenoid
- Backflow preventers
- Controllers
- Piping and pipe fittings
  - Pipe scheduling
- Water meters
- Micro-irrigation systems

- Layout
- Excavation
- Subgrade compaction
- Storage of excavated materials
- Removal of excavated materials
LEARNING TASKS

8. Install irrigation systems

9. Program the control system

10. Verify installation and operation

11. Clean up site

CONTENT

- Standards and specifications
- Trenching vs. pulling pipe
- Bedding pipe and wiring
- Backfilling
- Head and nozzle heights
- Control system

- Time
- Dates
- Duration
- Frequency
- Jurisdictional regulations

- Specifications and standards
- Site conditions
- Plant health

- Damage repairs
- Waste material disposal

Achievement Criteria

Performance The learner will install a small irrigation system.

Conditions The learner will be given the necessary materials, tools and equipment.

Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:

- Performed tasks safely
- Installed irrigation system according to plans and specifications
- Pressure tested the system
- Adjusted sprinkler heads
- Programmed the timer correctly
Program Content
Level 3

Line (GAC):  I  INSTALL HARDSCAPE
Competency:  I5  Install water features

Objectives
To be competent in this area, the individual must be able to:

• Describe installation water features using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

1. Describe types of water features

2. Select and use hand and power tools

3. Select and use equipment

4. Describe site preparation to install water features

5. Describe procedures to install water features

6. Explain maintaining water levels

7. Describe the factors for finalizing installation

CONTENT

- Ponds
- Waterfalls
- Gurglers
- Fountains
- Tools
  - Shovels
  - Picks
  - Chisels
  - Wheelbarrows
- Equipment
  - Excavators
  - Loaders
  - Skid steers
- Layout
- Excavation as required
- Geotextiles
- Drains
- Water supply components
- Filtration systems
- Pumps
- Electrical conduits
- Lighting
- Liners and membranes
- Adhesives, foams and mortar
- Aggregates and decorative features
- Volume
- Settling
- Optimal performance
- Sound
- Asthetics
- Ecosystem enhancement products as
LEARNING TASKS

8. Describe site clean up

CONTENT

required
- Beneficial bacteria
- pH amendments
- Plant material
- Fish
- Installation verification
- Specifications and standards
- Damage repairs
- Waste material disposal
Program Content
Level 3

Line (GAC): INSTALL HARDSCAPE
Competency: I6 Install low voltage landscape lighting

Objectives
To be competent in this area, the individual must be able to:
• Describe installation of low voltage landscape lighting using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

1. Select and use hand and power tools

2. Select and use equipment

3. Describe preparation for installation of low voltage landscape lighting

4. Describe components of low voltage landscape lighting

5. Describe installation of low voltage landscape lighting

6. Describe lighting adjustments

7. Describe site cleanup

CONTENT

• Tools
  o Wire strippers
  o Volt meter
  o Ladders
  o Shovels

• Trenchers
• Vibratory plow

• Trenches
• Tunnels
• Excavated materials
  o Storage
  o Removal
• Voltage drop calculation

• Conduit
• Wire
• Lighting components
  o LED lights
• Controller
• Fixtures

• Layout
• Assembly
• Fixture positioning
• Operation and voltage verification

• Program controller
• Lighting fixtures
• Customer requirements
• Designer effects

• Damage repairs
• Waste material disposal

Landscape Horticulturist Industry Training Authority 02/18
Objectives
To be competent in this area, the individual must be able to:
• Describe installation requirements for interior landscape plants.

LEARNING TASKS

1. Select hand tools

2. Select equipment

3. Prepare plant materials

4. Protect interior furnishings and surfaces

5. Prepare planting areas

CONTENT

• Tools
  o Tree dollies
  o Shovels
  o Rakes

• Equipment
  o Skid steers
  o Tree gantries

• Stock types
  o Container
  o Ball and burlap
  o Bare root
  o Caliper stock

• Containers
• Plant tags
• Foliar washing
• Scarifying root ball
• Plant health
  o Irrigation
  o Exposure

• Floors, walls, ceilings
• Furniture and structures
• Contract documents
• Standards and specifications

• Growing media
  o Amendments
  o Fertilizer types
  o Quality
  o Level
  o Quantity

• Containers
  o Coating
  o Condition

• Irrigation and drainage
• Undesirable material removal
LEARNING TASKS

6. Stage plant material

7. Lay out plant materials

8. Plant interior landscape plants

9. Verify plant installation

10. Clean up site

CONTENT

- Security
- Access
- Storage
- Time constraints
- Contract documents
- Placement
- Drawings and specifications
- Suitability for conditions
  - Temperature
  - Lighting
  - Proximity to structures
  - Air quality and pollutants
- Depth
- Drawings and specifications
- Mulch
- Irrigation
- Prune
- Site requirements
- Moisture content
- Plant health
- Drawings and specifications
- Excess materials
- Contract documents
- Floors, walls, ceilings
- Furniture and structures
Objectives
To be competent in this area, the individual must be able to:

• Describe maintenance requirements for landscape structures.

LEARNING TASKS

1. Inspect structures for defects and hazards

2. Describe maintenance procedures for landscape structures

CONTENT
• Peeling paint
• Rotting wood
• Heaving and settling
• Compromised hardware
• Blow
• Acid wash
• Paint
• Stain
• Clean
  o Scrub
  o Sweep
• Specifications and standards
Program Content
Level 3

Line (GAC): L MAINTAIN HARDSCAPE
Competency: L5 Maintain irrigation systems

Objectives
To be competent in this area, the individual must be able to:
• Describe maintenance procedures.
• Describe requirements for irrigation system start-up and maintenance.
• Describe irrigation system auditing and scheduling procedures.

LEARNING TASKS

1. Describe maintenance requirements
   - Spring start up
   - Seasonal operation
   - Winterization

2. Describe start-up to determine functioning of system
   - Heads
   - Nozzles
     - Spray patterns
   - Pipes
   - Valves
   - Electrical components
   - Controllers

3. Describe problems
   - Troubleshoot
   - Water velocity
   - Landscape changes
   - Plant growth
   - Vandalism

4. Describe solutions
   - Program scheduling
   - Head adjustments
   - Cleaning
   - Sensors
   - Landscape adjustments

5. Describe water stewardship practices
   - Irrigation systems scheduling
   - Irrigation system auditing
     - Irrigation Industry Association of BC

Landscape Horticulturist Industry Training Authority
Program Content
Level 3

Line (GAC): L MAINTAIN HARDSCAPE
Competency: L6 Maintain water features

Objectives
To be competent in this area, the individual must be able to:
• Describe maintenance requirements for water features.

LEARNING TASKS

1. Describe inspection of water features for defects

2. Describe the process for charging systems and replacing pumps

3. Describe the process for setting and resetting timers

4. Describe the process for draining and refilling features

5. Describe the process for running systems to ensure functioning

6. Describe the process for inspecting and testing water conditions

7. Describe the process for testing ground fault circuit interrupter (GFCI)

8. Describe the process for cleaning of components

9. Describe cleaning of water features

10. Describe problems with water features

CONTENT

• Cracks
• Leaks
• Plugged filters
• Faulty gaskets and seals
• Debris
• Undesirable growth

• Pump priming
• Start up operations

• Manufacturer’s specifications
• Contract requirements

• Jurisdictional regulations
• Seasonal maintenance
• Plant and fish protection

• Manufacturer’s specifications

• Lack of clarity
• Presence of algae
• Floating debris
• Level
• pH levels
• Presence of bacteria

• Canadian Standards Association (CSA)

• Filters
• Screens
• Nozzles
• Pumps
• Skimmers

• Basins
• Fountains
• Aquatic products

• Water amendment
  o Aquatic products
• Flow rates adjustment
LEARNING TASKS

11. Describe the process for winterizing of water features

CONTENT

- Landscape element adjustment
- Draining
- Disconnecting
- Disassembling
- Covering
- Avoiding damage
- Storing
- Manufacturers’ specifications
Program Content
Level 3

Line (GAC): L MAINTAIN HARDSCAPE
Competency: L7 Maintain landscape lighting

Objectives
To be competent in this area, the individual must be able to:
• Describe maintenance requirements for landscape lighting.

LEARNING TASKS
1. Describe visual inspection of lighting components
   • Defect detection
     o Flickering
     o Illumination
   • Fixtures
   • Lamps
   • Fuses
   • Transformers
   • Connectors

2. Describe adjustment of lighting components
   • Fixture positioning
   • Coverage
   • Timer
     o Seasonal requirements
   • Voltage levels
   • Exposed wires
   • Documentation pertaining to low voltage lighting

3. Describe cleaning and clearing of lighting components
   • Sensors
   • Debris
   • Fixtures
Line (GAC): L  MAINTAIN HARDSCAPE
Competency: L8  Practice snow and ice control

Objectives
To be competent in this area, the individual must be able to:
• Describe ice and snow removal considerations.

LEARNING TASKS
1. Select and use tools and equipment
   • Vehicles with blades
   • Blowers
     o Walk-behind
     o Tractor mounted
     o Backpack
   • Spreaders
   • Snow shovels
   • Loaders
   • Graders

2. Describe snow clearing
   • Storage locations
   • Removal requirements
   • Potential damage to landscape elements
   • Access points
   • Contract documents
   • Jurisdictional regulations
   • Snow markers
   • Site requirements

3. Describe application of ice control products
   • Contract documents
   • Jurisdictional regulations
   • Industry standards
   • Site requirements
   • Potential damage to landscape elements

4. Describe installation of protective structures
   • Snow fence
   • Wind breaks

5. Describe weather monitoring factors
   • Conditions
     o Precipitation
     o Wind
   • Scheduling
   • Equipment selection
   • Material selection
   • Inventory
Line (GAC): L MAINTAIN HARDSCAPE
Competency: L9 Repair hardscape

Objectives
To be competent in this area the individual must be able to:
• Describe hardscape repair.

LEARNING TASKS
1. Recognize damage to hardscapes

CONTENT
• Damage
  o Cracks
  o Frost heave
  o Spalling
  o Settling

• Issues
  o Damaged pipes
  o Plugged catch basins
  o Pooling

2. Describe minor repairs

• Damaged stones
• Damaged timber
• Pipes
• Leveling structures
• Mortar
• Adhesives
• Sealants
• Lift and re-lay
  o Slope regrading
• Aggregate surfaces
• Low voltage cable
• Standards and specifications
Le Line (GAC): M MAINTAIN SOFTSCAPE
Competency: M2 Maintain interior softscape

Objectives
To be competent in this area, the individual must be able to:
- Describe seasonal plant replacement.
- Describe cultivation and amendment of growing media.
- Describe irrigation and fertilization of plants.

LEARNING TASKS
1. Identify interior plants and their needs
   - Water
   - Light
   - Nutrients

2. Identify pests and diseases
   - Types
   - Causes
   - Integrated Pest Management (IPM)

3. Perform visual inspection
   - Plant health
   - Appearance
   - Growth habit
   - Growing media
     - Crusting
     - Salinity

4. Discuss irrigation and fertilization of plants
   - Quality of irrigation water
   - Frequency
   - Fertilization Rates and types
   - Methods
     - Manual
     - Automatic

5. Discuss cultivation and amendment of growing media
   - Aeration
   - Aesthetics
   - Growing media depth and levels
   - Amendments
     - Perlite
     - Vermiculite
     - Coir
     - Peat moss
     - Mycorrhizae
   - Mulch
     - Organic
     - inorganic

6. Discuss cleaning of foliage and containers
   - Aesthetics
   - Plant health
   - Damage
7. Discuss seasonal plant replacement

8. Discuss protection of interior furnishings and surfaces

9. Discuss pruning of interior plants

10. Discuss managing growth for site conditions

11. Discuss movement and rotation of plant
Line (GAC): M MAINTAIN SOFTSCAPE
Competency: M5 Repair softscape

Objectives
To be competent in this area, the individual must be able to:
- Describe management and repair of plant material.
- Describe management and repair of landscape materials.

LEARNING TASKS

1. Describe management of damaged plant material
   - Plant requirements
   - Standards and specifications
   - Structural supports
     - Cabling
     - Bracing
     - Staking
     - Propping
   - Pruning
   - Amending soils

2. Describe reasons for replacing interior and exterior plants
   - Dead, Damaged, Diseased
   - Maintenance level
   - Contract documents
   - Threshold levels
     - IPM
     - Client preference
     - Species
     - Appearance

3. Describe repair of natural and manufactured edges
   - Standards and specifications
   - Brick
   - Plastic
   - Aluminum
   - Wood

4. Describe repair and adjustment of staking and guying materials
   - Prevention of plant damage
   - Standards and specifications

5. Describe repair of grading and drainage
   - Standards and specifications

6. Describe reasons for replacing growing media
   - Test results
   - Non-viable
   - Pernicious pests
   - Jurisdictional regulations

7. Describe repair of inorganic mulch
   - Materials
     - Filter fabric permeability
     - Aggregate
     - Rubber
LEARNING TASKS

CONTENT

• Methods
  o Cleaning
  o Replenishing
  o Releveling
  o Replacing
Level 4
Landscape Horticulturist
Objectives

To be competent in this area, the individual must be able to:

- Inspect site specific environmental conditions.

**LEARNING TASKS**

1. Inspect site specific environmental conditions
   - Green infrastructure
   - Design intent
   - Sun and shade
   - Microclimates

2. Evaluate soil erosion
   - Construction impact or change in site conditions
   - Watering practices
   - Exposure
   - Slope
   - Soil characteristics
Line (GAC): C  ORGANIZE WORK
Competency: C2  Use documentation and reference material

Objectives
To be competent in this area, the individual must be able to:
• Interpret landscape drawings and design intent.
• Reference documentation pertaining to estimating.

LEARNING TASKS
1. Interpret landscape drawings and design intent
   • Design principles
   • Plant list
   • Notes
   • Specifications
   • Site protection areas
   • Construction and landscape plans
     o Site plan
     o Layout plan
     o Grading plan
     o Planting plan
     o Lighting plan
   • Detailed drawings
     o Section view
   • Section elevations
   • Perspective
   • Line weight
   • Exploded view

2. Reference documentation pertaining to estimating
   • Tenders
   • Bid documents
   • General conditions
   • Supplementary conditions
   • Standard form of contract
     o CCDC (Canadian Construction Documents Committee)
   • Codes
   • Standards
Line (GAC): C ORGANIZE WORK
Competency: C3 Maintain records

Objectives
To be competent in this area, the individual must be able to:

- Describe examples of additional records.
- Describe types of work records.

LEARNING TASKS
1. Describe examples of additional records
   - Integrated pest management program (IPM)
   - Jurisdictional regulations
     - Driver’s abstract
     - Work permits
     - Certification records

2. Describe types of work records
   - Work orders
   - Training records
   - Daily time sheets
   - Change orders
   - Site assessment records
   - Employee evaluations
Line (GAC): C  ORGANIZE WORK
Competency: C4  Participate in job planning activities

Objectives
To be competent in this area, the individual must be able to:
• Identify and schedule labour, materials, tools and equipment.
• Verify scope of project and determine sequence of job.

LEARNING TASKS
1. Identify labour requirements

CONTENT
• Skill level
• Production hours
• Project requirements
  o Weather
  o Materials and equipment
  o Jurisdictional regulations

2. Schedule labour, materials, tools and equipment

CONTENT
• Competing projects
• Potential challenges
• Site assessments
• Designated timelines
• Personnel
• Sequence of work
• On-site staging
• Contract documents
• Historical information
• Previous records

3. Identify and schedule sub-contractors

CONTENT
• Scope of work
• Contract documents
• Jurisdictional regulations

4. Verify scope of project and determine sequence of job

CONTENT
• Plan
• Budget
• Bottlenecks

5. Plan site-specific staging

CONTENT
• Environmental protection
• Vehicle parking
• Storage
• Portable offices
• Toilets
• Space availability
Program Content
Level 4

Line (GAC): D  PARTICIPATE IN MARKETING AND SALES
Competency: D4  Prepare estimates

Objectives
To be competent in this area, the individual must be able to:
• Prepare estimates for basic landscape installation projects.

LEARNING TASKS

1. Interpret site information and documentation

2. Identify sources of information pertaining to estimating

3. Estimate material costs

4. Estimate labour costs

5. Estimate equipment costs

6. Estimate additional costs

CONTENT
• Drawings
• Specifications
• Tendering documents
• Client instructions
• Digital mapping
• Suppliers
• RSMeans Cost Data
• Referenced standards and definitions
• Quantity take off
  o Length
  o Area
  o Volume
• Materials
  o Aggregates
  o Lumber
  o Mulch
  o Plants
  o Growing media
  o Rates of application
• Expansion and compaction factors
• Pricing
• Job requirements
• Historical data
• Labour productivity
• Skill level
• Scheduling
• Wages and labour burden
• Sub-contractors
• Job requirements
• Historical data
• Rental
• Availability
• Site considerations
• Hourly operational cost
• Sub-contractors
LEARNING TASKS

7. Coordinate project logistics

8. Provide estimates

CONTENT

- Direct job overhead costs
  - Transportation
  - Change orders
  - Accommodations
  - Permits
  - Waste disposal
  - Surcharges

- Indirect job overhead costs
  - Safety program
  - Administrative overhead
    - Insurance

- Contingencies
  - Weather

- Profit
  - Risk

- Logistical issues
  - Skill requirements
  - Scheduling
  - Equipment availability

- Coordination
  - Suppliers
  - Employees
  - Contractors

- Contract documents
- Recapitulation
- Profit taxes
- Time line/deadline
Line (GAC): E  USE COMMUNICATION AND MENTORING TECHNIQUES

Competency: E2  Use mentoring techniques

Objectives
To be competent in this area, the individual must be able to:

- Describe the role and responsibilities of a mentor.
- Describe the skills of a mentor.

LEARNING TASKS

1. Describe leadership in the organization
   - Definition of leadership
   - Role of leaders
   - Characteristics of leaders
   - Leadership skills
     - Delegation
     - Goal Setting
     - Coaching
     - Training

2. Define the roles and responsibilities of the mentor
   - Communication
   - Training
   - Modelling
   - Supporting
   - Enforcing
   - Ensuring skills progression
   - Assessing suitability

3. Describe training skills
   - Lesson objectives
   - Messaging
   - Explanations
   - Linking lessons
   - Demonstration
   - Practice
   - Assessing
   - Adjusting lesson
   - Supportive and corrective feedback

4. Describe learning styles and needs
   - Preferences
     - Visual
     - Auditory
     - Kinesthetic
   - Learning disabilities
   - Language proficiency

5. Describe the value of essential skills in the workplace
   - Reading
   - Writing
   - Document use
6. Manage time
   • Role of the supervisor
   • Ability to effectively manage personal and work time

7. Examine the concept of power in an organization
   • Recognizing power structure
   • How power is applied

8. Recognize ethical and social responsibility issues in the work place
   • Individual perspectives and experiences
   • Organizational ethics
   • Jurisdictional regulations
   • Managing diversity
   • Corporate culture

9. Interpret the employment standards
   • Impacts of the Employment Standards Act on horticultural operations
Program Content
Level 4

Line (GAC): F APPLY HORTICULTURAL PRACTICES
Competency: F2 Identify plants and plant requirements

Objectives
To be competent in this area, the individual must be able to:

- Identify plant and plant requirements for 90 woody and non-woody plants.
- Describe native and seasonal plants common to the horticulture industry in BC.
- Describe plants suitable for green infrastructure and edible landscapes.

LEARNING TASKS

1. Describe native plants common to the horticulture industry

2. Describe seasonal plants common to the horticulture industry in BC

3. Describe plants suitable for green infrastructure projects

4. Describe plants suitable for edible landscapes

5. Identify and describe 90 woody and non-woody plants

CONTENT

- Trees
- Shrubs
- Groundcovers
- Perennials
- Biennials
- Annuals
- Provenance
- Exterior
- Interior
- Green roofs
- Green walls
- Bioswales
- Rain gardens
- Jurisdictional regulations
- Wildlife
- Types
- Design implications
- Companion planting
- Using botanical terms
- According to its cultural and maintenance requirements
Objectives
To be competent in this area, the individual must be able to:

- Discuss implications of pest management in landscapes.
- Identify quarantine protocol.
- Develop an IPM program for a landscape.

LEARNING TASKS

1. Discuss the implications of pest management
   - Regulations
     - Federal
     - Provincial
     - Municipal
   - Purchase
   - Transportation
   - Storage
   - Use and disposal
   - Considerations in pest management
     - Economic
     - Aesthetic
     - Environmental
     - Social

2. Identify regulated versus non-regulated pests in BC
   - Exotic
   - Invasive
   - Noxious
   - Introduced
   - Jurisdictional regulations

3. Identify quarantine protocols
   - Early detection and eradication
   - Import/export restrictions
   - Containment or destruction of contaminated materials
   - Sanitation practices for tools, vehicles and equipment
   - Jurisdictional regulations
   - Standards and specifications

4. Prepare samples for lab testing
   - Submission form
   - Sample collections
   - Shipment of sample as per lab specifications

5. Develop a diagnostic checklist
   - Host plant identification
   - Abiotic/biotic
   - Patterns of signs and symptoms
LEARNING TASKS

6. Develop an IPM program

CONTENT
- Distribution
  - Site
  - Plant
- Site history
- Weather conditions
- Seasonality
- Geographic location
- Phenology
- Goals
- Severity of pest damage
- Maintenance level and site use
- Costs of control vs. economic/aesthetic losses
- Calculating risks

Achievement Criteria

Performance The learner will develop an IPM program.

Conditions The learner will be given the necessary materials, tools and equipment.

Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Identified the pest and host plant
- Integrated many control methods in a complementary fashion and justified selection of control methods
- Established monitoring guidelines
- Established the practical significance for the worksite
- The IPM program listed potential risks with recommended solutions
- Resource list showed appropriate breadth for the topic, including personnel used as resources, books, Ministry information, etc.
- Established evaluation guidelines
Line (GAC): G  APPLY ENVIRONMENTAL PRACTICES
Competency: G1  Practice environmental stewardship

Objectives
To be competent in this area, the individual must be able to:

• Discuss opportunities for stewardship related to green infrastructure and biodiversity.

LEARNING TASKS
1. Identify opportunities for stewardship related to green infrastructure and biodiversity

CONTENT
• Tools
• Equipment
• Plants
• Materials
• Disposal
• Organized work flow
• Site protection
• Maintenance practices
• Installation practices
Line (GAC): G APPLY ENVIRONMENTAL PRACTICES
Competency: G2 Practice biodiversity enhancement

Objectives
To be competent in this area, the individual must be able to:
• Describe a variety of habitats to support a range of organisms.
• Describe biodiverse enhancement strategies.

LEARNING TASKS

1. Define biodiversity

2. Describe selection of plants that ensure diversity within landscapes

3. Describe a variety of habitats that support a range of organisms

4. Describe bio-diverse enhancement strategies

CONTENT

- Value
- Purpose
- Jurisdictional regulations
- Aesthetics
- Disease and pest resistance
- Flower time
- Plant type
- Functions
  - Edible
  - Medicinal
  - Cultural
  - Structural
  - Economic
- Benefits
  - Climate control
  - Carbon capture
  - Symbiotic relationships
  - Pollution abatement
  - Energy conservation
  - Water infiltration
- Age
- Hydrozones
- Jurisdictional regulations
- Habitats
  - Refuge and nesting sites
  - Wildlife trees
  - Water and food
- Organisms
  - Beneficial insects
    - Pollinators
    - Biological controls
  - Mycorrhizae and other soil biota
  - Birds
- ‘Let it lay’
LEARNING TASKS

CONTENT
- Spring cleanup versus fall cleanup
- Reduced chemical use
- Plant selection and design
- Product selection
Program Content
Level 4

Line (GAC): H PERFORM PRE-CONSTRUCTION ACTIVITIES
Competency: H1 Participate in landscape design activities

Objectives
To be competent in this area, the individual must be able to:
- Describe the principles of garden design.
- Participate in landscape design activities.
- Create a planting plan.

LEARNING TASKS

1. Select and use tools

2. Perform site measurements

3. Examine influential historical and cultural landscape styles

4. Examine sustainable approaches of design and contemporary gardens

5. Describe the design characteristics of plants and materials

6. Describe the principles of design

7. Describe the elements of design

CONTENT

- Levels
- GPS
- Measuring devices
- Scaling devices
- Compass
- Ruler
- Computer
- Trace paper
- Drafting pencil
- Grade levels
- Stake interpretation
- Grid system
- Triangulation
- Formal vs. informal
- Historical and cultural influences
- Contemporary styles
- Xeriscaping
- Green infrastructure
  - Rain gardens
  - Green roofs
- Maintenance considerations
- Use of native plants in the landscape
- SITES (Sustainable Sites Initiative)
- Site specific design
- Colour
- Form
- Texture
- Size
- Order
- Unity
- Rhythm
- Simplicity
LEARNING TASKS

8. Describe the design process

9. Identify components of a landscape drawing

10. Describe the functions of the site

CONTENT

- Variety
- Balance
- Emphasis
- Scale
- Sequence

- Project research and preparation
  - Client consultation
  - Presenting the portfolio
  - Available services and fees
  - Proposal for design services
  - Jurisdictional regulations

- Site plan and analysis
  - Site inventory
  - Site measurements
  - Site analysis
  - Design objectives

- Preliminary design phase
  - Functional drawings
  - Conceptual drawings

- Design phase
  - Construction documentation
  - Layout plan
  - Grading plan
  - Planting plan
  - Irrigation plan
  - Lighting plan
  - Detail drawings
  - Master plan

- Site preparation
  - Marking
  - Staking

- Installation
- Maintenance
- Evaluation
- Scale
- Copyright
- Drawing specifications
- Notes
- Title block
- Directional arrow
- Drawing title
- Outdoor use areas
LEARNING TASKS

11. Create a preliminary design

   • Outside rooms
   • Recreation space
   • Outdoor work or service area
   • Public space
   • Site ecology

   • Form composition
   • Plant function
   • Suitability
     o Exposure
     o Macroclimate
     o Microclimate
     o Soil conditions
     o Hydrozones
   • Structures
     o Fences and walls
     o Overhead structures
     o Walkways, paths and driveways
     o Materials and maintenance

12. Create a planting plan

   • Plant list
   • Graphic conventions
     o Line weight
     o Symbols
   • Plant spacing
   • Plant availability

Achievement Criteria

Performance The learner will create a planting plan.

Conditions The learner will be given the necessary materials, tools and equipment.

Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
   • Produced a complete planting plan incorporating design characteristics
Line (GAC): K  INSTALL GREEN INFRASTRUCTURE SYSTEMS
Competency: K1  Select green infrastructure

Objectives
To be competent in this area, the individual must be able to:
• Select green infrastructure technologies, methods and products.
• Identify benefits and applications of green infrastructure technologies.

LEARNING TASKS
1. Describe factors affecting the selection of green infrastructure
   • Site specific conditions
     o Environmental
       – Water flow
       – Topography
       – Drainage patterns
       – Growing media
       – Existing vegetation
     o Construction limitations
       – Structural load
       – Building envelope
       – Drainage
   • Natural ecosystem considerations
     o Function
     o Purpose
     o Structure
   • Budget
   • Jurisdictional regulations
     o Community plans
   • Client needs
   • Product availability
   • Design considerations

2. Identify benefits and applications of green infrastructure technologies
   • Biodiversity
   • Water conservation
     o Smart water technology
   • Rain/stormwater management
   • Climate control
   • Air purification
   • Reduced heat island effect
   • Protecting natural resources
   • Site sustainability

3. Select green infrastructure technologies, methods and products
   • Site conditions
   • Materials and equipment
   • Site access
   • Certification and personnel qualifications
Program Content
Level 4

LEARNING TASKS

4. Identify green infrastructure systems

5. Compare types of green, blue and grey infrastructures

6. Identify benefits of plants within green infrastructure systems

7. Identify benefits of the urban forest

CONTENT

- Filtration systems
- Low impact development
- Living walls
- Green roofs
- Rain gardens
- Bioretention pond
- Green parking
- Permeable pavement
- Bioswales
- Urban forest
- Engineered wetlands
- Feasibility
- Cost
- Environmental impact
- Aesthetics
- Maintenance
- System functionality
- Ecosystems service benefits
- Carbon sequestration
- Symbiotic relationships
- Pollution mitigation
- Cost savings
- Environmental
- Economic
- Social
Line (GAC): K  INSTALL GREEN INFRASTRUCTURE SYSTEMS
Competency: K2  Install green roofs and walls

Objectives
To be competent in this area, the individual must be able to:
• Describe the components of green roofs and walls.
• Describe the procedure for installation of green roofs and walls.

LEARNING TASKS
1. Identify tools and equipment
   - Lifts
   - Booms
   - Cranes
   - Fall protection equipment

2. Describe types and functions of green roof systems
   - Extensive
   - Intensive

3. Describe the process and procedures to install green roofs and walls
   - Site preparation
   - Growing media
   - Plant material
   - Safe working procedures
     - Fall protection
   - Jurisdictional regulations

4. Describe the non-organic components used in green roofs and walls
   - Membranes
   - Root barriers
   - Drainage
   - Irrigation
   - Pumps
   - Ballasts

5. Describe the characteristics of organic components used in green roofs and walls
   - Growing media
   - Plant material
Program Content  
Level 4

Line (GAC): K  INSTALL GREEN INFRASTRUCTURE SYSTEMS  
Competency: K3  Install rainwater and stormwater management systems

Objectives
To be competent in this area, the individual must be able to:

- Describe the components of rainwater/stormwater management, harvesting, and retention systems.
- Describe the procedure for installation of rainwater/stormwater systems.

<table>
<thead>
<tr>
<th>LEARNING TASKS</th>
<th>CONTENT</th>
</tr>
</thead>
</table>
| 1. Describe types and functions of rainwater/stormwater management systems | Management  
Harvesting  
Retention |
| 2. Describe the process and procedures to install rainwater/stormwater systems | Site preparation  
Growing media  
Plant material  
Safe working procedures  
Jurisdictional regulations |
| 3. Describe the components of rainwater/stormwater management systems | Growing media  
Plant materials  
Aggregates  
Liners  
Biofilters  
Water aerators |
| 4. Describe the components of rainwater/stormwater harvesting systems | Cisterns  
Pumps  
Hoses  
Valves  
Pipes  
Aggregates  
Rain barrels  
Tanks  
Irrigation systems  
Soil cells  
Water harvesting crates |
| 5. Describe the components of rainwater/stormwater retention systems | Growing media  
Plant materials  
Aggregates  
Liners  
Biofilters  
Water aerators |
Objectives

To be competent in this area, the individual must be able to:

- Describe erosion control materials and methods of installation.

LEARNING TASKS

1. Describe tools and equipment

   CONTENT
   - Tools
     - Shovels
     - Post pounders
     - Knives
   - Equipment
     - Augers
     - Trenchers
     - Loaders

2. Identify erosion control methods and their application

   CONTENT
   - Silt fencing
   - Gabion walls
   - Roll-type materials
     - Tarps
     - Mats
     - Blankets
   - Wattles
   - Plant materials
   - Boulders
   - Aggregates

3. Describe installation methods

   CONTENT
   - Site preparation
   - Placement
   - Securement
   - Verification
   - Disposal
   - Jurisdictional regulations
Line (GAC): K INSTALL GREEN INFRASTRUCTURE SYSTEMS

Competency: K5 Install biodiverse plantings and natural areas

Objectives
To be competent in this area, the individual must be able to:

- Describe installation considerations and procedures for biodiverse plantings and natural areas.

LEARNING TASKS

1. Describe installation considerations for biodiverse plantings and natural areas
   - Environmental stewardship
     - Minimal disturbances
   - Site preparation
     - Protection of sensitive areas
   - Verification
   - Disposal
   - Jurisdictional regulations
     - CLS exceptions for natural areas

2. Describe installation procedures for biodiverse plantings and natural areas
   - Stock inspection
   - Plant preparation
   - Layout
   - Installation
   - Protection and stabilization
   - Monitoring
   - Organic mulch
Line (GAC): N MAINTAIN GREEN INFRASTRUCTURE
Competency: N1 Maintain green roofs and walls

Objectives
To be competent in this area, the individual must be able to:
• Describe processes and procedures for maintaining green roofs and walls.
• Identify non-horticultural elements requiring inspection and maintenance.

LEARNING TASKS
1. Describe processes and procedures for maintaining green roofs and walls

   • Debris removal
   • Weed control
   • Pests and diseases control
     o Fertilizer application
   • Irrigation
   • Plant coverage assessment
   • Plant pruning
   • Growing media inspection
     o Fall protection

2. Identify non-horticultural elements requiring inspection and maintenance

   • Leak detection
   • Exposed membrane
   • Vents
   • Drainage system
     o Standing water
     o Sedimentation
     o Drain pathways
   • Pumps
   • Pipes
Line (GAC): N MAINTAIN GREEN INFRASTRUCTURE
Competency: N2 Maintain rainwater and stormwater management systems

Objectives
To be competent in this area, the individual must be able to:

- Describe processes and procedures for maintaining the function of rainwater and stormwater management systems.
- Identify non-horticultural elements requiring inspection and maintenance.

LEARNING TASKS

1. Describe processes and procedures for maintaining the function of rainwater and stormwater management systems
   - Debris removal
   - Weed control
   - Pests and diseases control
   - Fertilizer application
   - Plant health assessment
   - Plant pruning
   - Mulch assessment
     - Depth
     - Quality
   - Growing media inspection
     - Erosion
     - Viability
   - Water testing
   - Jurisdictional regulations
     - Fall protection

2. Identify non-horticultural elements requiring inspection and maintenance
   - Leak detection
   - Exposed membrane
   - Vents
   - Drainage system
     - Standing water
     - Sedimentation
     - Drain pathways
   - Pumps
   - Pipes
   - Mesh
   - Filters
   - Basins
   - Inlet channels and outlet channels
   - Cisterns
Line (GAC): N MAINTAIN GREEN INFRASTRUCTURE
Competency: N3 Maintain erosion control

Objectives
To be competent in this area, the individual must be able to:

• Describe the procedures to inspect and repair erosion control materials.

LEARNING TASKS
1. Describe the procedures to inspect erosion control materials

   CONTENT
   • Functionality
     o Sloughing
     o Rilling
     o Gullies
     o Sedimentation
     o Flooding
     o Weed control

2. Describe the procedures to repair erosion control materials

   CONTENT
   • Industry standards
   • Jurisdictional regulations
Line (GAC): N MAINTAIN GREEN INFRASTRUCTURE
Competency: N4 Maintain biodiverse plantings and natural areas

Objectives
To be competent in this area, the individual must be able to:
• Identify criteria for monitoring site.
• Describe maintenance procedures.

LEARNING TASKS
1. Identify criteria for monitoring site
   • Safe public access
   • Site disturbances
     o Erosion
     o Vandalism
     o Illegal camping
     o Dumping
   • Public safety
   • Plant health
     o Invasive and unwanted species
   • Plant establishment
   • Contract documents

2. Describe maintenance procedures
   • Reporting
   • Ensuring integrity of pathways
   • Removal
   • Pruning
   • Planting
   • Plant protection
     o Tree guards
     o Fencing
Section 4

ASSESSMENT GUIDELINES
## Assessment Guidelines – Level 1

### Level 1 Grading Sheet: Subject Competency and Weightings

<table>
<thead>
<tr>
<th>LINE</th>
<th>SUBJECT COMPETENCIES</th>
<th>THEORY WEIGHTING</th>
<th>PRACTICAL WEIGHTING</th>
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<tr>
<td>C</td>
<td>ORGANIZE WORK</td>
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### Total

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### In-school theory & practical subject competency weighting

- **80%** for In-school percentage
- **20%** for Final Level Mark

### Final in-school mark

Apprentices must achieve a minimum 70% for the final in-school mark to be eligible to write the Landscape Horticulturist Standardized Level exam.

### In-school Mark

Combined theory and practical subject competency multiplied by **80%**

### Standardized Level Exam Mark

The exam score is multiplied by **20%**

### Final Level Mark

**FINAL%**
## Assessment Guidelines – Level 2

**Level 2 Grading Sheet: Subject Competency and Weightings**

**PROGRAM:** IN-SCHOOL TRAINING  
**LANDSCAPE HORTICULTURIST LEVEL 2**

<table>
<thead>
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<tr>
<td>G</td>
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</tr>
<tr>
<td>H</td>
<td>PERFORM PRE-CONSTRUCTION ACTIVITIES</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>I</td>
<td>INSTALL HARDSCAPE</td>
<td>15%</td>
<td>35%</td>
</tr>
<tr>
<td>J</td>
<td>INSTALL SOFTSCAPE</td>
<td>10%</td>
<td>40%</td>
</tr>
<tr>
<td>L</td>
<td>MAINTAIN HARDSCAPE</td>
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</tr>
<tr>
<td>M</td>
<td>MAINTAIN SOFTSCAPE</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**In-school theory & practical subject competency weighting**

| In-school Mark | Combined theory and practical subject competency multiplied by | 80% |
| In-school Mark | Standardized Level Exam Mark | The exam score is multiplied by | 20% |
| Final Level Mark | | | FINAL% |

Apprentices must achieve a minimum 70% for the final in-school mark to be eligible to write the Landscape Horticulturist Standardized Level exam.
## Assessment Guidelines – Level 3

**Level 3 Grading Sheet: Subject Competency and Weightings**

<table>
<thead>
<tr>
<th>LINE</th>
<th>SUBJECT COMPETENCIES</th>
<th>THEORY WEIGHTING</th>
<th>PRACTICAL WEIGHTING</th>
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<tbody>
<tr>
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<tr>
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<td>ORGANIZE WORK</td>
<td>15%</td>
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</tr>
<tr>
<td>D</td>
<td>PARTICIPATE IN MARKETING AND SALES</td>
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<tr>
<td>F</td>
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<tr>
<td>G</td>
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<tr>
<td>I</td>
<td>INSTALL HARDSCAPE</td>
<td>20%</td>
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<tr>
<td>J</td>
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<tr>
<td>M</td>
<td>MAINTAIN SOFTSCAPE</td>
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</tr>
</tbody>
</table>

| Total | 100% | 100% |

**In-school theory & practical subject competency weighting**

| In-school % | 80% | 20% |

**Final in-school mark**
Apprentices must achieve a minimum 70% for the final in-school mark to be eligible to write the Landscape Horticulturist Standardized Level exam.

**In-School Mark**
Combined theory and practical subject competency multiplied by 80%

**Standardized Level Exam Mark**
The exam score is multiplied by 20%

**Final Level Mark**

<table>
<thead>
<tr>
<th>Final Level Mark</th>
<th>FINAL%</th>
</tr>
</thead>
</table>

Landscape Horticulturist Industry Training Authority 02/18
# Assessment Guidelines – Level 4

## Level 4 Grading Sheet: Subject Competency and Weightings

**PROGRAM:**

- **IN-SCHOOL TRAINING:**
  - **LANDSCAPE HORTICULTURIST**
  - **LEVEL 4**

<table>
<thead>
<tr>
<th>LINE</th>
<th>SUBJECT COMPETENCIES</th>
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<th>PRACTICAL WEIGHTING</th>
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</thead>
<tbody>
<tr>
<td>C</td>
<td>ORGANIZE WORK</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>D</td>
<td>PARTICIPATE IN MARKETING AND SALES</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>E</td>
<td>USE COMMUNICATION AND MENTORING TECHNIQUES</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>F</td>
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<td>50%</td>
</tr>
<tr>
<td>G</td>
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<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>H</td>
<td>PERFORM PRE-CONSTRUCTION ACTIVITIES</td>
<td>10%</td>
<td>50%</td>
</tr>
<tr>
<td>K</td>
<td>INSTALL GREEN INFRASTRUCTURE SYSTEMS</td>
<td>25%</td>
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</tr>
<tr>
<td>N</td>
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<td>5%</td>
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</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**In-school theory & practical subject competency weighting**

- **85%**
- **15%**

**Final in-school mark**

Apprentices must achieve a minimum 70% as the final in-school mark to be eligible to write the Landscape Horticulturist Interprovincial Red Seal exam.

**ITA will enter the apprentices’ Landscape Horticulture Red Seal Interprovincial examination mark in ITADA. A minimum mark of 70% on the examination is required for a pass.**
Section 4

TRAINING PROVIDER STANDARDS
Facility Requirements

LEVEL ONE

Classroom Area
- Approximately 900 square feet
- Comfortable seating and tables suitable for training, teaching, lecturing and drafting
- Compliance with all local and national fire code and occupational safety requirements
- Lighting controls to allow easy visibility of projection screen while also allowing students to take notes
- Windows must have shades or blinds to adjust sunlight
- Heating/Air conditioning for comfort all year round
- In-room temperature regulation to ensure comfortable room temperature
- In-room ventilation sufficient to control training room temperature
- Acoustics in the room must allow audibility of the instructor
- White marking board with pens and eraser (optional: flipchart in similar size)
- Projection screen or projection area at front of classroom
- Overhead projector and a multi-media (data) projector

Shop Area
- Access to a service bay – approximately 600 square feet
- Access to a site for equipment operation – minimum 1 acre
- Access to all tools and equipment as listed for Level One

Lab Requirements
- Botany or Science teaching lab outfitted with compound and dissecting microscopes - approximately 600 square feet
  - Access to live ‘in situ’ plant material as well as herbaria, and visual samples (slides, photographic databases, etc.)
  - Microscope slides of showing root, stem and leaf anatomy (monocot and dicot)
  - Microscope slides showing woody stem growth
  - Hand lens (10X)
  - Glassware, lamps, stir plate (with heating capacity)
  - Refrigerator and microwave
  - Collection of arthropods, disease organisms, and examples of plant stress
- Soil Science or Chemistry teaching lab - approximately 600 square feet
  - Glassware, lamps, stir plate (with heating capacity)
  - Refrigerator, access to a drying oven and microwave
  - Nested sieves, shakers, scales
  - Access to Hydrometers and sedimentation cylinders
  - Munsell colour books (recommended)
Training Provider Standards

Student Facilities
- Adequate lunch room as per WorkSafeBC requirements
- Adequate washroom facilities as per WorkSafeBC requirements
- Personal storage lockers

Instructor’s Office Space
- Suitable space and office furniture necessary for instructor to prepare lessons and secure file records

Other
- Access to botanical gardens
LEVEL TWO

Classroom Area

- Approximately 900 square feet
- Comfortable seating and tables suitable for training, teaching, lecturing and drafting
- Compliance with all local and national fire code and occupational safety requirements
- Lighting controls to allow easy visibility of projection screen while also allowing students to take notes
- Windows must have shades or blinds to adjust sunlight
- Heating/Air conditioning for comfort all year round
- In-room temperature regulation to ensure comfortable room temperature
- In-room ventilation sufficient to control training room temperature
- Acoustics in the room must allow audibility of the instructor
- White marking board with pens and eraser (optional: flipchart in similar size)
- Projection screen or projection area at front of classroom
- Overhead projector and a multi-media (data) projector

Shop Area

- Access to a service bay – approximately 600 square feet
- Access to a site for equipment operation – minimum 1 acre
- Access to all tools and equipment as listed for Level Two

Lab Requirements

- Botany or Science teaching lab outfitted with compound and dissecting microscopes - approximately 600 square feet
  - Access to live ‘in situ’ plant material as well as herbaria, and visual samples (slides, photographic databases, etc.)
  - Microscope slides showing root, stem and leaf anatomy (monocot and dicot)
  - Microscope slides showing woody stem growth
  - Hand lens (10X)
  - Glassware, lamps, stir plate (with heating capacity)
  - Refrigerator and microwave
  - Collection of arthropods, disease organisms, and examples of plant stress
- Soil Science or Chemistry teaching lab - approximately 600 square feet
  - Glassware, lamps, stir plate (with heating capacity)
  - Refrigerator, access to a drying oven and microwave
  - Nested sieves, shakers, scales
  - Access to Hydrometers and sedimentation cylinders
  - Munsell colour books (recommended)
  - pH meters
  - Soil sampling equipment
Student Facilities

- Adequate lunch room as per WorkSafeBC requirements
- Adequate washroom facilities as per WorkSafeBC requirements
- Personal storage lockers

Instructor’s Office Space

- Suitable space and office furniture necessary for instructor to prepare lessons and secure file records

Other

- Access to a botanical garden
- Access to container nursery stock
- Access to field-grown stock/plant material that can be prepared for transplanting
- Trailer and tractor nursery equipment
- Access to large tree transplanting equipment
- Nursery hand carts and tree dollies
- Multiple nursery stock containers
LEVEL THREE

Classroom Area
• Approximately 900 square feet
• Comfortable seating and tables suitable for training, teaching, lecturing and drafting
• Compliance with all local and national fire code and occupational safety requirements
• Lighting controls to allow easy visibility of projection screen while also allowing students to take notes
• Windows must have shades or blinds to adjust sunlight
• Heating/Air conditioning for comfort all year round
• In-room temperature regulation to ensure comfortable room temperature
• In-room ventilation sufficient to control training room temperature
• Acoustics in the room must allow audibility of the instructor
• White marking board with pens and eraser (optional: flipchart in similar size)
• Projection screen or projection area at front of classroom
• Overhead projector and a multi-media (data) projector

Shop Area
• Access to a service bay – approximately 600 square feet
• Access to a site for equipment operation – minimum 1 acre
• Access to all tools and equipment as listed for Level Three

Lab Requirements
• Botany or Science teaching lab outfitted with compound and dissecting microscopes - approximately 600 square feet
  o Access to live ‘in situ’ plant material as well as herbaria, and visual samples (slides, photographic databases, etc.)
  o Hand lens (10X)
  o Glassware, lamps, stir plate (with heating capacity)
  o Refrigerator and microwave
  o Collection of arthropods, disease organisms, and examples of plant stress
• Soil Science or Chemistry teaching lab - approximately 600 square feet
  o Glassware, lamps, stir plate (with heating capacity)
  o Refrigerator, access to a drying oven and microwave
  o Nested sieves, shakers, scales
  o Access to Hydrometers and sedimentation cylinders
  o Munsell colour books (recommended)
  o pH meters
  o Soil sampling equipment

Student Facilities
• Adequate lunch room as per WorkSafeBC requirements
• Adequate washroom facilities as per WorkSafeBC requirements
Training Provider Standards

- Personal storage lockers

Instructor's Office Space
- Suitable space and office furniture necessary for instructor to prepare lessons and secure file records

Other
- Access to a botanical garden
- Access to live 'in situ' plant material for pruning
- Access to plant material for planting and staking
- Landscape plans and specifications
- Access to installation site
- Access to installation supplies (for hardscapes)
- Access to appropriate site for installations and maintenance of irrigation and drainage
- Range of landscape design periodicals
LEVEL FOUR

Classroom Area

- Approximately 900 square feet
- Comfortable seating and tables suitable for training, teaching, lecturing and drafting
- Compliance with all local and national fire code and occupational safety requirements
- Lighting controls to allow easy visibility of projection screen while also allowing students to take notes
- Windows must have shades or blinds to adjust sunlight
- Heating/Air conditioning for comfort all year round
- In-room temperature regulation to ensure comfortable room temperature
- In-room ventilation sufficient to control training room temperature
- Acoustics in the room must allow audibility of the instructor
- White marking board with pens and eraser (optional: flipchart in similar size)
- Projection screen or projection area at front of classroom
- Overhead projector and a multi-media (data) projector

Shop Area

- Access to a service bay – approximately 600 square feet
- Access to a site for equipment operation – minimum 1 acre
- Access to all tools and equipment as listed for Level Four

Lab Requirements

- Botany or Science teaching lab outfitted with compound and dissecting microscopes - approximately 600 square feet
  - Access to live ‘in situ’ plant material as well as herbaria, and visual samples (slides, photographic databases, etc.)
  - Hand lens (10X)
  - Glassware, lamps, stir plate (with heating capacity)
  - Refrigerator and microwave
  - Collection of arthropods, disease organisms, and examples of plant stress
- Soil Science or Chemistry teaching lab - approximately 600 square feet
  - Glassware, lamps, stir plate (with heating capacity)
  - Refrigerator, access to a drying oven and microwave
  - Nested sieves, shakers, scales
  - Access to Hydrometers and sedimentation cylinders
  - Munsell colour books (recommended)
  - pH meters
  - Soil sampling equipment

Student Facilities

- Adequate lunch room as per WorkSafeBC requirements
- Adequate washroom facilities as per WorkSafeBC requirements
Training Provider Standards

- Personal storage lockers

Instructor’s Office Space
- Suitable space and office furniture necessary for instructor to prepare lessons and secure file records

Other
- Access to a botanical garden
- Access to live ‘in situ’ plant material for pruning
- Access to plant material for planting and staking
- Landscape plans and specifications
- Range of landscape design periodicals
## Tools and Equipment

### Hand Tools

<table>
<thead>
<tr>
<th>Common</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
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<tr>
<td>• brooms</td>
<td>• blocks</td>
<td>• axe</td>
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<td>• bypass pruners</td>
<td>• chains</td>
<td>• backpack sprayer</td>
<td>• backpack sprayer</td>
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<td>• calculator</td>
<td>• core sampler/probe</td>
<td>• blocks</td>
<td>• box cutters</td>
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<td>• cart</td>
<td>• cultivator</td>
<td>• box cutters</td>
<td>• brick carriers</td>
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<td>• brick carriers</td>
<td>• brick splitter</td>
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<td>• grease gun</td>
<td>• chirses</td>
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<td>• dolly</td>
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<td>• ladders</td>
<td>• pipe cutters</td>
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<td>• wheelbarrow</td>
<td>• post pounder</td>
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<tr>
<td>• picks</td>
<td>• wheelbarrow</td>
<td>• post pounder</td>
<td>• pole pruners</td>
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<tr>
<td>• pipe cutters</td>
<td></td>
<td>• newelian shears</td>
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<tr>
<td>• pliers</td>
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<td>• pole saw</td>
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<td>• pole pruners</td>
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<td>• post hole auger</td>
<td>• post maul</td>
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</tr>
<tr>
<td>• pole saw</td>
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<td>• newelian shears</td>
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<tr>
<td>• post hole auger</td>
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<td>• post maul</td>
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<tr>
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</tr>
<tr>
<td>• post pounder</td>
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<td>• newelian shears</td>
<td>• newelian shears</td>
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<tr>
<td>• pruning shears</td>
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<td>• newelian shears</td>
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</tr>
<tr>
<td>• scaffolding</td>
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<tr>
<td>• scythe</td>
<td></td>
<td>• newelian shears</td>
<td>• newelian shears</td>
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</tr>
</tbody>
</table>

### Tools and Equipment (Continued)

- **Level 1**: Common tools include blocks, chains, core sampler/probe, cultivator, dolly, edger, grease gun, hex keys, microscope, nursery cart, picks, pipe cutters, roller, shapers, sod lifter, soil screeners, string line, hand lens, sod knife, tie-downs.
- **Level 2**: Additional tools include axe, backpack sprayer, blocks, box cutters, brick carriers, brick splitter, chains, dolly, greasers, guillotine, hand tamper, handsaws, hedge shears, hex keys, loppers, microscope, nursery cart, paving stone cart, paving stone extractor, picks, pliers, post hole auger, post maul, post pounder, pruning shears.
- **Level 3**: Advanced tools include axe, backpack sprayer, box cutters, brick carriers, brick splitter, chains, chirses, core sampler/probe, crimpers, cultivators, dibblers, dolly, greasers, guillotine, hard plane, hand tamper, handsaws, hedge shears, hex keys, loppers, microscope, nursery cart, paving stone cart, paving stone extractor, picks, pliers, post hole auger, post maul, post pounder, pruning shears.
- **Level 4**: Specialized tools include axe, backpack sprayer, box cutters, brick carriers, brick splitter, chains, chirses, core sampler/probe, crimpers, cultivators, dolly, greasers, guillotine, hard plane, hand tamper, handsaws, hedge shears, hex keys, loppers, microscope, nursery cart, paving stone cart, paving stone extractor, picks, pliers, post hole auger, post maul, post pounder, pruning shears, pry bar, scaffolding, scythe.
## Training Provider Standards

- pry bar
- screeding bars
- scythe
- spreaders
- shears
- shoring equipment
- side cutters
- soil screener
- hand lens
- tie-downs
- transplant table
- power auger
- chainsaw
- concrete saw
- core aerator
- demolition hammer (electric and pneumatic)
- electric drill
- fertilizer injector
- grinder
- mechanical digger
- mitre/chop saw
- mortar/cement mixer
- mulcher
- power auger
- rototiller
- power seeder/spreader
- power soil screener
- power/pressure washer
- power wheelbarrow
- side cutters
- spreaders
- hand lens
- tie-downs
- tree cart
- water key
- weed torch
- wire cutters
- wire strippers

### Power/Motorized Tools

<table>
<thead>
<tr>
<th>Common</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>attachments</td>
<td>• air seeder</td>
<td>• chainsaw</td>
<td>• power auger</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• core aerator</td>
<td>• circular saw</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• fertilizer injector</td>
<td>• concrete saw</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• hydro-seeder</td>
<td>• core aerator</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• mechanical digger</td>
<td>• demolition hammer (electric and pneumatic)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• mower</td>
<td>• electric drill</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• power seeder/spreader</td>
<td>• fertilizer injector</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• trencher</td>
<td>• grinder</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• walk-behind aerator</td>
<td>• mechanical digger</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• mitre/chop saw</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td>• mortar/cement mixer</td>
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<td></td>
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<td></td>
<td>• mulcher</td>
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<td></td>
<td></td>
<td></td>
<td>• power auger</td>
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<td></td>
<td></td>
<td></td>
<td>• rototiller</td>
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<td></td>
<td></td>
<td></td>
<td>• power seeder/spreader</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• power soil screener</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• power/pressure washer</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• power wheelbarrow</td>
<td></td>
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</tr>
</tbody>
</table>
Training Provider Standards

- reciprocating saw
- sabre saw
- table saw
- tree spade
- trencher
- walk-behind aerator
- wet saw
- plate compactor
- vibrating plate tamper
- saw
- sabre saw
- spider lift
- table saw
- torch
- trencher
- vacuum
- vacuum lifter
- wet saw
- plate compactor
- vibrating plate tamper

Measuring Equipment

<table>
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<td>anemometer</td>
<td>anemometer</td>
<td>anemometer</td>
<td>GPS</td>
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<td>barometer</td>
<td>barometer</td>
<td>barometer</td>
<td>scale ruler</td>
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<td>levels</td>
<td>compaction measuring device</td>
<td>compaction measuring device</td>
<td>catch can reader</td>
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<td>measuring wheel</td>
<td>light meter</td>
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<td>compaction measuring device</td>
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<td>measuring tape</td>
<td>graduated cylinders</td>
<td>graduated cylinders</td>
<td>flow meter</td>
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<td>thermometer</td>
<td>moisture meter/sensor</td>
<td>moisture meter/sensor</td>
<td>hygrometer</td>
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<tr>
<td></td>
<td>pH meter</td>
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<td>light meter</td>
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</tr>
<tr>
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<td>scales</td>
<td>scales</td>
<td>graduated cylinders</td>
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<td></td>
<td>tire pressure meter</td>
<td>soil tester</td>
<td>moisture meter/sensor</td>
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<td>tensiometer</td>
<td>tire pressure meter</td>
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Motorized Equipment

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<td>excavator</td>
<td>air compressor</td>
<td>air compressor</td>
<td>air compressor</td>
<td>backhoe</td>
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<tr>
<td>flat deck truck</td>
<td>bale breaker</td>
<td>all-terrain vehicles</td>
<td>bed edger</td>
<td>lifts</td>
</tr>
<tr>
<td>front end</td>
<td></td>
<td></td>
<td></td>
<td>post hole</td>
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</tbody>
</table>
## Training Provider Standards

- loader
- generator
- loaders
- compactor
- skid-steer
- sterilizer
- tractor
- truck
- bed edger
- blowers
- forklift
- mower
- paddle broom
- pallet jack
- peat shredder
- dethatcher
- power rake
- power roller
- shredder
- slit seeder
- seed drill
- sod cutter
- soil screener
- trencher
- trimmers
- walk-behinds (various)
- bale breaker
- blower truck
- blowers
- brush cutters
- clearing saw
- forklift
- hedge trimmer
- rototillers
- mortar mixer
- mulcher
- paddle broom
- pallet jack
- pneumatic hammer
- post hole auger
- post pounder
- soil screener
- tree spade
- trencher
- trimmers
- walk-behinds (various)
- blowers
- brush cutters
- chipper
- clearing saw
- flat filler
- lifts
- mortar mixer
- paddle broom
- pallet jack
- peat shredder
- pneumatic hammer
- post hole auger
- post pounder
- pot filler
- potting machines
- pumps
- steam cleaner
- tree gantry
- trencher
- vehicles with blades
- walk-behinds (various)
- snowblower
- auger
- post pounder

## Equipment Attachments

<table>
<thead>
<tr>
<th>Common</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>bucket</td>
<td>forklift</td>
<td>aerator</td>
<td>auger/post hole digger</td>
<td>auger/post hole digger</td>
</tr>
<tr>
<td>flat deck</td>
<td>back hoe</td>
<td>auger/post hole digger</td>
<td>blade</td>
<td>back hoe</td>
</tr>
<tr>
<td>forks</td>
<td>cultivator</td>
<td>cultivator</td>
<td>cultivator</td>
<td>grader</td>
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<td>ladders</td>
<td>dethatcher</td>
<td>spreader</td>
<td>spray equipment</td>
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<td>grapple</td>
<td>trencher</td>
<td>snow equipment</td>
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<td>loaders</td>
<td>mower baggers</td>
<td>leaf vacuum</td>
<td>spray equipment</td>
<td>spray equipment</td>
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<td>trailer</td>
<td>mowers</td>
<td>power sweeper</td>
<td>trencher</td>
<td>trencher</td>
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<td>overseeder</td>
<td>power sweeper</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>plough</td>
<td></td>
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</tr>
</tbody>
</table>
Training Provider Standards

- rollers
- seeders
- top-dresser
- trencher
- tree dolly
- tree spade
- vacuum

PPE and Safety Equipment

<table>
<thead>
<tr>
<th>Common</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ear protection</td>
<td>chemical suit</td>
<td>chaps/ballistic pants</td>
<td>fall protection equipment</td>
</tr>
<tr>
<td></td>
<td>eye protection</td>
<td>fall protection equipment</td>
<td>chemical suit</td>
<td>chemical suit</td>
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<tr>
<td></td>
<td>eye wash kit</td>
<td>respiratory protection</td>
<td>fall protection equipment</td>
<td>fall protection equipment</td>
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<tr>
<td></td>
<td>face shields</td>
<td></td>
<td>respiratory protection</td>
<td>respiratory protection</td>
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<tr>
<td></td>
<td>fire extinguisher</td>
<td></td>
<td></td>
<td>ventilation fan</td>
</tr>
<tr>
<td></td>
<td>first aid kit</td>
<td></td>
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<tr>
<td></td>
<td>flares</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>gloves</td>
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<td></td>
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<tr>
<td></td>
<td>hard hat</td>
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<td></td>
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<tr>
<td></td>
<td>hearing protection</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>high visibility clothing</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>safety boots</td>
<td></td>
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<td></td>
<td>safety vests</td>
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<tr>
<td></td>
<td>scabbard/protective sheath</td>
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<tr>
<td></td>
<td>skin protection</td>
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<tr>
<td></td>
<td>spill kit</td>
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<td></td>
<td>sun hat</td>
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<tr>
<td></td>
<td>sunblock</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>traffic cones</td>
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<td></td>
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</tr>
</tbody>
</table>
Reference Materials

LEVEL ONE

Required Reference Materials

• Kwantlen University College School of Horticulture Plant identification Database, www.kwantlen.ca/horticulture/
  https://appserver1.kwantlen.ca/apps/plantid/plantid.nsf/search
• British Columbia Landscape Standard - Latest edition. BC Landscape and Nursery Association and the British Columbia Association of Landscape Architects, Surrey, BC
• Landscape Horticulturist Level One Apprentice Manual, by HEBC
  o Identify Plants and Describe Their Use – Module 1, HEBC 2012
  o Communication and Organizational Skills – Module 1, HEBC 2012
  o Equipment Maintenance and Safety – Module 1, HEBC 2012
  o Plant Science for Horticulture – Module 1, HEBC 2012
  o Plant Stress – Signs and Symptoms, HEBC 2012
  o Soil and Soilless Media – Physical and Biological Characteristics – Module 1, HEBC 2012
  o Horticultural Skills – Module 1, HEBC 2012

Recommended Resources and Texts

• WorkSafeBC Website (http://www.worksafebc.com/)
• Equipment Manufacturers Websites (Internet)
• Abiotic Disorders of Landscape Plants : A Diagnostic Guide - Costello, Laurence Raleigh. 2003. University of California, Agriculture and Natural Resources, Oakland, CA
• Field Guide to Noxious and Other Selected Weeds of British Columbia - Cranston, Roy. 2002. Ministry of Agriculture, Food and Fisheries; Ministry of Forests, Victoria, BC (Also available online at http://www.agf.gov.bc.ca/cropprot/weedguid/weedguid.htm )
• Pacific Northwest; Plant Disease Management Handbook - 2000. Extension Services of Oregon State University, Washington State University, and the University of Idaho

NOTE:
This list of Reference Materials is for training providers. Apprentices should contact their preferred training provider for a list of recommended or required texts for this program.
LEVEL TWO

Required Reference Materials

- Kwantlen University College School of Horticulture Plant identification Database, www.kwantlen.ca/horticulture/
- https://plantdatabase.kwantlen.ca
- Landscape Horticulturist Level One Apprentice Manual, by HEBC
  - Identify Plants and Describe Their Use – Module 2, HEBC 2012
  - Leadership and Organizational Skills – Module 2, HEBC 2012
  - Equipment Maintenance and Safety – Module 2, HEBC 2012
  - Plant Science for Horticulture – Module 2, HEBC 2012
  - Plant Stress – Causes and Controls – Module 2, HEBC 2012
  - Soils and Soilless Media – Chemical Characteristics – Module 2, HEBC 2012
  - Horticultural Skills – Plant Quality and Handling – Module 2, HEBC 2012

Recommended Resources and Texts

- Kwantlen University College School of Horticulture Plant identification Database, www.kwantlen.ca/horticulture/
- https://plantdatabase.kwantlen.ca
- WorkSafeBC Website (http://www.worksafebc.com/)
- Equipment Manufacturers Websites (Internet)
- Pacific Northwest; Plant Disease Management Handbook - 2008. Extension Services of Oregon State University, Washington State University, and the University of Idaho
Training Provider Standards

- Considerations for their use - Ministry of Education, Skills and Training and the Ministry of Labour and the Centre for Curriculum and Professional Development. 1995. BC.

NOTE:
This list of Reference Materials is for training providers. Apprentices should contact their preferred training provider for a list of recommended or required texts for this program.
LEVEL THREE

Required Reference Materials

- Landscape Horticulturist Level Three Apprentice Manual, by HEBC
- Kwantlen University College School of Horticulture Plant identification Database, www.kwantlen.ca/horticulture/
- https://plantdatabase.kwantlen.ca
- Principles of Exterior Drainage - NDS, Inc. Lindsay, CA.

Recommended Resources and Texts

- Protecting Nature’s Balance: IPM in B.C. - U.B.C. Access. (Video)
- IPM for Floriculture and Nurseries - Latest edition. Dreistadt, Steve (editor) University of California, Oakland CA Publication 3402
- Knowing and Recognizing the Biology of Glasshouse Pests and Their Natural Enemies - Latest edition. Malais, M.H. and Ravensberg, W.J. Koppert
- Biological Systems - Reed Business Information, Doetinchem, Netherlands
Training Provider Standards

- Drip Irrigation: For Every Landscape and All Climates - Kourik, Robert. 1992. Metamorphic Press, Santa Rosa, CA

NOTE:
This list of Reference Materials is for training providers. Apprentices should contact their preferred training provider for a list of recommended or required texts for this program.
LEVEL FOUR

Required Reference Materials

- Landscape Horticulturist Level Four Apprentice Manual, by HEBC
- Kwantlen University College School of Horticulture Plant identification Database, www.kwantlen.ca/horticulture/
- https://plantdatabase.kwantlen.ca

Recommended Resources and Texts

- The Turf Line News - Western Canada Turfgrass Association, BC.
- Protecting Nature’s Balance: IPM in B.C. - U.B.C. Access. (Video)
- IPM for Floriculture and Nurseries - Latest edition. Dreistadt, Steve (editor) University of California, Oakland CA Publication 3402
- Knowing and Recognizing - Latest edition. Malais, M.H. and Ravensberg, W.J. Koppert
- Biological Systems - Reed Business Information, Doetinchem, Netherlands
Training Provider Standards


NOTE:
This list of Reference Materials is for training providers. Apprentices should contact their preferred training provider for a list of recommended or required texts for this program.
Instructor Requirements

Occupation Qualification

The instructor must possess:

- Subject matter competence as demonstrated by a Landscape Horticulturist Trade Qualification/Apprentice Certificate, Horticulture Diploma or Degree
- Adult teaching competence as demonstrated by successful completion of Provincial Instructor Diploma (PIDP) or equivalent or regular faculty status at an institution which has a defined faculty review process (as specified by institutional policy) or contract faculty who have at least completed the Instructional Skills Workshop (PIDP 3102) or equivalent.

Work Experience

A minimum three (3) years of experience working in the industry related to the specific area of competency, unless specified below.

ADDITIONAL CREDENTIALS AND EXPERIENCE RECOMMENDED FOR SPECIFIC SUBJECT MATTER

Line A  PERFORM SAFETY-RELATED FUNCTIONS

- Subject matter competence as demonstrated by an Outdoor Power Equipment Trades Qualification/Apprentice Certificate or as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma, Certified Landscape Professional and five years of industry experience.

Line B  USE TOOLS, EQUIPMENT AND VEHICLES

- Subject matter competence as demonstrated by an Outdoor Power Equipment Trades Qualification/Apprentice Certificate or as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma, and five years of industry experience. Class 5 Driver’s License.

Line C  ORGANIZE WORK

- Subject matter competence as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma, Certified Landscape Professional, Project Management Certificate and five years of industry experience.

Line D  PARTICIPATE IN MARKETING AND SALES

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma, Certified Landscape Professional, Diploma with Marketing, Human
Training Provider Standards

Resource or Organizational Behaviour specialty or Baccalaureate Degree in Business. Two years supervisory or management experience in a private or public organization.

D4 Prepare Estimates

- Subject matter competence as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma, Certified Landscape Professional, or Certificate or Diploma in Project Management. Three years of industry experience as a landscape or construction estimator.

Line E  USE COMMUNICATION AND MENTORING TECHNIQUES

- Subject matter competence as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma, Certified Landscape Professional Business, or Diploma with Human Resource or Organizational Behaviour specialty or Baccalaureate Degree in Horticulture with a minor in Business or Certified Landscape Professional. Two years supervisory or management experience in a private or public organization.

Line F  APPLY HORTICULTURAL PRACTICES

F1 Practice Basic Plant Science

- Subject matter competence as demonstrated by a Baccalaureate Degree in Horticulture, Botany, Agronomy, Plant Biology, Forestry, or Crop Science and/or a Diploma in Horticulture, Agriculture or Forestry with a minimum of 5 years of experience in plant science.

F2 Identify Plants and Plant Requirements

- Subject matter competence as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in Horticulture, Botany, Agronomy, Plant Biology, Forestry, or Crop Science. Minimum 5 years of experience in horticulture.

F3 Manage Plant Health and Growing Conditions

- Subject matter competence as demonstrated by a Horticulture Diploma or Baccalaureate Degree in Horticulture, Agronomy, Forestry, Crop Science, or Pest Management and/or a Diploma in Agriculture or Forestry with a minimum of 5 years of experience in analyzing and maintaining plant health.

F4 Prune Plant Material

- Subject matter competence as demonstrated by Landscape Horticulturist or Arboriculture Qualification/Apprentice Certificate, Horticulture Diploma. International Society of Arboriculture – Arborist Certification. 5 years of experience.

Line G  APPLY ENVIRONMENTAL PRACTICES

- Subject matter competence as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in Horticulture, Botany, Agronomy, Plant Biology, Forestry, or Crop Science. Minimum 5 years of experience in horticulture.
Training Provider Standards

G3 Practice Soil Stewardship

- Subject matter competence as demonstrated by a Baccalaureate Degree in Soil Science Horticulture, Agronomy, Forestry, or Crop Science and/or a Diploma in Horticulture, Agriculture or Pest Management with a minimum of 5 years of experience in analyzing physical and biological characteristics of soil and soilless media.

Line H  PERFORM PRE-CONSTRUCTION ACTIVITIES

- Subject matter competence as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma, Certified Landscape Professional, Project Management Certificate and five years industry experience. Five years of experience.

H1 Participate in Landscape Design Activities

- Subject matter competence as demonstrated by a Horticulture Diploma (Landscape Design) or CNLA Certified Landscape Designer or Bachelor of Landscape Architecture, plus 2 years of experience in private or public organization developing and implementing landscape designs.

Line I  INSTALL HARDSCAPE

- Subject matter competence as demonstrated by a Horticulture, Carpentry or Masonry Trades Qualification/Apprentice Certificate or Horticulture Diploma, plus five years of relevant industry experience.

I4 Install Irrigation Systems

- Subject matter competence as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma and BC Certified Irrigation Technician Level One.

Line J  INSTALL SOFTSCAPE

- Subject matter competence as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in Horticulture and 2 years of practical landscape experience.

Line K  INSTALL GREEN INFRASTRUCTURE SYSTEMS

- Subject matter competence as demonstrated by a Horticulture Diploma or Baccalaureate Degree in Horticulture or Environmental Sciences and one year of practical experience designing or maintaining green infrastructure.

Line L  MAINTAIN HARDSCAPE

- Subject matter competence as demonstrated by a Horticulture, Carpentry or Masonry Trades Qualification/Apprentice Certificate or Horticulture Diploma, plus two years of experience.
Line M  MAINTAIN SOFTSCAPE

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma and five years of practical landscape experience.

Line N  MAINTAIN GREEN INFRASTRUCTURE

- Subject matter competence as demonstrated by a Landscape Horticulturist Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in Horticulture or Environmental Sciences and one year of practical experience designing or maintaining green infrastructure.
Appendices
Appendix A
Previous Contributors

The Program Outline was prepared with the advice and direction of an industry steering committee convened initially by the HortEducationBC (HEBC). Members included:

- Anne Kadwell CEO HortEducationBC
- Bill Hardy HEBC Board Chair (Northwest Landscape Ltd.)
- Don Fraser Past Chair (Northwest Landscape Ltd.)
- Mary Ann Van Den Berge BCLNA Representative (Trice Farms Pond & Garden Centre)
- Cable Baker BCLNA Representative (RCB Garden Service)
- Bruce McTavish BCLNA Representative (Kwantlen Polytechnic University, McTavish Resource & Management Consultants Ltd.)
- Garfield Marshall BCLNA Representative (Advance Orchard Co. Ltd.)
- Ted de Crom WCTA Representative (City of Richmond Parks & Recreation Department)
- Gail Szostek GreenSpace Consulting (former HortEducation BC Board Member)
- Bill Reid the Corporation of the District of Powell River, Department of Parks, Recreation and Culture (former HortEducation BC Board Member)
- Egan Davis HortEducationBC Board Member (City of Vancouver)
- Rob Welsh Education Representative (Kwantlen Polytechnic University)
- Dale Toronitz Education Representative (Camosun College)
- Denis Gour Apprentice Representative (Blasig Landscape Design & Construction Ltd.)

Industry Subject Matter Experts retained to assist in the development of the Program Outline (2013):

- Carol Barnett
- PJ Burns
- Betty Cunnin
- David Davidson
- Jeff Foley
- Renee Giardini
Training Provider Standards

- Denis Gour
- Tim Holt
- Peter Isaacson
- Gary Jones
- Anne Kadwell
- Ron Marchuk
- Bruce McTavish
- Michelle Nakano
- Dan Regan
- Kristine Schlamp
- Liz Spring