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PROGRAM OUTLINE

Landscape Horticulturist



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LANDSCAPE HORTICULTURIST PROGRAM OUTLINE

**APPROVED BY INDUSTRY
MAY 2013**

**BASED ON
NOA 2010**

**Developed by
Industry Training Authority
Province of British Columbia**



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Section 1

INTRODUCTION

Landscape Horticulturist



Foreword

This Program Outline describes the Landscape Horticulturist Apprenticeship Program. This program represents the new standard for horticulture apprenticeship training in British Columbia. All tasks identified in the National Occupational Analysis (NOA) have been included, as well as those competencies that apply specifically to Landscape Horticulture in British Columbia.

This document is intended as a guide for the course instructors in the classroom, laboratories and for practical training. Since this is a practical trade it is expected that instructor demonstration and student participation will be integrated into all learning activities.

Note: The Achievement Criteria for the practical assessments may be combined at the instructor's discretion and as time permits.

Safe working practices may not be specified in all competencies and learning tasks, however they are an implied part of this training program and should be stressed throughout the apprenticeship training.

This Program Outline also lists the Training Provider Standards which includes:

- Facility Requirements
- Tools and Equipment (for each level of technical training)
- Reference Materials
- Instructor Requirements

SAFETY ADVISORY

Be advised that references to the WorkSafeBC 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.



Acknowledgements

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

- *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.)
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- *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)
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- *Denis Gour*, Apprentice Representative (Blasig Landscape Design & Construction Ltd.)

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

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- J. Jankola & Associates Consulting

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 Horticulturist 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.

Section	Training Providers	Employers/ Sponsors	Apprentices	Challengers
Program Credentialing Model	Communicate program length and structure, and all pathways to completion	Understand the length and structure of the program	Understand the length and structure of the program, and pathway to completion	Understand challenger pathway to Certificate of Qualification
OAC	Communicate the competencies the industry has defined as representing the scope of the occupation	Understand the competencies that an apprentice is expected to demonstrate in order to achieve certification	View the competencies they will achieve as a result of program completion	Understand the competencies they must demonstrate in order to challenge the program
Training Topics and Suggested Time Allocation	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	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	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	Understand the relative weightings of various competencies of the occupation on which assessment is based
Program Content	Defines the objectives, learning tasks, high level content that must be covered for each competency, as well as defining observable, measurable achievement criteria for objectives with a practical component	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	Provides detailed information on program content and performance expectations for demonstrating competency	Allows individuals to check program content areas against their own knowledge and performance expectations against their own skill levels



Section	Training Providers	Employers/ Sponsors	Apprentices	Challengers
Training Provider Standards	Defines the facility requirements, tools and equipment, reference materials (if any) and instructor requirements for the program	Identifies the tools and equipment an apprentice is expected to have access to; those supplied by the training provider and those the student is expected to own	Provides information on the training facility, tools and equipment provided by the school and the student, reference materials they may be expected to acquire, and minimum qualification levels of program instructors	Identifies the tools and equipment a tradesperson is expected to be competent in using or operating; which may be used or provided in a practical assessment



Section 2

PROGRAM OVERVIEW

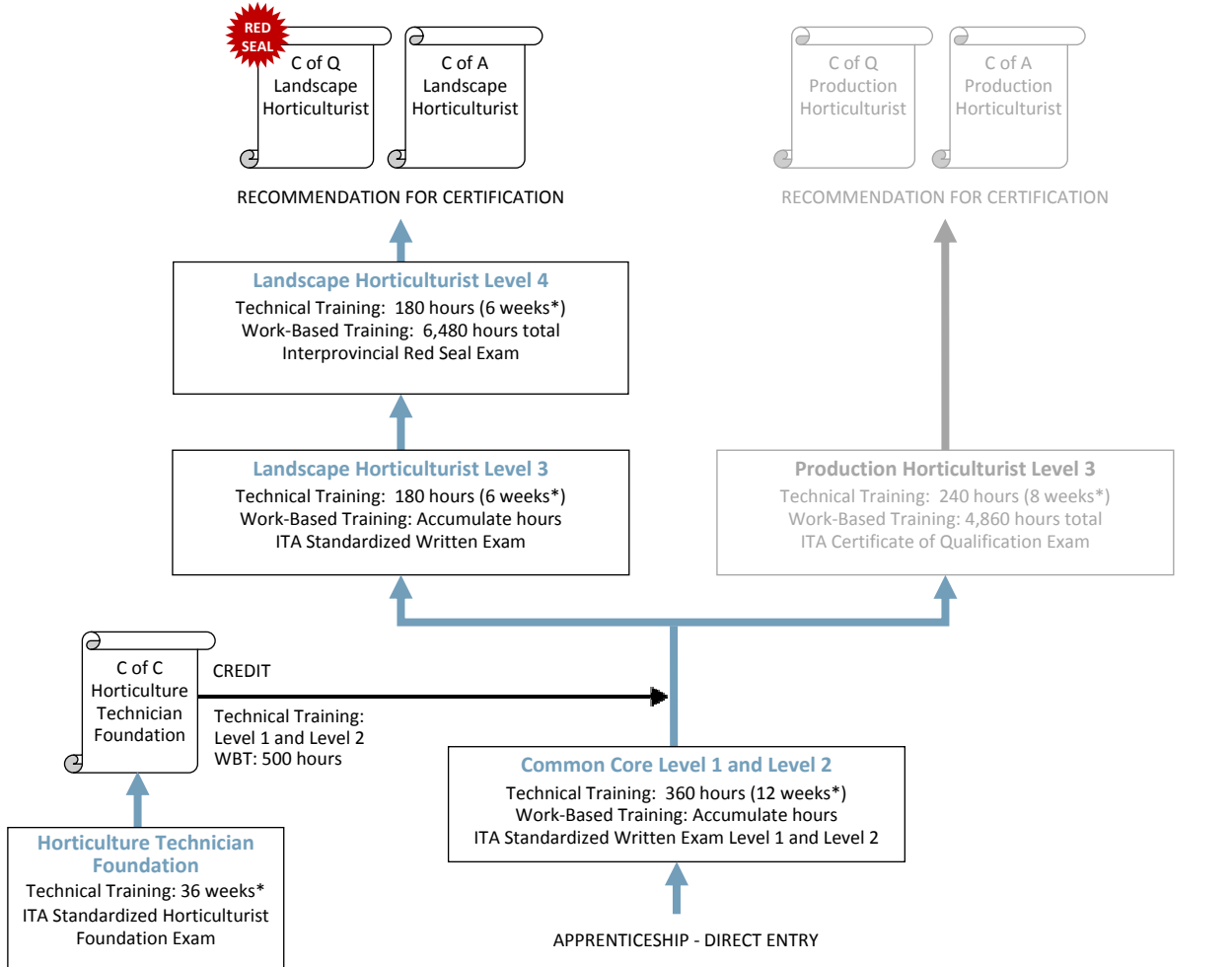
Landscape Horticulturist



Program Credentialing Model

Apprenticeship Pathway

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

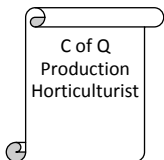


C of Q = Certificate of Qualification
 C of A = Certificate of Apprenticeship
 C of C = Certificate of Completion
 WBT = Work-Based Training

*Suggested duration based on 30-hour week

CROSS-PROGRAM CREDITS

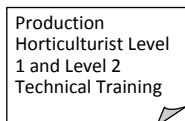
Individuals who hold the credentials listed below are entitled to receive partial credit toward the completion requirements of this program



Technical Training: Level 1 and Level 2
 Work-Based Training: 3,240 hours



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



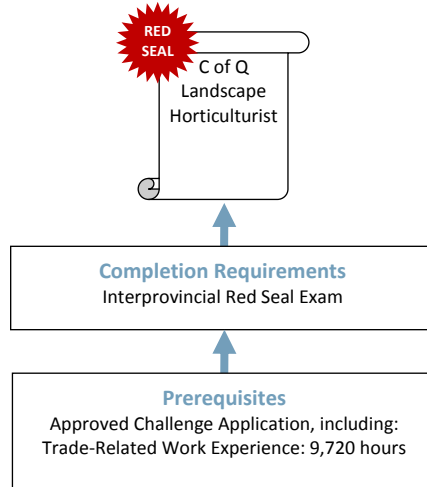
Technical Training: Level 1 and Level 2
 Work-Based Training: None



Challenge Pathway

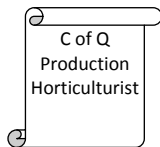
This graphic provides an overview of the Landscape Horticulturist challenge pathway.

C of Q = Certificate of Qualification



CROSS-PROGRAM CREDITS

Individuals who hold the credentials listed below are entitled to receive the following credits toward WBT for challenging this program



Work Experience: 3,240 hours

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

Work Experience: 1,000 hours



Occupational Analysis Chart

LANDSCAPE HORTICULTURIST

Occupation Description: "Landscape Horticulturist" means a person who selects, handles and utilizes trees, shrubs and ornamental plants and turf grass for the design, development and maintenance of public and private landscaping spaces. Prepares soil, plants, cultivates, prunes and irrigates to maintain plant vigor. Controls plant pests utilizing appropriate integrated pest management techniques.

USES OCCUPATIONAL SKILLS A	Use personal protective equipment (PPE) A1	Identify fire types and extinguishing methods A2	Use WHMIS A3	Recognize work hazards A4	Demonstrate basic horticultural skills A5	Identify relevant legislation, regulations and standards A6
	1 2	1	1	1	1 2	1
USES AND MAINTAINS TOOLS AND EQUIPMENT B	Use and maintain hand tools and power tools B1	Use and maintain measuring equipment B2	Operate vehicles and motorized equipment B3	Maintain vehicles and motorized equipment B4	Use and maintain equipment attachments B5	Transport equipment B6
	1 2 3 4	1	1 2	1 2	2	3 4
ORGANIZES WORK C	Perform site assessments C1	Use documentation and reference material C2	Maintain records C3	Comply with policies and regulations C4	Plan daily tasks C5	Communicate with others C6
	3	3	3	3	3	1 2
	Order plants and materials C7	Transport materials C8	Organize plants, materials and equipment C9	Maintain safe work environment C10	Examine interpersonal and supervisory skills C11	
	4	3	2	1 2	1 2	
PARTICIPATES IN MARKETING AND SALES D	Control inventory D1	Sell product and services D2	Maintain customer relations D3	Prepare estimates for basic landscape installation projects D4		
	3	4	4	4		



Program Overview

ANALYZES AND MAINTAINS PLANT HEALTH E	Identify plants and plant requirements E1 1 2 3 4	Manage growing conditions E2 2	Manage pests and diseases E3 1 2 3 4	Describe plant science as it applies to horticulture E4 1 2	Describe physical and biological characteristics of soil and soilless media E5 1	Describe chemical characteristics of soil and soilless media E6 2
	Assess landscape sites with respect to soils E7 3					
PERFORMS PRE-CONSTRUCTION ACTIVITIES F	Interpret landscape plans F1 3	Participate in job planning activities F2 3	Prepare site F3 3	Examine the principles of garden design and participate in basic landscape design activities F4 4		
	INSTALLS SOFTSCAPE G					
INSTALLS SOFTSCAPE G	Install erosion control materials G1 4	Install growing media G2 4	Describe installation of interior landscape plants G3 4	Install turf from seed G4 4	Install exterior landscape plants G5 4	Install sod G6 4
	Install mulch G7 4					
INSTALLS HARDSCAPE H	Install drainage systems H1 3	Install landscape structures H2 3	Install walkway, patio, driveway and parking lot materials H3 3	Install steps and retaining walls H4 3	Install irrigation systems H5 3	Install water features H6 3
	Install low voltage landscape lighting H7 3					



MAINTAINS SOFTSCAPE I	Maintain growing media I1	Maintain and schedule maintenance activities for grass/turf I2	Maintain interior softscape I3	Maintain exterior softscape I4	Demonstrate basic pruning of trees, shrubs, groundcovers and vines I5	Describe cultural management of trees, shrubs, groundcovers and vines I6																													
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MAINTAINS HARDSCAPE J	Maintain drainage system J1	Maintain walkways, patios, driveways and parking lots J2	Maintain irrigation systems J3	Maintain landscape lighting J4	Maintain water features J5	Maintain steps and retaining walls J6																													
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Training Topics and Suggested Time Allocation

Landscape Horticulturist – Level 1

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line A	USES OCCUPATIONAL SKILLS	15%	75%	25%	100%
A1	Use personal protective equipment (PPE)		✓	✓	
A2	Identify fire types and extinguishing methods		✓	✓	
A3	Use WHMIS		✓		
A4	Recognize work hazards		✓	✓	
A5	Demonstrate basic horticultural skills		✓	✓	
A6	Identify relevant legislation, regulations and standards		✓		
Line B	USES AND MAINTAINS TOOLS AND EQUIPMENT	25%	40%	60%	100%
B1	Use and maintain hand tools and power tools		✓	✓	
B2	Use and maintain measuring equipment		✓	✓	
B3	Operate vehicles and motorized equipment		✓	✓	
B4	Maintain vehicles and motorized equipment		✓	✓	
Line C	ORGANIZES WORK	10%	80%	20%	100%
C6	Communicate with others		✓	✓	
C10	Maintain safe work environment		✓	✓	
C11	Examine interpersonal and supervisory skills		✓	✓	
Line E	ANALYZES AND MAINTAINS PLANT HEALTH	50%	50%	50%	100%
E1	Identify plants and plant requirements		✓	✓	
E3	Manage pests and diseases		✓	✓	
E4	Describe plant science as it applies to horticulture		✓	✓	
E5	Describe physical and biological characteristics of soil and soilless media		✓	✓	
Total Percentage for Landscape Horticulturist Level 1		100%			



Training Topics and Suggested Time Allocation

Landscape Horticulturist – Level 2

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line A	USES OCCUPATIONAL SKILLS	10%	25%	75%	100%
A1	Use personal protective equipment (PPE)		✓	✓	
A5	Demonstrate basic horticultural skills		✓	✓	
Line B	USES AND MAINTAINS TOOLS AND EQUIPMENT	20%	40%	60%	100%
B1	Use and maintain hand tools and power tools		✓	✓	
B3	Operate vehicles and motorized equipment		✓	✓	
B4	Maintain vehicles and motorized equipment		✓	✓	
B5	Use and maintain equipment attachments		✓	✓	
Line C	ORGANIZES WORK	20%	50%	50%	100%
C6	Communicate with others		✓	✓	
C9	Organize plants, materials and equipment		✓	✓	
C10	Maintain safe work environment		✓	✓	
C11	Examine interpersonal and supervisory skills		✓	✓	
Line E	ANALYZES AND MAINTAINS PLANT HEALTH	50%	60%	40%	100%
E1	Identify plants and plant requirements		✓	✓	
E2	Manage growing conditions		✓	✓	
E3	Manage pests and diseases		✓	✓	
E4	Describe plant science as it applies to horticulture		✓	✓	
E6	Describe chemical characteristics of soil and soilless media		✓	✓	
Total Percentage for Landscape Horticulturist Level 2		100%			



Training Topics and Suggested Time Allocation

Landscape Horticulturist – Level 3

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line B	USES AND MAINTAINS TOOLS AND EQUIPMENT	5%	10%	90%	100%
B1	Use and maintain hand tools and power tools		✓	✓	
B6	Transport equipment		✓	✓	
Line C	ORGANIZES WORK	10%	50%	50%	100%
C1	Perform site assessments		✓	✓	
C2	Use documentation and reference material		✓	✓	
C3	Maintain records		✓	✓	
C4	Comply with policies and regulations		✓	✓	
C5	Plan daily tasks		✓	✓	
C8	Transport materials		✓	✓	
Line D	PARTICIPATES IN MARKETING AND SALES	1%	90%	10%	100%
D1	Control inventory		✓	✓	
Line E	ANALYZES AND MAINTAINS PLANT HEALTH	24%	40%	60%	100%
E1	Identify plants and plant requirements		✓	✓	
E3	Manage pests and diseases		✓	✓	
E7	Assess landscape sites with respect to soils		✓	✓	
Line F	PERFORMS PRE-CONSTRUCTION ACTIVITIES	10%	25%	75%	100%
F1	Interpret landscape plans		✓	✓	
F2	Participate in job planning activities		✓	✓	
F3	Prepare site		✓	✓	
Line H	INSTALLS HARDSCAPE	30%	25%	75%	100%
H1	Install drainage systems		✓	✓	
H2	Install landscape structures		✓	✓	
H3	Install walkway, patio, driveway and parking lot materials		✓	✓	
H4	Install steps and retaining walls		✓	✓	
H5	Install irrigation systems		✓	✓	
H6	Install water features		✓	✓	
H7	Install low voltage landscape lighting		✓	✓	
Line I	MAINTAINS SOFTSCAPE	15%	25%	75%	100%
I5	Demonstrate basic pruning of trees, shrubs, groundcovers and vines		✓	✓	



% of Time Allocated to:

		% of Time	Theory	Practical	Total
Line J	MAINTAINS HARDSCAPE	5%	25%	75%	100%
J1	Maintain drainage systems		✓	✓	
J2	Maintain walkways, patios, driveways and parking lots		✓	✓	
J3	Maintain irrigation systems		✓	✓	
J4	Maintain landscape lighting		✓	✓	
J5	Maintain water features		✓	✓	
J6	Maintain steps and retaining walls		✓	✓	
J7	Maintain landscape structures		✓	✓	
		100%			



Training Topics and Suggested Time Allocation

Landscape Horticulturist – Level 4

		% of Time Allocated to:			
		% of Time	Theory	Practical	Total
Line B	USES AND MAINTAINS TOOLS AND EQUIPMENT	5%	10%	90%	100%
B1	Use and maintain hand tools and power tools		✓	✓	
B6	Transport equipment		✓	✓	
Line C	ORGANIZES WORK	1%	50%	50%	100%
C7	Order plants and materials		✓	✓	
Line D	PARTICIPATES IN MARKETING AND SALES	10%	50%	50%	100%
D2	Sell product and services		✓	✓	
D3	Maintain customer relations		✓	✓	
D4	Prepare estimates for basic landscape installation projects		✓	✓	
Line E	ANALYZES AND MAINTAINS PLANT HEALTH	20%	25%	75%	100%
E1	Identify plants and plant requirements		✓	✓	
E3	Manage pests and diseases		✓	✓	
Line F	PERFORMS PRE-CONSTRUCTION ACTIVITIES	10%	75%	25%	100%
F4	Examine the principles of garden design and participate in basic landscape design activities		✓	✓	
Line G	INSTALLS SOFTSCAPE	30%	25%	75%	100%
G1	Install erosion control materials		✓	✓	
G2	Install growing media		✓	✓	
G3	Describe installation of interior landscape plants		✓	✓	
G4	Install turf from seed		✓	✓	
G5	Install exterior landscape plants		✓	✓	
G6	Install sod		✓	✓	
G7	Install mulch		✓	✓	
Line I	MAINTAINS SOFTSCAPES	24%	25%	75%	100%
I1	Maintain growing media		✓	✓	
I2	Maintain and schedule maintenance activities for grass/turf		✓	✓	
I3	Maintain interior softscape		✓	✓	
I4	Maintain exterior softscape		✓	✓	
I6	Describe cultural management of trees, shrubs, groundcovers and vines		✓	✓	
Total Percentage for Landscape Horticulturist Level 4		100%			



Section 3

PROGRAM CONTENT

Landscape Horticulturist



Level 1

Landscape Horticulturist



Line (GAC): **A** **USES OCCUPATIONAL SKILLS**
Competency: **A1** **Use personal protective equipment (PPE)**

Objectives

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

- Describe and demonstrate personal safety in the workplace.
- Demonstrate proper use of PPE.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Select and use PPE as required for task, tools, equipment, machinery and environment 2. Ensure safe use of PPE 3. Store PPE to maintain its integrity 4. Check PPE prior to use 5. Check PPE inventory 6. Recognize damaged and expired PPE 7. Check and replace PPE components | <ul style="list-style-type: none"> • Ear protection • Eye protection • Hand protection • Foot protection • Safety vests • Respiratory protection • Fall protection • Inspect • Maintain • Dry area • Protected area • Operation • Condition • Ensuring there is a ready supply • Check expiration date • Ensure integrity of PPE • According to manufacturers' specification • According to workplace requirements |
|--|--|

Achievement Criteria

- Performance** The learner will select PPE for specified tasks.
- Conditions** The learner will be given the appropriate 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



Line (GAC): **A USES OCCUPATIONAL SKILLS**
Competency: **A2 Identify fire types and extinguishing methods**

Objectives

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

- Identify various types and classes of fires.
- Describe the procedure for using a fire extinguisher.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Describe conditions necessary to support a fire
 2. Describe classes of fires according to the materials being burned
 3. Describe the procedure for using a fire extinguisher | <ul style="list-style-type: none"> • Air • Fuel • Heat • Chemical chain reaction • Weather conditions
 • Class A • Class B • Class C • Class D • Symbols and colours
 • Extinguisher selection • P.A.S.S. <ul style="list-style-type: none"> ○ Pull ○ Aim ○ Squeeze ○ Sweep |
|---|--|



Line (GAC): **A** **USES OCCUPATIONAL SKILLS**
Competency: **A3** **Use WHMIS**

Objectives

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

- Summarize Workplace Hazardous Material Information System (WHMIS).
- Complete the online WHMIS certification.

LEARNING TASKS

1. Describe WHMIS requirements

CONTENT

- WHMIS certification
- WHMIS symbols
 - Compressed gas
 - Flammable and combustible material
 - Oxidizing Material
 - Poisonous and Infectious Material
 - Poisonous and Infectious Material that will cause immediate or serious toxic effects
 - Poisonous and Infectious Material that will cause other toxic effects
 - Corrosive material
 - Dangerously reactive material
- WHMIS labels

NOTE: WHMIS certification is mandatory to complete Level One.



Line (GAC): **A USES OCCUPATIONAL SKILLS**
Competency: **A4 Recognize work hazards**

Objectives

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

- Identify workplace hazards.
- Identify how to mitigate the risk of workplace accidents and injuries.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <p>1. Identify workplace hazards and potential risks</p> | <ul style="list-style-type: none"> • Electrical and utility • Working at heights • Gravitational (“slips, trips and falls”) • Thermal (heat and cold stress) • Motorized equipment/mechanical (pinch point, “struck against”, vehicle) • Public • Behavioural (fatigue, rushing, complacency, stress, substance abuse, ignorance, frustration) • Chemical • Compressed gas • Environmental (insects, plants, weather) • Hazardous trees |
| <p>2. Identify how to mitigate the risks of workplace accidents and injuries</p> | <ul style="list-style-type: none"> • Visual assessments • Safe work plan • Post-job inspection |



Line (GAC): **A** **USES OCCUPATIONAL SKILLS**
Competency: **A5** **Demonstrate basic horticultural skills**

Objectives

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

- Practice basic skills used in general horticulture.
- Use safe work habits.
- Identify, select, use and maintain appropriate hand tools for the task.
- Practice safe operation of common power equipment.
- Identify levels of landscape maintenance and plant standards stated in the BC Landscape Standard.

LEARNING TASKS

1. Demonstrate basic horticultural skills

CONTENT

- Range of workplace hazards
 - Hazards versus risks
- Hand tools used in basic horticulture
 - Refer to Level One *B1- Use and maintain hand tools and power tools*
- BC Landscape Standard
 - Objectives of the BC Landscape Standard
 - Guide to use
 - Format of the BC Landscape Standard
 - Scope of sections
- Basic horticultural tasks
 - Maintenance
 - Determining maintenance levels
 - Appropriate maintenance procedures
 - Common landscape maintenance tasks and tools
- Operating horticulture power equipment safely and efficiently
 - Refer to Level One *B1- Use and maintain hand tools and power tools*
- Safe work practices when lifting and bending
- Basic calculations
 - Landscape calculations
 - Calculating quantities: fertilizer application rates
 - Conversions
- Cooperative work methods

**Achievement Criteria**

Performance The learner will maintain beds, borders, lawns, nurseries, and containers on campus.

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

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

- Performed tasks in a safe manner
- Used tools and equipment safely and correctly
- Performed tasks in a logical sequence



Line (GAC): **A USES OCCUPATIONAL SKILLS**
Competency: **A6 Identify relevant legislation, regulations and standards**

Objectives

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

- Describe and apply relevant legislation and regulations to activities that impact onsite activities.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Identify applicable federal legislation and regulations 2. Identify applicable provincial legislation and regulations 3. Identify applicable local regulations 4. Examine applicable regulations 5. Examine relevant WorkSafeBC procedures | <ul style="list-style-type: none"> • Where to find standards • How specific federal requirements apply to horticulture activities • How specific provincial requirements apply to horticulture activities • How specific local requirements apply to horticulture activities • Applying regulations, standards, and procedures to the job • Applying WorkSafeBC accident and near miss reporting procedures • Applying accident investigation requirements |
|---|---|



Line (GAC): B USES AND MAINTAINS TOOLS AND EQUIPMENT

Competency: B1 Use and maintain hand tools and power tools

Objectives

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

- Describe safe use and maintenance of hand and power tools.

LEARNING TASKS

1. Identify hand and power tools for basic horticultural tasks
2. Describe hand tool maintenance
3. Describe power tool maintenance

CONTENT

- (See the list of *Tools and Equipment* for Level One, detailed in the *Training Provider Standards* of this Program Outline)
- Cleaning and disinfecting hand tools to ensure proper operation and to prevent transfer of contaminants
- Lubricating hand tools such as secateurs and shears
- Checking tools regularly for damage, excessive wear and proper operation
- Storing hand tools for organization, safety and security
- Sharpening hand tools such as secateurs, shears and shovels
- Replacing components in tools such as secateurs and loppers due to damage and wear
- Lubricating power tools according to manufacturers' specifications
- Adjusting power tools such as chain saws, mowers and power washers
- Checking tools for wear, damage and malfunction
- Following recommended maintenance schedule according to manufacturers' specifications
- Checking fluid levels and air pressure
- Greasing nipples on motorized equipment
- Sharpening and balancing mower blades
- Sharpening tools such as chainsaws and power edgers according to manufacturers' specification
- Disinfecting tools to prevent cross-contamination from site to site
- Storing power tools for organization and security



Line (GAC): **B USES AND MAINTAINS TOOLS AND EQUIPMENT**
Competency: **B2 Use and maintain measuring equipment**

Objectives

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

- Safely use and maintain measuring equipment.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Select and use appropriate measuring equipment for the task
 2. Maintain measuring equipment | <ul style="list-style-type: none"> • (see the list of <i>Measuring Equipment</i> for Level One, detailed in the <i>Training Provider Standards</i> of this Program Outline)
 • Cleaning and disinfecting measuring equipment to ensure proper operation and to prevent transfer of contaminants • Calibrating measuring equipment such as thermometers, pH meters, levels and EC meters • Checking and replacing batteries on measuring equipment • Checking tools for damage, excessive wear and proper operation • Storing measuring equipment for organization, safety and security |
|---|---|

Achievement Criteria

- Performance** The learner will calibrate measuring equipment.
- Conditions** The learner will be given thermometers, pH meters, levels and EC meters.
- Criteria** The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Calibrated to manufacturers' specifications



Line (GAC): **B USES AND MAINTAINS TOOLS AND EQUIPMENT**
Competency: **B3 Operate vehicles and motorized equipment**

Objectives

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

- Identify engine designs and functions of motorized equipment.
- Apply safe work practices as related to motorized horticulture equipment.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Identify engine components of motorized equipment engines
 2. Demonstrate personal safety in the workplace
 3. Demonstrate safe operating procedures for motorized horticulture equipment such as starting, stopping and adjusting | <ul style="list-style-type: none"> • Differences between a two-stroke, four-stroke, and hybrid four-stroke engines • Carburetor • Ignition system • Starter components • Piston • Compression
 • Safety procedures • Use of PPE
 • String trimmers • Lawnmowers • Backpack blowers |
|---|---|

Achievement Criteria

- Performance** The learner will start, stop and adjust power equipment.
- Conditions** The learner will be given string trimmers, lawnmowers and backpack blowers.
- Criteria** The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Started, stopped and adjusted power equipment to manufacturers' specifications



Line (GAC): **B USES AND MAINTAINS TOOLS AND EQUIPMENT**
Competency: **B4 Maintain vehicles and motorized equipment**

Objectives

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

- Maintain motorized equipment.
- Apply safe work practices as related to motorized horticulture equipment.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| 1. Use hand tools to maintain horticulture equipment | <ul style="list-style-type: none"> • Sockets and wrenches • Ignition tester • Tachometer • Torque wrench • Feeler gauges |
| 2. Perform and document circle check of vehicles and motorized equipment | <ul style="list-style-type: none"> • Lights • Plates • Brakes |
| 3. Inspect equipment | <ul style="list-style-type: none"> • Inspect visually for: <ul style="list-style-type: none"> ○ Damage and wear • Lock-out and tag-out as necessary • Inspect equipment to ensure efficient functioning |
| 4. Check position of safety features as applicable | <ul style="list-style-type: none"> • Lock-out devices • Chutes • Trimmer and belt guards • Operator presence switches |
| 5. Check and replace fluids according to manufacturers' specifications | <ul style="list-style-type: none"> • Oil • Coolant • Hydraulic fluids |
| 6. Check and replace components | <ul style="list-style-type: none"> • Spark plugs • Belts • Pull cords |
| 7. Check and adjust air pressure in components | <ul style="list-style-type: none"> • Tires • Air compressors |
| 8. Check and tighten components | <ul style="list-style-type: none"> • Loose connections • Loose fittings |



LEARNING TASKS

- 9. Check cutting height and adjust

- 10. Apply preventive maintenance procedures

CONTENT

- According to client expectations
- Turf needs

- Equipment maintenance
 - Clean fuel
 - Clean air
 - Clean lubricating oil
- Maintenance schedule
- Maintain a lawn mower or edger: Every three months or 50 hours
 - Change engine oil
 - Replace or service air filter
 - Sharpen blade
 - Check spark plug
 - Check and adjust controls and drive mechanisms
 - Lube controls and drive mechanisms
 - Clean cooling fins
 - Tighten bolts
- Maintain a hedge or string trimmer
- Mixing gas and oil

Achievement Criteria

Performance The learner will service motorized equipment (at the instructor's discretion).

Conditions The learner will be given any of the motorized equipment listed:

- Lawn mower
- Edger
- Dethatcher
- Rototiller
- String trimmer
- Hedger
- Chainsaw
- Backpack blower
- Aerator

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

- Inspected power equipment to manufacturers' specifications
- Checked position of safety features to manufacturers' specifications
- Checked and replaced fluids according to manufacturers' specifications
- Cleaned and/or replaced air and oil filters to manufacturers' specifications
- Cleaned and/or replaced spark plugs to manufacturers' specifications
- Adjusted carburetor, if required, to manufacturers' specifications



Line (GAC): **C ORGANIZES WORK**
Competency: **C10 Maintain safe work environment**

Objectives

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

- Assess site hazards and apply appropriate safety procedures.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Assess site hazards
 2. Identify PPE and safety equipment
 3. Maintain worksite to avoid injuries to self and others | <ul style="list-style-type: none"> • High voltage • Motorized equipment • Working at heights
 • For task
 • Clean • Tidy |
|---|--|



Line (GAC): **C ORGANIZES WORK**
Competency: **C11 Examine interpersonal and supervisory skills**

Objectives

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

- Describe the basic interpersonal and supervisory skills based on time stress management, ethics, communication, power and teams.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Manage time
 2. Explain stress management
 3. Recognize ethical and social responsibility issues in the work place
 4. Communicate effectively
 5. Describe conflict management
 6. Examine the concept of power in an organization | <ul style="list-style-type: none"> • Role of the supervisor • Ability to effectively manage personal and work time
 • Individual • Organizational • How organizations can help manage stress
 • Ethical and social consequences of work place practices <ul style="list-style-type: none"> ○ Personal experience ○ Religious beliefs impact personal ethics ○ Culture affects ethical norms ○ Internal reflection ○ Organizational ethics ○ Legal responsibilities ○ BC Acts
 • Identifying and using verbal and non-verbal communication techniques (review Level One C6 – <i>Communicate with others</i>)
 • Defining conflict • Sources of conflict • Basic styles for managing conflict • Conflict management strategies • Guidelines of managing interpersonal conflict
 • Recognizing power structure in the organization and how power is applied within the organization |
|--|--|



LEARNING TASKS

7. Describe characteristics of an effective team

CONTENT

- Characteristics of a high performing crew/team
- Recognizing ineffective work crews
- Supervisory role



Line (GAC): E **ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: E1 **Identify plants and plant requirements**

Objectives

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

- Identify a wide range of plants, morphological characteristics, growing requirements, use and availability.

LEARNING TASKS

1. Recognize a range of plant materials commonly used in commercial horticulture
2. Employ correct naming and plant identification terminology
3. Name the plant family for each plant identified

CONTENT

- Life cycle of a plant
- Plant growth patterns
 - Annuals
 - Biennials
 - Perennials
 - Herbaceous perennials
 - Woody perennials
- Deciduous and evergreen plants
 - Deciduous plants
 - Evergreens
 - Broadleaf evergreens
 - Coniferous evergreens
- Climbing plants
 - Stems specialized for climbing
 - Monocarpic plants
- Origin of plant naming systems
 - Common names
 - Nomenclature
 - Binomial system for naming plants
 - Plant taxonomy
 - Writing botanical names
- Plant families
- Plant families commonly found in British Columbia
 - ASTERACEAE – Aster Family
 - CARYOPHYLLACEAE – Pink Family
 - ERICACEAE – Heath Family
 - LAMIACEAE – Mint Family
 - LILIACEAE – Lily Family
 - RANUNCULACEAE – Buttercup Family
 - ROSACEAE – Rose Family
 - SAPINDACEAE – Soapberry Family



LEARNING TASKS

CONTENT

- | | |
|---|--|
| <p>4. Recognize and describe bud, bark, foliage, flower and fruit characteristics</p> | <ul style="list-style-type: none"> • 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 |
| <p>5. Use a dichotomous key for plant identification</p> | <ul style="list-style-type: none"> • Limitations of plant keys • Conifer key • Deciduous key |
| <p>6. Identify and describe 50 woody and non-woody plants.</p> | <ul style="list-style-type: none"> • Using botanical terms • According to its cultural and maintenance requirements |



Line (GAC): E **ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: E3 **Manage pests and diseases**

Objectives

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

- Identify signs and symptoms of living and non-living factors that cause plant stress.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Define plant stress 2. Describe conditions that lead to plant stress | <ul style="list-style-type: none"> • Causes and symptoms • Abiotic factors <ul style="list-style-type: none"> ○ Light temperature ○ Humidity ○ Air ○ Water supply ○ Mechanical damage ○ Nutrition ○ Other common symptoms of abiotic plant stress • Distinguishing between biotic and abiotic causes of plant stress • Biotic plant stress <ul style="list-style-type: none"> ○ Common indicators • Biotic plant stress factors <ul style="list-style-type: none"> ○ Common plant insect indicators ○ Common plant disease indicators • Susceptibility to biotic stress factors (insects and diseases) • Potential stress-inducing environmental conditions |
| <ol style="list-style-type: none"> 3. Categorize plant pest types and broadly associate the symptoms of biotic plant stress with type of plant | <ul style="list-style-type: none"> • Major plant pest types including: <ul style="list-style-type: none"> ○ Plant feeding pests ○ Plant feeding animals ○ Diseases ○ Weeds • Damage caused by various pests |
| <ol style="list-style-type: none"> 4. Describe the life stages of example pests | <ul style="list-style-type: none"> • Lifecycle of typical pests • Disease lifecycles |
| <ol style="list-style-type: none"> 5. Describe basic arthropod morphology and identify typical examples of arthropod to order | <ul style="list-style-type: none"> • Basic arthropod morphology • Eight orders of insects |



LEARNING TASKS

6. Identify the four types of plant-pathogens

7. Describe the characteristics that make plants weeds

8. Describe established methods for controlling pests (IPM)

CONTENT

- Categories of pathogens:
 - Fungi
 - Bacteria
 - Viruses
 - Nematodes

- Defining weeds
 - Competition
 - Common characteristics
- Classification of weeds by life histories
 - Annuals
 - Biennials
 - Herbaceous perennials
 - Woody perennials

- Integrated Pest Management (IPM)
- Six steps of IPM
 - Prevention
 - Identification
 - Monitoring
 - Thresholds
 - Treatments
 - Evaluation
- Establishing methods for controlling pests
 - Cultural
 - Biological
 - Chemical



Line (GAC): E ANALYZES AND MAINTAINS PLANT HEALTH
Competency: E4 Describe plant science as it applies to horticulture

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

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Describe the external parts of herbaceous and woody stems 2. Describe the parts of a leaf and variations in shape 3. Describe parts of the flower 4. Identify typical inflorescences 5. Identify typical fruit 6. Describe stages in the life cycle of a flowering plant 7. Describe parts of a seed and seedling | <ul style="list-style-type: none"> • Plant identification using features of a stem <ul style="list-style-type: none"> ○ Woody and herbaceous stems • Parts of a simple leaf • Leaf shapes • Leaf tips • Leaf margins • Leaf surfaces • Pattern of veins within the leaf blade • Simple and compound leaves • Flower structure <ul style="list-style-type: none"> ○ Complete and incomplete flowers ○ Perfect vs. imperfect flowers ○ Monoecious vs. dioecious plants ○ Flower symmetry • Inflorescence types • Placing fruit types <ul style="list-style-type: none"> ○ Fleshy fruits ○ Dry fruits • Dehiscent and indehiscent fruits • Reproduction • Monocot seed development • Dicot seed development • Dicot seedling development • Monocot seedling development |
|--|---|

**LEARNING TASKS**

8. Identify stem, root, and leaf modifications

9. Identify plant adaptations to environmental effects

10. Describe basic growth responses to plant hormones

CONTENT

- Roots
 - Root systems
 - Specialized underground storage structures

- Plant adaptations
- Stem modifications for protection
- Stems specialized for colonizing

- Response to hormones
 - Auxins
 - Gibberellins (GA)
 - Cytokinins
 - Ethylene
 - Abscisic acid (ABA)



Line (GAC): E **ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: E5 **Describe physical and biological characteristics of soil and soilless media**

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.
- Examine soil formation, the physical and biological properties of soils, and soilless media as they relate to use, soil quality, and plant growth.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| 1. Define soil | <ul style="list-style-type: none"> • Soil • Soil formation • Parent material • Biotic – living organisms • Topography • Time |
| 2. Define soil quality | <ul style="list-style-type: none"> • Soil quality and the importance of soil quality, relative to plant growth and environmental sustainability |
| 3. Describe a soil profile | <ul style="list-style-type: none"> • Soil profiles <ul style="list-style-type: none"> ○ LFH horizon ○ A horizon ○ B horizon ○ C horizon |
| 4. Explain the physical properties of soil and soilless medias | <ul style="list-style-type: none"> • Texture • Structure • Density • Porosity • Soil compaction • Soil structure and plant growth • Soilless media |
| 5. Describe the behaviour of water in soil | <ul style="list-style-type: none"> • Water in soils • Soil water holding capacity • Available water • Water movement through soil • Wetting front • Hydrolic conductivity of a soil |



LEARNING TASKS

6. Examine the key soil biological processes and their effects on plant growth and soil quality

7. Explain the role of organic matter in soil

8. Describe composting methods

CONTENT

- Water retention and flow in layered soils
- Water movement in urban soils
- Managing soils in the urban landscape

- Biological process in soil
- Plants
- Soil animals
- Other organisms
- Role of soil organisms in soil quality
- Promoting beneficial soil organisms

- Basic composition of soil organic matter
- Key roles of soil organic matter relative to soil chemical and physical behaviour

- Composting processes
- Aerobic vs. anaerobic microorganisms
- Food web of the compost pile
- Use of compost



Level 2

Landscape Horticulturist



Line (GAC): **A USES OCCUPATIONAL SKILLS**
Competency: **A1 Use personal protective equipment (PPE)**

Objectives

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

- Describe and demonstrate personal safety in the workplace.
- Demonstrate proper use of PPE.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Review personal protective requirements (as per Level One A1 – <i>Use personal protective equipment</i>)
 2. Examine chemical handling requirements | <ul style="list-style-type: none"> • Selecting and using PPE as required for task, tools, equipment, machinery and environment • Ensuring the safe use of PPE • Storing PPE • Checking PPE prior to use • Checking PPE inventory • Recognizing damaged and expired PPE • Checking and replacing PPE components
 • Goggles • Rubber gloves • Face shields • Chemical protection suits |
|--|--|



Line (GAC): **A** **USES OCCUPATIONAL SKILLS**
Competency: **A5** **Demonstrate basic horticultural skills**

Objectives

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

- Assess plant quality.
- Demonstrate plant-handling requirements.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Perform plant-grading according to the Canadian Standard for Nursery Stock and British Columbia Landscape Standard 2. Identify containers used for growing and shipping ornamental plant material 3. Describe standards for root ball sizing 4. Prepare balled and burlapped plants 5. Securely load plant material 6. Prepare plant materials | <ul style="list-style-type: none"> • Assessing and grading plants according to standards for plant: • Foliage density <ul style="list-style-type: none"> ○ Caliper ○ Height ○ Width ratios • Calculating container volume and comparing results to the standards • Calculating root ball sizes for: <ul style="list-style-type: none"> ○ Containers ○ Field grown stock • Rootballs: <ul style="list-style-type: none"> ○ Digging ○ Wrapping ○ Tying • Safely and efficiently lifting and carrying plant material to avoid physical damage to self and plants • Methods of harvesting plant material for field grown stock • Safety • Loading • Unloading • Securing plant material to a truck • Removal of containers • Scarifying root ball |
|--|---|



LEARNING TASKS

- 7. Demonstrate proper planting procedures for bare root stocks

- 8. Operate truck and trailer

CONTENT

- Appropriate depth and width of the planting hole
- Placing the plant in hole and back filling with appropriate material
- Appropriate post-planting maintenance requirements
- Appropriate storage of dormant and non-dormant plant material
- Appropriate storage onsite

- Safety
- Coupling the truck/tractor and trailer
- Operating either combination in reverse
- Securely parking the vehicle
- Compliance to guidelines established in Certified Horticulture Technician Program (CHT)



Line (GAC): **B USES AND MAINTAINS TOOLS AND EQUIPMENT**
Competency: **B1 Use and maintain hand tools and power tools**

Objectives

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

- Demonstrate safe use and maintenance of hand tools.
- Demonstrate safe use and maintenance of power tools.

LEARNING TASKS

1. Identify hand and power tools for basic horticultural tasks for Level Two technical training
2. Demonstrate hand tool maintenance
3. Demonstrate power tool maintenance

CONTENT

- (see the list of *Tools and Equipment* for Level Two, detailed in the *Training Provider Standards* of this Program Outline)
- Review Level One *B1 - Use and maintain hand tools and power tools.*
- Review Level One *B1 - Use and maintain hand tools and power tools.*



Line (GAC): B USES AND MAINTAINS TOOLS AND EQUIPMENT

Competency: B3 Operate vehicles and motorized equipment

Objectives

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

- Examine vehicle and motorized equipment designs and functions.
- Operate and apply safe work practices as related to horticulture task requirements.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <p>1. Identify horticulture vehicle and motorized equipment engine components and function</p> | <ul style="list-style-type: none"> • Differences between gas and diesel engines • Carburetor • Alternator • Radiator • Piston • Compression |
| <p>2. Describe and demonstrate personal safety as related to large multiple cylinder equipment</p> | <ul style="list-style-type: none"> • Safe lifting and moving techniques • Entry onto and exit from machinery using the three point contact • Appropriate personal protective equipment • Work place hazards and mitigation of the risk of accident and injury • General shop safety |
| <p>3. Describe and demonstrate safe operating procedures for horticulture equipment</p> | <ul style="list-style-type: none"> • General points for safe tractor operation • Tractor precautions: <ul style="list-style-type: none"> ○ Starting, speed and slopes ○ Hitch attachments ○ Transfer of tractors and equipment ○ Tractor transfer warnings • Operating a skid steer loader and zero turn walk behind machine • Power take-off precautions • Connecting attachments |

Achievement Criteria

- Performance** The learner will safely operate a vehicle.
- Conditions** The learner will be given a skid steer and specified attachments (e.g., bucket, forks).
- Criteria** The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Performed a circle check
 - Used three point contact when entering and exiting
 - Hooked up appropriate attachments
 - Started and maneuvered machine and attachments safely



Line (GAC): **B USES AND MAINTAINS TOOLS AND EQUIPMENT**
Competency: **B4 Maintain vehicles and motorized equipment**

Objectives

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

- Perform basic maintenance on larger multiple cylinder engines and equipment as applied to horticulture.
- Apply safe work practices as related to horticulture equipment.

LEARNING TASKS

CONTENT

<p>1. Use hand tools to maintain horticulture equipment</p>	<ul style="list-style-type: none"> • Sockets and wrenches • Ignition tester • Multimeter • Battery charger • Tire gauge • Hydrometer
<p>2. Practice preventive maintenance and troubleshooting procedures</p>	<ul style="list-style-type: none"> • Tune up equipment • Diagnose work or defective parts
<p>3. Perform and document circle check of vehicles and motorized equipment</p>	<ul style="list-style-type: none"> • Lights • Plates • Brakes
<p>4. Inspect equipment</p>	<ul style="list-style-type: none"> • Inspecting visually for: <ul style="list-style-type: none"> ○ Damage and wear ○ Lock out and tag out as necessary • Inspecting equipment to ensure efficient functioning
<p>5. Check position of safety features</p>	<ul style="list-style-type: none"> • Lockout devices • Chutes • Trimmer and belt guards • Rollover protection devices (ROP) • Operator presence switches
<p>6. Check and replace fluids according to manufacturers' specifications</p>	<ul style="list-style-type: none"> • Oil • Coolant • Hydraulic fluids
<p>7. Check and replace components</p>	<ul style="list-style-type: none"> • Spark plugs • Belts • Pull cords



LEARNING TASKS

CONTENT

- | | |
|--|--|
| 8. Check and adjust air pressure in components | <ul style="list-style-type: none"> • Tires • Air compressors |
| 9. Check and tighten components | <ul style="list-style-type: none"> • Loose connections • Loose fittings |
| 10. Check cutting height and adjust components | <ul style="list-style-type: none"> • According to client expectations • Turf needs |
| 11. Develop a preventive maintenance plan | <ul style="list-style-type: none"> • Performing preventive maintenance every 3 months or 50 hours <ul style="list-style-type: none"> ○ Checking engine oil ○ Changing engine oil ○ Checking air filter ○ Oil-bathing air filter ○ Greasing fittings ○ Checking hydraulic oil ○ Checking tire pressures ○ Testing coolant ○ Checking belts ○ Checking hoses |

Achievement Criteria

Performance The learner will practice preventive maintenance on vehicles and motorized equipment.

- Conditions** The learner will be given:
- Skid steer loader
 - Gear tractor
 - 3 - reel turf mower
 - Gas powered utility vehicle (Gator)
 - Electric powered utility vehicle

Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria and in accordance with manufacturers' specifications:

- Checked engine oil
- Changed engine oil
- Checked air filter
- Oil-bathed air filter
- Greased fittings
- Checked hydraulic oil
- Checked tire pressures
- Tested coolant
- Checked belts
- Checked hoses



Line (GAC): **B USES AND MAINTAINS TOOLS AND EQUIPMENT**
Competency: **B5 Use and maintain equipment attachments**

Objectives

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

- Safely use equipment attachments for the appropriate task.
- Maintain equipment attachments.

LEARNING TASKS

1. Identify, select and use the appropriate equipment attachments for the task

2. Maintain equipment attachments

CONTENT

- (see the list of *Equipment Attachments* for Level Two, detailed in the *Training Provider Standards* of this Program Outline)

- Greasing fittings on equipment such as trailers, aerators and cultivators
- Inspecting attachments for damage and wear and lock-out and tag-out as necessary
- Adjusting attachments for parking, travel and operation
- Checking hydraulic fluids to ensure optimum and safe operation of equipment
- Cleaning and disinfecting attachments such as drop spreaders, sprayers and mowers
- Replacing damaged and worn components such as bushings, blades and tines
- Performing a circle check of equipment attachments to check for items such as lights, plates and brakes
- Checking operation of safety brake pin on trailers

**Achievement Criteria**

Performance	The learner will inspect and service equipment.
Conditions	The learner will be given equipment such as trailers, aerators and rototillers.
Criteria	<p>The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:</p> <ul style="list-style-type: none">• Greased fittings on equipment• Inspected attachments for damage and wear and locked-out and tagged-out as necessary• Adjusted attachments for parking, travel and operation• Checked hydraulic fluids to ensure optimum and safe operation of equipment• Cleaned and disinfected attachments such as drop spreaders, sprayers and mowers• Replaced damaged and worn components such as bushings, blades and tines • Performed a circle check of equipment attachments to check for items such as lights, plates and brakes• Checked operation of safety brake pin on trailers



Line (GAC): **C** **ORGANIZES WORK**
Competency: **C6** **Communicate with others**

Objectives

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

- Effectively communicate trade related information to various people.
- Use a variety of communication techniques such as hand signals, communication equipment, and communication skills.

LEARNING TASKS

1. Use communication skills

2. Use communication equipment

3. Use universal hand signals to communicate visually

CONTENT

- Mentoring apprentices
- Ensuring co-workers understand instructions using methods such as
 - Mirroring
 - Repeating back
- Practicing active listening skills
- Reporting discrepancies and seeking direction from supervisor

- Two-way radios
- Computers
- Cell phones

- Communicating with
 - Machine operators
 - Truckers
 - Crane operators
- WorkSafeBC requirements



Line (GAC): C **ORGANIZES WORK**
Competency: C9 **Organize plants, materials and equipment**

Objectives

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

- Inspect and verify plants, materials and equipment.
- Receive, unload, record, protect and store plants, materials and equipment.
- Lay out plants on site.
- Perform final checks of plants, materials and equipment.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Inspect and verify plants and materials | <ul style="list-style-type: none"> • Accuracy • Quality • Quantity |
| <ol style="list-style-type: none"> 2. Remove and inspect monitoring devices when necessary | <ul style="list-style-type: none"> • Temperature recorders • Environmental recorders |
| <ol style="list-style-type: none"> 3. Receive, unload, record and protect materials and products in an organized fashion | <ul style="list-style-type: none"> • Plant materials <ul style="list-style-type: none"> ○ Group/match plants by size and species ○ Place received products in designated areas to maintain product quality • Other materials <ul style="list-style-type: none"> ○ Wood chips ○ Soil ○ Aggregates ○ Store in designated areas to avoid contamination • Products <ul style="list-style-type: none"> ○ Soils ○ Seed ○ Plugs ○ Roots ○ Labels ○ Containers |
| <ol style="list-style-type: none"> 4. Allocate specified storage areas for equipment and hazardous materials | <ul style="list-style-type: none"> • Equipment • Hazardous materials |
| <ol style="list-style-type: none"> 5. Lay out plants on site | <ul style="list-style-type: none"> • According to landscape plans |



LEARNING TASKS

- 6. Perform final check onsite

- 7. Process substandard materials

CONTENT

- Required
 - Plants
 - Materials
 - Equipment

- Quarantine
- Reject
- Dispose of

Achievement Criteria

- Performance** The learner will organize plant materials and equipment onsite.
- Conditions** The learner will be given the appropriate plants, materials and equipment to handle a range of ornamental plant material.
- Criteria** The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Sourced and selected plants
 - Laid out plants according to landscape plans
 - Performed final check
 - Processed substandard materials



Line (GAC): **C ORGANIZES WORK**
Competency: **C10 Maintain safe work environment**

Objectives

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

- Assess site hazards and follow specified safety procedures.

LEARNING TASKS

CONTENT

1. Coordinate task with other workers	<ul style="list-style-type: none"> • Avoiding injury to <ul style="list-style-type: none"> ○ Self ○ Co-workers ○ Others
2. Follow safety procedures when working in high traffic areas	<ul style="list-style-type: none"> • Flagging • Pylons • Signage
3. Handle hazardous materials in accordance with government regulations and WHMIS procedures	<ul style="list-style-type: none"> • Disposing • Labelling • Using PPE
4. Participate in safety meetings and discussion	<ul style="list-style-type: none"> • Ensuring that information is recorded and distributed to all team members
5. Report unsafe conditions to supervisor	<ul style="list-style-type: none"> • Recognizing • Reporting
6. Recognize safety warning signals	<ul style="list-style-type: none"> • Back-up signals • Back-up alarms • Warning lights
7. Contain and dispose of spill contaminants	<ul style="list-style-type: none"> • According to regulations
8. Coordinate with other agencies	<ul style="list-style-type: none"> • Private and public line locators • Emergency response teams



Line (GAC): **C ORGANIZES WORK**
Competency: **C11 Examine interpersonal and supervisory skills**

Objectives

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

- Demonstrate supervisory skills based on leadership, motivation, and delegation.
- Describe safety management and managing in a diverse workplace.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Describe leadership in the organization
 2. Describe leadership skills
 3. Describe safety culture
 4. Describe managing a diverse workplace
 5. Interpret the employment standards | <ul style="list-style-type: none"> • Definition of leadership • Role of leaders • Characteristics of leaders
 • Motivational theories • Delegation learning • Skills needed for effective delegation • Setting goals for effective delegation and employee commitment • Team management: coaching and training
 • Role of WorkSafeBC • Safety culture in the workplace
 • Managing diversity <ul style="list-style-type: none"> ○ Characteristics of culture ○ Elements of cultural difference ○ Cultural orientation • Legal Requirements <ul style="list-style-type: none"> ○ Canadian Charter of Rights And Freedoms ○ Canadian Human Rights Act of 1985 ○ BC Human Rights Code • Enforcement of Human Rights
 • Impacts of the Employment Standards Act on horticultural operations |
|--|---|



Line (GAC): E **ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: E1 **Identify plants and plant requirements**

Objectives

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

- Identify plants used in all segments of horticulture.
- Identify plants suitable for planting in difficult situations.

LEARNING TASKS

1. Recognize a range of plant materials commonly used in commercial horticulture

2. Explain plant hardiness zones

3. Recognize plants suitable for planting in difficult situations

CONTENT

- Natural habitat
 - Alpine plants
 - Woodland understory plants
 - Mediterranean plants
 - Bog plants
 - Native plants
- Plant use characteristics
 - Bedding plants
 - Cut flowers
 - Trees and shrubs
 - Groundcovers
 - Climbers
- Characteristics of individual plants and plant groups
- Plant size
- Texture
- Plant form

- Plant hardiness zones
- Relationship between plant health and hardiness zones

- Provenance
- Difficult planting conditions
 - Sunny arid conditions
 - Shade
 - Dry shade
 - Dry soil conditions
 - Wetlands
 - Compacted soils
 - Slopes



LEARNING TASKS

4. Identify weeds and invasive plants

5. Recognize and describe bud, bark, foliage, flower, and fruit characteristics

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

CONTENT

- Introduction of aliens
- Characteristics of invasive and weed plants

- Bud characteristics such as
 - Morphology
 - Type (vegetative or flower)
 - Arrangement
- Bark characteristics such as
 - Furrowed
 - Smooth
 - Plate-like
 - Others
- 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): E ANALYZES AND MAINTAINS PLANT HEALTH
Competency: E2 Manage growing conditions

Objectives

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

- Describe managing a variety of growing conditions.

LEARNING TASKS

1. Describe managing growing conditions as applicable to interior and exterior horticulture operations

CONTENT

- Determining exposure to conditions such as
 - Light
 - Wind
 - Heating
 - Ventilation
 - Air conditioning (HVAC) systems
 - Moisture
 - Reflective heat load based on location
- Using light meters for measuring light level for interior plants
- Collecting growing media samples using core samplers
- Checking growing media samples manually or by lab analysis for
 - Texture
 - Drainage
 - pH
 - Nutrients
 - Contaminants
- Determining air quality that might affect interior and exterior plants
- Taking corrective measures such as
 - Fertilization
 - Liming
 - Adding organics
 - Neutralizing water
 - Correcting drainage



Line (GAC): E **ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: E3 **Manage pests and diseases**

Objectives

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

- Examine biological characteristics of weeds, plant feeders and pathogens.
- List control strategies.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <p>1. Describe and distinguish between the major plant pest types</p> | <ul style="list-style-type: none"> • Weeds as pests • Invertebrates as pests • Vertebrates as pests • Pathogens as pests |
| <p>2. Describe characteristics that make plants weeds</p> | <ul style="list-style-type: none"> • Review what is a weed • Weeds as competitors • Weed classification • Hidden effects of weeds • Seeds of weedy plants |
| <p>3. Describe characteristics that make vertebrates pests</p> | <ul style="list-style-type: none"> • Wildlife management • Vertebrate plant-feeding pests <ul style="list-style-type: none"> ○ Birds ○ Deer ○ Rodents |
| <p>4. Describe characteristics that make invertebrates pests</p> | <ul style="list-style-type: none"> • Pest ecology • Insect pest success • Common invertebrate pests <ul style="list-style-type: none"> ○ Aphids ○ Leafhoppers ○ Scales ○ Weevils and beetles ○ Caterpillars and moths ○ Lacebugs ○ Sawflies ○ Thrips ○ Mites ○ Fungus gnats ○ Leaf miners ○ Slugs and snails |



LEARNING TASKS

5. Describe the characteristics that make pathogens pests

6. Describe the principles of cultural control methods as applied to horticultural plant pests

7. Describe the principles of biological control methods as applied to horticultural plant pests

8. Describe the principles of chemical control methods as applied to horticultural plant pests

9. Describe the integrated strategies and tactics for control of viruses

10. Describe integrated strategies and tactics for the control of bacteria

CONTENT

- Pathogen success
- The disease triangle
- The disease cycle
- Common diseases
 - Diseases caused by bacteria
 - Fungal diseases
 - Diseases caused by nematodes
 - Diseases caused by viruses

- Cultural methods of controlling weeds
 - Organic mulches
 - Non-organic mulches
 - Weed control in established plantings
- Cultural control of plant feeding pests
- Cultural control of pathogens

- Biological control of weeds
- Biological control of plant-feeding pests
- Beneficial organisms
- Biological agents
- Biological control of pathogens

- Chemical control of plant pests
 - Pesticides
- Chemical control of weeds
 - Herbicides
- Chemical control of plant feeding pests
 - Horticultural oil
 - Botanicals
 - Inorganics
 - Insecticidal soaps
 - Synthetic pesticides (organic)

- Integrated control strategies for common plant viral diseases
- Methods for the exclusion and eradication of plant pest vectors
- Management of virus-infected plants

- Biological control
- Cultural control method



LEARNING TASKS

CONTENT

- | | |
|---|---|
| <p>11. Describe integrated strategies and tactics for the control of fungi</p> <p>12. Describe the integrated strategies and tactics for the control of plant-feeding pests</p> | <ul style="list-style-type: none"> • Biological control • Cultural control • General prevention
 • Biological control • Cultural control • Plant-feeding pests • Invertebrates • Nematodes (invertebrates) • Arthropod plant feeding pest (invertebrates) • Vertebrate plant feeding pests and control |
|---|---|



Line (GAC): E **ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: E4 **Describe plant science as it applies to horticulture**

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 internal anatomy of stems, roots, and leaves

2. Describe plant part anatomy

3. Describe the movement of sap through a plant and the effects of environment on the rate of flow

4. Describe the flow of sugars, produced in photosynthesis, through the plant

CONTENT

- The plant cell
- Cell types, tissues, and their functions
- Primary growth
- Secondary growth

- Stems
 - Herbaceous stems
 - Woody stems
 - Bark
- Roots
 - Root apical meristems
 - Root cap
 - Epidermis
 - Cortex
 - Endodermis
 - Pericycle
 - Vascular tissue
 - Adventitious roots
 - Secondary growth
- Leaves
 - Anatomy of a leaf

- Water movement
 - Diffusion
 - Osmosis
 - Capillary attraction
 - Active transport

- Photosynthesis
 - Chlorophyll
 - Translocation for sugars
 - Respiration



LEARNING TASKS

5. Explain the influence of temperature, water availability, and light on the rates of photosynthesis and respiration

6. Describe the growth response to external stimuli

CONTENT

- Influence of environmental factors
- Effect of light, carbon dioxide availability, water, and nutrient availability on the rate of photosynthesis
- Environmental effects on the plant growth
- Effect of temperature on plant development
- Effect of water stress on plant growth

- Photoperiod and flower production
 - Photoperiod
 - Tropisms and plant growth



Line (GAC): E **ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: E6 **Describe chemical characteristics of soil and soilless media**

Objectives

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

- Examine soil and soil management in horticulture.
- Examine the chemical properties of soil and soilless media (soil reaction, soil salinity, soil fertility).
- Sample soils.

LEARNING TASKS

CONTENT

<ol style="list-style-type: none"> 1. Describe how soil colloids determine soil chemical properties 2. Behaviour of nutrients in soil 3. Acquisition of nutrients by plants 4. Measure soil reaction (pH) 5. Manage soil reaction 6. Explain how soil reaction (pH) relates to soil fertility 7. Measure and manage salinity and sodicity 8. Describe soil salinity and sodicity and impact on soil properties 	<ul style="list-style-type: none"> • Soil colloids • Soil pH and colloidal material • Cations and plant roots • Mineral nutrients • Primary macronutrients • Secondary macronutrients • Micronutrients • Nutrient uptake • The nitrogen cycle • Root absorption • Define pH • Testing soil for pH • Adjusting the pH of soil • Buffering capacity • Plant growth and pH tolerance <ul style="list-style-type: none"> ○ Importance of pH to plant growth ○ Phosphorus ○ Pathogens and pH • Salinity in soils • Measurement of salinity and sodicity • Measurement of electrical conductivity • Sodic soils • Impact of salinity and sodicity on soil physical and chemical characteristics
--	---



LEARNING TASKS

9. Discuss nutrient management

10. Sample soils

11. Interpret soil test information

12. Interpret fertilizer label information

CONTENT

- Nutrient management
 - Slow-release fertilizers
 - Water soluble fertilizers
- Field stock and landscape fertilizer management
- Turf fertilizer management
- Organic fertilizers and amendments
- Inorganic fertilizers

- Soil testing
 - Collecting soil samples in field crops and on landscape sites
 - Procedures of soilless media samples
- Limitations of soil nutrient analysis

- Interpreting basic soil test results
- Calculate fertilizer application rates

- Classifications of fertilizers
- Fertilizer labeling

Achievement Criteria

Performance	The apprentice will examine soil samples and identify chemical properties.
Conditions	The learner will be given soil samples and testing equipment.
Criteria	<p>The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:</p> <ul style="list-style-type: none"> • Performed sodic and salinity analysis • Performed pH analysis • Performed nutrient management analysis



Level 3

Landscape Horticulturist



Line (GAC): **B** **USES AND MAINTAINS TOOLS AND EQUIPMENT**
Competency: **B1** **Use and maintain hand tools and power tools**

Objectives

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

- Demonstrate safe use and maintenance of hand tools.
- Demonstrate safe use and maintenance of power tools.

LEARNING TASKS

1. Identify hand and power tools for basic horticultural tasks for Level Three technical training
2. Demonstrate hand tool maintenance
3. Demonstrate power tool maintenance

CONTENT

- (see the list of *Tools and Equipment* for Level Three, detailed in the *Training Provider Standards* of this Program Outline)
- Review Level One *B1 - Use and maintain hand tools and power tools.*
- Review Level One *B1 - Use and maintain hand tools and power tools.*



Line (GAC): **B USES AND MAINTAINS TOOLS AND EQUIPMENT**
Competency: **B6 Transport equipment**

Objectives

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

- Load equipment and attachments safely, according the authorities having jurisdiction.
- Unload equipment and attachments safely, according the authorities having jurisdiction.

LEARNING TASKS

CONTENT

1. Load equipment and attachments

2. Unload equipment and attachments

- Selecting trailer type according to
 - Equipment restrictions
 - Weight restrictions
- Securing loads according to jurisdictional requirements
 - Including all equipment attachments
- Tying flags to back end of trailers to indicate extended load according to regulations
- Placing traffic cones and blocks when loading and unloading trailer

- Determine the best location for unloading equipment and attachments
 - Level ground
 - Close to work area
- Placing traffic cones and blocks when loading and unloading trailer



Line (GAC): **C** **ORGANIZES WORK**
Competency: **C1** **Perform site assessments**

Objectives

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

- Conduct site assessment as per industry standard practices.
- Identify and mark public and private utilities.
- Perform soil analysis and identify existing plants.
- Plan for construction activities.

EARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Assess access points 2. Perform visual inspection 3. Identify markings for public and private utilities 4. Mark locations of private utilities 5. Perform soil tests 6. Identify existing plants 7. Identify construction activity requirements | <ul style="list-style-type: none"> • Access points to identify <ul style="list-style-type: none"> ○ Site restrictions ○ Challenges for work • Visual inspection of <ul style="list-style-type: none"> ○ Site ○ Neighbouring properties • BC One Call <ul style="list-style-type: none"> ○ Cable ○ Natural gas ○ Power ○ Telephone • Irrigation lines • Drainage systems • Landscape lighting components • Locate septic components if necessary • Percolation • Core sampling • Ribbon tests • Health • Vigour • Maintenance practices • Areas to be marked for excavating and/or protecting • Grading and drainage patterns • Security requirements |
|--|---|

**Achievement Criteria**

- Performance The learner will identify existing plants and perform soil tests.
- Conditions The learner will be directed to a specified site on campus and provided with the necessary equipment for select soil tests.
- Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Identified existing plants for
 - Health
 - Vigour
 - Maintenance practices
 - Performed percolation and ribbon tests on soil



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

Objectives

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

- Use documentation and reference materials to plan and organize work activities.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Locate documentation and reference materials 2. Interpret documentation 3. Refer to WHMIS for procedures for hazardous materials 4. Use catalogues 5. Use field books for referencing 6. Use text books and interpret in-depth information | <ul style="list-style-type: none"> • Required documentation for task • Plans • Specifications • Site locates • Product instructions • Storage • Usage • Clean up • Plant identification • Comparing products among suppliers • Ordering <ul style="list-style-type: none"> ○ Tools ○ Equipment ○ Plant materials • Identifying <ul style="list-style-type: none"> ○ Pests ○ Diseases ○ Methods of control • Plant materials • Pests • Diseases |
|--|---|

**Achievement Criteria**

- Performance The learner will use documentation and reference materials to plan and organize work activities.
- Conditions The learner will be given a case study and reference material (to be determined by the instructor).
- Criteria The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Selected appropriate research documents to identify
 - Plants
 - Tools
 - Equipment
 - Price comparisons
 - Identification of hazardous materials
 - Evaluated the quality of the research documents



Line (GAC): **C ORGANIZES WORK**
Competency: **C3 Maintain records**

Objectives

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

- Read, record, complete, maintain and provide input for records as required on the job.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Complete safety records
 2. Complete work records
 3. Complete tool and equipment records
 4. Provide input
 5. Maintain records as required
 6. Read and record data | <ul style="list-style-type: none"> • Accident reports • Safety meeting sheets • According to regulations <ul style="list-style-type: none"> ○ Governmental ○ Industry ○ Company
 • Work orders • Daily time sheets • Change orders • Site assessment records
 • Sign-out records • Training sign-off sheets
 • Safety inspection reports • Employee evaluations
 • Integrated pest management (IPM) • Plant health programs
 • Test results • Monitoring devices |
|--|--|



Line (GAC): **C** **ORGANIZES WORK**
Competency: **C4** **Comply with policies and regulations**

Objectives

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

- Describe and demonstrate knowledge of current policies and regulations that pertain to the horticultural industry and the authorities having jurisdiction.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Review and comply with current governmental and company policies 2. Enforce safety regulations 3. Comply with governmental, company and environmental agencies 4. Contact authorities 5. Contact public and private locators 6. Verify personal licensing and certification | <ul style="list-style-type: none"> • Transportation • Pest control • Conservation of water • Habitat preservation • Control of spraying • WorkSafeBC requirements <ul style="list-style-type: none"> ○ PPE usage ○ Usage of tools and equipment ○ Handling and storage of equipment • Department of Fisheries and Oceans (DFO) • Canadian Food Inspection Agency (CFIA) • Environment Canada • Provincial, regional and municipal agencies • For information • To report incidents and occurrences • Locate utility lines (BC One Call) • Other services • Up to date • Current |
|---|---|



Line (GAC): C **ORGANIZES WORK**
Competency: C5 **Plan daily tasks**

Objectives

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

- Demonstrate the ability to plan and execute daily tasks.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Organize for daily tasks 2. Prioritize and sequence tasks 3. Delegate tasks to team members 4. Modify daily tasks according to challenges 5. Refer to other information to assist in daily planning | <ul style="list-style-type: none"> • Labour • Materials • Equipment • Time management • Efficient performance • Utilize individual strengths • Site hazards • Weather • Lack of materials • Competing projects • Historical information • Previous plans |
|--|--|

Achievement Criteria

- Performance** The learner will demonstrate the ability to plan and execute daily tasks.
- Conditions** The learner will be given a case study and related historical information.
- Criteria** The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria
- Organized daily tasks
 - Prioritized and sequenced tasks
 - Delegated tasks to team members
 - Modified daily tasks according to challenges



Line (GAC): C **ORGANIZES WORK**
Competency: C8 **Transport materials**

Objectives

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

- Plan and prepare for the transportation of materials.
- Load materials according to standard practices.
- Transport materials according to governing requirements, policies and regulations.

LEARNING TASKS

CONTENT

1. Protect plant materials	<ul style="list-style-type: none"> • Tarps • Anti-desiccants
2. Secure materials	<ul style="list-style-type: none"> • Approved tie-downs
3. Load/unload materials using tools and equipment	<ul style="list-style-type: none"> • Dollies • Forklifts
4. Load materials to allow for optimal transport and unloading	<ul style="list-style-type: none"> • Sequence • Direction
5. Check that loose materials are secure and loaded in a manner to prevent spillage	<ul style="list-style-type: none"> • Wood chips • Soil • Aggregates
6. Cover materials according to policies and regulations	<ul style="list-style-type: none"> • Governmental • Company
7. Load and transport materials according to regulations and requirements	<ul style="list-style-type: none"> • Weight restriction regulations • Load distribution requirements
8. Perform and document circle checks	<ul style="list-style-type: none"> • Vehicle • Towed equipment



Line (GAC): **D** **PARTICIPATES IN MARKETING AND SALES**
Competency: **D1** **Control inventory**

Objectives

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

- Control inventory as per company policies and procedures.

LEARNING TASKS

1. Control inventory

CONTENT

- Varying methodology within each company dependent on the type of work performed
 - Often performed by owner/operator or accounting department
- Identifying and counting inventory
 - Manual
 - Electronic systems
- Maintaining inventory records
- Identifying and sorting materials
- Identifying restock orders



Line (GAC): E **ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: E1 **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.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <p>1. Identify plants and plant requirements</p> | <ul style="list-style-type: none"> • Review of Level One and Level Two E1 competency <ul style="list-style-type: none"> ○ Range of plant materials commonly used in commercial horticulture ○ Correct naming and plant identification terminology ○ Plant families ○ Using a dichotomous key for plant identification ○ Plant hardiness zones ○ Plants suitable for planting in difficult situations ○ Identifying weeds and invasive plants ○ Recognizing bud, bark, foliage, flower, and fruit characteristics |
| <p>2. Recognize plants suitable for common tropical, floral and interior landscape situations</p> | <ul style="list-style-type: none"> • Interior landscaping • House plants • Floral uses such as cut flowers |
| <p>3. Identify and describe 90 woody and non-woody plants</p> | <ul style="list-style-type: none"> • Using botanical terms • According to its cultural and maintenance requirements |



LEARNING TASKS

CONTENT

5. Describe IPM for weeds in landscapes

- Evaluation
- Prevention
- Identification
- Monitoring
- Action thresholds
- Treatments
- Evaluation

6. Describe IPM for other pests in landscapes

- Wildlife management
- Control and management of deer
- Controlling moles in turf areas
- Controlling snails and slugs

Achievement Criteria

Performance The learner will develop an IPM program outline.

Conditions The learner will be given IPM program outline headings and reference resources.

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

- Scope of the IPM program should have included a significant problem for a landscape, greenhouse, nursery, and be reasonable in complexity for this project (determined by the instructor)
- Site of the IPM program as described in Section 1 of IPM proposal
- Major pests have been selected, and types of damage and control measures listed
- Potential control methods including physical, cultural, chemical, and biological methods have been listed



Line (GAC): **E ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: **E7 Assess landscape sites with respect to soils**

Objectives

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

- Assess landscapes sites with respect to soils.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Assess landscape site soils
 2. Examine soil compaction and drainage
 3. Examine soil erosion
 4. Examine the impact of fill, cut, and grading on soils and site hydrology
 5. Examine site grading and slopes
 6. Examine site protection | <ul style="list-style-type: none"> • Soil quality concepts • Soil or growing media depth • Soil sampling and testing for quality • Collecting soil samples for nutrient, chemical, and textural analysis on landscape sites • Soil samples for soil layering • Environmental conditions • Construction impact or change in site conditions
 • Soil layering or horizons • Soil compaction <ul style="list-style-type: none"> ○ Measuring soil compaction • Impact of compaction on soil permeability and drainage • Impact of soil layers on water movement
 • Soil erosion • Environmental conditions • Construction impact or change in site conditions
 • Cut and fill projects <ul style="list-style-type: none"> ○ Impact of fill ○ Impact of cut • Other causes of bank failure
 • Site grading
 • Soil compaction protection • Erosion protection <ul style="list-style-type: none"> ○ Hydroseeding ○ Erosion control mats ○ Silt fencing |
|---|---|



LEARNING TASKS

CONTENT

7. Examine site remediation

- Remediation of soil compaction
- Remediation of drainage and soil infiltration issues
 - Subsurface drainage
 - Mounded plant beds
 - Raised plant beds
 - Subsoil sculpturing

8. Examine specialty growing media

- Green roofs
- Container planters
- Athletic fields



Line (GAC): F **PERFORMS PRE-CONSTRUCTION ACTIVITIES**
Competency: F1 **Interpret landscape plans**

Objectives

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

- Interpret plans, scales and symbols as they relate to pre-construction activities.
- Interpret project specifications as they relate to pre-construction activities.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Interpret specified scale 2. Interpret symbols to determine the scope of work 3. Interpret project specifications 4. Identify stakeholders for future inquiries | <ul style="list-style-type: none"> • Site layout • Job planning activities • Property lines • Grades • Elevations • Hardscape and softscape elements • Planting plan • Softscape and hardscape details • Property owners • Designers • Engineers |
|---|---|



Line (GAC): F PERFORMS PRE-CONSTRUCTION ACTIVITIES
Competency: F2 Participate in job planning activities

Objectives

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

- Participate in job planning activities.

LEARNING TASKS

1. Participate in job planning activities

CONTENT

- Identifying labour expertise
- Determining production hours
- Reviewing safety plan to ensure safe completion of the project
- Verifying term of project and determining sequence of job to ensure project is completed according to plan and budget
- Verifying materials and procedures to meet project specifications
- Planning onsite staging
 - Environmental protection
 - Vehicle parking
 - Storage
 - Portable office and toilets
- Locating private and public utilities to ensure safe completion of project
- Identifying and scheduling sub-contractors to fulfill scope of work
- Identifying and scheduling tools, equipment and attachments to ensure availability



Line (GAC): F PERFORMS PRE-CONSTRUCTION ACTIVITIES
Competency: F3 Prepare site

Objectives

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

- Plan and prepare the site according to plans and specifications.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <p>1. Select and use hand tools</p> | <ul style="list-style-type: none"> • Tools <ul style="list-style-type: none"> ○ Levels ○ Builder’s Level ○ Transits ○ Hammers ○ Others |
| <p>2. Select and use equipment</p> | <ul style="list-style-type: none"> • Equipment <ul style="list-style-type: none"> ○ Skid steers ○ Loaders ○ Excavators ○ Others |
| <p>3. Identify and communicate discrepancies</p> | <ul style="list-style-type: none"> • Plans • Site conditions |
| <p>4. Preserve existing hardscape and softscape elements according to plans and specifications</p> | <ul style="list-style-type: none"> • Elements <ul style="list-style-type: none"> ○ Trees ○ Decks ○ Others |
| <p>5. Remove unwanted materials</p> | <ul style="list-style-type: none"> • Hazards • Debris |
| <p>6. Create access</p> | <ul style="list-style-type: none"> • Ensure site <ul style="list-style-type: none"> ○ Efficiency ○ Security |
| <p>7. Identify markings to avoid personal injury and damage to utilities</p> | <ul style="list-style-type: none"> • Utility hazards <ul style="list-style-type: none"> ○ Underground ○ Overhead |
| <p>8. Locate and cordon off areas to minimize environmental impact</p> | <ul style="list-style-type: none"> • Environmental considerations |



LEARNING TASKS

CONTENT

- | | |
|---|---|
| 9. Install environmental mitigation mechanism | <ul style="list-style-type: none"> • Environmental mitigation mechanisms <ul style="list-style-type: none"> ○ Filters ○ Silt fencing ○ Storm sewer guards ○ Others |
| 10. Lay out site | <ul style="list-style-type: none"> • Marking and staking locations of hardscape and softscape elements to be installed |
| 11. Establish grade to ensure positive drainage | <ul style="list-style-type: none"> • Plans • Specifications |
| 12. Strip and stockpile topsoil and cut/fill material | <ul style="list-style-type: none"> • Establish rough grade according to <ul style="list-style-type: none"> ○ Plans ○ Specifications |
| 13. Excavate growing media and place service conduits to support sub-trade activities | <ul style="list-style-type: none"> • Sub-trade activities <ul style="list-style-type: none"> ○ Installing drainage systems ○ Installing irrigation systems ○ Laying fibre optics ○ Others |
| 14. Verify site is prepared and ready for the next phase | <ul style="list-style-type: none"> • According to specifications |

Achievement Criteria

- Performance** The learner will prepare a site.
- Conditions** The learner will be given a set of plans, and appropriate tools and equipment.
- Criteria** The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:
- Selected and used the appropriate hand tools and equipment
 - Identified and communicated discrepancies
 - Preserved existing hardscape and softscape elements according to plans and specifications
 - Identified markings to avoid personal injury and damage to utilities
 - Located and cordoned off areas to minimize environmental impact
 - Installed environmental mitigation mechanism
 - Laid out site
 - Verified site was prepared and ready for the next phase



Line (GAC): **H INSTALLS HARDSCAPE**
Competency: **H1 Install drainage systems**

Objectives

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

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

LEARNING TASKS

1. Select and use tools

2. Select and use equipment

3. Examine drainage terminology and theory

CONTENT

- Tools
 - Shovels
 - Picks
 - Wheelbarrows
 - Others

- Equipment
 - Excavators
 - Trenchers
 - Skid steers
 - Others

- Water and drainage
- Hydrolic cycle
- Precipitation
 - Rain
 - Snow
- Runoff
 - Overland flow
 - Sub-surface flow
 - Saturated overland flow
- Impacts of urbanization runoff
 - Horticulture solutions to urban runoff
- Soils
 - Soil profile and texture
 - Soil permeability
 - Compaction
 - Perched water tables
- Benefits of good drainage
 - Plant health
 - Root development
 - Nutrient uptake
 - Plant tolerance
 - Pathogenic organisms



LEARNING TASKS

4. Examine surface and substrate drainage system components and function

5. Examine drainage system planning and design considerations

6. Prepare for drainage system installation

CONTENT

- Over drained soils
- General water table changes

- Drainage systems
- Surface drainage system components
 - Storm drains
 - Manholes
 - Drain outlets
 - Retention/detention pools
 - Rain gardens
- Subsurface drainage system components
 - Pipes
 - Pipe envelope fabrics
 - Blind inlets

- Drainage plan
 - Developing a drainage plan
- Drainage system capacity
- Subsurface drainage planning
 - Drain depth and spacing
 - Drain diameter
 - Grades for drains
 - Installation of sub-surface drains
- Surface drainage planning
 - Land grading
- Recommended slopes for various soils and conditions
- Limiting velocities
- Minimization of soil structural damage during grading operations
- Open channels, ditches and swales

- Subsurface drainage installation
 - Design drawing
 - Performing installation
 - Critical aspects of all sub-surface drain installation
- Determining site slopes and drainage grades
 - Survey instruments
- How to use a log book
- Booking procedures
- Establishing elevations



LEARNING TASKS

7. Install drainage system

CONTENT

- Moving specified drainage system materials into desired location
- Laying out and assembling drainage components
- Verifying drainage system operation
- Backfilling drainage system with specified materials to finish grade
- Verifying installation meets specifications and is ready for next phase

Achievement Criteria 1

Performance The learner will install a sub-surface drainage system (install a drain pipe, filter and fabric, in an excavated trench).

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
- Drain installed at proper grade
- Correct size drain and type of rock used
- Drain rock placed to correct depth
- Filter fabric properly installed

Achievement Criteria 2

Performance The learner will use appropriate survey instruments to shoot in grade stakes and develop a grading plan:

- Set up a builder's level on a tripod
- Shot elevations at intervals given by the instructor
- Recorded elevations in log book

Conditions The learner will be given:

- Builder's level
- Tripod
- Metric rod
- Metric chain
- Log book
- Grade stakes

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

- Proper set up of equipment
- Accurate measurement of distance intervals
- Accurate measurement of elevations
- Accurate plotting of elevations
- Setup and marked grade stakes



Line (GAC): **H INSTALLS HARDSCAPE**
Competency: **H2 Install landscape structures**

Objectives

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

- Install landscape structures using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <p>1. Select and use tools</p> | <ul style="list-style-type: none"> • Tools <ul style="list-style-type: none"> ○ Power saws ○ Power drills ○ Hammers ○ Brooms ○ Water and power blowers ○ Others |
| <p>2. Select and use equipment</p> | <ul style="list-style-type: none"> • Equipment <ul style="list-style-type: none"> ○ Excavators ○ Skid steers and attachments ○ Others |
| <p>3. Prepare for the installation of landscape structures</p> | <ul style="list-style-type: none"> • Laying out and marking construction area • Excavating as required • Preparing foundation suitable for structure installation |
| <p>4. Install landscape structures</p> | <ul style="list-style-type: none"> • Constructing specified structures <ul style="list-style-type: none"> ○ Decks ○ Pergolas ○ Gazebos • Verifying installation meets specifications and is ready for next phase |
| <p>5. Cleanup site</p> | <ul style="list-style-type: none"> • Cleaning surfaces using tools • Repairing damage that has occurred as a result of construction • Disposing of and recycling waste materials |



LEARNING TASKS

5. Clean-up site

CONTENT

- Screeding bedding materials as required
- Laying materials
 - Flagstones
 - Concrete
 - Aggregates
 - Paving stones
- Other paving types and methods
 - Permeable paving
 - Gravel
 - Stone
- Cleaning surfaces
- Applying joint materials according to manufacturers' specifications
 - Mortars
 - Sand
 - Polymeric sand
- Cleaning and sealing according to manufacturers' specifications if required
- Verifying installation meets specifications and is ready for next phase

- Cleaning and repairing damage that has occurred as a result of construction
- Disposing and recycling waste materials

Achievement Criteria

Performance The learner will construct a small patio using interlocking pavers.

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 patio according to plans



Line (GAC): **H INSTALLS HARDSCAPE**
Competency: **H4 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

CONTENT

- | | |
|---|---|
| <p>1. Select and use tools</p> | <ul style="list-style-type: none"> • Tools <ul style="list-style-type: none"> ○ Shovels ○ Picks ○ Diamond saw ○ Stone chisels ○ Wheelbarrows ○ Brooms ○ Power blowers ○ Mechanical sweepers ○ Others |
| <p>2. Select and use equipment</p> | <ul style="list-style-type: none"> • Equipment <ul style="list-style-type: none"> ○ Excavators ○ Plate compacters ○ Skid steers ○ Others |
| <p>3. Perform safe work practices</p> | <ul style="list-style-type: none"> • PPE • Recognizing work hazards • Moving materials |
| <p>4. Describe standards for environmental protection</p> | <ul style="list-style-type: none"> • Silt fencing • Environmental construction practices • Material storage • Sourcing appropriate information relative to environmental protection |
| <p>5. Describe site preparation and protection of existing site elements</p> | <ul style="list-style-type: none"> • Existing plant material • Existing hard features |
| <p>6. Lay out and stake site from a working drawing</p> | <ul style="list-style-type: none"> • Laying out site from drawings • Horizontal measurements • Staking |



LEARNING TASKS

CONTENT

- | | |
|---|--|
| <p>7. Locate the position of underground services</p> | <ul style="list-style-type: none"> • Gas • Electrical • Water • Sewer • Cable • Telephone • BC One call/Contractor liability and site delay concerns |
| <p>8. Describe the use of survey and lay out equipment</p> | <ul style="list-style-type: none"> • Equipment <ul style="list-style-type: none"> ○ Builder's level ○ Carpenter's level ○ String level ○ Water level ○ Slope ○ Other devices for levelling |
| <p>9. Describe the properties and use of hard construction materials</p> | <ul style="list-style-type: none"> • Materials <ul style="list-style-type: none"> ○ Wood ○ Segmental retaining wall systems ○ Stone ○ Other wall materials |
| <p>10. Describe the safe operation of various types of compaction equipment</p> | <ul style="list-style-type: none"> • Equipment <ul style="list-style-type: none"> ○ Vibrator plate tampers ○ Jumping jack tampers ○ Hand tampers |
| <p>11. Describe the procedures for non-masonry construction of a wall from a variety of materials</p> | <ul style="list-style-type: none"> • Materials <ul style="list-style-type: none"> ○ Wood ○ Segmental retaining wall systems ○ Stone ○ Other wall materials |
| <p>12. Prepare to install steps and retaining walls</p> | <ul style="list-style-type: none"> • Laying out and marking construction area • Excavating as specified and stabilizing compaction • Storing or removing excavated materials |
| <p>13. Install steps and retaining walls</p> | <ul style="list-style-type: none"> • Placing geotextile materials as required for stability • Adding aggregate base and compacting in lifts according to specifications |



LEARNING TASKS

CONTENT

- Placing bedding materials if required
 - Sand
 - Limestone screening
 - Concrete footing
- Screeding bedding materials as required
- Building wall and steps by performing
 - Stacking and assembling courses
 - Using materials such as timber, natural stone and manufactured stone according to specifications
- Placing drainage systems and backfill according to specifications
- Installing adhesives or mortar to secure capstones and treads
- Cleaning surfaces
- Verifying installation meets specifications and is ready for next phase

- 14. Cleanup site
 - Repairing damage that has occurred as a result of construction
 - Disposing of and recycling waste materials

Achievement Criteria

- Performance The learner will construct a small retaining wall 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): **H** **INSTALLS HARDSCAPE**
Competency: **H5** **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

CONTENT

1. Select tools

- Tools
 - Pipe cutters
 - Crimping tools
 - Trenching shovels
 - Wheelbarrows
 - Others

2. Determine equipment required

- Equipment
 - Excavators
 - Trenchers
 - Skid steers and attachments
 - Others

3. Use irrigation terminology

- Gallons per minute (GPM)
- Velocity
- Precipitation rate
- Matched precipitation
- Balance precipitation
- Static pressure
- Dynamic pressure
- Feet of head
- Pounds per square inch (PSI)
- Pressure loss due to friction
- Pipe sizing
- Polyvinyl Chloride (PVC)
- Polyethylene (PE)
- Evapotranspiration (ET)
- Water hammer
- Head to head spacing

**LEARNING TASKS****CONTENT**

- Controller and valve types

Achievement Criteria

Performance The learner will install a small irrigation system.

Conditions The learner will be given a set of plans, 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 irrigation system according to plans and specifications
- Pressure tested the system
- Adjusted sprinkler heads
- Programmed the timer correctly



Line (GAC): H **INSTALLS HARDSCAPE**
Competency: H6 **Install water features**

Objectives

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

- Install water features using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

1. Select and use tools
2. Select and use equipment
3. Prepare to install water features
4. Installing water features

CONTENT

- Tools
 - Shovels
 - Picks
 - Chisels
 - Wheelbarrows
 - Others
- Equipment
 - Excavators
 - Loaders
 - Skid steers
 - Others
- Laying out and marking construction area
- Excavating as required
- Placing geotextiles materials according to specifications
- Placing
 - Drains
 - Water supply components
 - Filtration systems
 - Electrical conduits
- Placing membranes according to specifications
- Applying adhesives, foams and mortar to secure and seal assembly
- Completing assembly of
 - Water supply components
 - Filtration systems
 - Lighting
- Adding water, running water systems and lighting
- Adjusting water features to ensure optimum performance



LEARNING TASKS

CONTENT

5. Clean-up site

- Adding aggregates and decorative features according to specifications
 - Rocks
 - Garden art
 - Foot bridges
- Verifying and adjusting water flow, sound and aesthetics
- Draining water and cleaning all components
- Refilling water features and adding ecosystem enhancement products as required
 - Beneficial bacteria
 - pH amendments
- Placing aquatic plants as required
- Verifying installation meets specifications
- Repairing any damage that has occurred as a result of construction
- Disposing of and recycling waste materials



Line (GAC): **H INSTALLS HARDSCAPE**
Competency: **H7 Install low voltage landscape lighting**

Objectives

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

- Install low voltage landscape lighting using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <p>1. Select and use tools</p> | <ul style="list-style-type: none"> • Tools <ul style="list-style-type: none"> ○ Wire strippers ○ Volt meter ○ Ladders ○ Trenchers ○ Shovels ○ Others |
| <p>2. Prepare for installation of low voltage landscape lighting</p> | <ul style="list-style-type: none"> • Digging trenches to required depth • Storing or removing excavated materials |
| <p>3. Install low voltage landscape lighting</p> | <ul style="list-style-type: none"> • Laying out and assembling lighting components according to manufacturers' specifications and lighting plan • Verifying operation of the lighting system and checking voltage • Programming light controller and adjusting fixtures • Setting lighting for desired effects |
| <p>4. Cleanup site</p> | <ul style="list-style-type: none"> • Repairing any damage that has occurred as a result of construction • Disposing of and recycling waste materials |

Achievement Criteria

- Performance** The learner will install a small lighting 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:
- Performed tasks safely
 - Installed lighting system according to plans and specifications



Line (GAC): I **MAINTAINS SOFTSCAPE**
Competency: I5 **Demonstrate basic pruning of trees, shrubs, groundcovers and vines**

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. Describe pruning considerations
2. Review basic plant morphology, anatomy, and physiology with regard to pruning
3. Demonstrate pruning techniques for young and established trees, shrubs, groundcovers and vines

CONTENT

- Reasons for pruning trees and shrubs
 - Health and vigour
 - Direct, control, or modify growth
 - Enhancing fruit and flower production
- Factors affecting the pruning of trees
 - Plant form
 - Function
 - Age
 - Location
 - Timing
 - Pre-pruning treatments
 - Severe pruning
 - Alternatives to pruning
- Efficiencies while pruning
 - Hand pruning vs. mechanical tools
 - Efficiencies and maintenance standard
- Plant morphology
 - Roots
 - Trunk
 - Crown
 - Branching
- Pruning techniques
 - Pruning cuts
 - Basic steps in pruning trees and shrubs
 - General pruning techniques for canopy cleaning
 - Canopy thinning
 - Canopy raising
 - Canopy reduction
 - Removal
 - Crown balancing



LEARNING TASKS

4. Describe training techniques for young trees
5. Describe timing of pruning ornamentals
6. Describe compartmentalization
7. Transplant ornamental woody plants

CONTENT

- Canopy restoration
- Early training for young trees
 - Developing trunk calliper
 - Scaffold spacing
 - Co-dominant stems
 - Root pruning and training
- Plant groups according to growth and flowering habits
- Other factors that affect pruning time
 - Dormant season
 - Growth response
 - Wind and frost damage
 - Non-dormant pruning
 - Scorch
- Compartmentalization of decay in trees (CODIT): Resisting decay in trees
- Callus and wound wood
- Review transplanting ornamental woody plants
 - Timing: dormant vs. non-dormant transplanting
- Plant protection during digging and transport
- Root ball size
- International Society of Arborists (ISA) caliper guidelines
- Canadian Nursery Landscape Association (CNLA) Standards for nursery stock
- 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



LEARNING TASKS

- 8. Demonstrate safe working practices and operation of common arboricultural equipment and tools

CONTENT

- Safe working practices
 - PPE required
 - Safe working environment
 - Ergonomics
 - Lifting and carrying safety
 - Safely operating power equipment
 - General procedures when operating power equipment
- Maintenance of tools
 - Tool cleaning procedures
 - Pruning equipment
 - Ladders
 - WorkSafeBC

Achievement Criteria

Performance	The learner will demonstrate basic pruning and transplanting techniques.
Conditions	The learner will be given the tools, equipment and materials to perform pruning techniques.
Criteria	<p>The learner will score a passing grade of 70% or better on a rating sheet according to the following criteria:</p> <ul style="list-style-type: none"> • Safely performed tasks • Pruned trees and shrubs according to industry standards • Transplanted trees and shrubs according to industry standards



Line (GAC): J **MAINTAINS HARDSCAPE**
Competency: J1 **Maintain drainage system**

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 for drainage system

CONTENT

- Checking drains to ensure proper operation
- Inspecting and replacing screens to avoid blockage
- Repair and maintenance procedures
 - Ponding
 - Blowouts
 - Washouts
 - Erosion at drain outlet
 - Sediment blockage
 - Root blockage
 - Iron oxide blockage
- Removing debris from drainage system to ensure optimal flow
- Maintaining grades according to original design to allow for adequate flow
- Inspecting performance of drains by flushing drainage systems with water
- Ensuring drain covers are secure
- Winterizing drainage systems



Line (GAC): J **MAINTAINS HARDSCAPE**
Competency: J2 **Maintain walkways, patios, driveways and parking lots**

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 maintenance requirements for walkways, patios, driveways and parking lots

CONTENT

- Visually inspecting structural integrity of hard surfaces for safety and aesthetic reasons
- Removing debris and undesirable growth
- Applying preservatives, stains and sealants on hard surfaces to provide ease of cleaning, longevity and aesthetics
- Repairing wood surface damage
 - Rooting
 - Splintering
 - Cracking
- Topping up jointing sand on interlock surfaces according to manufacturers' specifications
- Repairing damage to aggregate-based hard surfaces
 - Paving stones
 - Gravel
 - Asphalt
 - Concrete

**LEARNING TASKS**

3. Describe irrigation system winterization and spring start-up

CONTENT

- Winterizing a residential/commercial irrigation system
 - Air compressor requirements
 - Safety around compressors
 - Air hose connection to irrigation system
 - Compressor pressure recommendations for safe blow-out
 - Valve consideration for over-wintering including back-flow preventers
- Spring start up procedures
 - Recommended water velocity when re-filling lines
 - Head and nozzle maintenance
 - Pipe repairs
 - Adjusting pressure-regulating valves
 - Controller schedule



Line (GAC): J MAINTAINS HARDSCAPE
Competency: J4 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 maintenance requirements for landscape lighting

CONTENT

- Turning on system to detect defects
- Visually checking light fixtures, fuses and transformers for function and damage, and repairing and replacing as required
- Repairing low-voltage wiring
- Checking and adjusting lighting coverage and positioning
- Cleaning and clearing sensor to ensure optimum operation
- Checking lighting timing and adjusting program according to seasonal requirements



Line (GAC): J MAINTAINS HARDSCAPE

Competency: J5 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 maintenance requirements for water features

CONTENT

- Inspecting water features for defects
 - Cracks
 - Leaks
 - Plugged filters
 - Faulty gaskets and seals
- Charging systems to prime pumps and starting up operation for the season
- Setting and re-setting timers according to manufacturers' specifications
- Cleaning components
 - Filters
 - Screens
 - Nozzles
 - Pumps
- Running systems to ensure functioning according to manufacturers' specifications
- Inspecting water for conditions
 - Lack of clarity
 - Presence of algae
 - Floating debris
- Testing water for conditions
 - pH levels
 - Presence of bacteria
- Draining and refilling features for seasonal maintenance
- Cleaning basins manually and/or with aquatic cleaning products
- Removing and protecting plants and fish during winter or when cleaning the features if required
- Winterizing by disassembling, covering and draining to avoid damage
- Disconnecting feature components and storing according to manufacturers' specifications
- Cleaning fountains by draining water and washing features



Line (GAC): J **MAINTAINS HARDSCAPE**
Competency: J6 **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 maintenance requirements for steps and retaining walls

CONTENT

- Inspecting steps and walls to detect defects that require remediation
- Performing minor repairs
 - Replacing cracked stones
 - Replacing rotting timber
- Cleaning steps and walls using tools and equipment
 - Pressure washers
 - Brooms
- Sealing steps and retaining walls as required



Line (GAC): J MAINTAINS HARDSCAPE
Competency: J7 Maintain landscape structures

Objectives

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

- Describe maintenance requirements for landscape structures.

LEARNING TASKS

1. Describe maintenance requirements for landscape structures

CONTENT

- Inspecting structures for defects
 - Peeling paint
 - Rotting wood
 - Heaving and settling
- Performing minor repairs
 - Replacing rotting and cracked lumber
 - Levelling structures
 - Staining or painting wood structures
- Recognizing hazards of structures and taking appropriate action



Level 4

Landscape Horticulturist



Line (GAC): **B USES AND MAINTAINS TOOLS AND EQUIPMENT**
Competency: **B1 Use and maintain hand tools and power tools**

Objectives

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

- Demonstrate safe use and maintenance of hand tools.
- Demonstrate safe use and maintenance of power tools.

LEARNING TASKS

1. Identify hand and power tools for basic horticultural tasks
2. Demonstrate hand tool maintenance
3. Demonstrate power tool maintenance

CONTENT

- (see the list of *Tools and Equipment* for Level Four, detailed in the *Training Provider Standards* of this Program Outline)
- Review Level One *B1 - Use and maintain hand tools and power tools.*
- Review Level One *B1 - Use and maintain hand tools and power tools.*



Line (GAC): **B** **USES AND MAINTAINS TOOLS AND EQUIPMENT**
Competency: **B6** **Transport equipment**

Objectives

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

- Load equipment and attachments safely and according to the authorities having jurisdiction.
- Transport equipment and attachments safely and according to the authorities having jurisdiction.
- Unload equipment and attachments safely and according to the authorities having jurisdiction.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Discuss loading equipment and attachments | <ul style="list-style-type: none"> • Review Level Three <i>B6 - Transport equipment</i> |
| <ol style="list-style-type: none"> 2. Transport equipment and attachments | <ul style="list-style-type: none"> • Determining route from shop to worksite for hauling in advance <ul style="list-style-type: none"> ○ Heavy hauling ○ Weight and height restrictions • Following road closure procedures as necessary • Complying with licensing requirements for transporting equipment and attachments |
| <ol style="list-style-type: none"> 3. Discuss unloading equipment and attachments | <ul style="list-style-type: none"> • Review Level Three <i>B6 - Transport equipment</i> |



Line (GAC): C **ORGANIZES WORK**
Competency: C7 **Order plants and materials**

Objectives

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

- Describe the process for ordering plants and materials.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Identify required materials 2. Ensure accuracy of ordering 3. Keep records 4. Compare prices 5. Determine times and dates | <ul style="list-style-type: none"> • Types of materials • Size • Quality • Quantity • Using botanical nomenclature when ordering plant material • Order number • Tracking number • Name of supplier • Budget purposes • Delivery • Pick up |
|--|---|



Line (GAC): **D PARTICIPATES IN MARKETING AND SALES**
Competency: **D2 Sell product and services**

Objectives

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

- Describe selling products and services.

LEARNING TASKS

1. Describe selling products and services

CONTENT

- Advising and educating clients
 - Plants
 - Products
 - Services
- Directing customers to seasonal purchases
- Up-selling additional products and services to clients
- Visually displaying products and services in an attractive way
- Handling payments for products and services
- Writing invoices, calculating taxes and issue receipts for payment
- Communicating with existing customers to advise of special
 - Products
 - Prices
 - Services
- Distributing advertising material to clients



Line (GAC): **D PARTICIPATES 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 good customer relations

CONTENT

- Addressing client’s concerns with tact and politeness
- Practicing good public relations by acknowledging regular clients
- Maintaining customer record information
 - Address
 - Phone number
 - Email
 - Product preferences
- Providing after-service follow-up
- Distributing product service information to clients



Line (GAC): D **PARTICIPATES IN MARKETING AND SALES**
Competency: D4 **Prepare estimates for basic landscape installation projects**

Objectives

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

- Prepare estimates for basic landscape installation projects.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Read plans and measurements (construction and landscape drawings) 2. Examine landscape contract specifications 3. Calculate area, volumes, and quantities | <ul style="list-style-type: none"> • Plans symbols and abbreviations • Scale rulers • Reading landscape plans <ul style="list-style-type: none"> ○ Plan view ○ Elevation view ○ Perspective view ○ Construction drawings ○ Title page ○ Site plan ○ Layout plan ○ Grading plan ○ Planting plan ○ Lighting plan • Construction details <ul style="list-style-type: none"> ○ Constructon detail forms ○ Section view ○ Exploded view • Specifications • General project Information • Special conditions • Project coordination • Referenced standards and definitions • Project meetings • Quality control • Materials and equipment • Contract closeout • Calculations of area and volume <ul style="list-style-type: none"> ○ Area and volume formulae • Measuring a site <ul style="list-style-type: none"> ○ Use of a planimeter ○ Manual take-off of landscape sites • Calculation of landscape materials |
|--|---|



LEARNING TASKS

4. Calculate additional costs

5. Other consideration in preparing final bid for a landscape project

6. Describe various types of risk management strategies used in the landscape industry

7. Communicate with others to discuss project logistics

CONTENT

- Soil, gravel, other fill materials
- Sod or grass areas
- Planting areas
- Hard landscape materials

- Calculation process
 - Labour and equipment
 - Sub-trades
 - Transportation
 - Safety program
 - Contingencies
 - Surcharges
 - Accommodations

- Other related costs within an estimate
 - Overhead
 - Risk
 - Profit
- Preparing final bid document
- Access to various areas on site
- Final submission date

- Managing risk
 - Customer/public risk
 - Onsite injury
- Types of insurance coverage
 - Commercial property coverage
 - Commercial vehicle policies
 - General liability insurance
 - Other insurance
- Bonding
 - Using of bonds for risk management
- Using Liens in risk management

- Communicating with others
 - Contractors
 - Suppliers
 - Employers
- Logistics
 - Skill requirements
 - Machinery
- Products



Line (GAC): E **ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: E1 **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.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <p>1. Identify plant and plant requirements</p> | <ul style="list-style-type: none"> • Review of Level One and Level Two E1 competency <ul style="list-style-type: none"> ○ Range of plant materials commonly used in commercial horticulture ○ Correct naming and plant identification terminology ○ Plant families ○ Using a dichotomous key for plant identification ○ Plant hardiness zones ○ Plants suitable for planting in difficult situations ○ Identifying weeds and invasive plants ○ Recognizing bud, bark, foliage, flower, and fruit characteristics |
| <p>2. Describe examples of native trees, shrubs, groundcovers, perennials, biennials, and annuals common to the horticulture industry</p> | <ul style="list-style-type: none"> • Commercial landscaping • Nursery production |
| <p>3. Describe examples of seasonal crops</p> | <ul style="list-style-type: none"> • Common to the ornamental horticulture industry |
| <p>4. Identify and describe 90 woody and non-woody plants</p> | <ul style="list-style-type: none"> • Using botanical terms • According to its cultural and maintenance requirements |



Line (GAC): **E ANALYZES AND MAINTAINS PLANT HEALTH**
Competency: **E3 Manage pests and diseases**

Objectives

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

- Review basic principles of IPM.
- Discuss social and political implications of pest management in landscapes.
- Describe the impacts of exotic and invasive pests in the landscape.
- Plan an IPM program for a landscape.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <p>1. Discuss principles of IPM</p> | <ul style="list-style-type: none"> • Review principles of IPM <ul style="list-style-type: none"> ○ Prevention ○ Identification ○ Monitoring ○ Thresholds ○ Treatments ○ Evaluation |
| <p>2. Discuss the social and political implications of pest management in landscapes</p> | <ul style="list-style-type: none"> • Federal pesticide regulations • Provincial pesticide regulations • Municipal pesticide regulations • Considerations in pest management <ul style="list-style-type: none"> ○ Economic and aesthetic ○ Environmental ○ Social |
| <p>3. Describe exotic pests</p> | <ul style="list-style-type: none"> • Exotic pests • Invasive plants • Regulated pests |
| <p>4. Examine IPM example – aphid control on urban trees</p> | <ul style="list-style-type: none"> • Program goal • Site • Crop-pest system • Target pest • IPM program <ul style="list-style-type: none"> ○ Pest monitoring ○ Cultural control ○ Biological control ○ Chemical control ○ Evaluation ○ Social consideration |



LEARNING TASKS

5. Plan an IPM program for a landscape

CONTENT

- Developing an IPM program
 - Goals
 - Worksite
 - Landscape-pest systems
 - Types of pest damage
 - Costs of control vs. economic/aesthetic losses
 - Thresholds and monitoring
 - Pulling strategies together
 - Calculating risks
 - Evaluating IPM program
- Implementing IPM program
 - Phase I: Monitoring pest population levels
 - Phase II: Modify spray control programs
 - Phase III: Include biological control

Achievement Criteria 1

Performance The learner will develop an IPM program outline.

Conditions The learner will be given:

- IPM program outline heading (from instructor)
- Reference materials

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

- The scope of the IPM program should have included a significant problem for the landscape, and be reasonable in complexity for this project
- The site of the IPM program has been adequately described
- The major pests have been selected, and the types of damage and control measures listed
- Potential control methods including physical, cultural, chemical and biological methods have been listed

Achievement Criteria 2

Performance The learner will use the IPM proposal prepared in Achievement Criteria 1 and the outline provided by the instructor, to develop an overview of the scope of the report.

Conditions The learner will be given:

- IPM program outline heading (from instructor)
- Reference materials

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

- The topic has been covered adequately, with enough detail or explanations
- The dynamic aspects of the program have been made clear
- The program integrated many control methods in a complementary fashion



- The program had practical significance for the worksite
- The program researched many alternative methods for pest control, identified those which fit into the program and explained why other methods are not to be employed
- The IPM program listed potential risks, with recommended solutions
- Sociological considerations were briefly introduced
- Resource list showed appropriate breadth for the topic, including personnel used as resources, books, Ministry information, etc.



Line (GAC): F **PERFORMS PRE-CONSTRUCTION ACTIVITIES**
Competency: F4 **Examine the principles of garden design and participate in basic landscape design activities**

Objectives

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

- Describe the principles of garden design.
- Participate in basic landscape design activities.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Examine influential historical and cultural landscape styles 2. Examine sustainable approaches of design and contemporary gardens 3. Describe the elements and principles of design 4. Describe the design elements of line, form, and texture 5. Describe the principles of design: unity, balance, sequence, rhythm and proportion | <ul style="list-style-type: none"> • Formal vs. informal • Historical and cultural influences • Contemporary styles • Xeriscaping • Rain garden approach • Green roofs • Maintenance considerations • Use of native plants in the landscape • Role of the International Gardens Festivals • Using the elements and principles of design <ul style="list-style-type: none"> ○ Simplicity and variety ○ Balance ○ Interconnection ○ Similarity • Visual elements of design • Line • Symmetrical balance • Asymmetrical balance • Sequence • Rhythm • Proportion • Emphasis • Visual principles of design • Unity • Repetition • Split complementary colour scheme • Monochromatic colour schemes • Analogous colour schemes |
|---|--|



LEARNING TASKS

6. Describe the design process including research and preparation phase

7. Examine the functions of the site and development of plan

8. Examine preliminary design

CONTENT

- Effect of light on colour in the landscape
- Combining colour
- Value
- Intensity
- Using colour in the landscape
 - Creating space in the landscape with colour contrast
 - Primary colours
 - Tertiary colours
- Hue
- The colour wheel

- Creativity and the design process
- Project research and preparation
 - Client consultation
 - Presenting the portfolio
 - Available services and fees
 - Proposal for design services
- Site study: Site plan and analysis
 - Gathering data
 - Making the site measurements
 - Recording measurements for the site plan
 - Site analysis
 - Design program

- The purpose of functional diagrams
- Outdoor use areas
- The concept of outside rooms
- Recreation space
- Outdoor work or service area

- Form composition
- Functional contributions of plants in the landscape
- Selecting the right plant for the right place on the site
- Plant availability
- Suitable exposure
 - Macroclimate
 - Microclimate
 - Soil conditions



LEARNING TASKS

9. Describe the master plan and construction drawings
10. Describe maintenance and evaluation
11. Participate in basic landscape design activities

CONTENT

- Plant characteristics
- Cultural requirements and site suitability: growth and maintenance
- Plant spacing
- Structures
 - Fences and walls
 - Overhead structures
 - Walkways, paths and driveways
 - Structures: Materials and maintenance
- Master plan and working drawings
 - Master plan
 - Construction documentation
 - Layout plan
 - Grading plan
 - Planting plan
 - Irrigation plan
 - Lighting plan
 - Construction detail drawings
- Maintenance
- Evaluation
- Selecting tools
 - Builder's level/transit
 - GPS
 - Measuring wheels
 - Others
- Measuring and inventorying existing site conditions to provide information to the design team
- Providing detail support to design team for construction plan
- Using design principles to apply creative interpretation of the landscape plan

Achievement Criteria

- Performance** The learner will create a design for a garden bed.
- 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 design for a garden bed incorporating the principles of texture, colour, form, and scale



Line (GAC): **G INSTALLS SOFTSCAPE**
Competency: **G1 Install erosion control materials**

Objectives

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

- Install erosion control materials using the correct tools, equipment and materials, as per specifications.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| 1. Select and use tools | <ul style="list-style-type: none"> • Tools <ul style="list-style-type: none"> ○ Shovels ○ Post pounders ○ Knives ○ Others |
| 2. Select and use equipment | <ul style="list-style-type: none"> • Equipment <ul style="list-style-type: none"> ○ Augers ○ Trenchers ○ Loaders ○ Others |
| 3. Install erosion control material | <ul style="list-style-type: none"> • Moving specified erosion control material into desired location • Laying out and applying erosion control material • Securing placement of erosion control material to ensure performance • Verifying that erosion control installation meets specifications and is ready for next phase |

Achievement Criteria

- Performance** The learner will install erosion control material.
- Conditions** The learner will be given appropriate 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
 - Installed erosion materials as specified



Line (GAC): **G INSTALLS SOFTSCAPE**
Competency: **G3 Describe installation of interior landscape plants**

Objectives

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

- Describe installation requirements for interior landscape plants.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <p>1. Select tools</p> | <ul style="list-style-type: none"> • Tools <ul style="list-style-type: none"> ○ Tree dollies ○ Shovels ○ Rakes ○ Others |
| <p>2. Select equipment</p> | <ul style="list-style-type: none"> • Equipment <ul style="list-style-type: none"> ○ Skid steers ○ Tree gantries ○ Others |
| <p>3. Describe preparation of plant materials</p> | <ul style="list-style-type: none"> • Foliar washing • Scarifying root ball • Managing nutrient balance |
| <p>4. Describe installation of interior landscape plants</p> | <ul style="list-style-type: none"> • Monitoring plant health throughout installation process • Moving plant materials to desired location • Laying out plant materials according to plan • Planting interior landscape plants according to specifications • Pruning plants as required • Verifying moisture content of growing media to ensure adequate irrigation • Verifying plant installation meets specifications and is ready for next phase • Protecting interior furnishings and surfaces |



Achievement Criteria

Performance The learner will install turf grass from seed.

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:

- Selected and used appropriate tools and equipment
- Installed seed according to specifications



Line (GAC): **G INSTALLS SOFTSCAPE**
Competency: **G5 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 tools

2. Select and use equipment

3. Prepare plant materials

4. Install exterior landscape plants

CONTENT

- Tools
 - Tree dollies
 - Shovels
 - Rakes
 - Others

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

- Removal of containers
- Scarifying root ball
- Managing nutrient balance

- Monitoring plant health throughout installation process
- Moving plant materials to desired location
- Laying out plant materials as per plan
- Planting, staking and guying plant materials as specified
- Pruning plant materials as required
- Verifying moisture content of growing media to ensure adequate irrigation
- Verifying plant installation meets specifications and ready for next phase

**Achievement Criteria**

Performance The learner will install exterior landscape plants.

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
- 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 and ready for next phase



Line (GAC): I **MAINTAINS SOFTSCAPE**
Competency: I1 **Maintain growing media**

Objectives

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

- Discuss inspections, assessments, and cultivation of growing media.
- Discuss collecting soil and water samples for lab testing.
- Discuss interpretation of lab testing results and amendments to growing media.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Discuss visually inspecting growing media and plants 2. Discuss assessing growing media composition for conditions 3. Discuss cultivating growing media 4. Discuss collecting and interpreting soil and water samples 5. Discuss amending growing media | <ul style="list-style-type: none"> • Signs of and symptoms of health • Determining needs of growing media and plants • Texture • Moisture levels • Porosity • Tools <ul style="list-style-type: none"> ○ Probes ○ Ribbon tests • Tools <ul style="list-style-type: none"> ○ Garden fork ○ Cultivator ○ Hoe ○ Others • Reasons for cultivating growing media <ul style="list-style-type: none"> ○ Aeration ○ Weed control ○ Maintenance of growing media structure • Sending samples to the lab to determine <ul style="list-style-type: none"> ○ Fertility levels ○ Deficiency levels • Interpreting lab results • Determining growing media amendments as required • Maintaining optimum growing conditions |
|--|---|



Line (GAC): I **MAINTAINS SOFTSCAPE**
Competency: I2 **Maintain and schedule maintenance for grass/turf**

Objectives

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

- Maintain and schedule maintenance for grass/turf according to specifications.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| <p>1. Describe turfgrass cultivation</p> | <ul style="list-style-type: none"> • Cultivation • Aeration • Aeration equipment • When to aerate • Topdressing • Thatch removal (de-thatching) • Power raking equipment |
| <p>2. Describe maintenance scheduling for residential lawns</p> | <ul style="list-style-type: none"> • Mowing frequency and height of cut • Length of maintenance season • Maintenance and fertilization • Soil quality and testing • Secondary operations of maintenance (mechanical maintenance/cultivation) <ul style="list-style-type: none"> ○ Thatch control ○ Alleviating soil compaction by aerating ○ Topdressing (organic/aggregate) |
| <p>3. Describe maintenance scheduling for commercial and posts turf sites</p> | <ul style="list-style-type: none"> • Mowing • Fertilization • Cultural management |



LEARNING TASKS

4. Describe trouble shooting turf problems

5. Describe turfgrass pest management

CONTENT

- Visual inspection
 - Colour
 - Thinning
 - Grades
 - Drainage
- Performing growing media analysis to determine substrate conditions
- Species selection
 - Growth habit consideration
 - Site exposure conditions
 - Wear and tolerance
- Managing non-irrigated sites
- Construction and grow-in challenges
 - Poor quality materials
 - Irrigation and drainage repairs
 - Poor turfgrass quality after grow-in
- Maintenance and cultivation concerns
 - Budget constraints
 - Client demands
 - Timing of operations
 - Specific wear sites on the turfgrass
- Sports turf and golf turf problems
 - Divot repair
 - Patching small damaged areas
 - Poor mowing quality
 - Sand based root zone concerns
- Mowing quality concerns
 - Sharpening and adjusting cutting units
 - Mower sanitation
- Water management
 - Timing of irrigation
 - Poor irrigation coverage
 - Traffic on water stressed turfgrass
 - Overwatering and saturate soil
- Renovation and repair
- Pest management
 - Abiotic pests
 - Biotic pests



LEARNING TASKS

6. Describe turfgrass propagation methods

CONTENT

- Seeding
 - Seedbed preparation
 - Amendments
 - Seeding
- Overseeding
 - Equipment
- Sodding
 - Sodding vs. seeding
 - Site preparation
 - Sod laying techniques
 - Sod quality
- Hydroseeding
 - Site preparation
 - Application equipment
- Minimum depth of growing media for turf installation
- Soil quality concerns
- Post planting care
 - Establishment

Achievement Criteria

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

Conditions The learner will be provided with a site.

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): I **MAINTAINS SOFTSCAPE**
Competency: I3 **Maintain interior softscape**

Objectives

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

- Identify interior softscape plants and their needs.
- Maintain interior softscape plants as required.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| 1. Identify interior plants and their needs | <ul style="list-style-type: none"> • Water • Light • Nutrients |
| 2. Identify pests and diseases | <ul style="list-style-type: none"> • Types • Causes |
| 3. Discuss performing visual inspection | <ul style="list-style-type: none"> • Determining plant health |
| 4. Describe irrigating and fertilizing plants | <ul style="list-style-type: none"> • According to plant needs <ul style="list-style-type: none"> ○ Manual ○ Automated methods |
| 5. Describe cleaning foliage and containers | <ul style="list-style-type: none"> • Aesthetics • Plant health |
| 6. Describe pruning plants | <ul style="list-style-type: none"> • For reasons such as <ul style="list-style-type: none"> ○ Dead, disease, damage and interfering (D,D,D,I) ○ Plant health growth control ○ Aesthetics |
| 7. Discuss transplanting plants | <ul style="list-style-type: none"> • For reasons such as <ul style="list-style-type: none"> ○ Growth control ○ Relocation of plants ○ Prevention of root girdling |
| 8. Describe dividing plants | <ul style="list-style-type: none"> • For reasons such as <ul style="list-style-type: none"> ○ Reducing plant size ○ Propagating and improving aesthetic value and vigor |
| 9. Describe mulching interior beds and containers | <ul style="list-style-type: none"> • For reasons such as <ul style="list-style-type: none"> ○ Moisture retention |



LEARNING TASKS

CONTENT

10. Describe performing seasonal plant rotation

- Weed suppression
- Growing media temperature moderation
- Aesthetics

11. Describe protecting furnishings and surfaces

- For reasons such as
 - Health
 - Aesthetics
- Barricades
- Tape
- Surface applications



Line (GAC): I **MAINTAINS SOFTSCAPE**
Competency: I4 **Maintain exterior softscape**

Objectives

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

- Identify exterior softscape plants and their needs.
- Maintain exterior softscape plants as required.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Identify exterior plant and their needs 2. Identify pests and diseases 3. Perform visual inspection 4. Describe irrigating and fertilizing plants 5. Describe cultivating growing media 6. Describe pruning plants 7. Describe transplanting plants | <ul style="list-style-type: none"> • Water • Light • Nutrients
 • Types • Causes
 • Determine plant health
 • According to plant needs <ul style="list-style-type: none"> ○ Manually ○ Automate methods
 • Tools <ul style="list-style-type: none"> ○ Garden fork ○ Cultivator ○ Others • For reasons such as <ul style="list-style-type: none"> ○ Aeration ○ Weed control ○ Maintenance of growing media structures
 • For reasons such as <ul style="list-style-type: none"> ○ Dead, disease, damage and interfering (D,D,D,I) ○ Plant health growth control ○ Aesthetics
 • For reasons such as <ul style="list-style-type: none"> ○ Growth control ○ Relocation of plants ○ Prevention of root girdling |
|--|---|



LEARNING TASKS

CONTENT

- | | |
|--|---|
| 8. Describe dividing plants | <ul style="list-style-type: none"> • For reasons such as <ul style="list-style-type: none"> ○ Reducing plant size ○ Propagate and improve aesthetic value and vigor |
| 9. Describe performing seasonal planting and removal of plants | <ul style="list-style-type: none"> • Annuals • Biennials • Bulbs |
| 10. Describe applying seasonal protection or hardening-off practices to ensure plant survival through winter | <ul style="list-style-type: none"> • Select media • Ground cover |
| 11. Describe removing weeds | <ul style="list-style-type: none"> • For reasons such as <ul style="list-style-type: none"> ○ Plant health ○ Aesthetics |
| 12. Describe mulching beds and containers | <ul style="list-style-type: none"> • For reasons such as <ul style="list-style-type: none"> ○ Moisture retention ○ Weed suppression ○ Growing media temperature moderation ○ Aesthetics |
| 13. Describe edging beds | <ul style="list-style-type: none"> • For reasons such as <ul style="list-style-type: none"> ○ Bed definition ○ Aesthetics |
| 14. Describe site cleanup | <ul style="list-style-type: none"> • Litter pickup • Removing excess clippings • Clean sidewalks |
| 15. Describe repairing or removing staking and guying materials to prevent plant damage | <ul style="list-style-type: none"> • As required • Materials |

Achievement Criteria

- Performance** The learner will create a maintenance plan for an exterior softscape.
- Conditions** The learner will be provided with a site.
- 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): I **MAINTAINS SOFTSCAPE**
Competency: I6 **Describe cultural management of trees, shrubs, groundcovers and vines**

Objectives

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

- Discuss the cultural management of woody plants in the landscape.
- Examine techniques used to diagnose common problems in ornamental plants in the landscape.
- Discuss tree preservation, winter protection, and hazard abatement practices for woody ornamental plants.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Identify the value of trees in the landscape
 2. Examine the land development process and the impacts of construction on woody plants
 3. Explain the goals of tree preservation
 4. Recognize plant problems
 5. Identify hazard trees | <ul style="list-style-type: none"> • Environmental and social functions of trees • Energy conservation, pollution abatement, and storm control properties of plants in the landscape • Economic value of trees in landscape sites
 • Impacts on surrounding plant growth from <ul style="list-style-type: none"> ○ Planning ○ Design ○ Grading and construction ○ Maintenance on trees
 • How the long-term health and survival of trees is dependent upon the patterns of tree growth and development, and preventing injury
 • Identifying patterns of common damage to ornamental plant material and developing a diagnostic checklist for plants • Common tools used by arborists to diagnose plant problems
 • What constitutes a hazard tree • Factors contributing to tree failure <ul style="list-style-type: none"> ○ Structural defects ○ Plant species ○ Size ○ Age ○ Site conditions • How past maintenance practices can impact the development of disorders leading to decline |
|--|---|



LEARNING TASKS

6. Describe landscape maintenance practices that prevent disorder, disease, and decline of woody plant material

CONTENT

- Performing landscape functions on woody plants in the landscape
 - Edging
 - Fertilizing
 - Mulching
 - Irrigating
 - Weeding
 - Pruning



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, drying oven and microwave
 - Nested sieves, shakers, scales
 - Hydrometers and sedimentation cylinders
 - Munsell colour books



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, drying oven and microwave
 - Nested sieves, shakers, scales
 - Hydrometers and sedimentation cylinders
 - Munsell colour books
 - 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
 - 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, drying oven and microwave
 - Nested sieves, shakers, scales
 - Hydrometers and sedimentation cylinders
 - Munsell colour books
 - 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 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.)
 - 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, drying oven and microwave
 - Nested sieves, shakers, scales
 - Hydrometers and sedimentation cylinders
 - Munsell colour books
 - 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 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

LEVEL ONE

Shop Equipment

Motorized Equipment

- Baggers for leafs
- Blowers (backpack, hand held, push, earth auger)
- Dethatcher
- Edgers
- Hedge trimmer (extension, long reach)
- Lawn/weed trimmers (gas & electric)
- Pressure washer
- Soil screener
- String trimmer
- Sterilizers

Shop (Facility) Tools

Standard Power Tools

- Chainsaw
- Grinder
- Pole chainsaw
- Pallet Jack
- Power cultivator (rototiller)
- Vacuum (wet/dry, leaf)
- Walk-behind aerator

Standard Hand Tools

- Brooms
- Cultivator (manual)
- De-thatching rake
- Garden forks
- Grease guns
- Handheld watering equipment
- Landscape rakes
- Loppers
- Mallet
- Microscope
- Pickaxes
- Picks
- Pitch forks
- Pliers (various types)
- Pruning shears
- Rakes (various types)
- Screwdrivers (various types)
- Seed/fertilizer spreader
- Sharpening tools
- Shovels (coal, clam, scoop/barn, spade, garden)
- Spades (various types)
- String line
- Tarps
- Trowels
- Weed digger
- Wheelbarrow
- Wrenches



Specialty (Facility) Tools

Measuring Equipment

- EC meters Levels
- Hydrometer
- Levels
- pH meter
- Scales
- Sedimentation cylinder
- Tape measure
- Thermometers
- Tire pressure meter

Student Equipment (supplied by school)

Required - PPE and Safety Equipment

- Ear protection
- Eye protection (glasses, shields)
- Eye wash kit
- Fall protection (harness)
- Fire extinguisher
- First Aid kits
- Flares
- Hardhat
- Lanyard
- Particle masks
- Reflective shirts, jackets
- Respirators
- Safety vests
- Spill kit
- Traffic cones

Office Equipment

Recommended

- Camera
- Communication devices
- Computers

Student Tools (supplied by student)

Required

- CSA-approved steel-toed footwear
- Calculator
- Hand lens (10x)
- Secateurs

Recommended

- Work gloves
- Rainwear



LEVEL TWO

Shop Equipment

Motorized Equipment

- 3-reel turf mower
- Backhoe
- Baggers for leafs
- Blowers (backpack, hand held, push, earthauger)
- Brush cutter
- Clearing saw
- Edgers
- Electric powered utility vehicle
- Elevated work platforms
- Excavator
- De-thatcher
- Flat filler
- Fork lift
- Front end loader
- Gas powered utility vehicle (Gator)
- Hedge trimmer (extension, long reach)
- Lawn/weed trimmers (gas & electric)
- Pot filler
- Powered rollers
- Pressure washer
- Pumps
- Ram compactor (jumping jack)
- Riding mowers/mulchers
- Skid steer loader
- Soil screener
- Sterilizers
- String trimmer
- Tractors
- Trucks
- Turf and tree sprayer

Required – Attachments

- Bucket
- Forks
- Trailer
- Spray equipment

Recommended – Attachments

- Aerator
- Auger/post hole digger
- Blade
- Cultivator
- Discer
- Harrow
- Leaf vacuum
- Overseeder
- Plough
- Power sweeper
- Rototiller
- Snow blower
- Soil profiler
- Top dresser
- Tow behind de-thatcher
- Tow behind thatcher
- Tree spade
- U-blade
- Vacuum



Shop (Facility) Tools

Standard Power Tools

- Chainsaw
- Electric drill
- Fertilizer injector
- Grinder
- Hammer drill
- Mower/mulcher
- Power cultivator (rototiller)
- Power sprayer
- Vacuum (wet/dry, leaf)
- Walk-behind aerator

Standard Hand Tools

- Axes
- Backpack sprayer
- Boxcutters
- Brick carriers
- Brick splitter
- Brooms
- Bulb planters
- Cart
- Chains
- Chisels
- Clearing axes
- Core samplers (probe)
- Crimpers
- Crowbars
- Cultivator (manual)
- De-thatching rake
- Dolly
- Files
- Flags
- Garden forks
- Grease guns
- Hammers (hand, sledge)
- Hand tamper
- Handheld watering equipment
- Landscape rakes
- Loppers
- Mallet
- Microscope
- Pickaxes
- Picks
- Pitch forks
- Pliers (various types)
- Pry bar
- Punch
- Rakes (various types)
- Screwdrivers (various types)
- Seed/fertilizer spreader
- Sharpening tools
- Shovels (coal, clam, scoop/barn, spade, garden)
- Side cutters
- Soil screener
- Spades (various types)
- String line
- Tap and die
- Tape measure
- Tarps
- Tie-downs (straps, chains)
- Tree cart
- Trowels
- Water key
- Weed digger
- Wheelbarrow
- Wheel chocks
- Wrenches



Specialty (Facility) Tools

Measuring Equipment

- Anemometer
- EC meter
- Hydrometer
- Hygrometer
- Levels (line, hand, zip laser)
- Light meter
- pH meter
- Tape measure
- Thermometer
- Tire pressure meter

Student Equipment (supplied by school)

Required - PPE and Safety Equipment

- Cones
- Chemical protection suits
- Ear protection
- Eye protection (glasses, shields)
- Eye wash kit
- Face shields
- Fall protection (harness)
- Fire extinguisher
- First Aid kits
- Flares
- Goggles
- Hard hat
- Lanyard
- Particle masks
- Reflective shirts, jackets
- Respirators
- Rubber gloves
- Safety vests
- Spill kit
- Traffic cones

Recommended - Office Equipment

- Camera
- Communication devices
- Computers

Student Tools (supplied by student)

Required

- CSA-approved steel-toed footwear

Recommended

- Calculator
- Hand lens (10x)
- Work gloves
- Rainwear



LEVEL THREE

Shop Equipment

Motorized Equipment

- Bale breaker
- 3-reel turf mower
- Backhoe
- Baggers for leafs
- Blowers (backpack, hand held, push, earth auger)
- Brush cutter
- Chipper
- Clearing saw
- Conveyor belt
- Edgers
- Electric powered utility vehicle
- Elevated work platforms
- Excavator
- De-thatcher
- Flat filler
- Fork lift
- Front-end loader
- Gas powered utility vehicle (Gator)
- Generators
- Guillotine
- Hedge trimmer (extension, long reach)
- Lawn/weed trimmers (gas & electric)
- Man lift
- Mortar mixer
- Plate compactor
- Plate tamper
- Pot filler
- Powered rollers
- Pressure washer
- Pumps
- Ram compactor (jumping jack)
- Riding mowers/mulchers
- Skid-steer loader
- Sod cutter
- Soil screener
- Spider
- Steam jenny
- Sterilizers
- String trimmer
- Tractors
- Trencher (irrigation)
- Trucks
- Turf and tree sprayer

Required – Attachments

- Bucket
- Forks
- Trailer
- Spray equipment

Recommended – Attachments

- Aerator
- Auger/post hole digger
- Blade
- Cultivator
- Discer
- Harrow
- Leaf vacuum
- Overseeder
- Plough
- Power sweeper
- Rototiller
- Snow blower
- Soil profiler
- Top dresser
- Tow behind de-thatcher
- Tow behind thatcher
- Tree spade
- U-blade



- Vacuum

Shop (Facility) Tools

Standard Power Tools

- Chainsaw
- Circular saw
- Compressor
- Concrete saw (dry, wet)
- Demolition hammer (electric)
- Demolition hammer (pneumatic)
- Electric drill
- Fertilizer injector
- Grinder
- Hammer drill
- Heat gun
- Mitre/chop saw
- Mortar/cement mixer
- Mower/mulcher
- Powder-actuated tools
- Power auger
- Power cultivator (rototiller)
- Power sprayer
- Powered wheel barrow
- Reciprocating saw
- Sabre saw
- Table saw
- Torch
- Trencher
- Vacuum (wet/dry, leaf)
- Walk-behind aerator
- Wet saw

Standard Hand Tools

- Axes
- Backpack sprayer
- Boxcutters
- Brick carriers
- Brick splitter
- Brooms
- Builder's level
- Bulb planters
- Cart
- Chains
- Chisels
- Clay pick
- Clearing axes
- Core samplers (probe)
- Crimpers
- Crowbars
- Cultivator (manual)
- De-thatching rake
- Dolly
- Files
- Flags
- Garden forks
- Grease guns
- Hammers (hand, sledge)
- Hand plane
- Handsaws (cross cut, back, pruning, sod)
- Hand tamper
- Handheld watering equipment
- Ladders (step, extension, orchard)
- Landscape rakes
- Loppers
- Mallet
- Microscope
- Paving stone cart
- Paving stone cutter
- Paving stone extractor
- Picks
- Pick axes
- Pitch forks
- Pipe cutters
- Pliers (various types)
- Plumb line



- Pole pruners
- Pole saw
- Post hole auger
- Post maul
- Post pounder
- Pruning shears
- Pry bar
- Punch
- Rakes (various types)
- Scaffolding
- Screeding bars
- Screwdrivers (various types)
- Seed/fertilizer spreader
- Sharpening tools
- Shovels (coal, clam, scoop/barn, spade, garden)
- Side cutters
- Sod lifter
- Soil screener
- Spades (various types)
- String line
- Tap and die
- Tape measure
- Tarps
- Tie downs (straps, chains)
- Tree cart
- Trowels
- Water key
- Weed digger
- Wheelbarrow
- Wheel chocks
- Wrenches

Specialty (Facility) Tools

Measuring Equipment

- Anemometer
- Barometer
- Compaction measuring device
- Flow meter
- Gas meter
- GPS
- Hydrometer
- Hygrometer
- Laser distance measure
- Levels (line, hand, zip laser)
- Light meter
- Measuring wheel
- Planimeter
- pH meter
- Scale ruler
- Tape measure
- Thermometer
- Tire pressure meter
- Water meter

Student Equipment (supplied by school)

Required - PPE and Safety Equipment

- Chaps/ballistic pants
- Cones
- Chemical protection suits
- Ear protection
- Eye protection (glasses, shields)
- Eyewash kit
- Face shields
- Fall protection (harness)
- Fire extinguisher
- First Aid kits
- Flares
- Goggles
- Hard hat
- Lanyard
- Particle masks
- Reflective shirts, jackets



- Respirators
- Rubber gloves
- Safety vests

Recommended - Office Equipment

- Camera
- Communication devices
- Computers
- Drafting scale 1-100

- Spill kit
- Traffic cones

- Laminator
- Printer
- Thermal printer

Student Tools (supplied by student)

Required

- CSA-approved steel-toed footwear

Recommended

- Calculator
- Hand lens (10x)
- Work gloves
- Rainwear



LEVEL FOUR

Shop Equipment

Motorized Equipment

- 3-reel turf mower
- Bale breaker
- Backhoe
- Baggers for leafs
- Bed edger
- Blender (power)
- Blowers (backpack, hand held, push, earth auger)
- Brush cutter
- Chipper
- Clearing saw
- Conveyor belt
- Edgers
- Electric powered utility vehicle
- Elevated work platforms
- Excavator
- De-thatcher
- Flat filler
- Fork lift
- Front end loader
- Gas powered utility vehicle (Gator)
- Generators
- Guillotine
- Hedge trimmer (extension, long reach)
- Hydro-seeding equipment
- Lawn/weed trimmers (gas & electric)
- Man lift
- Mortar mixer
- Peat shredder
- Plate compactor
- Plate tamper
- Pot filler
- Power dethatcher
- Power rake
- Powered rollers
- Pressure washer
- Pumps
- Ram compactor (jumping jack)
- Riding mowers/mulchers
- Shredder
- Skid-steer loader
- Sod cutter
- Soil screener
- Spider
- Steam jenny
- Sterilizers
- String trimmer
- Tractors
- Trencher (irrigation)
- Trucks
- Turf and tree sprayer

Required – Attachments

- Bucket
- Forks
- Trailer
- Spray equipment

Recommended – Attachments

- Aerator
- Auger/post hole digger
- Blade
- Cultivator
- Discer
- Harrow
- Leaf vacuum
- Overseeder
- Plough
- Power sweeper



- Rototiller
- Snow blower
- Soil profiler
- Top dresser
- Tow behind de-thatcher

- Tow behind thatcher
- Tree spade
- U-blade
- Vacuum

Shop (Facility) Tools

Standard Power Tools

- Air seeder
- Chainsaw
- Circular saw
- Compressor
- Concrete saw (dry, wet)
- Demolition hammer (electric)
- Demolition hammer (pneumatic)
- Electric drill
- Fertilizer injector
- Grinder
- Hammer drill
- Lawn roller
- Mitre/chop saw
- Mortar/cement mixer
- Mower/mulcher
- Powder-actuated tools
- Power auger

- Power cultivator (rototiller)
- Power seeder/power spreader
- Power soil screener
- Power sprayer
- Powered wheel barrow
- Reciprocating saw
- Roller
- Sabre saw
- Table saw
- Transplant table
- Tree spade
- Torch
- Trencher
- Vacuum (wet/dry, leaf)
- Walk-behind aerator
- Wet saw

Standard Hand Tools

- Axes
- Backpack sprayer
- Boxcutters
- Brick carriers
- Brick splitter
- Brooms
- Builder's level
- Bulb planters
- Cart
- Chains
- Chisels
- Clay pick
- Clearing axes
- Colour wheel
- Core samplers (probe)

- Crimpers
- Crowbars
- Cultivator (manual)
- De-thatching rake
- Dolly
- Files
- Flags
- Garden forks
- Grease guns
- Hammers (hand, sledge)
- Hand plane
- Handsaws (cross cut, back, pruning, sod)
- Hand tamper
- Handheld watering equipment
- Ladders (step, extension, orchard)



- Landscape rakes
- Loppers
- Mallet
- Microscope
- Paving stone cart
- Paving stone cutter
- Paving stone extractor
- Picks
- Pickaxes
- Pitch forks
- Pipe cutters
- Pliers (various types)
- Plumb line
- Pole pruners
- Pole saw
- Post hole auger
- Post maul
- Post pounder
- Pruning shears
- Pry bar
- Punch
- Rakes (various types)
- Scaffolding
- Screeding bars
- Screwdrivers (various types)
- Seed/fertilizer spreader
- Sharpening tools
- Shovels (coal, clam, scoop/barn, spade, garden)
- Side cutters
- Sod lifter
- Soil screener
- Spades (various types)
- String line
- Tap and die
- Tape measure
- Tarps
- Tie downs (straps, chains)
- Tree cart
- Trowels
- Water key
- Weed digger
- Wheelbarrow
- Wheel chocks
- Wrenches

Specialty (Facility) Tools

Measuring Equipment

- Anemometer
- Barometer
- Compaction measuring device
- Flow meter
- Gas meter
- GPS
- Hydrometer
- Hygrometer
- Laser distance measure
- Levels (line, hand, zip laser)
- Light meter
- Measuring wheel
- Planimeter
- pH meter
- Scale ruler
- Tape measure
- Thermometer
- Tire pressure meter
- Water meter

**Student Equipment (supplied by school)*****Required - PPE and Safety Equipment***

- Chaps/ballistic pants
- Cones
- Chemical protection suits
- Ear protection
- Eye protection (glasses, shields)
- Eyewash kit
- Face shields
- Fall protection (harness)
- Fire extinguisher
- First Aid kits
- Flares
- Goggles
- Hard hat
- Lanyard
- Particle masks
- Reflective shirts, jackets
- Respirators
- Rubber gloves
- Safety vests
- Spill kit
- Traffic cones

Recommended - Office Equipment

- Camera
- Communication devices
- Computers
- Drafting scale 1-100
- Laminator
- Printer
- Thermal printer

Student Tools (supplied by student)***Required***

- CSA-approved steel-toed footwear

Recommended

- Calculator
- Hand lens (10x)
- Work gloves
- Rainwear



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>
- Botany for Gardeners - Latest edition. Capon, Brian. Timber Press, Portland, OR.
- Soil Science and Management - Latest edition. Plaster J. Edward. Thomson/Delmar Learning, Clifton Park, NY
- British Columbia Landscape Standard - Latest edition. BC Landscape and Nursery Association and the British Columbia Association of Landscape Architects, Surrey, BC
- Identify Plants and Describe Their Use – Module 1, HEBC 2012
- Communication and Organizational Skills – Module 1, HEBC 2012
- Equipment Maintenance and Safety – Module 1, HEBC 2012
- Plant Science for Horticulture – Module 1, HEBC 2012
- Plant Stress – Signs and Symptoms, HEBC 2012
- Soil and Soilless Media – Physical and Biological Characteristics – Module 1, HEBC 2012
- Horticultural Skills – Module 1, HEBC 2012

Recommended Resources

- Integrated Pest Management Manual for Landscape Pests in British Columbia. Gilkeson, Linda A. 2000. Pollution and Remediation Branch, Victoria, BC.
- WorkSafeBC Website (<http://www.worksafebc.com/>)
- Equipment Manufacturers Websites (Internet)

**Suggested Texts**

- Abiotic Disorders of Landscape Plants : A Diagnostic Guide - Costello, Laurence Raleigh. 2003. University of California, Agriculture and Natural Resources, Oakland, CA
- Home and Garden Pest Management Guide for British Columbia - B.C. Ministry of Agriculture Fisheries and Food Latest edition. Crown Publications, Victoria, BC
- B.C. Nursery and Landscape Pest Management and Production Guide - Latest edition. B.C. Ministry of Environment, Lands, and Parks. Latest Edition, Crown Publications, Victoria BC
- Ball Identification Guide to Greenhouse Pests and Beneficials - Gill, Stanton. 1998. Ball Publishing, Batavia, Ill.
- 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
- Soil Management Handbook for the Lower Fraser Valley - Bertrand, R.A., G.A. Hughes-Games, and D.C. Nikkel. 1991. Ministry of Agriculture, Fisheries & Food, Abbotsford, B.C.
- Western Fertilizer Handbook - Soil Improvement Committee, California Fertilizer Association. Latest edition (Horticulture ed.) Interstate Publishing Inc., Danville, Illinois
- Groundskeepers Safety Guide - Latest edition. Canadian Centre for Occupational Health and Safety, Hamilton, ON.
- Outdoor Power Equipment, Latest Edition, Webster, Jay, Nelson. Canada, Scarborough ON

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>
- Botany for Gardeners - Capon, Brian. Latest edition. Timber Press, Portland, OR.
- Integrated pest management manual for landscape pests in British Columbia - Gilkeson, Linda A. 2000. Pollution and Remediation Branch, Victoria, BC.
- Soil Science and Management - Latest edition. Plaster J. Edward. Thomson/Delmar Learning, Clifton Park, NY
- British Columbia Landscape Standard - Latest edition. BC Landscape and Nursery Association, BC Society of Landscape Architects, BC
- Canadian Standards for Nursery Stock - Latest edition. Canadian Nursery and Landscape Association
- 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

- Kwantlen University College School of Horticulture Plant identification Database, www.kwantlen.ca/horticulture/
<https://plantdatabase.kwantlen.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>)
- WorkSafeBC Website (<http://www.worksafebc.com/>)
- Equipment Manufacturers Websites (Internet)

Suggested Texts

- B.C. Nursery and Landscape Pest Management and Production Guide - Latest edition. B.C. Ministry of Environment, Lands, and Parks. Latest Edition, Crown Publications, Victoria BC
- Home and Garden Pest Management Guide for British Columbia - B.C. Ministry of Agriculture Fisheries and Food Latest edition. Crown Publications, Victoria, BC
- Abiotic disorders of landscape plants: a diagnostic guide - Costello, Laurence Raleigh. 2003. University of California, Agriculture and Natural Resources, Oakland, CA
- Ball Identification Guide to Greenhouse Pests and Beneficials - Gill, Stanton. 1998. Ball Publishing, Batavia, Ill.
- Pacific Northwest; Plant Disease Management Handbook - 2008. Extension Services of Oregon State University, Washington State University, and the University of Idaho



- Handbook for Pesticide Applicators and Pesticide Dispensers - Latest edition. Provincial Ministry of Environment, BC
- Western Fertilizer Handbook - Soil Improvement Committee, California Fertilizer Association. Latest edition. (Horticulture Ed.) Interstate Publishing Inc., Danville, Illinois
- Soil Fertility Manual - Latest edition. Potash & Phosphate Institute and the Foundation for Agronomic Research. Province of British Columbia Ministry of Skills, Training and Labour and the Centre for Curriculum and Professional Development, Norcross, GA
- 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.
- Outdoor Power Equipment, Latest Edition, Webster, Jay, Nelson. Canada, Scarborough ON

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

- Kwantlen University College School of Horticulture Plant identification Database, www.kwantlen.ca/horticulture/
<https://plantdatabase.kwantlen.ca>
- B.C. Nursery and Landscape Pest Management and Production Guide - Latest edition. B.C. Ministry of Environment, Lands, and Parks. Latest Edition, Crown Publications, Victoria, BC
- Home and Garden Pest Management Guide for British Columbia - B.C. Ministry of Agriculture Fisheries and Food Latest edition. Crown Publications, Victoria, BC.
- Integrated pest management manual for landscape pests in British Columbia - Gilkeson, Linda A. 2000. Pollution and Remediation Branch, Victoria, BC. (Also available online at <http://wlapwww.gov.bc.ca/epd/epdpa/ipmp/ipm-manuals.htm>).
- Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines - Harris, R., J. Clark, and N. Matheny. Latest edition. Prentice Hall Upper Saddle River, New Jersey,
- British Columbia Landscape Standard - Latest edition. BCLNA/BCSLA, Surrey B.C.
- Soil Science and Management - Latest edition. Plaster, E. J. Delmar Publishing. Albany, NY
- Irrigation System Design Binder - Hunter Industries. San Marcos, CA.
- A Guide to Troubleshooting Automatic Sprinkler Systems - The Toro Company. Riverside, CA.
- Low-Volume Landscape Irrigation Design Manual - Rain Bird Corporation. Glendora, CA.
- Principles of Exterior Drainage - NDS, Inc. Lindsay, CA.
- Landscape Construction - Latest edition. Sauter, David. Delmar Thomson Learning, Albany, NY

Recommended Resources

- Protecting Nature's Balance: IPM in B.C. - U.B.C. Access. (Video)

Suggested Texts

- IPM Training Manual for Landscape Gardeners - Daar Sheila, Helga Olkowski and William Oldowski. 1992. The Bio-Integral Resource Centre (BIRC), Berkley, CA
- IPM for Floriculture and Nurseries - Latest edition. Dreistadt, Steve (editor) University of California, Oakland CA Publication 3402
- Pests of Landscape Trees and Shrubs - Latest edition. Dreistadt, Steve (editor). University of California Oakland CA. Publication 3359.
- A Colour Handbook of Biological Control in Plant Protection - Latest edition. Helyer, N. et al. Timber Press, Portland, OR
- 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
- Applied Bionomics Biological Technical Manual - Latest edition. Matteoni, J.A. and Elliot, D. Applied Bionomics, Sydney, B.C.
- Concepts in Integrated Pest Management - Latest edition. Norris, R.F., et al. Prentice Hall. Upper Saddle River, NJ
- Common Sense Pest Control - Latest edition. Olkowski, W. et al. Taunton Press, Newtown, CT
- Pest Management Recommendations for Greenhouse Crops - Ontario Ministry of Agriculture Latest edition. Publication 365, Ontario MAF



- Nursery and Landscape Plant Production and IPM Publication 383 - Ontario Ministry of Agriculture. Latest edition. Ontario MAF
- Entomology and Pest Management - Latest edition. Pedigo, L. P. Prentice Hall, Upper Saddle River, NJ
- Arborists' Certification Study Guide - Latest edition. International Society of Arboriculture, Champaign III.
- Cavendish Encyclopedia of Pruning and Training - Brickell, C. 1996. Cavendish Books, Vancouver, B.C.
- An Illustrated Guide to Pruning - Latest edition. Gilman, Edward F. Delmar-Thomson Learning, NY.
- Soil Improvement Committee of the California Fertilizer Association. Western Fertilizer Handbook, Horticulture Edition. Latest edition. Interstate Publishers, Danville IL
- Simplified Irrigation Design - Melby, Pete. 1995. Van Nostrand Reinhold
- Irrigation System Design – an Engineering Approach - Cuenca, Richard H. 1989. Prentice-Hall, New York
- Drip Irrigation: For Every Landscape and All Climates - Kourik, Robert. 1992. Metamorphic Press, Santa Rosa, CA
- Course and Grounds Irrigation and Drainage - Jarrett, Albert R. Golf. 1985. Prentice-Hall, Reston, VA
- Golf Course Irrigation System Design - Pira, Edward S. 1998. Ann Arbor Press, Ann Arbor, MI
- Course and Grounds Irrigation and Drainage - Jarrett, Albert R. Golf. 1985. Prentice-Hall, Reston, VA
- Golf Course Irrigation System Design - Pira, Edward S. 1998. Ann Arbor Press, Ann Arbor, MI
- Turf Irrigation Manual - Choate, Richard B. 1994. Weathermatic Publishing, Dallas, TX

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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

- Kwantlen University College School of Horticulture Plant identification Database, www.kwantlen.ca/horticulture/
<https://plantdatabase.kwantlen.ca>
- BC Nursery and Landscape Pest Management and Production Guide - Latest edition. B.C. Ministry of Environment, Lands, and Parks. Latest Edition, Crown Publications, Victoria BC
- Home and Garden Pest Management Guide for British Columbia - B.C. Ministry of Agriculture Fisheries and Food Latest edition. Crown Publications, Victoria, BC
- Integrated pest management manual for landscape pests in British Columbia - Gilkeson, Linda A. 2000. Pollution and Remediation Branch, Victoria, BC.
- Arboriculture: Integrated Management of Landscape Trees, Shrubs and Vines. - Latest edition. Harris, Richard W., James R. Clark, Nelda P. Metheny. Prentice Hall, NJ
- British Columbia Landscape Standard - Latest edition. BC Landscape and Nursery Association and the British Columbia Association of Landscape Architects, Surrey, BC

Recommended Resources

- The Turf Line News - Western Canada Turfgrass Association, BC.
- Protecting Nature's Balance: IPM in B.C. - U.B.C. Access. (Video)

Suggested Texts

- IPM Training Manual for Landscape Gardeners - Daar Sheila, Helga Olkowski and William Oldowski. 1992. The Bio-Integral Resource Centre (BIRC), Berkley, CA
- IPM for Floriculture and Nurseries - Latest edition. Dreistadt, Steve (editor) University of California, Oakland CA Publication 3402
- Pests of Landscape Trees and Shrubs - Latest edition. Dreistadt, Steve (editor). University of California Oakland CA. Publication 3359
- A Colour Handbook of Biological Control in Plant Protection - Latest edition. Helyer, N. et al. Timber Press, Portland, OR
- Knowing and Recognizing - Latest edition. Malais, M.H. and Ravensberg, W.J. Koppert
- Biological Systems - Reed Business Information, Doetinchem, Netherlands
- Applied Bionomics Biological Technical Manual - Latest edition. Matteoni, J.A. and Elliot, D. Applied Bionomics, Sydney, B.C.
- Concepts in Integrated Pest Management - Latest edition. Norris, R.F., et al. Prentice Hall, Upper Saddle River, NJ
- Common Sense Pest Control - Latest edition. Olkowski, W. et al. Taunton Press, Newtown, CT
- Pest Management Recommendations for Greenhouse Crops - Latest edition. Ontario Ministry of Agriculture Publication 365, Ontario MAF
- Nursery and Landscape Plant Production and IPM Publication 383 - Latest edition. Ontario Ministry of Agriculture. Ontario MAF
- Entomology and Pest Management - Latest edition. Pedigo, L. P. Prentice Hall, Upper Saddle River, NJ
- Residential Landscape Architecture - 2nd edition. Booth, N. K. & Hiss, J.H. 1999. Prentice-Hall Publishing, Upper Saddle River, NJ



- Landscape Design A Practical Approach 4th edition - Hannebaum, L.G. 1998. Prentice-Hall Publishing, Upper Saddle River, NJ
- Turfgrass Management - 6th edition. Turgeon, A. J. 2002. Prentice-Hall Publishing, Upper Saddle River, NJ
- Fundamentals of Turfgrass Management - Christians, Nick. 1998. Ann Arbor Press, Chelsea MI
- Turfgrass Science and Management 3rd edition - Emmons, R. 1999. IPT, Delmar. Albany NY
- Turf Irrigation Manual - Choate, Richard B. 1994. Weathermatic Publishing, Dallas, TX
- Turfgrass Management - Turgeon, A. J. 2002. 6th edition. Prentice-Hall Publishing, Upper Saddle River, NJ
- Fundamentals of Turfgrass Management - Christians, Nick. 1998. Ann Arbor Press, Chelsea MI

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Instructor Requirements

Occupation Qualification

The instructor must possess:

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma
- 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

- Instructors with the Landscape Horticulture C of Q must have a minimum 2 years experience working in the industry as a journey person
- Or credentials for related subject matter competence

ADDITIONAL CREDENTIALS AND EXPERIENCE RECOMMENDED FOR SPECIFIC SUBJECT MATTER

LEVEL ONE

Subject Matter: Plant Identification and Use

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in Horticulture and 2 years of plant identification experience.

Subject Matter: Communication and Supervision

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

Subject Matter: Equipment Operation and Maintenance

- Subject matter competence as demonstrated by an Outdoor Power Equipment Trades Qualification/Apprentice Certificate.
- 5 years of relevant industry experience.

Subject Matter: 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.

Subject Matter: Analyze and Maintain Plant Health

- 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.

**Subject Matter: Physical and Biological Characteristics of Soil and Soilless Media**

- 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.

Subject Matter: Practical Horticultural Skills

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

LEVEL TWO**Subject Matter: Plant Identification and Use**

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in Horticulture and 2 years of plant identification experience.

Subject Matter: Communication and Supervision

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in with a minor in Business or Certified Landscape Professional. Two years of relevant industry experience.

Subject Matter: Equipment Operation and Maintenance

- Subject matter competence as demonstrated by an Outdoor Power Equipment Trades Qualification/Apprentice Certificate or equivalent within Horticulture training or education, with a minimum of 2 years of relevant industry experience.

Subject Matter: 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 5 years of experience in plant science.

Subject Matter: Analyze and Maintain Plant Health

- 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.

Subject Matter: Chemical Characteristics of Soil and Soilless Media

- 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.

Subject Matter: Practical Horticultural Skills

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



LEVEL THREE

Subject Matter: Plant Identification and Use

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in Horticulture, Botany, Agronomy, Plant Biology, Forestry, or Crop Science.

Subject Matter: Analyze and Maintain Plant Health

- Subject matter competence as demonstrated by a Horticulture Diploma or Baccalaureate Degree in Horticulture, Agronomy, Forestry, Crop Science, or Pest Management.

Subject Matter: Soil Science

- Subject matter competence as demonstrated by a Baccalaureate Degree in Soil Science Horticulture, Agronomy, Forestry, or Crop Science.

Subject Matter: Plant Maintenance

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in Horticulture, Botany, Agronomy, Plant Biology, Forestry, or Crop Science. Five years relevant industry experience.

Subject Matter: Install and Maintain Hardscapes

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in with a minor in Business or Certified Landscape Professional or Turf Certificate. Two years relevant industry experience.

LEVEL FOUR

Subject Matter: Plant Identification and Use

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in Horticulture, Botany, Agronomy, Plant Biology, Forestry, or Crop Science.

Subject Matter: Analyze and Maintain Plant Health

- Subject matter competence as demonstrated by a Horticulture Diploma or Baccalaureate Degree in Horticulture, Agronomy, Forestry, Crop Science, or Pest Management.

Subject Matter: Install and Maintain Softscape

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma combined with International Society of Arboriculture – Arborist Certification.

Subject Matter: Estimate Landscape Projects

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma, Certified Landscape Professional, or five years industry experience as an estimator. Two years relevant industry experience.

Subject Matter: Install and Maintain Softscape

- Subject matter competence as demonstrated by a Horticulture Trades Qualification/Apprentice Certificate or Horticulture Diploma or Baccalaureate Degree in with a minor in Business or Certified Landscape Professional or Turf Certificate. Two years relevant industry experience.



Subject Matter: Principles of Landscape Design

- Subject matter competence as demonstrated by a Horticulture Diploma (Landscape Design) or Certified Landscape Designer designation.