

Interprovincial Program Guide

Landscape Horticulturist

2010

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Table of Contents

Acknowledgements	2
Introduction	4
User Guide	5
IPG Glossary of Terms	7
Essential Skills Profiles	9
Profile Chart.....	10
Recommended Level Structure.....	12
2010 NOA Sub-Task to IPG Unit Comparison	13

PROGRAM CONTENT

Level 1.....	23
Level 2.....	39
Level 3.....	59

Introduction

Jurisdictions have long recognized the benefit of pooling resources in the development and maintenance of apprenticeship training standards. A successful example of this is the Interprovincial Standards Red Seal Program itself. Essential to the establishment of standards is the development of suitable training systems and programs which enable tradespeople to acquire certification based on these standards. While certification is the responsibility of Apprenticeship administrators throughout Canada, the development and delivery of technical training is the responsibility of jurisdictions.

In 1999, work to develop common training for apprenticeship programs within the Atlantic Provinces began. To date, 22 Curriculum Standards have been developed through the Atlantic Standards Partnership (ASP) project to assist programming staff and instructors in the design and delivery of technical training. Similarly, the Canadian Council of Directors of Apprenticeship (CCDA) embarked on a process for the development of national Interprovincial Program Guides (IPGs) for the Boilermaker, Carpenter and Sprinkler System Installer trades. At its January 2005 strategic planning session, the CCDA identified developing common training standards as one of key activities in moving towards a more cohesive apprenticeship system.

With the support of Human Resources and Skills Development Canada (HRSDC), several provinces and territories have partnered to build on the ASP and the CCDA processes to further develop IPGs to be used across the country. This partnership will create efficiencies in time and resources and promote consistency in training and apprentice mobility.

User Guide

According to the Canadian Apprenticeship Forum, the IPG is: "a list of validated technical training outcomes, based upon those sub-tasks identified as common core in the National Occupational Analysis (NOA), and validated by industry in the provinces and territories as incorporating the essential tasks, knowledge and skills associated with a given trade."

Learning outcomes contained in the IPG represent the minimum common core content for the development of jurisdictional training standards and outlines. IPGs are developed based on the NOAs and extensive industry consultation. The IPG is intended to assist program development staff in the design of jurisdictional plans of training. Each jurisdiction has the flexibility to add additional content.

The IPG was deliberately constructed for ease of use and flexibility of structure in order to adapt to all delivery requirements. It details units of training, unit outcomes and objectives. It does not impose a delivery model or teaching format.

Jurisdictions and/or training providers will select and develop delivery materials and techniques that accommodate a variety of learning styles and delivery patterns. The IPG does not dictate study materials, textbooks or learning activities to be used in delivery.

The IPG document includes a recommended leveling structure to facilitate mobility for apprentices moving from one jurisdiction to another. Because of difference in jurisdictional regulations and program durations, levels are offered as suggestions only.

Structure

The IPG is divided into units. The unit codes are used as a means of identification and are not intended to convey the order of delivery. Prerequisites have not been detailed. Each unit consists of *Learning Outcomes* and *Objectives and Content*.

The *Learning Outcomes* are the specific performances that must be evaluated. Wording of the learning outcomes, "Demonstrate knowledge of...", acknowledges the broad spectrum of ways in which knowledge can be shown. It is at the discretion of each jurisdiction to determine the manner in which learning outcomes are evaluated; theoretically, practically or a combination of both.

User Guide (*continued*)

The *Objectives and Content* for the unit details the information to be covered in order to achieve the performances specified in the *Learning Outcomes*. These objectives can be either theoretical or practical in nature, based on the requirements identified through the industry consultation process. The learning activities used to cover the objectives are at the discretion of the jurisdiction; however, practically worded objective statements have been used where industry indicated a need for the apprentices to receive exposure to performing the task or skill outlined while attending technical training. For example, this exposure could be done through instructor demonstration or individual or group performance of the skill or task. This practical training will help to reinforce the theoretical component of the technical training.

Detailed content for each objective has not been developed. Where detail is required for clarity, content has been provided. The content listed within the IPG document is **not** intended to represent an inclusive list; rather, it is included to illustrate the intended direction for the objective. Content may be added or extended in jurisdictional training plans as required.

Jurisdictions are free to deliver the IPG units one at a time or concurrently, provided that all *Learning Outcomes* are met. The IPG does not indicate the amount of time to be spent on a particular unit as the length of time required to deliver the *Learning Outcomes* successfully will depend upon the learning activities and teaching methods used.

Optional Units

In the 2010 Landscape Horticulturist NOA, Block D – Production of Plant Materials, is NOT COMMON CORE. This means the tasks in this block are performed by less than 70% of responding jurisdictions and the content will not be tested on the Interprovincial Red Seal Examination for the trade. Jurisdictions may choose to deliver the optional units because the learning outcomes cover the tasks performed by landscape horticulturists in their jurisdiction.

IPG Glossary of Terms

These definitions are intended as a guide to how language is used in the IPGs.

ADJUST	To put in good working order; regulate; bring to a proper state or position.
APPLICATION	The use to which something is put and/or the circumstance in which you would use it.
CHARACTERISTIC	A feature that helps to identify, tell apart, or describe recognizably; a distinguishing mark or trait.
COMPONENT	A part that can be separated from or attached to a system; a segment or unit.
DEFINE	To state the meaning of (a word, phrase, etc.).
DESCRIBE	To give a verbal account of; tell about in detail.
DIAGNOSE	To analyze or identify a problem or malfunction.
EXPLAIN	To make plain or clear; illustrate; rationalize.
IDENTIFY	To point out or name objectives or types.
INTERPRET	To translate information from observation, charts, tables, graphs, and written material.
MAINTAIN	To keep in a condition of good repair or efficiency.
METHOD	A means or manner of doing something that has procedures attached to it.
OPERATE	How an object works; to control or direct the functioning of.
PROCEDURE	A prescribed series of steps taken to accomplish an end.
PURPOSE	The reason for which something exists or is done, made or used.

IPG Glossary of Terms *(continued)*

SERVICE	<p>Routine inspection and replacement of worn or deteriorating parts.</p> <p>An act or business function provided to a customer in the course of one's profession. (e.g., haircut).</p>
TECHNIQUE	<p>Within a procedure, the manner in which technical skills are applied.</p>
TEST	<p>v. To subject to a procedure that ascertains effectiveness, value, proper function, or other quality.</p> <p>n. A way of examining something to determine its characteristics or properties, or to determine whether or not it is working correctly.</p>
TROUBLESHOOT	<p>To follow a systematic procedure to identify and locate a problem or malfunction and its cause.</p>

Essential Skills Profiles

Essential Skills are the skills needed for work, learning and life. They provide the foundation for learning all the other skills that enable people to evolve within their jobs and adapt to workplace change.

Over the past several years, the Government of Canada has conducted research examining the skills people use at work. From this research, Essential Skills Profiles have been developed for various occupations.

For more information regarding Essential Skills and to access Essential Skills Profiles for specific occupations, visit Human Resources and Skills Development Canada's Essential Skills website at:

www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

Profile Chart

OCCUPATIONAL SKILLS			
LHT-100 Safety	LHT-105 Hand and Power Tools	LHT-110 Vehicles, Equipment and Machinery	LHT-115 Plant Science
LHT-120 Plant Identification I	LHT-200 Plant Identification II	LHT-300 Plant Identification III	LHT-125 Soil Management
LHT-135 Communication	LHT-205 Pest and Disease Management	LHT-210 Trade Related Documents	LHT-230 Plant Inventory Management
LHT-250 Sales and Customer Relations	LHT-350 Estimating		
LANDSCAPE CONSTRUCTION			
LHT-140 Site Layout and Surveying	LHT-215 Plan Reading	LHT-220 Job Planning	LHT-225 Site Protection, Grading and Drainage
LHT-235 Plant Installation	LHT-240 Turf Establishment	LHT-245 Landscape Pavers	LHT-320 Irrigation
LHT-325 Landscape Walls	LHT-330 Concrete Construction	LHT-335 Wood Construction	LHT-340 Water Features and Low Voltage Landscape Lighting
LHT-345 Interior Plantscapes			
LANDSCAPE MAINTENANCE			
LHT-130 Fertilizers	LHT-305 Plant Care and Maintenance	LHT-310 Pruning	LHT-315 Turf Maintenance

Profile Chart (*Continued*)

PRODUCTION OF PLANT MATERIALS (NOT COMMON CORE)			
LHT-255 Plant Propagation* (Optional)	LHT-355 Growing Facilities* (Optional)	LHT-360 Plant Production* (Optional)	

*Optional Unit – see page 6 for explanation.

Recommended Level Structure

Level 1			Level 2		
Unit Code	Title	Page	Unit Code	Title	Page
LHT-100	Safety	24	LHT-200	Plant Identification II	40
LHT-105	Hand and Power Tools	25	LHT-205	Pest and Disease Management	42
LHT-110	Vehicles, Equipment and Machinery	26	LHT-210	Trade Related Documents	45
			LHT-215	Plan Reading	46
LHT-115	Plant Science	28	LHT-220	Job Planning	47
LHT-120	Plant Identification I	30	LHT-225	Site Protection, Grading and Drainage	48
LHT-125	Soil Management	33	LHT-230	Plant Inventory Management	50
			LHT-235	Plant Installation	51
LHT-130	Fertilizers	35	LHT-240	Turf Establishment	53
LHT-135	Communication	36	LHT-245	Landscape Pavers	54
			LHT-250	Sales and Customer Relations	56
LHT-140	Site Layout and Surveying	37	LHT-255	Plant Propagation*	57
Level 3					
Unit Code	Title	Page			
LHT-300	Plant Identification III	60			
LHT-305	Plant Care and Maintenance	62			
LHT-310	Pruning	63			
LHT-315	Turf Maintenance	65			
LHT-320	Irrigation	67			
LHT-325	Landscape Walls	69			
LHT-330	Concrete Construction	71			
LHT-335	Wood Construction	72			
LHT-340	Water Features and Low Voltage Landscape Lighting	73			
LHT-345	Interior Plantscapes	75			
LHT-350	Estimating	77			
LHT-355	Growing Facilities*	78			
LHT-360	Plant Production*	80			

*Optional Unit – see page 6 for explanation.

2010 NOA Sub-task to IPG Unit Comparison

NOA Sub-task		IPG Unit	
Task 1 - Uses and maintains tools and equipment.			
1.01	Maintains hand tools.	LHT-100	Safety
		LHT-105	Hand and Power Tools
1.02	Maintains power tools.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
1.03	Maintains measuring equipment.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
1.04	Maintains vehicles and motorized equipment.	LHT-110	Vehicles, Equipment and Machinery
1.05	Maintains equipment attachments.	LHT-110	Vehicles, Equipment and Machinery
1.06	Uses personal protective equipment (PPE).	LHT-100	Safety
1.07	Transports equipment.	LHT-110	Vehicles, Equipment and Machinery
Task 2 - Organizes work.			
2.01	Performs site assessments.	LHT-230	Plant Inventory Management
		LHT-240	Turf Establishment
		LHT-140	Site Layout and Surveying
		LHT-225	Site Protection, Grading and Drainage
2.02	Uses documentation and reference material.	LHT-100	Safety
		LHT-135	Communication
		LHT-210	Trade Related Documents
		LHT-250	Sales and Customer Relations
		LHT-215	Plan Reading
		LHT-120	Plant Identification I
		LHT-200	Plant Identification II
		LHT-300	Plant Identification III
		LHT-230	Plant Inventory Management
		LHT-205	Pest and Disease Management
2.03	Maintains records.	LHT-135	Communication
		LHT-210	Trade Related Documents
		LHT-230	Plant Inventory Management
2.04	Complies with policies and regulations.	LHT-100	Safety
		LHT-210	Trade Related Documents

NOA Sub-task		IPG Unit	
		LHT-105	Hand and Power Tools
		LHT-205	Pest and Disease Management
		LHT-130	Fertilizers
2.05	Plans daily tasks.	LHT-135	Communication
		LHT-210	Trade Related Documents
		LHT-220	Job Planning
		LHT-215	Plan Reading
2.06	Communicates with others.	LHT-135	Communication
		LHT-250	Sales and Customer Relations
2.07	Orders plants and materials.	LHT-210	Trade Related Documents
		LHT-220	Job Planning
		LHT-350	Estimating
		LHT-230	Plant Inventory Management
2.08	Transports materials.	LHT-110	Vehicles, Equipment and Machinery
		LHT-230	Plant Inventory Management
2.09	Organizes plants, materials and equipment.	LHT-220	Job Planning
		LHT-110	Vehicles, Equipment and Machinery
		LHT-215	Plan Reading
		LHT-140	Site Layout and Surveying
		LHT-230	Plant Inventory Management
		LHT-125	Soil Management
2.10	Maintains safe work environment.	LHT-100	Safety
Task 3 - Participates in marketing and sales.			
3.01	Controls inventory.	LHT-210	Trade Related Documents
		LHT-220	Job Planning
		LHT-230	Plant Inventory Management
3.02	Sells products and services.	LHT-135	Communication
		LHT-250	Sales and Customer Relations
3.03	Maintains customer relations.	LHT-135	Communication
		LHT-250	Sales and Customer Relations
3.04	Performs estimating, tendering and contracting.	LHT-135	Communication
		LHT-210	Trade Related Documents
		LHT-350	Estimating
Task 4 - Analyses and maintains plant health.			
4.01	Identifies plants and plant requirements.	LHT-120	Plant Identification I
		LHT-200	Plant Identification II
		LHT-300	Plant Identification III
4.02	Manages growing conditions.	LHT-230	Plant Inventory Management
		LHT-125	Soil Management

NOA Sub-task		IPG Unit	
4.03	Manages pests and diseases.	LHT-205	Pest and Disease Management
Task 5 - Performs pre-construction activities.			
5.01	Participates in basic landscape design activities.	LHT-215	Plan Reading
		LHT-140	Site Layout and Surveying
5.02	Interprets landscape plans.	LHT-250	Sales and Customer Relations
		LHT-220	Job Planning
		LHT-215	Plan Reading
		LHT-350	Estimating
5.03	Participates in job planning activities.	LHT-100	Safety
		LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-220	Job Planning
		LHT-350	Estimating
		LHT-140	Site Layout and Surveying
5.04	Prepares site.	LHT-100	Safety
		LHT-135	Communication
		LHT-105	Hand and Power Tools
		LHT-220	Job Planning
		LHT-215	Plan Reading
		LHT-140	Site Layout and Surveying
Task 6 - Installs softscape.			
6.01	Installs erosion control materials.	LHT-110	Vehicles, Equipment and Machinery
		LHT-215	Plan Reading
		LHT-140	Site Layout and Surveying
6.02	Installs growing media.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-215	Plan Reading
		LHT-230	Plant Inventory Management
		LHT-235	Plant Installation
		LHT-130	Fertilizers
		LHT-240	Turf Establishment
LHT-140	Site Layout and Surveying		
6.03	Installs interior landscape plants.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-220	Job Planning
		LHT-215	Plan Reading
		LHT-235	Plant Installation

NOA Sub-task		IPG Unit	
		LHT-230	Plant Inventory Management
		LHT-310	Pruning
		LHT-140	Site Layout and Surveying
		LHT-320	Irrigation
		LHT-345	Interior Landscapes
6.04	Installs exterior landscape plants.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-215	Plan Reading
		LHT-230	Plant Inventory Management
		LHT-235	Plant Installation
		LHT-310	Pruning
		LHT-140	Site Layout and Surveying
6.05	Installs turf from seed.	LHT-320	Irrigation
		LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-240	Turf Establishment
6.06	Installs sod.	LHT-320	Irrigation
		LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-215	Plan Reading
		LHT-240	Turf Establishment
6.07	Installs mulch.	LHT-320	Irrigation
		LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-215	Plan Reading
		LHT-230	Plant Inventory Management
Task 7 - Installs hardscape.			
7.01	Installs drainage systems.	LHT-235	Plant Installation
		LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-215	Plan Reading
		LHT-220	Job Planning
7.02	Installs landscape structures.	LHT-140	Site Layout and Surveying
		LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery

NOA Sub-task		IPG Unit	
		LHT-220	Job Planning
		LHT-215	Plan Reading
		LHT-140	Site Layout and Surveying
		LHT-245	Landscape Pavers
		LHT-325	Landscape Walls
		LHT-330	Concrete Construction
		LHT-335	Wood Construction
		LHT-340	Water Features and Low Voltage Landscape Lighting
7.03	Installs walkway, patio, driveway and parking lot materials.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-220	Job Planning
		LHT-215	Plan Reading
		LHT-140	Site Layout and Surveying
		LHT-245	Landscape Pavers
		LHT-330	Concrete Construction
7.04	Installs steps and retaining walls.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-220	Job Planning
		LHT-215	Plan Reading
		LHT-140	Site Layout and Surveying
		LHT-245	Landscape Pavers
		LHT-325	Landscape Walls
		LHT-330	Concrete Construction
7.05	Installs irrigation systems.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-220	Job Planning
		LHT-215	Plan Reading
		LHT-140	Site Layout and Surveying
		LHT-320	Irrigation
7.06	Installs water features.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-220	Job Planning
		LHT-215	Plan Reading
		LHT-230	Plant Inventory Management

NOA Sub-task		IPG Unit	
		LHT-140	Site Layout and Surveying
		LHT-340	Water Features and Low Voltage Landscape Lighting
7.07	Installs low voltage landscape lighting.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-220	Job Planning
		LHT-140	Site Layout and Surveying
		LHT-340	Water Features and Low Voltage Landscape Lighting
Task 8 - Maintains softscape.			
8.01	Maintains growing media.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-115	Plant Science
		LHT-125	Soil Management
		LHT-230	Plant Inventory Management
		LHT-205	Pest and Disease Management
		LHT-305	Plant Care and Maintenance
8.02	Maintains grass/turf.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-115	Plant Science
		LHT-205	Pest and Disease Management
		LHT-130	Fertilizers
		LHT-315	Turf Maintenance
		LHT-240	Turf Establishment
		LHT-320	Irrigation
8.03	Maintains interior softscape.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-220	Job Planning
		LHT-345	Interior Landscapes
		LHT-230	Plant Inventory Management
		LHT-205	Pest and Disease Management
		LHT-305	Plant Care and Maintenance
		LHT-310	Pruning
		LHT-130	Fertilizers
LHT-320	Irrigation		

NOA Sub-task		IPG Unit	
8.04	Maintains exterior softscape.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-220	Job Planning
		LHT-120	Plant Identification I
		LHT-200	Plant Identification II
		LHT-300	Plant Identification III
		LHT-230	Plant Inventory Management
		LHT-305	Plant Care and Maintenance
		LHT-205	Pest and Disease Management
		LHT-310	Pruning
		LHT-130	Fertilizers
LHT-320	Irrigation		
Task 9 - Maintains hardscape.			
9.01	Maintains drainage systems.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-220	Job Planning
		LHT-215	Plan Reading
		LHT-140	Site Layout and Surveying
		LHT-225	Site Protection, Grading and Drainage
9.02	Maintains walkways, patios, driveways and parking lots.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-245	Landscape Pavers
		LHT-330	Concrete Construction
		LHT-335	Wood Construction
9.03	Maintains irrigation systems.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-120	Plant Identification I
		LHT-200	Plant Identification II
		LHT-300	Plant Identification III
		LHT-230	Plant Inventory Management
		LHT-240	Turf Establishment
		LHT-320	Irrigation
9.04	Maintains landscape lighting.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery

NOA Sub-task		IPG Unit	
		LHT-340	Water Features and Low Voltage Landscape Lighting
9.05	Maintains water features.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-230	Plant Inventory Management
		LHT-340	Water Features and Low Voltage Landscape Lighting
9.06	Maintains steps and retaining walls.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-325	Landscape walls
		LHT-245	Landscape Pavers
		LHT-330	Concrete Construction
		LHT-335	Wood Construction
9.07	Maintains landscape structures.	LHT-105	Hand and Power Tools
		LHT-110	Vehicles, Equipment and Machinery
		LHT-325	Landscape walls
		LHT-245	Landscape Pavers
		LHT-330	Concrete Construction
		LHT-335	Wood Construction
		LHT-340	Water Features and Low Voltage Landscape Lighting
Task 10 - Manages growing facilities. (NOT COMMON CORE)			
10.01	Manages structures and contents. (NOT COMMON CORE)	LHT-355	Growing Facilities*
		LHT-355	Growing Facilities*
10.02	Manages climate control and components. (NOT COMMON CORE)	LHT-355	Growing Facilities*
10.03	Manages irrigation and fertigation systems. (NOT COMMON CORE)	LHT-355	Growing Facilities*
10.04	Manages sanitary environment. (NOT COMMON CORE)	LHT-355	Growing Facilities*
Task 11 - Manages greenhouse crops. (NOT COMMON CORE)			
11.01	Propagates plant materials. (NOT COMMON CORE)	LHT-255	Plant Propagation*
11.02	Transplants plants. (NOT COMMON CORE)	LHT-255	Plant Propagation*
11.03	Grows crops. (NOT COMMON CORE)	LHT-360	Plant Production*
		LHT-255	Plant Propagation*

NOA Sub-task		IPG Unit	
11.04	Ships greenhouse crops. (NOT COMMON CORE)	LHT-255	Plant Propagation*
Task 12 - Manages nursery, field and container crops. (NOT COMMON CORE)			
12.01	Propagates nursery, field and container crops. (NOT COMMON CORE)	LHT-255	Plant Propagation*
12.02	Grows nursery, field and container crops. (NOT COMMON CORE)	LHT-360	Plant Production*
12.03	Harvests nursery, field and container crops. (NOT COMMON CORE)	LHT-360	Plant Production*
		LHT-255	Plant Propagation*
12.04	Ships nursery, field and container crops. (NOT COMMON CORE)	LHT-255	Plant Propagation*

*Optional Unit – see page 6 for explanation.

LEVEL 1

LHT-100 Safety

Learning Outcomes:

- Demonstrate knowledge of safety equipment, their applications, maintenance and procedures for use.
- Demonstrate knowledge of safe work practices.
- Demonstrate knowledge of regulatory requirements pertaining to safety.

Objectives and Content:

1. Identify types of personal protective equipment (PPE) and clothing and describe their applications.
2. Describe the procedures for care and maintenance of PPE.
3. Identify hazards and describe safe work practices and equipment.
 - i) personal
 - ii) workplace
 - iii) environment
4. Identify and describe workplace safety and health regulations.
 - i) federal
 - Material Safety Data Sheets (MSDS)
 - Workplace Hazardous Material Information System (WHMIS)
 - Transportation of Dangerous Goods (TDG)
 - Pest Management Regulatory Agency (PMRA)
 - ii) provincial/territorial
 - occupational health and safety (OH&S)
 - iii) municipal

LHT-105 Hand and Power Tools

Learning Outcomes:

- Demonstrate knowledge of hand, power and measuring tools and equipment, their applications, maintenance and procedures for use.

Objectives and Content:

1. Identify hazards and describe safe work practices pertaining to tools and equipment.
2. Describe the implications of hand and power tool selection and use on the practice of environmental stewardship.
3. Identify types of hand tools and describe their applications and procedures for use.
4. Describe the procedures used to inspect, maintain, sharpen, clean and store hand tools.
5. Identify types of power equipment and describe their applications, limitations and procedures for use.
 - i) electric
 - ii) gas
 - two cycle engine
 - four cycle engine
6. Describe the daily/seasonal operating procedures used to inspect, maintain, sharpen, clean, and store power tools.
7. Identify types of measuring tools and equipment and describe their applications and procedures for use.
8. Describe the procedures used to inspect, clean, maintain and store measuring tools and equipment.
9. Use and maintain hand, power and measuring tools applicable to the workplace.

LHT-110 Vehicles, Equipment and Machinery

Learning Outcomes:

- Demonstrate knowledge of vehicles/trailers, equipment and machinery, and their applications, operation and procedures for use.

Objectives and Content

1. Identify hazards and describe safe work practices pertaining to vehicles/trailers, equipment and machinery.
2. Describe the implications of vehicle, equipment and machinery selection and use on the practice of environmental stewardship.
3. Interpret codes and regulations pertaining to vehicles/trailers, equipment and machinery.
4. Identify types of engines and describe their characteristics, applications and operation.
 - i) gasoline/propane
 - ii) diesel
 - iii) electric
5. Identify basic vehicle systems and components and describe their characteristics and operation.
 - i) drive systems
 - ii) brakes
 - iii) control/safety systems
6. Describe the daily/seasonal operating procedures used to inspect, clean and maintain engines.
 - i) safety checks
 - ii) manufacturer's specifications/operators equipment manual
7. Identify types of equipment and machinery and describe their characteristics, applications and operation.
 - i) components
 - ii) attachments

8. Describe the daily/seasonal operating procedures used to inspect, maintain, clean and store equipment and machinery.
9. Describe the procedures used to load/unload, secure and transport tools, equipment and machinery.
10. Describe the daily/seasonal operating procedures used to inspect, maintain, clean and store vehicles/trailers.
11. Describe the operating procedures when hauling a trailer.

LHT-115 Plant Science

Learning Outcomes:

- Demonstrate knowledge of plant growth and development.
- Demonstrate knowledge of plant nutrient requirements.

Objectives and Content:

1. Define terminology associated with plant science.
2. Identify the factors which impact on plant growth and development.
 - i) temperature
 - ii) hardiness
 - iii) growing medium
 - iv) air quality
 - carbon dioxide
 - oxygen
 - humidity
 - v) light
 - vi) water
 - vii) pests and disease
 - viii) environmental stresses
 - ix) plant life cycle
3. Identify plant anatomy and morphology.
 - i) cell types
 - ii) tissues
 - iii) organs
 - leaves
 - stems
 - roots
 - flowers
 - fruits
 - seeds
4. Explain the function of a plant as an organism.
 - i) reproduction
 - ii) photosynthesis

- iii) respiration
 - iv) transpiration
 - v) hormones
 - vi) dormancy
5. Identify plant nutrients and describe the impact of nutrient deficiencies/excess on plants and plant growth.

Learning Outcomes:

- Demonstrate knowledge of the International Code of Botanical Nomenclature used for plant identification.

Objectives and Content:

1. Explain the International Code of Botanical Nomenclature and its use in plant identification.
 - i) family
 - ii) genus
 - iii) species
 - iv) variety/cultivar
 - v) common name
 - vi) nursery trademarks
2. Interpret the use of dichotomous keys to classify plants.
3. Identify plant categories and describe their characteristics.
 - i) herbaceous
 - ii) woody
 - iii) annual
 - iv) perennial
 - v) biennial
4. Use plant morphology to categorize a plant to the family level.
 - i) leaves/needles
 - ii) flowers/fruits/seeds
 - iii) buds
 - iv) bark
 - v) growth habits
5. Use plant morphology to categorize the plants on the list to the genus and species level (see chart below).
 - i) leaves/needles
 - ii) flowers/fruits/seeds
 - iii) buds

- iv) bark
 - v) growth habits
6. Describe the cultural requirements of these plants.
- i) moisture
 - ii) light
 - iii) soil type
 - iv) hardiness
 - v) nutrients
 - vi) propagation
 - vii) salt tolerance
7. Identify the considerations for the selection of these plants for specific uses.
- i) residential applications
 - ii) commercial applications
 - iii) reclamation/restoration
 - iv) location and environment
8. Select plants for specific applications.

Landscape Horticulturist Plant List by Family

	Family	Latin name	Common name	Character
1	ASTERACEAE	<i>Gerbera jamesonii</i>	Transvaal Daisy	Annual
2	ASTERACEAE	<i>Aster spp.</i>	Common Aster	Perennial
3	ASTERACEAE	<i>Leucanthemum x superbum</i>	Shasta Daisy	Perennial
4	ASTERACEAE	<i>Rudbeckia fulgida</i>	Black Eyed Susan	Perennial
5	BERBERIDACEAE	<i>Berberis thunbergii</i>	Japanese Barberry	Tree/Shrub
6	BETULACEAE	<i>Betula papyrifera</i>	Paper Birch	Tree/Shrub
7	BRASSICACEAE	<i>Lobularia maritima</i>	Alyssum	Annual
8	BRASSICACEAE	<i>Iberis sempervirens</i>	Candytuft	Perennial
9	CAPRIFOLIACEAE	<i>Lonicera x brownii 'Dropmore Scarlet'</i>	Scarlet Trumpet Honeysuckle	Tree/Shrub
10	CAPRIFOLIACEAE	<i>Symphoricarpos albus</i>	Snowberry	Tree/Shrub
11	CARYOPHYLLACEAE	<i>Dianthus chinensis</i>	Dianthus/China Pink	Annual
12	CELASTRACEAE	<i>Euonymus alatus</i>	Winged Burning Bush	Tree/Shrub
13	CRASSULACEAE	<i>Sedum spectabile</i>	Stonecrop	Perennial
14	CUPRESSACEAE	<i>Juniperus horizontalis</i>	Horizontal Juniper	Tree/Shrub
15	CUPRESSACEAE	<i>Thuja occidentalis</i>	Eastern White Cedar	Tree/Shrub
16	DRYOPTERIDACEAE	<i>Matteuccia struthiopteris</i>	Ostrich Fern	Perennial
17	ERICACEAE	<i>Arctostaphylos uva-ursi</i>	Bearberry/Kinnikinnick	Tree/Shrub
18	FUMARIACEAE	<i>Dicentra spectabilis</i>	Bleeding Heart	Perennial

	Family	Latin name	Common name	Character
19	GERANIACEAE	<i>Pelargonium spp.</i>	Geranium	Annual
20	LAMIACEAE	<i>Salvia splendens</i>	Scarlet Sage	Annual
21	LAMIACEAE	<i>Monarda didyma</i>	Bee Balm	Perennial
22	LILIACEAE	<i>Hemerocallis spp.</i>	Daylily	Perennial
23	LILIACEAE	<i>Hosta spp.</i>	Hosta	Perennial
24	OLEACEAE	<i>Syringa vulgaris</i>	Common Lilac	Tree/Shrub
25	PINACEAE	<i>Picea glauca</i>	White Spruce	Tree/Shrub
26	PINACEAE	<i>Pinus mugo</i>	Mugo Pine, Swiss Mountain Pine	Tree/Shrub
27	POACEAE	<i>Miscanthus sinensis</i>	Maiden Grass	Perennial
28	POACEAE	<i>Calamagrostis x acutiflora</i>	Feather Reed Grass	Perennial
29	RANUNCULACEAE	<i>Delphinium elatum</i>	Perennial Larkspur	Perennial
30	RANUNCULACEAE	<i>Trollius europaeus</i>	Globeflower	Perennial
31	ROSACEAE	<i>Amelanchier alnifolia</i>	Service Berry	Tree/Shrub
32	ROSACEAE	<i>Rosa rugosa</i>	Rugosa Rose	Tree/Shrub
33	ROSACEAE	<i>Sorbus aucuparia</i>	European Mountain Ash	Tree/Shrub
34	ROSACEAE	<i>Spiraea japonica</i>	Japanese Spirea	Tree/Shrub
35	SALICACEAE	<i>Populus tremuloides</i>	Trembling Aspen	Tree/Shrub
36	SAPINDACEAE	<i>Acer ginnala</i>	Amur Maple	Tree/Shrub
37	SAPINDACEAE	<i>Acer saccharinum</i>	Silver Maple	Tree/Shrub
38	TAXACEAE	<i>Taxus x media</i>	Yew	Tree/Shrub
39	TILIACEAE	<i>Tilia cordata</i>	Little Leaf Linden	Tree/Shrub
40	VITACEAE	<i>Parthenocissus quinquefolia</i>	Virginia Creeper	Tree/Shrub

LHT-125 Soil Management

Learning Outcomes:

- Demonstrate knowledge of soil types and soil amendments.

Objectives and Content:

1. Identify physical soil characteristics that must be considered when determining the suitability for plant growth.
 - i) soil formation
 - ii) drainage
 - iii) aeration/porosity
 - iv) water retention
 - v) compaction
 - vi) soil texture/structure
2. Describe the implications of soil management on the practice of environmental stewardship.
3. Identify types of media and describe their characteristics and applications.
 - i) native soil
 - ii) soilless medium
 - iii) manufactured soil
 - iv) compost
4. Identify the soil characteristics that impact soil chemical and biological properties.
 - i) nutrient availability
 - ii) chemical composition
 - soil acidity/alkalinity
 - soil salinity
 - cation exchange capacity
 - iii) organic matter
 - iv) biological activity
5. Explain the procedures used for taking soil samples.
6. Identify types of soil tests and describe their characteristics and applications.

7. Identify types of soil amendments and describe their characteristics and applications.
 - i) organic
 - ii) inorganic
8. Identify the considerations when selecting soil amendments for plants.
9. Describe the procedures used to apply and/or incorporate soil amendments.
10. Describe the procedures used to store, transport and dispose of soil and soil amendment products and packaging.
11. Select and incorporate soil amendments.
12. Interpret soil test results.

LHT-130 Fertilizers

Learning Outcomes:

- Demonstrate knowledge of the codes and regulations pertaining to fertilizers.
- Demonstrate knowledge of the characteristics of fertilizers.
- Demonstrate knowledge of the procedures and equipment used for the application, handling, transport, storage and disposal of fertilizers.

Objectives and Content:

1. Define terminology associated with fertilizers.
2. Identify hazards and describe safe work practices pertaining to fertilizers and their use.
3. Describe the implications of fertilizer management on the practice of environmental stewardship.
4. Identify types of fertilizers and describe their characteristics and applications.
5. Interpret codes and regulations pertaining to fertilizers.
6. Describe the analysis and formulation of fertilizers.
7. Describe the procedures and equipment used for the application of fertilizers.
8. Describe the procedures and equipment used to store, dispose and transport fertilizers.
9. Calibrate application equipment.

LHT-135 Communication

Learning Outcomes:

- Demonstrate knowledge of effective communication practices.
- Demonstrate knowledge of communication equipment and their applications.

Objectives and Content:

1. Identify effective communication practices.
2. Describe the importance of the coaching and mentoring relationship between journey person and apprentice.
3. Identify the types of communication methods and equipment and describe their applications.
4. Describe the importance of effective verbal, non-verbal and written communication with clients, contractors, suppliers and employees.
5. Communicate effectively using verbal and non-verbal techniques.
6. Prepare and deliver an informal presentation related to an industrial topic.

LHT-140 Site Layout and Surveying

Learning Outcomes:

- Demonstrate knowledge of the procedures used to perform site layout and surveying.

Objectives and Content:

1. Define terminology associated with site layout and surveying.
2. Identify hazards and describe safe work practices pertaining to site layout and surveying.
3. Describe the implications of site layout and surveying on the practice of environmental stewardship.
4. Interpret documentation pertaining to site layout and surveying.
 - i) plans
 - ii) specifications
5. Identify specific tools and equipment relating to site layout and surveying, and describe their applications and procedures for use.
6. Identify the methods and procedures used to stake out points when performing site layout.
 - i) grade levels and stake interpretation
 - ii) grid system
 - iii) triangulation
 - iv) distance and vector
7. Perform site layout.
8. Demonstrate the set up and use of surveying equipment.

LEVEL 2

Learning Outcomes:

- Demonstrate knowledge of additional plants, their characteristics and cultural requirements.

Objectives and Content:

1. Use plant morphology to categorize a plant to the family level.
 - i) leaves/needles
 - ii) flowers/fruits/seeds
 - iii) buds
 - iv) bark
 - v) growth habits

2. Use plant morphology to categorize the plants on the list to the genus and species level (see chart below).
 - i) leaves/needles
 - ii) flowers/fruits/seeds
 - iii) buds
 - iv) bark
 - v) growth habits

3. Describe the cultural requirements of these additional plants.
 - i) moisture
 - ii) light
 - iii) soil type
 - iv) hardiness
 - v) nutrients
 - vi) propagation
 - vii) salt tolerance

4. Identify the considerations for the selection of these additional plants for specific uses.
 - i) residential applications
 - ii) commercial applications
 - iii) reclamation/restoration
 - iv) location and environment

5. Select plants for specific applications.

Landscape Horticulturist Plant List by Family

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

LHT-205 Pest and Disease Management

Learning Outcomes:

- Demonstrate knowledge of codes and regulations pertaining to pest and disease management.
- Demonstrate knowledge of types of pests and diseases and the procedures used to manage them.
- Demonstrate knowledge of the procedures used to handle, transport, apply, store and dispose of pest and disease management products and tools.
- Demonstrate knowledge of pest control products, formulations and application equipment.

Objectives and Content:

1. Define terminology associated with pest and disease management.
2. Define the components of an Integrated Pest Management (IPM) program.
3. Describe the implications of IPM on the practice of environmental stewardship.
4. Identify methods used for pest and disease management and treatment.
 - i) regulatory
 - ii) physical/mechanical
 - iii) cultural
 - iv) biological
 - v) chemical
5. Identify hazards and describe safe work practices pertaining to pest and disease management.
6. Interpret and complete documentation pertaining to pest and disease management.
 - i) pest and disease monitoring
 - ii) treatment and management records
 - iii) evaluation of pest and disease management methods

7. Interpret codes and regulations pertaining to pest and disease management methods and products.
 - i) environmental protection
 - ii) personal protective equipment (PPE)
8. Identify the considerations for selecting and applying pest and disease management measures.
 - i) pest/disease populations
 - ii) injury levels
 - iii) action thresholds
 - iv) beneficial insect pest populations
9. Identify specific tools and equipment relating to pest and disease management and describe their applications and procedures for use.
10. Identify common types of pests in relation to the landscape and describe their characteristics and life cycles.
 - i) arthropods
 - ii) nematodes
 - iii) birds and mammals
 - iv) weeds
11. Identify common types of diseases and disorders in relation to the landscape and describe their characteristics.
 - i) biotic
 - ii) abiotic
12. Identify the factors for selecting and applying pest and disease management measures.
 - i) site analysis
 - ii) pest/disease populations
 - iii) injury levels
 - iv) action thresholds
 - v) monitoring techniques
13. Describe the procedures used to implement pest and disease management measures.
 - i) management techniques
 - ii) preparation
 - iii) equipment selection

- iv) equipment calibration
 - v) application techniques
14. Describe the procedures associated with the handling, transportation, storage and disposal of pest and disease management related products and materials.
- i) pest and disease management products
 - ii) infested or contaminated plant material or soil
 - iii) pest management product containers
15. Select, apply and record pest and disease management measures.

LHT-210 Trade Related Documents

Learning Outcomes:

- Demonstrate knowledge of trade related documents and their use.
- Demonstrate knowledge of the procedures used to prepare documentation.

Objectives and Content:

1. Identify types of trade related documents and describe their applications.
 - i) manufacturers' specifications
 - ii) blueprints
 - iii) guidelines, codes and standards
 - hardscape specifications
 - softscape specifications
 - safety specifications
 - iv) contracts and proposals
 - tenders/tendering
 - guarantees/warranties

2. Identify types of documentation and describe the procedures used to prepare them.
 - i) work orders
 - change
 - job
 - material
 - ii) reports
 - hazard assessment
 - safety
 - workers compensation
 - iii) maintenance/service/stock/inventory records
 - shop
 - job site
 - vehicle
 - equipment

3. Prepare and complete trade related forms and documents.

LHT-215 Plan Reading

Learning Outcomes:

- Demonstrate knowledge of landscape plans and associated documentation.

Objectives and Content:

1. Identify types of landscape plans and documentation and describe their characteristics and applications.
2. Interpret information and design principles on landscape plans.
 - i) title block
 - ii) legend
 - iii) scale
 - iv) symbols
 - v) elements
 - vi) hazards
 - vii) details
 - viii) plant material
 - colour
 - texture
 - scale
 - form
3. Interpret information on specifications.
 - i) general conditions
 - ii) supplementary conditions
 - iii) contract personnel
4. Interpret and extract information from landscape plans and documentation.

LHT-220 Job Planning

Learning Outcomes:

- Demonstrate knowledge of trade related documentation.
- Demonstrate knowledge of the procedures used to plan job tasks.

Objectives and Content:

1. Define terminology associated with job planning.
2. Identify hazards and describe safe work practices pertaining to job planning.
3. Identify types of trade related documentation and describe their applications and procedures for use.
 - i) drawings
 - ii) qualifications
 - iii) specifications
 - iv) codes and standards
 - v) manuals
 - vi) permits
 - vii) regulations
 - viii) policies
4. Identify the considerations and requirements when planning jobs and job tasks.
 - i) site assessment
 - ii) materials and equipment
 - iii) personnel
 - iv) sequence of work
 - v) on-site staging
 - vi) clean-up/debris removal
5. Explain the importance of accurate record keeping and describe the associated procedures.
6. Plan job tasks.
7. Maintain accurate records.

Learning Outcomes:

- Demonstrate knowledge of the procedures used to protect features on the site.
- Demonstrate knowledge of the procedures used to perform grading and install drainage systems.
- Demonstrate knowledge of the installation of erosion control materials.

Objectives and Content:

1. Define terminology associated with site protection, grading and drainage systems.
2. Identify hazards and describe safe work practices pertaining to site layout, surveying, grading and drainage.
3. Describe the implications of site protection, grading and drainage on the practice of environmental stewardship.
4. Interpret codes and regulations pertaining to site protection, grading and drainage.
5. Interpret documentation pertaining to site protection, grading and drainage.
 - i) grading plans
 - existing grades
 - proposed grades
 - rough grades
 - finished grades
 - ii) drainage plans
 - iii) specifications
6. Identify specific tools, equipment and attachments relating to site protection, grading and drainage, and describe their applications and procedures for use.
7. Identify the methods used to establish protection zones.
8. Identify types of grading and drainage systems.

9. Describe the procedures used to perform site grading.
 - i) rough grading
 - ii) grading for drainage
 - iii) finish grading

10. Identify erosion and sediment control materials and describe their characteristics and applications.

11. Describe the procedures used to install erosion and sediment control materials.

LHT-230 Plant Inventory Management

Learning Outcomes:

- Demonstrate knowledge of the procedures for ordering, receiving, storing and transporting of plant materials.

Objectives and Content:

1. Define terminology associated with ordering, receiving, storing and transporting plant materials.
2. Identify hazards and describe safe work practices pertaining to handling plant materials.
3. Interpret documentation relevant to ordering, receiving, storing and transporting plant materials.
 - i) plans
 - ii) specifications
 - iii) regulations
 - iv) shipping documentation
4. Describe the procedures for ordering plant materials.
5. Explain the process for verifying and accepting plant material shipments.
 - i) required documentation
 - ii) verification of order
 - quantity
 - variety
 - size
 - iii) quality
6. Describe the procedures used for transporting and storing plant materials.
 - i) transportation methods
 - ii) loading
 - iii) securing
 - iv) protecting
 - v) unloading
 - vi) holding area

LHT-235 Plant Installation

Learning Outcomes:

- Demonstrate knowledge of the procedures used to install herbaceous and woody plant materials.

Objectives and Content:

1. Identify hazards and describe safe work practices pertaining to the installation of woody plants.
2. Describe the implications of plant installation on the practice of environmental stewardship.
3. Identify specific tools and equipment relating to plant material installation and describe their applications and procedures for use.
4. Identify the considerations for determining suitability of planting site for plant materials.
 - i) sun and wind exposure
 - ii) water availability
 - iii) quality of growing medium
 - iv) site accessibility
 - v) proximity to buildings and utility services
 - vi) air quality and pollutants
5. Describe the installation procedures for a variety of root preparations and stock types.
 - i) bare root
 - ii) ball and burlap/wire basket
 - iii) containerized
 - iv) caliper stock
6. Describe the procedures used to prepare planting site for tree installation.
 - i) excavation
 - ii) planting pit dimensions
 - iii) soil amendment
 - iv) site drainage

7. Describe the procedures used to install trees.
 - i) placement
 - ii) loosening of root containment
 - iii) root placement
 - iv) backfilling
 - v) mulching
 - vi) machine-planting
 - vii) stabilizing
 - viii) fertilizing

8. Describe the procedures used for post-planting care of trees.
 - i) irrigation
 - ii) pruning
 - iii) fertilizing
 - iv) protecting
 - v) stabilizing
 - vi) mulching

9. Describe the procedures used to prepare planting beds for herbaceous and woody plant material installation.
 - i) bed cultivation
 - ii) incorporating soil amendment
 - iii) removal of weeds/debris
 - iv) bed edging
 - v) grading and drainage

10. Describe the procedures used to install herbaceous and woody plant materials.
 - i) bed layout
 - ii) plant placement
 - iii) loosening of root containment
 - iv) root placement
 - v) backfilling
 - vi) irrigation
 - vii) fertilizing
 - viii) mulching

LHT-240 Turf Establishment

Learning Outcomes:

- Demonstrate knowledge of turf establishment methods and their associated procedures.

Objectives and Content:

1. Define terminology associated with turf establishment.
2. Describe the implications of turf establishment on the practice of environmental stewardship.
3. Identify the grass species that are sustainable in various jurisdictions.
4. Identify the considerations when selecting turf grass types.
 - i) environmental conditions
 - ii) site use
 - iii) site size
 - iv) cultural requirements
5. Interpret and complete documentation relating to turf establishment.
6. Identify specific tools and equipment relating to turf establishment and describe their applications and procedures for use.
7. Identify the methods of turf establishment and describe their applications.
 - i) seeding
 - ii) sodding
8. Describe the procedures used to establish turf by seeding.
9. Describe the procedures used to establish turf by sodding.
10. Identify the methods used for post-establishment care of seeded and sodded turf and describe their applications.
11. Identify possible turf establishment problems and describe solutions.
12. Describe the procedures used for harvesting and post-harvest handling of sod.

LHT-245 Landscape Pavers

Learning Outcomes:

- Demonstrate knowledge of the procedures used to install natural stone paver and modular precast concrete landscape pavers and slabs.
- Demonstrate knowledge of the procedures used to maintain natural stone paver and modular precast concrete landscape pavers and slabs.

Objectives and Content:

1. Define terminology associated with hardscape installation and maintenance.
2. Identify hazards and describe safe work practices pertaining to hardscape installation and maintenance.
3. Describe the implications of landscape pavers on the practice of environmental stewardship.
4. Interpret codes, regulations and manufacturer's specifications pertaining to hardscape installation and maintenance.
5. Interpret documentation pertaining to hardscape installation and maintenance.
 - i) plans
 - ii) contract specifications
 - iii) shipping documents
6. Identify specific tools and equipment relating to hardscape installation and maintenance and describe their applications and procedures for use.
7. Identify types of natural stone paver, and modular precast concrete landscape pavers and slabs used in hardscape installation and describe their characteristics and applications.
8. Describe the procedures used to prepare for installation of natural stone paver, and modular precast concrete landscape pavers and slabs.
9. Describe the procedures used to install natural stone paver, and modular precast concrete landscape pavers and slabs.

10. Describe the procedures used to maintain natural stone paver and modular precast concrete landscape pavers and slabs.
11. Install landscape pavers.

Learning Outcomes:

- Demonstrate knowledge of customer relations.
- Demonstrate knowledge of sales techniques.
- Demonstrate knowledge of products and services.

Objectives and Content:

1. Explain the importance of advising clients about products and services.
2. Describe the procedures and techniques associated with the sales of products and services.
 - i) customer education
 - ii) up-selling products and services
 - iii) conflict resolution
 - iv) after service follow-up
3. Describe the procedures associated with retail sales.
 - i) merchandizing
 - ii) invoicing
 - iii) receiving payments
 - iv) advertising
4. Practice effective communication with clients.

LHT-255 Plant Propagation* (Optional)

Learning Outcomes:

- Demonstrate knowledge of the procedures associated with plant propagation.

Objectives and Content:

1. Define terminology associated with plant propagation.
2. Identify hazards and describe safe work practices relating to plant propagation.
3. Describe the implications of plant propagation on the practice of environmental stewardship.
4. Interpret and complete documentation relating to plant propagation.
5. Identify specific tools and equipment relating to plant propagation and describe their applications and procedures for use.
6. Identify the considerations used when selecting stock/parent plants for propagation purposes.
7. Identify the methods and describe the procedures used for plant propagation and describe their characteristics and applications.
 - i) seeding
 - ii) cutting
 - iii) grafting and budding
 - iv) layering
 - v) division/separation
 - vi) micro-propagation
8. Describe the procedures used to maintain stock/parent plants.
9. Describe the procedures used to propagate plants using the various propagation methods.
10. Describe the procedures used to maintain post-propagated plants.
11. Perform plant propagation.

* Optional Unit – see page 6 for explanation.

LEVEL 3

Learning Outcomes:

- Demonstrate knowledge of additional plants, their characteristics and cultural requirements.

Objectives and Content:

1. Use plant morphology to categorize a plant to the family level.
 - i) leaves/needles
 - ii) flowers/fruits/seeds
 - iii) buds
 - iv) bark
 - v) growth habits

2. Use plant morphology to categorize the plants on the list to the genus and species level (see chart below).
 - i) leaves/needles
 - ii) flowers/fruits/seeds
 - iii) buds
 - iv) bark
 - v) growth habits

3. Describe the cultural requirements of these plants.
 - i) moisture
 - ii) light
 - iii) soil type
 - iv) hardiness
 - v) nutrients
 - vi) pruning
 - vii) cultivation

4. Identify the considerations for the selection of these plants for specific uses.
 - i) residential applications
 - ii) commercial applications
 - iii) reclamation/restoration
 - iv) location and environment

5. Select plants for specific applications.

Landscape Horticulturist Plant List by Family

	Family	Latin name	Common name	Character
1	ASTERACEAE	<i>Rudbeckia hirta</i>	Gloriosa Daisy	Annual
2	ASTERACEAE	<i>Helianthus annuus</i>	Sunflower	Annual
3	ASTERACEAE	<i>Cosmos bipinnatus</i>	Cosmos	Annual
4	ASTERACEAE	<i>Dendranthema x morifolium</i>	Garden Mum	Perennial
5	ASTERACEAE	<i>Echinops bannaticus</i>	Globe Thistle	
6	ASTERACEAE	<i>Achillea millefolium</i>	Common Yarrow	Perennial
7	ASTERACEAE	<i>Artemisia schmidtiana</i>	Silver Mound	Perennial
8	ASTERACEAE	<i>Liatris spicata</i>	Blazing Star	Perennial
9	BETULACEAE	<i>Betula pendula</i>	European White Birch	Tree/Shrub
10	BETULACEAE	<i>Corylus cornuta</i>	Beaked Hazelnut	Tree/Shrub
11	BRASSICACEAE	<i>Arabis caucasica</i>	Rock Cress	Annual
12	CAPRIFOLIACEAE	<i>Sambucus racemosa</i>	European Red Elder	Tree/Shrub
13	CARYOPHYLLACEAE	<i>Cerastium tomentosum</i>	Snow-in-Summer	Perennial
14	CORNACEAE	<i>Cornus alba</i>	White Dogwood	Tree/Shrub
15	CRASSULACEAE	<i>Sempervivum tectorum</i>	Hens and Chicks	Perennial
16	CUPRESSACEAE	<i>Juniperus scopulorum</i>	Rocky Mountain Juniper	Tree/Shrub
17	CUPRESSACEAE	<i>Juniperus squamata</i>	Squamata Juniper	Tree/Shrub
18	CUPRESSACEAE	<i>Microbiota decussata</i>	Siberian Cypress	Tree/Shrub
19	FABACEAE	<i>Genista pilosa</i>	Spreading Broom	Tree/Shrub
20	LAMIACEAE	<i>Thymus pseudolanuginosus</i>	Woolly Thyme	Perennial
21	OLEACEAE	<i>Fraxinus pennsylvanica</i> var. <i>subintegerrima</i>	Green Ash	Tree/Shrub
22	OLEACEAE	<i>Syringa meyeri</i>	Meyers Lilac	Tree/Shrub
23	PINACEAE	<i>Larix laricina</i>	Tamarack	Tree/Shrub
24	PINACEAE	<i>Picea pungens</i>	Colorado Spruce	Tree/Shrub
25	RANUNCULACEAE	<i>Aconitum napellus</i>	Monkshood	Perennial
26	RANUNCULACEAE	<i>Aquilegia hybrida</i>	Columbine	Perennial
27	ROSACEAE	<i>Spiraea x vanhouttei</i>	Bridal Wreath Spirea	Tree/Shrub
28	ROSACEAE	<i>Alchemilla mollis</i>	Lady's Mantle	Perennial
29	ROSACEAE	<i>Physocarpus opulifolius</i>	Common Ninebark	Tree/Shrub
30	SALICACEAE	<i>Populus deltoides</i>	Plains Cottonwood	Tree/Shrub

LHT-305 Plant Care and Maintenance

Learning Outcomes:

- Demonstrate knowledge of the procedures used to care and maintain herbaceous and woody plant materials.
- Demonstrate knowledge of procedures used to care and maintain interior plants.

Objectives and Content:

1. Identify hazards and describe safe work practices pertaining to the care and maintenance of plants.
2. Describe the implications of plant care and maintenance on the practice of environmental stewardship.
3. Identify specific tools and equipment relating to care and maintenance and describe their applications and procedures for use.
4. Describe the procedures used to maintain all plant materials.
5. Describe the procedures used for winterization of plant materials.
 - i) wrapping/screening
 - ii) rodent protection
 - iii) bed cleaning
 - iv) cutting back
 - v) mulching
6. Describe the procedures used for recycling and disposing of related waste materials.

LHT-310 Pruning

Learning Outcomes:

- Demonstrate knowledge of the procedures used to inspect, maintain, store and transport pruning tools and equipment.
- Demonstrate knowledge of the procedures for pruning.
- Demonstrate knowledge of the procedures for the disposal of diseased and infested plant parts.

Objectives and Content:

1. Define terminology associated with pruning and pruning related to the removal of diseased and infested plant parts.
2. Identify hazards and describe safe work practices pertaining to pruning and pruning related to the removal of diseased and infested plant parts.
3. Interpret and prepare documentation pertaining to pruning and pruning related to the removal of diseased and infested plant parts.
4. Identify specific tools and equipment relating to pruning and pruning related to the removal of diseased plant parts and describe their applications and procedures for use.
5. Describe the procedures used to inspect, maintain, store and transport pruning tools and equipment.
6. Explain the purpose of pruning.
 - i) plant appearance
 - ii) plant growth requirements
 - coniferous
 - deciduous
 - iii) plant health
7. Identify pruning methods and techniques and describe their associated procedures.
 - i) heading
 - ii) cleaning/thinning

- iii) crown raising
 - iv) reduction
 - v) restoration
 - vi) specialized methods
8. Identify pruning methods related to the removal and disposal of diseased and infested plant parts and describe their associated procedures.
 9. Perform basic pruning techniques.
 10. Clean and sanitize pruning tools and equipment.

LHT-315 Turf Maintenance

Learning Outcomes:

- Demonstrate knowledge of turf equipment and its care and maintenance.
- Demonstrate knowledge of maintenance practices and procedures.

Objectives and Content:

1. Define terminology associated with turf maintenance.
2. Identify hazards and describe safe work practices pertaining to turf maintenance.
3. Describe the implications of turf maintenance on the practice of environmental stewardship.
4. Interpret and complete documentation relating to turf maintenance.
5. Identify specific tools and equipment relating to turf maintenance and describe their applications and procedures for use.
6. Identify the considerations when determining turf maintenance techniques.
 - i) grass type
 - ii) site use
 - iii) site size
 - iv) cultural requirements
7. Describe the procedures used to inspect and maintain turf maintenance equipment.
8. Identify the considerations for equipment operation on turf.
 - i) surface slope
 - ii) obstructions
 - permanent
 - portable
 - iii) site conditions
 - iv) turf use

9. Describe the procedures used to maintain turf.
 - i) mowing
 - ii) fertilizing
 - iii) irrigation
 - iv) cultivation
 - aeration
 - dethatching
 - v) top dressing
 - vi) overseeding
 - vii) edging/trimming

10. Identify possible turf problems and describe their causes and the procedures used to correct them.
 - i) compaction
 - ii) thatch build-up
 - iii) poor drainage
 - iv) winter kill
 - v) pests
 - weeds
 - insects
 - diseases
 - animals
 - vi) shade

11. Perform inspection and maintenance of turf maintenance equipment.

LHT-320 Irrigation

Learning Outcomes:

- Demonstrate knowledge of irrigation equipment and systems, their applications and operation.
- Demonstrate knowledge of the procedures used to install, maintain, troubleshoot and repair irrigation equipment and systems.

Objectives and Content:

1. Define terminology associated with irrigation.
2. Identify hazards and describe safe work practices pertaining to irrigation.
3. Describe the implications of irrigation on the practice of environmental stewardship.
4. Identify specific tools and equipment related to irrigation and describe their applications and procedures for use.
5. Identify water sources for irrigation and describe the considerations and procedures for determining water quality and availability.
 - i) sample preparation
 - ii) water testing
 - iii) water pressure
 - iv) flow rate
 - v) results interpretation
6. Identify the factors that determine irrigation rates and methods.
 - i) plant materials
 - growth stage
 - mature size
 - water use rate
 - ii) root zone assessment
 - iii) soil/water relationship
 - iv) site conditions
 - v) application
 - time

- rate
 - duration
 - vi) climate
7. Identify the types of irrigation systems.
 - i) drip/low water volume
 - ii) sprinkler
 8. Identify types of irrigation components and describe their applications and procedures for use.
 9. Describe the procedures used to install irrigation equipment and systems.
 10. Describe the procedures used to maintain, troubleshoot, repair and adjust irrigation equipment and systems.
 - i) spring start-up
 - ii) seasonal operation
 - iii) fall shut-down
 11. Install and maintain irrigation equipment.
 12. Repair and adjust irrigation equipment and systems.

LHT-325 Landscape Walls

Learning Outcomes:

- Demonstrate knowledge of the procedures used to install natural stone and modular precast concrete wall units.
- Demonstrate knowledge of the procedures used to maintain natural stone and modular precast concrete wall units.

Objectives and Content:

1. Define terminology associated with hardscape installation and maintenance.
2. Identify hazards and describe safe work practices pertaining to hardscape installation and maintenance.
3. Describe the implications of landscape walls on the practice of environmental stewardship.
4. Interpret codes, regulations and manufacturer's specifications pertaining to hardscape installation and maintenance.
5. Interpret documentation pertaining to hardscape installation and maintenance.
 - i) plans
 - ii) contract specifications
 - iii) shipping documents
6. Identify specific tools and equipment relating to hardscape installation and maintenance and describe their applications and procedures for use.
7. Identify types of natural stone and modular precast concrete landscape wall units used in hardscape installation and describe their characteristics and applications.
8. Describe the procedures used to prepare for installation of natural stone and modular precast concrete landscape wall units.
9. Describe the procedures used to install natural stone and modular precast concrete wall units.

10. Describe the procedures used to maintain natural stone and modular precast concrete wall units.
11. Install modular wall units.

LHT-330 Concrete Construction

Learning Outcomes:

- Demonstrate knowledge of the procedures used to install poured concrete features.
- Demonstrate knowledge of the procedures used to maintain poured concrete features.

Objectives and Content:

1. Define terminology associated with hardscape installation and maintenance.
2. Identify hazards and describe safe work practices pertaining to hardscape installation and maintenance.
3. Describe the implications of concrete construction on the practice of environmental stewardship.
4. Interpret codes, regulations and manufacturer's specifications pertaining to hardscape installation and maintenance.
5. Interpret documentation pertaining to hardscape installation and maintenance.
 - i) plans
 - ii) contract specifications
 - iii) shipping documents
6. Identify specific tools and equipment relating to hardscape installation and maintenance and describe their applications and procedures for use.
7. Identify concrete products and materials used in hardscape installation and maintenance and describe their characteristics and applications.
8. Describe the procedures used to prepare for installation of poured concrete features.
9. Describe the procedures used to install poured concrete features.
10. Describe the procedures used to maintain poured concrete features.

LHT-335 Wood Construction

Learning Outcomes:

- Demonstrate knowledge of the procedures used to construct wood features.

Objectives and Content:

1. Define terminology associated with hardscape installation and maintenance.
2. Identify hazards and describe safe work practices pertaining to hardscape installation and maintenance.
3. Describe the implications of wood construction on the practice of environmental stewardship.
4. Interpret codes, regulations and manufacturer's specifications pertaining to hardscape construction and maintenance.
5. Interpret documentation pertaining to hardscape installation and maintenance.
 - i) plans
 - ii) contract specifications
 - iii) shipping documents
6. Identify specific tools and equipment relating to wood feature construction and maintenance and describe their applications and procedures for use.
7. Identify products and materials used in wood feature construction and maintenance and describe their applications and procedures for use.
 - i) natural timber and wood
 - ii) engineered and composite wood
8. Describe the procedures used to prepare for installation of hardscape materials.
9. Describe the procedures used to install landscape wood features.
10. Describe the procedures used to maintain landscape wood features.

Learning Outcomes:

- Demonstrate knowledge of the design, installation and maintenance of landscape water features.
- Demonstrate knowledge of the design, installation and maintenance of low voltage landscape lighting.

Objectives and Content:

1. Define terminology associated with water features and low voltage landscape lighting.
2. Identify hazards and describe safe work practices pertaining to water features and low voltage landscape lighting.
3. Describe the implications of water features and lighting on the practice of environmental stewardship.
4. Interpret codes and regulations pertaining to water features and low voltage landscape lighting.
5. Interpret documentation pertaining to water features and low voltage landscape lighting.
6. Identify types of water features and describe their characteristics and applications.
7. Describe the procedures used to install water features.
8. Describe the procedures used to maintain, troubleshoot and repair water features.
9. Identify types of low voltage landscape lighting and describe their characteristics and applications.
10. Describe the procedures used to install low voltage landscape lighting.

11. Describe the procedures used to maintain, troubleshoot and repair low voltage landscape lighting.
12. Install and maintain, troubleshoot and repair low voltage landscape lighting.

LHT-345 Interior Landscapes

Learning Outcomes:

- Demonstrate knowledge of interior plants, their characteristics and cultural requirements.
- Demonstrate knowledge of the procedures used to install and maintain interior landscapes.

Objectives and Content:

1. Define terminology associated with interior landscaping.
2. Identify hazards and describe safe work practices pertaining to interior landscaping.
3. Interpret codes and regulations pertaining to interior landscaping.
4. Describe the implications of interior landscaping on the practice of environmental stewardship.
5. Interpret and complete documentation pertaining to interior landscaping.
6. Identify specific tools and equipment relating to interior landscaping and describe their applications and procedures for use.
7. Use plant morphology to categorize the plants on the list to the genus and species level (see chart below).
 - i) leaves/needles
 - ii) flowers/fruits/seeds
 - iii) buds
 - iv) bark
 - v) growth habits
8. Describe the cultural requirements of these plants.
 - i) moisture
 - ii) light
 - iii) soil type
 - iv) hardiness

- v) nutrients
 - vi) propagation
 - vii) salt tolerance
9. Identify the considerations for the selection of these plants for specific interior uses.
 10. Describe the procedures used to install and maintain interior plants.
 11. Select plants for specific applications.

Landscape Horticulturist Interior Plant List by Family

	Family	Latin name	Common name	Character
1	AGAVACEAE	<i>Dracaena marginata</i>	Dragon Tree	Tropical/Indoor
2	ALOEACEAE	<i>Aloe vera</i>	Healing Plant	Tropical/Indoor
3	ARACEAE	<i>Dieffenbachia amoena</i>	Dumb Cane	Tropical/Indoor
4	ARACEAE	<i>Epipremnum aureum</i>	Pothos/Devil's Ivy	Tropical/Indoor
5	ARACEAE	<i>Monstera deliciosa</i>	Monster Plant	Tropical/Indoor
6	ARACEAE	<i>Philodendron selloum</i>	Tree Philodendron	Tropical/Indoor
7	ARACEAE	<i>Spathiphyllum cannifolium</i>	Peace Lily	Tropical/Indoor
8	ARALIACEAE	<i>Hedera helix</i>	English Ivy	Tropical/Indoor
9	ARALIACEAE	<i>Schefflera arboricola</i>	Hawaiian Elf Schefflera	Tropical/Indoor
10	ARAUCARIACEAE	<i>Araucaria heterophylla</i>	Norfolk (Island) Pine	Tropical/Indoor
11	CRASSULACEAE	<i>Crassula ovata</i>	Jade Plant	Tropical/Indoor
12	EUPHORBIACEAE	<i>Codiaeum variegatum var. pictum</i>	Croton	Tropical/Indoor
13	MORACEAE	<i>Ficus benjamina</i>	Weeping Fig	Tropical/Indoor
14	MORACEAE	<i>Ficus elastica</i>	India Rubber Plant/Rubber Tree	Tropical/Indoor

LHT-350 Estimating

Learning Outcomes:

- Demonstrate knowledge of the procedures used to calculate and estimate job requirements.

Objectives and Content:

1. Define terminology associated with estimating.
2. Identify sources of information pertaining to estimating.
3. Identify specific tools relating to estimating and describe their applications and procedures for use.
4. Describe the procedures used to calculate material requirements.
 - i) lengths
 - ii) surface areas
 - iii) volumes
 - iv) rates of application
 - v) expansion/compaction factors
 - vi) shipping quantities
5. Describe the procedures used to calculate equipment requirements.
 - i) equipment types/costing
 - ii) production rates
 - iii) transportation
6. Describe the procedures used to calculate labour requirements.
 - i) individual tasks
 - ii) production rates
 - iii) person-hours
7. Identify job requirements.
 - i) overhead costs
 - ii) general conditions
 - iii) profit margins
8. Calculate and estimate job requirements.

LHT-355 **Growing Facilities*** (Optional)

Learning Outcomes:

- Demonstrate knowledge of growing facilities, their contents and the procedures used to manage them.
- Demonstrate knowledge of climate control systems and the procedures used to manage climate controls and components.
- Demonstrate knowledge of irrigation and fertigation systems, and the procedures used to manage them.
- Demonstrate knowledge of the principles, practices and equipment used to create and manage a sanitary environment.

Objectives and Content:

1. Define terminology associated with growing facilities.
2. Identify hazards and describe safe work practices pertaining to growing facilities.
3. Describe the implications of growing facilities on the practice of environmental stewardship.
4. Interpret codes and regulations pertaining to growing facilities.
5. Interpret documentation relating to growing facilities.
6. Identify the factors which impact site selection and growing facility design.
7. Describe the procedures for site preparation and construction of growing facilities and their contents.
8. Identify the types of growing facilities and their related components.
 - i) greenhouse production
 - ii) nursery production
 - field grown
 - container grown

* Optional Unit – see page 6 for explanation.

9. Identify specific tools and equipment used to manage and maintain growing facilities and describe their applications and procedures for use.
10. Identify climate monitoring and control systems for growing facilities and describe their procedures for use.
11. Explain the procedures for winterizing growing facilities.
12. Identify irrigation and fertigation systems, water conservation and recapture systems and describe their procedures for use.
13. Describe sanitation principles and practices for growing facilities.

LHT-360 Plant Production* (Optional)

Learning Outcomes:

- Demonstrate knowledge of the procedures associated with plant production.

Objectives and Content:

1. Define terminology associated with plant production.
2. Identify hazards and describe safe work practices pertaining to plant production.
3. Describe the implications of plant production on the practice of environmental stewardship.
4. Identify codes and standards relating to plant production.
 - i) nursery certification requirements
5. Interpret and complete documentation relating to plant production.
6. Identify specific tools, equipment and structures relating to plant production and describe their applications and procedures for use.
 - i) field production
 - ii) containerized production
 - iii) greenhouse production
7. Describe the procedures used to select and prepare nursery growing sites.
8. Describe the procedures required for plant production planning.
9. Describe the procedures used for plant potting, lining out and planting operations.
10. Describe the procedures used for maintaining plant materials in production systems.
11. Describe the procedures used for harvesting and handling nursery stock.
 - i) storage
 - ii) grading
 - iii) labeling
 - iv) shipping

* Optional Unit – see page 6 for explanation.