NL Curriculum Standard

Plan of Training

Landscape Horticulturist

Government of Newfoundland and Labrador
Department of Immigration, Population Growth and Skills
Apprenticeship and Trades Certification Division

June 2018

PLAN OF TRAINING

Landscape Horticulturist

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Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Advanced Education, Skills and Labour
Apprenticeship and Trades Certification Division

Approved by:

Dave H

Chairperson, Provincial Apprenticeship and Certification Board

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Preface

This curriculum standard is based upon the 2017 edition of the Red Seal Occupational Standard (RSOS) for the Landscape Horticulturist trade. It describes the curriculum content for the Landscape Horticulturist apprenticeship training program.

Acknowledgements

The Provincial Trade Advisory Committee (PTAC), industry representatives, instructors and apprenticeship staff provided valuable input to the development of this provincial plan of training. Without their dedication to quality apprenticeship training, this document could not have been produced.

We offer you a sincere thank you.

Contact Information

Department of Immigration, Population Growth and Skills
Apprenticeship and Trades Certification Division
Tel: 709-729-2729
Toll Free: 1-877-771-3737
Email: app@gov.nl.ca
Web: www.gov.nl.ca/atcd

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		September 2019 – Level 2	
		September 2020 – Level 3	
		September 2021 – Level 4	
Update	March 2019	September 2019	Updated Related Suite courses

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A. RSOS Comparison Table

2017 RSOS Tasks and Sub-tasks		2018 POT	
Task 1 – Safety related functions			
1.01	Uses personal protective equipment (PPE)	LT1100	Safety
1.02	Maintains safe worksite	LT1100	Safety
		LT1111	Tools and Equipment
		LT2231	Vehicles, Equipment and Machinery
		TS1510	Occupational Health and Safety
		LT1231	Fertilizers
		LT1251	Plant Care and Maintenance
		LT1260	Irrigation
		LT1301	Site Layout and Surveying
		LT1201	Job Planning
		LT1121	Steps and Retaining Walls
		LT2160	Irrigation
		LT1131	Concrete Construction
		LT3050	Green Roofs and Walls
Task 2 – Tools, equipment and vehicles			
2.01	Uses hand tools	LT1111	Tools and Equipment
		LT1251	Plant Care and Maintenance
		LT1291	Turf Establishment
		LT1301	Site Layout and Surveying
		LT2110	Site Protection, Grading and Drainage
		LT1121	Steps and Retaining Walls
		LTT1131	Concrete Construction
		LT1141	Landscape Structures
		LT2151	Surface Materials
		LT2160	Irrigation
		LT2181	Water Features and Low Voltage Landscape Lighting
		LT3000	Snow and Ice Control
		LT2221	Pruning

2017 RSOS Tasks and Sub-tasks		2018 POT	
2.02	Uses power tools	LT1111	Tools and Equipment
		LT2110	Site Protection, Grading and Drainage
		LT1121	Steps and Retaining Walls
		LT1131	Concrete Construction
		LT1141	Landscape Structures
		LT1251	Plant Care and Maintenance
		LT2221	Pruning
		LT2181	Water Features and Low Voltage Landscape Lighting
		LT3030	Softscape Repair
		LT3000	Snow and Ice Control
		LT1260	Turf Maintenance
2.03	Uses measuring equipment	LT1111	Tools and Equipment
		LT1301	Site Layout and Surveying
		LT1121	Steps and Retaining Walls
		LT2110	Site Protection, Grading and Drainage
		LT1231	Fertilizers
		LT1141	Landscape Structures
		LT2151	Surface Materials
		LT2160	Irrigation
		LT2181	Water Features and Low Voltage Landscape Lighting
		LT2191	Pest and Disease Management
		LT2110	Site Protection, Grading and Drainage
		LT1121	Steps and Retaining Walls
		LT1131	Concrete Construction
		LT1141	Landscape Structures
		LT2151	Surface Materials
		LT2160	Irrigation
		LT2181	Water Features and Low Voltage Landscape Lighting
		LT3000	Snow and Ice Control
		LT1260	Turf Maintenance
		LT2201	Estimating

2017 RSOS Tasks and Sub-tasks		2018 POT	
Task 3 – Organizes work			
3.01	Performs site assessments	LT1201	Job Planning
		LT1220	Soil Management
		LT1231	Fertilizers
		LT1100	Safety
		LT1301	Site Layout and Surveying
		LT1121	Steps and Retaining Walls
		LT1131	Concrete Construction
		LT1141	Landscape Structures
		LT2151	Surface Materials
		LT2181	Water Features and Low Voltage Landscape Lighting
		LT2191	Pest and Disease Management
		LT1291	Turf Establishment
		LT2110	Site Protection, Grading and Drainage
		LT2160	Irrigation
		LT2201	Estimating
		LT2221	Pruning
		LT3040	Green Infrastructure
3.02	Uses documentation and reference material	CM2160	Communication Essentials
		LT1301	Site Layout and Surveying
		LT1130	Vehicles, Equipment and Machinery
		LT1241	Plans and Documentation
		LT1201	Job Planning
		LT2110	Site Protection, Grading and Drainage
		LT1121	Steps and Retaining Walls
		LT1131	Concrete Construction
		LT1141	Landscape Structures
		LT2151	Surface Materials
		LT2160	Irrigation
		LT2181	Water Features and Low Voltage Landscape Lighting
		LT2191	Turf Establishment
		LT2201	Estimating
		LT2221	Pruning
		SD1760	Workplace Essentials
		LT3040	Green Infrastructure

2017 RSOS Tasks and Sub-tasks		2018 POT	
3.03	Maintains records	CM2160	Communication Essentials
		LT1100	Safety
		LT1111	Tools and Equipment
		LT1220	Soil Management
		LT1241	Plans and Documentation
		LT1260	Turf Maintenance
		LT1301	Site Layout and Surveying
		LT1201	Job Planning
		LT1121	Steps and Retaining Walls
		LT1131	Concrete Construction
		LT2151	Surface Materials
		LT1130	Vehicles, Equipment and Machinery
		LT2231	Plant, Materials and Equipment Management
		SD1760	Workplace Essentials
		LT2201	Estimating
3.04	Participates in job planning activities	LT1201	Job Planning
		LT2201	Estimating
		LT3050	Green Roofs and Walls
		LT3060	Rainwater and Stormwater Management Systems
		LT3080	Biodiverse Plantings, Natural Areas and Enhancement
		LT3070	Erosion Control Materials
3.05	Orders materials	LT1201	Job Planning
		LT2231	Plant, Materials and Equipment Management
3.06	Organizes materials and equipment	LT1141	Landscape Structures
		LT1121	Steps and Retaining Walls
		LT1131	Concrete Construction
		LT2151	Surface Materials
		LT2231	Plant, Materials and Equipment Management
		LT3000	Snow and Ice Control
		LT1201	Job Planning
		LT2201	Estimating

2017 RSOS Tasks and Sub-tasks		2018 POT	
3.07	Transports materials	TS1520	Workplace Hazardous Materials Information System
		HE1630	Transportation of Dangerous Goods
		LT1130	Vehicles, Equipment and Machinery
		LT1220	Soil Management
		LT1231	Fertilizers
		LT2231	Plant, Materials and Equipment Management
3.08	Transports equipment	LT1130	Vehicles, Equipment and Machinery
		LT2231	Plant, Materials and Equipment Management
Task 4 – Marketing and sales			
4.01	Controls inventory	LT3010	Marketing and Sales
		LT2231	Plant, Materials and Equipment Management
4.02	Sells products and services	LT3010	Marketing and Sales
4.03	Maintains customer relations	LT3010	Marketing and Sales
4.04	Prepares estimates	LT2201	Estimating
Task 5 - Communication			
5.01	Uses communication techniques	CM2160	Communication Essentials
		SD1760	Workplace Essentials
		LT3010	Marketing and Sales
		SD1760	Workplace Essentials
5.02	Uses mentoring techniques	LT3090	Mentoring
Task 6 – Horticultural practices			
6.01	Identifies plants and plant requirements	LT1200	Plant Science
		LT1210	Plant Identification I
		LT1211	Plant Identification II
		LT1271	Interior Plantscapes
		LT2211	Plant Identification III
		LT2360	Propagates Plant Materials
		LT3050	Green Roofs and Walls
6.02	Manages plant health and growing conditions	LT1200	Plant Science
		LT1251	Plant Care and Maintenance
		LT1211	Plant Identification II
		LT1220	Soil Management
		LT1231	Fertilizers
		LT2360	Propagates Plant Materials
		LT1231	Fertilizers

2017 RSOS Tasks and Sub-tasks		2018 POT	
6.03	Prunes plant material	LT1251	Plant Care and Maintenance
		LT1281	Plant Installation
		LT1271	Interior Plantscapes
		LT2221	Pruning
6.04	Manages pests, diseases and invasive species	LT1200	Plant Science
		LT2340	Soil Stewardship
		LT2350	Water Stewardship
		LT1260	Turf Maintenance
		LT2221	Pruning
		LT3080	Biodiverse Plantings, Natural Areas and Enhancement
		LT1271	Interior Plantscapes
		LT2191	Pest and Disease Management
Task 7 – Environmental practices			
7.01	Practices environmental stewardship	LT1130	Vehicles, Equipment and Machinery
		LT1220	Soil Management
		LT1251	Plant Care and Maintenance
		LT2350	Water Stewardship
		LT1231	Fertilizers
		LT1260	Turf Maintenance
		LT1291	Turf Establishment
		LT2110	Site Protection, Grading and Drainage
		LT3000	Snow and Ice Control
		LT1201	Job Planning
		LT1121	Steps and Retaining Walls
		LT1131	Concrete Construction
		LT1141	Landscape Structures
		LT2151	Surface Materials
		LT2340	Soil Stewardship
		LT1301	Site Layout and Surveying
		LT2160	Irrigation
		LT2181	Water Features and Low Voltage Landscape Lighting
		LT2191	Pest and Disease Management
		LT3000	Snow and Ice Control
		LT3020	Environmental stewardship
		LT3080	Biodiverse Plantings, Natural Areas and Enhancement

2017 RSOS Tasks and Sub-tasks		2018 POT	
7.02	Practices biodiversity enhancement	LT3080	Biodiverse Plantings, Natural Areas and Enhancement
7.03	Practices soil stewardship	LT1220	Soil Management
		LT2340	Soil Stewardship
7.04	Practices water stewardship	LT2350	Water Stewardship
		LT2160	Irrigation
Task 8 - Pre-construction activities			
8.01	Participates in landscape design activities	LT1241	Plans and Documentation
		LT1301	Site Layout and Surveying
		LT3040	Green Infrastructure
		LT2201	Estimating
		LT2211	Plant Identification III
		LT3080	Biodiverse Plantings, Natural Areas and Enhancement
8.02	Prepares construction site	LT1281	Plant Installation
		LT1301	Site Layout and Surveying
		LT1121	Landscape Walls
		LT1131	Concrete Construction
		LT2151	Surface Materials
8.03	Performs grading	LT2110	Site Protection, Grading and Drainage
		LT1121	Steps and Retaining Walls
8.04	Installs drainage systems	LT2110	Site Protection, Grading and Drainage
		LT2350	Water Stewardship
Task 9 – Hardscape installation			
9.01	Installs landscape structures	LT1141	Landscape Structures
9.02	Installs surface materials	LT2110	Site Protection, Grading and Drainage
		LT1121	Steps and Retaining Walls
		LT1131	Concrete Construction
		LT2151	Surface Materials
9.03	Installs steps and retaining walls	LT1121	Steps and Retaining Walls
9.04	Installs irrigation systems	LT2160	Irrigation
		LT2350	Water Stewardship
9.05	Installs water features	LT2181	Water Features and Low Voltage Landscape Lighting
9.06	Installs low voltage landscape lighting	LT2181	Water Features and Low Voltage Landscape Lighting

2017 RSOS Tasks and Sub-tasks		2018 POT	
Task 10 - Softscape installation			
10.01	Installs growing media	LT1220	Soil Management
		LT1231	Fertilizers
		LT3050	Green Roofs and Walls
10.02	Installs exterior landscape plants	LT1281	Plant Installation
10.03	Transplants plants	LT1251	Plant Care and Maintenance
		LT1281	Plant Installation
10.04	Installs mulch	LT1281	Plant Installation
10.05	Installs turf from seed	LT1291	Turf Establishment
10.06	Installs sod	LT1291	Turf Establishment
10.07	Installs interior landscape plants	LT1271	Interior Plantscapes
Task 11 - Green infrastructure installation			
11.01	Selects green infrastructure	LT3040	Green Infrastructure
11.02	Installs green roofs and walls	LT3050	Green Roofs and Walls
11.03	Installs rainwater and stormwater management systems	LT3060	Rainwater and Stormwater Management Systems
11.04	Installs erosion control	LT2350	Water Stewardship
		LT3070	Erosion Control Materials
		LT2110	Site Protection, Grading and Drainage
		LT2340	Soil Stewardship
11.05	Installs biodiverse plantings and natural areas	LT3080	Biodiverse Plants, Natural Areas and Enhancement
Task 12 - Hardscape maintenance			
12.01	Maintains drainage systems	LT2350	Water Stewardship
		LT2110	Site Protection, Grading and Drainage
		LT2151	Surface Materials
12.02	Maintains landscape structures	LT1141	Landscape Structures
12.03	Maintains surface materials	LT1131	Concrete Construction
		LT2151	Surface Materials
12.04	Maintains steps and retaining walls	LT1121	Steps and Retaining Walls
		LT2151	Surface Materials
		LT1131	Concrete Construction
12.05	Maintains irrigation systems	LT2160	Irrigation
12.06	Maintains water features	LT2181	Water Features and Low Voltage Landscape Lighting
12.07	Maintains landscape lighting	LT2181	Water Features and Low Voltage Landscape Lighting
12.08	Practices snow and ice control	LT3000	Snow and Ice Control
12.09	Repairs hardscape	LT1141	Landscape Structures
		LT2181	Water Features and Low Voltage Landscape Lighting

2017 RSOS Tasks and Sub-tasks		2018 POT	
Task 13 - Softscape maintenance			
13.01	Maintains exterior softscape	LT1251	Plant Care and Maintenance
		LT1281	Plant Installation
13.02	Maintains interior softscape	LT1271	Interior Plantscapes
13.03	Maintains turfgrass	LT1260	Turf Maintenance
		LT2160	Irrigation
13.04	Propagates plant materials	LT2360	Propagates Plant Materials
13.05	Repairs softscape	LT3030	Softscape Repair
		LT1271	Interior Plantscapes
		LT2160	Irrigation
		LT2191	Pest and Disease Management
Task 14 - Green infrastructure maintenance			
14.01	Maintains green roofs and walls	LT3050	Green Roofs and Walls
14.02	Maintains rainwater and stormwater management systems	LT3060	Rainwater and Stormwater Management Systems
14.03	Maintains erosion control	LT3070	Erosion Control
14.04	Maintains biodiverse plantings and natural areas	LT3080	Biodiverse Plants, Natural Areas and Enhancement

B. Program Structure

For each and every course, a formal assessment is required for which 70% is the pass mark. A mark of 70% must be attained in both the theory examination and the practical project assignment, where applicable as documented on an official transcript.

The order of course delivery within each level can be determined by the training institution, as long as pre-requisite conditions are satisfied.

Upon completion of this training program, individuals may be required to complete other certifications (employer or job site specific) in order to gain employment.

A Pre-employment student who becomes an apprentice will also be required to complete Level 2, 3 and 4 in the Newfoundland and Labrador Curriculum Standard (NLCS).

Level 1				
Course No.	**IPG No.**	**Course Name**	**Hours**	**Pre-requisite(s)**
LT1103	LHT-100	Safety	5	None
LT1113	LHT-105	Tools and Equipment	6	LT1103
LT1133	LHT-110	Vehicles, Equipment and Machinery	28	LT1103
LT1203	LHT-115	Plant Science	30	LT1103
LT1215	LHT-120	Plant Identification I	30	LT1203
LT1223	LHT-125	Soil Management	30	LT1203
LT1233	LHT-130	Fertilizers	12	LT1113 LT1133 LT1223
LT1243	LHT-215	Plans and Documentation	6	AM1410
LT1253	LHT-305	Plant Care and Maintenance	15	LT1215 LT1233
LT1263	LHT-315	Turf Maintenance	10	LT1203 LT1233
LT1293	LHT-240	Turf Establishment	10	LT1113 LT1133 LT1215 LT1243 LT1263

Level 1				
Course No.	**IPG No.**	**Course Name**	**Hours**	**Pre-requisite(s)**
LT2111	LHT-225	Site Protection, Grading and Drainage	20	LT1113 LT1133
AM1410	--	Landscape Math Fundamentals	42	None
		Total Level 1 Hours	**244**	

*A Direct Entry Landscape Horticulturist apprentice is **not** required to complete AM1101 - Math Essentials course.

Required Work Experience

Level 2				
Course No.	**IPG No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
LT1301	LHT-140	Site Layout and Surveying	25	Level 1
LT1211	LHT-200	Plant Identification II	30	Level 1
LT1121	LHT-325	Steps and Retaining Walls	25	LT1301 LT1131
LT1131	LHT-330	Concrete Construction	20	LT1301
LT2151	LHT-245	Surface Materials	25	LT1301
LT2340	--	Soil Stewardship	20	LT1301
LT2350	--	Water Stewardship	25	LT1301
LT2360	--	Propagates Plant Materials	10	LT1211
LT1281	LHT-235	Plant Installation	20	Level 1
LT2221	LHT-310	Pruning	25	LT1211
LT2231	LHT-230	Plant, Materials and Equipment Management	15	LT1211
		Total Level 2 Hours	**240**	

Required Work Experience

Level 3				
Course No.	**IPG No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
LT1201	LHT-220	Job Planning	30	Level 2
LT2160	LHT-320	Irrigation	30	Level 2
LT2181	LHT- 340	Water Features and Low Voltage Landscape Lighting	35	Level 2
LT3000	--	Snow and Ice Control	10	LT1201
LT2191	LHT-205	Pest and Disease Management	35	Level 2
LT3020	--	Environmental Stewardship	15	Level 2
LT3010	--	Marketing and Sales	10	Level 2
LT1271	LHT-345	Interior Plantscapes	30	Level 2
LT1141	LHT-335	Landscape Structures	30	Level 2
LT3030	--	Softscape Repair	5	Level 2
		Total Level 3 Hours	**230**	

Required Work Experience

Level 4				
Course No.	**IPG No.**	**Course Name**	**Hours**	**Pre-Requisite(s)**
LT2201	LHT-350	Estimating	15	Level 3
LT2211	LHT-300	Plant Identification III	15	Level 3
LT3040	--	Green Infrastructure	30	Level 3
LT3050	--	Green Roofs and Walls	15	Level 3
LT3060	--	Rainwater and Stormwater Management Systems	15	Level 3
LT3070	--	Erosion Control Materials	10	Level 3
LT3080	--	Biodiverse Plants, Natural Areas and Enhancement	42	Level 3
LT3090	--	Mentoring	6	Level 3
		Total Level 4 Hours	**148**	
		Total Course Credit Hours	**862**	

Level 1

LT1103 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.
- Demonstrate knowledge of Back Injury Prevention Awareness.

Duration: 5 Hours

Pre-Requisite(s): None

Objectives and Content:

1. Identify types of personal protective equipment and clothing (PPE) and describe their applications.
   i. ear, eye, hand, foot and head protection
   ii. high-visibility clothing
   iii. breathing protection (mask)

2. Describe the procedures for care and maintenance of PPE.

3. Identify types of safety equipment and describe their applications.
   i. ventilation fans
   ii. spill kits
   iii. fire extinguishers
   iv. barriers
   v. signage
   vi. first-aid kit

4. Describe the procedures for care and maintenance of safety equipment.

5. Identify hazards, assess risk, describe safe work practices and recommend mitigation measures.
   i. personal
   ii. workplace
   iii. environment
   iv. pedestrian and vehicular

6. Identify jurisdictional workplace safety and health regulations.
    i. Workplace Hazardous Material Information System (WHIMIS)
    ii. Pest Management Regulatory Agency (PMRA)
    iii. pesticide applicator and operator legislation
    iv. Transportation of Dangerous Goods (TDG)
    v. federal, provincial/territorial, municipal
    vi. Occupational Health and Safety (OH&S)

Practical Requirements:

None.

LT1113 Tools and Equipment

Learning Outcomes:

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

Duration: 6 Hours

Pre-Requisite(s): LT1103

Objectives and Content:

1. Identify hazards and describe safe work practices pertaining to hand tools, power tools, measuring 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 tools and equipment and describe their applications, limitations and procedures for use.
   i. electric
   ii. gas
      - two-cycle engine
      - four-cycle engine

6. Describe the safe operation, maintenance and storage of cutting equipment.
   i. chain saw
   ii. circular saw
   iii. concrete saw
   iv. mitre/chop saw
   v. reciprocating saw
   vi. sabre saw
   vii. table saw

7. Describe the daily/seasonal operating procedures used to inspect, maintain, sharpen, clean, and store power tools.

8. Identify types of measuring equipment and describe their applications and procedures for use.
   i. pH meters
   ii. builders' levels
   iii. laser levels
   iv. electrical conductivity (EC) meters
   v. Global Positioning System (GPS)
   vi. tape measure
   vii. calibrated cylinders
   viii. calipers

9. Describe the procedures used to inspect, clean, maintain and store measuring tools and equipment.

Practical Requirements:

1. Use and maintain various types of hand tools.

2. Use and maintain various types of power tools.

3. Use and maintain various types of measuring tools.

LT1133 Vehicles, Equipment and Machinery

Learning Outcomes:

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

Duration: 28 Hours

Pre-Requisite(s): LT1103

Objectives and Content

1. Define terminology associated with transporting equipment.

2. Identify hazards and describe safe work practices pertaining to vehicles and motorized equipment attachments and trailer and transporting equipment.
   i. lockout/tagout

3. Describe the implications of the selection and use of vehicles, motorized equipment, attachments and trailers on the practice of environmental stewardship.

4. Identify codes, jurisdictional regulations, type of licenses required pertaining to vehicles, motorized equipment, attachments and trailers and the transportation of equipment.

5. Identify engine systems and describe their characteristics, applications and operation.
   i. gasoline/propane
   ii. diesel
   iii. electric

6. Identify basic vehicle systems and components and describe their characteristics and operation.
   i. drive systems
   ii. brakes
   iii. control/safety systems

7. Identify the type of license required to operate vehicles, motorized equipment, attachments and trailers.

8. Identify types of vehicles, motorized equipment, attachments and trailers and describe their characteristics, applications and operation.
   i. vehicles and motorized equipment
      - truck
      - turfgrass maintenance machines
      - skid steers
      - excavators
      - all-terrain vehicles (ATV)
      - tractors, hydro seeders
   ii. attachments and trailers
      - drop spreaders
      - sprayers
      - buckets
      - mowers
      - aerators
      - cultivators
      - hydro seeders
      - flatbed trailers
      - dump trailers

9. Describe the daily and seasonal operating procedures used to inspect, clean, maintain and store engines, vehicles, motorized equipment and attachments and trailers.
   i. pre-check
   ii. post check
   iii. maintenance checks
   iv. circle checks
   v. cold starts
   vi. changing seasonal tires
   vii. changing seasonal fluids
   viii. cleaning vehicles

10. Describe the procedures used to load/unload, secure and transport tools, equipment and machinery.

11. Interpret documentation relevant to transporting equipment.

Practical Requirements:

1. Conduct daily and seasonal maintenance procedures for landscape tools and equipment.

2. Demonstrate the proper use of fire extinguishers.

3. Demonstrate the use and operation of a truck and trailer.
   i. coupling and uncoupling
   ii. loading, securing, unloading
   iii. safe driving
   iv. backing-up
   v. set up warning triangles

4. Conduct pre-check and post-trip inspections.

LT1203 Plant Science

Learning Outcomes:

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

Duration: 30 Hours

Pre-Requisite(s): LT1103

Objectives and Content:

1. Apply principles of basic plant science.
   i. botany
   ii. physiology

2. Define terminology associated with plant science.

3. Identify plant characteristics.
   i. form
   ii. foliage and foliage pattern
   iii. stems and bark
   iv. bud
   v. fruit
   vi. flower
   vii. size
   viii. colour

4. 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

5. Identify plant anatomy and morphology.
   i. cell types
   ii. tissues
   iii. organs
      - leaves/needles
      - stems
      - roots
      - flowers/fruits/seeds
      - buds
      - bark
      - growth habits

6. Explain the biological processes of a plant.
   i. reproduction
   ii. photosynthesis
   iii. respiration
   iv. transpiration
   v. hormonal communication
   vi. dormancy

7. Identify plant nutrients and describe the impact of nutrient deficiencies/excess on plants and plant growth.

Practical Requirements:

1. Identity plant nutrient deficiencies from samples.

2. Identify plant anatomy in dormancy and when in leaf.

LT1215 Plant Identification I

Learning Outcomes:

- Demonstrate knowledge of the International Code of Nomenclature for algae, fungi and plants used for plant identification.

Duration: 30 Hours

Pre-Requisite(s): LT1203

Objectives and Content:

1. Explain the International Code of Nomenclature for algae, fungi and plants and its use in plant identification.
   i. family
   ii. genus
   iii. species
   iv. variety/cultivar

2. Interpret the use of dichotomous keys to classify plants.

3. Identify plant categories and describe their characteristics.
   i. herbaceous
   ii. woody
   iii. annuals
   iv. perennials
   v. biennials
   vi. coniferous trees
   vii. coniferous shrubs
   viii. deciduous trees
   ix. deciduous shrubs
   x. broad leaf evergreen
   xi. turfgrass
   xii. vines
   xiii. weeds
   xiv. edibles
   xv. native
   xvi. non-native
   xvii. invasive species

4. Explain the purpose of the Plant Hardiness Zone Map.

5. 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

6. Use plant morphology to categorize the plants on the list to the genus and species level.

7. Describe the cultural requirements of these plants (see chart below).
   i. moisture
   ii. light
   iii. soil type
   iv. hardiness
   v. nutrients
   vi. tolerance
   vii. propagation
   viii. salt tolerance
   ix. pruning times

8. 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

Landscape Horticulturist Plant List by Family

	FAMILY	LATIN NAME	COMMON NAME	CHARACTER
1	ASTERACEAE	Gerbera jamesonii	Transvaal Daisy	Annual
2	ASTERACEAE	Aster spp.	Common Aster	Perennial
3	ASTERACEAE	Leucanthemum x superbum	Shasta Daisy	Perennial
4	ASTERACEAE	Rudbeckia fulgida	Black Eyed Susan	Perennial
5	BERBERIDACEAE	Berberis thunbergii	Japanese Barberry	Tree / Shrub
6	BETULACEAE	Betula papyrifera	Paper Birch	Tree / Shrub
7	BRASSICACEAE	Lobularia maritima	Alyssum	Annual
8	BRASSICACEAE	Iberis sempervirens	Candytuft	Perennial
9	CAPRIFOLIACEAE	Lonicera x brownii 'Dropmore Scarlet'	Scarlet Trumpet Honeysuckle	Tree / Shrub
10	CAPRIFOLIACEAE	Symphoricarpos albus	Snowberry	Tree / Shrub

	FAMILY	LATIN NAME	COMMON NAME	CHARACTER
11	CARYOPHYLLACEAE	Dianthus chinensis	Dianthus / China Pink	Annual
12	CELASTRACEAE	Euonymus alatus	Winged Burning Bush	Tree / Shrub
13	CRASSULACEAE	Sedum spectabile	Stonecrop	Perennial
14	CUPRESSACEAE	Junipers horizontalis	Horizontal Juniper	Tree / Shrub
15	CUPRESSACEAE	Thuja occidentalis	Eastern White Cedar	Tree / Shrub
16	CUPRESSACEAE	Taxus x media	Yew	Tree / Shrub
17	ERICACEAE	Arctostaphylos uva-ursi	Bearberry / Kinnikinnick	Tree / Shrub
18	FUMARIACEAE	Dicentra spectabilis	Bleeding Heart	Perennial
19	GERANIACEAE	Pelargonium spp.	Geranium	Annual
20	LAMIACEAE	Salvia splendens	Scarlet Sage	Annual
21	LAMIACEAE	Monarda didyma	Bee Balm	Perennial
22	LILIACEAE	Hemerocallis spp.	Daylily	Perennial
23	LILIACEAE	Hosta spp.	Hosta	Perennial
24	OLEACEAE	Syringa vulgaris	Common Lilac	Tree / Shrub
25	PINACEAE	Picea glauca	White Spruce	Tree / Shrub
26	PINACEAE	Pinus mugo	Mugo Pine, Swiss MountainPine	Tree / Shrub
27	POACEAE	Miscanthus sinensis	Maiden Grass	Perennial
28	POACEAE	Calamagrostis x acutiflora	Feather Reed Grass	Perennial
29	POLYPODIACEAE	Matteuccia struthiopteris	Ostrich Fern	Perennial
30	RANUNCULACEAE	Delphinium elatum	Perennial Larkspur	Perennial
31	RANUNCULACEAE	Trollius europaeus	Globeflower	Perennial
32	ROSACEAE	Amelanchier alnifolia	Service Berry	Tree / Shrub
33	ROSACEAE	Rosa rugosa	Rugosa Rose	Tree / Shrub
34	ROSACEAE	Sorbus aucuparia	European Mountain Ash	Tree / Shrub
35	ROSACEAE	Spiraea japonica	Japanese Spirea	Tree / Shrub
36	SALICACEAE	Populus tremuloides	Trembling Aspen	Tree / Shrub
37	SAPINDACEAE	Acer ginnala	Amur Maple	Tree / Shrub
38	SAPINDACEAE	Acer saccharinum	Silver Maple	Tree / Shrub
39	TILIACEAE	Tilia cordata	Little Leaf Linden	Tree / Shrub

	FAMILY	LATIN NAME	COMMON NAME	CHARACTER
40	VITACEAE	Parthenocissus quinquefolia	Virginia Creeper	Tree / Shrub

Practical Requirements:

1. Identify plants using the International Code of Nomenclature.

2. Identify plants for landscape installation according to site location and degree of sun and shade.

LT1223 Soil Management

Learning Outcomes:

- Demonstrate knowledge of soil types and soil amendments.

Duration: 30 Hours

Pre-Requisite(s): LT1203

Objectives and Content:

1. Identify physical soil characteristics to consider when determining the suitability for plant growth.
   i. soil formation
   ii. drainage capacity
   iii. aeration/porosity
   iv. water retention
   v. compaction
   vi. soil texture/structure
   vii. pH
   viii. nutrients
   ix. organic matter
   x. contaminents
   xi. electrical conductivity

2. Describe the implications of soil management on the practice of environmental stewardship.

3. Identify types of growing media and describe their characteristics and applications.
   i. native soil
   ii. soilless medium
   iii. manufactured soil
   iv. compost

4. Test to 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
v. texture

5. Explain the procedures used for taking soil samples.

6. Identify types of soil tests, describe their characteristics and applications, interpret test results and explain how to develop recommendations based on test results.

7. Identify types of soil amendments and describe their characteristics, and procedures used to apply and/or incorporate them.
   i. organic
   ii. inorganic

8. Identify the considerations when selecting soil amendments for plants.

9. Describe the procedures used to apply and incorporate soil amendments.

10. Describe the procedures for storing, transporting and disposing of soil, soil amendment products and packaging according to jurisdictional regulations.

11. Identify specific tools and equipment relating to growing media installation and describe their applications and procedures for use.

12. Describe the procedures used for installing growing media.

13. Describe the procedures used to estimate quantities of materials required to install growing media.

Practical Requirements:

1. Take a soil sample.

2. Hand texture a soil sample.

3. Interpret soil sample test results.

LT1233 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.

Duration: 12 Hours

Pre-Requisite(s): LT1113, LT1133, LT1223

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 describe jurisdictional regulations pertaining to fertilizers.
6. Describe the analysis and formulation of fertilizers.
7. Describe the procedures and equipment used and calibration for the application of fertilizers and amendments.
8. Describe the procedures and equipment used to store, dispose and transport fertilizers.

Practical Requirements:

1. Calculate application rate as per specifications.
2. Determine fertilizer rates for a fertigation system.

LT1243 Plans and Documentation

Learning Outcomes:

- Demonstrate knowledge of landscape plans and associated documentation.
- Demonstrate knowledge of trade related documentation and their use.

Duration: 6 Hours

Pre-Requisite(s): AM1410

Objectives and Content:

1. Identify types of landscape drawings and associated documentation and describe their characteristics and applications.

2. Define and 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
   - ix. scope of work
   - x. site access
   - xi. work/site limits

3. Interpret and extract information from landscape drawings and documentation related to construction site specifications.
   - i. general conditions
   - ii. supplementary conditions
   - iii. contract personnel

Practical Requirements:

1. Interpret landscape construction plans.

LT1253 Plant Care and Maintenance

Learning Outcomes:

- Demonstrate knowledge of the procedures to care and maintain plant materials.

Duration: 15 Hours

Pre-Requisite(s): LT1215, LT1233

Objectives and Content:

1. Define terminology associated with exterior softscape.

2. Identify hazards and describe safe work practices pertaining to the care, maintenance and repair of plants and softscapes.

3. Interpret codes and regulations pertaining to exterior softscape.

4. Describe the implications of plant care and maintenance on the practice of environmental stewardship.

5. Identify specific tools and equipment relating to plant care, maintenance and repair and describe their applications and procedures for use.

6. Describe the procedures used to maintain and repair all plant materials.
   i. dead-heading/pruning
   ii. edging
   iii. cultivating
   iv. mulching
   v. dividing
   vi. fertilizing
   vii. weeding

7. Describe the procedures used for winterization of plant materials.
   i. wrapping/screening
   ii. rodent protection
   iii. bed cleaning
   iv. cutting back/ pruning
   v. mulching

8. Describe the procedures used for recycling and disposing of related waste materials.

Practical Requirements:

None.

LT1263 Turf Maintenance

Learning Outcomes:

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

Duration: 10 Hours

Pre-Requisite(s): LT1203, LT1233

Objectives and Content:

1. Define terminology associated with turf maintenance.

2. Identify hazards and describe safe work practices pertaining to turfgrass maintenance products and their use.

3. Identify types of turfgrass maintenance products and describe their characteristics and applications.

4. Interpret codes and regulations pertaining to turfgrass maintenance products.

5. Describe the implications of turf maintenance on the practice of environmental stewardship.

6. Interpret and complete documentation relating to turf maintenance.

7. Identify specific tools and equipment used for turf maintenance and describe their applications and procedures for use.

8. Identify the considerations for determining turfgrass maintenance techniques.
   i. grass type
   ii. site use
   iii. site size
   iv. cultural requirements
   v. contract documents

9. Describe the procedures used to inspect and maintain turf maintenance equipment.

10. Identify the considerations for equipment operation on turf.
    i. surface slope
    ii. obstructions
        - permanent
        - portable
    iii. site conditions
    iv. turf use

11. Describe the procedures used to maintain turfgrass.
    i. mowing
    ii. fertilizing
    iii. irrigating
    iv. cultivating
        - aeration
        - dethatching
    v. top dressing
    vi. overseeding
    vii. edging/trimming

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

Practical Requirements:

1. Implement turf maintenance procedures.

LT1293 Turf Establishment

Learning Outcomes:

- Demonstrate knowledge of turf establishment methods and their associated procedures.
- Demonstrate knowledge of turf establishment from seed and installation procedures.
- Demonstrate knowledge of turf establishment from sod methods and the installation procedures.

Duration: 10 Hours

Pre-Requisite(s): LT1113, LT1133, LT1215, LT1223, LT1243, LT1263

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. Identify the considerations when selecting sod types.
   i. peat sod
   ii. mineral soil sod

6. Interpret and complete documentation relating to turf establishment.

7. Identify tools and equipment used to establish turfgrass and describe their applications and procedures for use.

8. Identify the methods of turf establishment and describe their applications.
   i. seeding / hydro seeding
   ii. sodding

9. Identify the methods used for post-establishment care of seeded and sodded turf and describe their applications.

10. Describe the procedures used to install and establish turf by seeding.
11. Identify calculations required for determining seed quantities.
12. Describe the procedures used to install and establish turf by sodding.
13. Identify calculations required for determining sod quantities.
14. Identify possible turf establishment problems and describe solutions.
15. Describe the procedures used for harvesting and post-harvest handling of sod.

Practical Requirements:

None.

LT2111 Site Protection, Grading and Drainage

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.

Duration: 20 Hours

Pre-Requisite(s): LT1113, LT1133

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. Describe how drainage system maintenance protects the site features.

5. Identify and describe site protection measures that minimize environmental impact.

6. Interpret codes, CLS and regulations pertaining to site protection, grading and drainage.

7. 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

8. Identify specific tools and equipment relating to site protection, grading and drainage, and describe their applications and procedures for use.

9. Identify types of grading and drainage systems.

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

11. Describe the procedures used to install drainage systems.
    i. sub-surface drains
    ii. surface drainage

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

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

Practical Requirements:

1. Demonstrate knowledge of using level instrumentation.

AM1410 Landscape Math Fundamentals

Learning Outcomes:

- Demonstrate knowledge of mathematical concepts in the performance of trade practices.
- Demonstrate knowledge of mathematics as a critical element of the trade environment.
- Solve mathematical word problems.
- Demonstration knowledge of mathematical principles for the purposes of problem solving, job and materials estimation, measurement, calculation, system conversion, diagram interpretation and scale conversions, formulae calculations, and geometric applications.

Duration: 42 Hours

Pre-Requisite(s): None

Objectives and Content:

The instructor is required to use trade specific examples to reinforce the course objectives.

1. Describe percent/decimal/fraction conversions and comparisons in trade specific situations.

2. Describe ratios and proportions as they relate to trade specific problems.

3. Describe the use of the Imperial and Metric measurement systems in trade specific applications.

4. Describe Imperial and Metric conversions in trade specific situations.
   i. convert between imperial and metric measurements
   ii. convert to another unit within the same measurement system

5. Describe how to manipulate formulas using cross multiplication, dividing throughout, elimination, and substitution to solve trade specific problems.
   i. right angle triangles
   ii. area
   iii. volume
   iv. perimeter
   v. density

6. Identify calculations involving geometry that are relevant to the trade.
   i. angle calculations
   ii. circle calculations

7. Identify math processes used to complete administrative trade tasks.
   i. material estimation
   ii. material costing
   iii. time & labour estimates
   iv. taxes & surcharges
   v. markup & projecting revenue

Practical Requirements:

1. To emphasize or further develop specific knowledge objectives, students will be asked to complete practical demonstrations, which confirm proper application of mathematical theory to job skills.

Note: This course is **Non-Transferable** to other trades programs, and **Not Eligible for Prior Learning Assessment**. Students completing training in this trade program are required to complete this math course. Apprentice transfers under Provincial / Territorial Mobility agreements may be exempt from this requirement.

LEVEL 2

LT1301 Site Layout and Surveying

Learning Outcomes:

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

Duration: 25 Hours

Pre-Requisites: Level 1

Objectives and Content:

1. Define terminology associated with site assessment, layout and surveying.

2. Identify hazards and describe safe work practices pertaining to site assessment, site measurements, layout and surveying.

3. Describe the implications of site assessment, layout and surveying on the practice of environmental stewardship.

4. Interpret documentation pertaining to site assessment, layout and surveying.
   i. plans
   ii. specifications
   iii. codes
   iv. standards

5. Identify specific tools and equipment relating to site assessment, layout and surveying, and describe their applications and procedures for use.

6. Identify the methods and procedures used to perform site assessment and site layout.
   i. grade levels and stake interpretation
   ii. grid system
   iii. triangulation
   iv. distance and vector

Practical Requirements:

1. Set up a builders' level and use to determine grades.
2. Measure existing features from a site to a site plan.
3. Locate existing features from a site to a site plan.
4. Perform a site layout.

LT1211 Plant Identification II

Learning Outcomes:

- Demonstrate knowledge of additional plants, their characteristics and cultural requirements.
- Demonstrate the procedure to select plans for specific applications.

Duration: 30 Hours

Pre-Requisites: Level 1

Objectives and Content:

1. Describe the procedure for using 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. Describe the procedure for using plant morphology to categorize the plants on the list to the genus and species level (see chart below).

3. Describe the cultural requirements of plants (see table below).
   vi. moisture
   vii. light
   viii. soil type
   ix. hardiness
   x. nutrients
   xi. propagation
   xii. salt tolerance
   xiii. pruning times

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

Landscape Horticulturist Plant List by Family

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

Practical Requirements:

1. Identify plants using the international system of plant nomenclature.

2. Identify landscape plants for landscape installation according to site location and degree of sun and shade.

LT1121 Steps and Retaining 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 and repair natural stone and modular precast concrete wall units.

Duration: 25 Hours

Pre-Requisites: LT1301, LT1131

Objectives and Content:

1. Define terminology associated with hardscape installation and maintenance.

2. Identify hazards and describe safe work practices pertaining to hardscape installation, maintenance and repair.

3. Describe the implications of steps and retaining 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, maintenance and repair.
   i. plans
   ii. contract specifications
   iii. shipping documents
   iv. drawings
   v. manufacturers' specifications

6. Identify specific tools and equipment relating to hardscape installation and maintenance and describe their applications and procedures for use.
   i. shovels
   ii. picks
   iii. chisels
   iv. wheelbarrows
   v. brooms
   vi. power blowers
   vii. excavators
   viii. plate compactors
   ix. concrete saws

7. Identify types of materials used in wall and step construction and describe their characteristics and applications.
   i. timber
   ii. natural stone
   iii. manufactured stones

8. Describe the procedures used to prepare for installation of walls and steps.

9. Describe the procedures used to install walls and steps.

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

11. Describe the procedures and products used to repair natural stone and modular precast concrete wall units.

12. Describe the procedures used to estimate quantities of materials required to install wall units and steps.

Practical Requirements:

1. Install a natural stone wall and steps.

2. Install modular wall units and steps.

LT1131 Concrete Construction

Learning Outcomes:

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

Duration: 20 Hours

Pre-Requisites: LT1301

Objectives and Content:

1. Define terminology associated with concrete installation and maintenance.

2. Identify hazards and describe safe work practices pertaining to concrete installation, maintenance and repair.

3. Describe the implications of concrete construction on the practice of environmental stewardship.

4. Interpret codes, regulations and manufacturer’s specifications pertaining to concrete installation and maintenance.

5. Interpret documentation pertaining to concrete installation, maintenance and repair.
   i. plans
   ii. contract specifications
   iii. shipping documents
   iv. drawings
   v. manufacturers' specifications

6. Identify specific tools and equipment relating to concrete 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 and products used to maintain poured concrete features.

11. Describe the procedures and products used to repair poured concrete features.

Practical Requirements:

1. Install poured concrete features.

LT2151 Surface Materials

Learning Outcomes:

- Demonstrate knowledge of the procedures used to install surface materials.
- Demonstrate knowledge of the procedures used to maintain and repair surface materials.

Duration: 25 Hours

Pre-Requisites: LT1301

Objectives and Content:

1. Define terminology associated with surface material installation and maintenance.

2. Identify hazards and describe safe work practices pertaining to surface material installation, maintenance and repair.

3. Describe the implications of landscape pavers on the practice of environmental stewardship.

4. Interpret codes, regulations and manufacturer's specifications pertaining to surface material installation and maintenance.

5. Interpret documentation pertaining to surface material installation, maintenance and repair.
   i. plans
   ii. contract specifications
   iii. shipping documents

6. Identify specific tools and equipment relating to surface material installation and maintenance and describe their applications and procedures for use.

7. Identify types of surface materials, their applications and use.
   i. natural stones
   ii. concrete
   iii. paving stones (segmental pavement)
   iv. aggregate
   v. permeable pavement
   vi. synthetic materials (artificial turf)

8. Identify bedding materials and base used with various surface materials.
   i. sand
   ii. aggregates
   iii. high performance bedding materials
   iv. concrete bases

9. Describe the procedures used to prepare for installation of surface materials.

10. Describe the procedures used to install surface materials.

11. Describe the procedures and products used to maintain and repair surface material.

12. Describe the procedures used to estimate quantities of materials required to install surface materials.

13. Describe the procedures and products used to maintain drainage systems when installing surface materials.

Practical Requirements:

1. Install landscape pavers, natural stone pavers and aggregates.

LT2340 Soil Stewardship

Learning Outcomes:

- Demonstrate knowledge of minimizing harm to soil structure, health and microbiome.
- Demonstrate knowledge of conserving soil and preserving soil health.

Duration: 20 Hours

Pre-Requisites: LT1301

Objectives and Content:

1. Describe the impact of cultivation on the soil structure, health and microbiome.

2. Identify situations in which cultivating is required.

3. Describe how minimum tillage and other methods of cultivation minimize harm to soil structure, health and soil organisms.

4. Explain the economic and environmental reasons for conserving soil and preserving soil health.
   i. sequestering carbon
   ii. minimizing spread of pests, diseases and invasive species
   iii. minimizing damage to soil structure
   iv. reducing inputs and outputs

5. Describe site protection measures that minimize environmental impact.

6. Explain bulk soil storage procedures that minimize environmental impact.

7. Describe methods to prevent soil erosion and siltation.

8. Explain the reasons for using the cut and fill method.

Practical Requirements:

1. Select soil stewardship method and describe implementation of the method.

2. Install soil erosion control methods.

3. Assess site features and determine low impact development (LID) practices.

LT2350 Water Stewardship

Learning Outcomes:

- Demonstrate knowledge of landscaping practices that support water stewardship.

Duration: 25 Hours

Pre-Requisites: LT1301

Objectives and Content:

1. Identify water retention and weed prevention materials.

2. Identify water retention practices.

3. Identify low impact development (LID) practices.
   i. rain barrels
   ii. infiltration trenches
   iii. bioswales
   iv. bioretention cells
   v. rain gardens
   vi. green roofing
   vii. smart irrigation
   viii. xeriscaping
   ix. permeable surfacing
   x. water harvesting systems
   xi. downspout disconnect
   xii. stormwater ponds

4. Describe the benefits and application of efficient irrigation systems.

5. Identify xeriscape principles.

6. Describe erosion control methods.
   i. cover cropping
   ii. silt fencing
   iii. mulching
   iv. groundcovers
   v. bales
   vi. erosion control mats
   vii. gabion baskets

7. Explain methods for protecting endangered species in waterways.

8. Explain methods for preventing the spread of invasive species in waterways.

9. Explain methods to prevent pesticides, fertilizers and pollutants from reaching waterways.

10. Describe the benefits of preserving urban forest tree canopy to maintain leaf surface and promote water infiltration.

11. Describe riparian restoration.

12. Describe the benefits and use of reclaimed water systems.

13. Identify jurisdictional regulations relating to water stewardship.

14. Describe the procedures used to maintain site grading.
    i. rough grading
    ii. grading for drainage
    iii. finish grading

15. Describe winterization procedures for drainage systems.

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

17. Describe the procedures used to maintain erosion and sediment control materials.

Practical Requirements:

1. Assess site features and determine low impact development (LID) practices.

2. Collect and label water samples, send to lab and interpret test results.

LT2360 Propagates Plant Materials

Learning Outcomes:

- Demonstrate knowledge of the procedures associated with plant propagation.

Duration: 10 Hours

Pre-Requisites: LT1211

Objectives and Content:

1. Define terminology associated with plant propagation.

2. Identify hazards and describe safe work practices relating to plant propagation.

3. Identify the considerations used when selecting stock/parent plants for propagation purposes.
   i. vigor
   ii. health
   iii. propagation methods
   iv. timing

4. Describe the procedures used to propagate plants using the various propagation methods.

Practical Requirements:

1. Harvest and divide underground storage organs.

2. Select and perform propagation methods.

LT1281 Plant Installation

Learning Outcomes:

- Demonstrate the knowledge of the procedures used to install plant materials.
- Demonstrate knowledge of mulch materials, the application and procedures for use.
- Demonstrate knowledge of principles and procedures to transplant plants.

Duration: 20 Hours

Pre-Requisites: Level 1

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 Canadian and regional landscape standards and jurisdictional regulations.

4. Describe companion planting procedures.

5. Identify tools and equipment relating to plant material installation and describe their applications and procedures for use.
   i. tree dollies
   ii. shovels
   iii. rakes
   iv. skid-steers
   v. tree grantries

6. 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

7. Describe the installation procedures for a variety of root preparations and stock types.
   i. bare root
   ii. ball-and-burlap (B & B)
   iii. wire basket
   iv. containerized
   v. caliper stock

8. Describe the procedures used to prepare planting site for tree installation.
   i. excavation
   ii. determining planting pit dimensions
   iii. amending soil
   iv. site drainage

9. 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
   ix. protection tree

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

11. 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
   vi. drainage

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

13. Describe the application and procedures for transplanting plants.

14. Identify tools and equipment related to transplanting and describe their applications and procedures for use.

15. Identify the factors for determining viability of plant for transplanting.

16. Describe irrigation rates and methods and fertilization requirements for transplanted plants.

17. Describe the application and procedures used to prune transplanted plants.

18. Describe the procedures used to estimate quantities of plant material required.

19. Identify types of mulch materials and their applications.

20. Describe the procedures used to apply mulch materials.

21. Describe the procedures used to estimate quantities of mulch materials required.

Practical Requirements:

1. Select plant materials, prepare planting bed for plant installation and install plant materials.

2. Transplant plant materials.

3. Stabilize trees.

4. Mulch trees.

LT2221 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.

Duration: 25 Hours

Pre-Requisites: LT1211

Objectives and Content:

1. Define terminology associated with pruning.

2. Identify hazards and describe safe work practices pertaining to pruning.

3. Identify regional jurisdictional regulations pertaining to pruning.

4. Interpret and prepare documentation pertaining to pruning and pruning related to the removal of diseased and infested plant parts.

5. 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.

6. Describe the procedures used to inspect, maintain, store and transport pruning tools and equipment.
   i. hedge trimmers
   ii. shears
   iii. saws
   iv. secateurs
   v. pruners
   vi. loppers

7. Describe the purpose of pruning.
   i. plant appearance
   ii. plant growth requirements
      - coniferous
      - deciduous
   iii. plant health
   iv. structure

v. unwanted growth
vi. prevention of winter damage

8. Identify and describe pruning methods and techniques and describe their associated procedures.
   i. heading
   ii. cleaning/thinning
   iii. crown raising
   iv. reduction
   v. restoration
   vi. specialized methods
   vii. 3-cut method
   viii. flush cut
   ix. removal

9. Identify and describe the procedures for removing plant parts and disposal of diseased and infested plant parts.

10. Identify factors that affect pruning times.
   i. dormancy
   ii. flower period
   iii. growth response
   iv. wind and frost damage
   v. Scorch

11. Describe methods to organize debris for efficient handling.

Practical Requirements:

1. Perform basic pruning techniques.

2. Clean and sanitize pruning tools and equipment.

3. Perform safe work practices using pruning equipment.

LT2231 Plant, Materials and Equipment Management

Learning Outcomes:

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

Duration: 15 Hours

Pre-Requisites: LT1211

Objectives and Content:

1. Define terminology associated with receiving, ordering, organizing, storing and transporting materials, plants and equipment.
   i. wood chips
   ii. soil
   iii. aggregates
   iv. lumber
   v. pavers
   vi. fertilizers
   vii. pond and irrigation materials
   viii. electrical supplies

2. Identify hazards and describe safe work practices pertaining to receiving, organizing, storing and transporting materials, plants and equipment shipments.

3. Interpret documentation relevant to ordering, receiving, organizing, storing and transporting materials, plants and equipment.
   i. plans
   ii. specifications
   iii. regulations
   iv. shipping documentation

4. Identify the standard relevant to ordering plants and materials.

5. Explain the process for verifying and accepting materials, plants and equipment shipments.
   i. required documentation
   ii. verification of order
      - quantity
      - variety
      - size
   iii. quality

6. Describe the procedures used for ordering, receiving, organizing, transporting and storing materials, plants and equipment.
   i. transportation methods
      - loading
      - securing
      - protecting
      - unloading
      - holding area
      - watering

7. Identify documentation relevant to material weights.

Practical Requirements:

1. Select various species as they arrive.
   i. identify species
   ii. group accordingly
   iii. verify quantity

2. Demonstrate procedure for loading and unloading of plants and materials.

LEVEL 3

LT1201 Job Planning

Learning Outcomes:

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

Duration: 30 Hours

Pre-Requisites: Level 2

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
   ix. tenders and contracts
   x. site locates
   xi. product instructions

4. Identify the considerations and project requirements when planning jobs and job tasks.
   i. site assessment
   ii. weather
   iii. materials and equipment
   iv. competing projects
   v. designated timelines
   vi. personnel
   vii. sequence of work
   viii. on-site staging
   ix. clean-up/debris removal

x. jurisdictional regulations
xi. scheduling

5. Explain the importance of accurate record keeping and describe the associated procedures.

6. Identify types of safety records and work records, and describe the procedures used to prepare safety records and work records.
   i. work orders
      - change orders
      - job
      - material
      - training records
      - daily time sheets
   ii. reports
      - hazard assessment
      - safety (accident reports, tag-outs, safety meeting records)
      - Worker's Compensation
   iii. maintenance/service/stock/inventory records
      - shop
      - job site assessment records
      - vehicle and equipment maintenance records

Practical Requirements:

1. Plan job tasks.

2. Prepare, complete and maintain trade-related forms, documents and records.

LT2160 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.

Duration: 30 Hours

Pre-Requisites: Level 2

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 tools and equipment related to irrigation and describe their applications and procedures for use.
   i. pipe cutters
   ii. crimping tools
   iii. trenching shovels
   iv. pipe puller
   v. wheelbarrows
   vi. excavators
   vii. trenchers
   viii. loaders
   ix. skid steers
   x. attachments

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 system components and describe their applications and procedures for use.
   i. screens
   ii. heads
   iii. pipes
   iv. wires
   v. filters
   vi. valves

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

Practical Requirements:

1. Install, maintain, repair and troubleshoot an irrigation system.

2. Perform spring start-up and fall shut-down procedures.

LT2181 Water Features and Low Voltage Landscape Lighting

Learning Outcomes:

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

Duration: 35 Hours

Pre-Requisites: Level 2

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 installation, maintenance and repair of 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 installation, maintenance and repair of water features and low voltage landscape lighting.

5. Interpret documentation pertaining to the installation, maintenance and repair of water features and low voltage landscape lighting.
   i. water features
      - flow rates
      - pipe and pump sizing charts

6. Identify types of water features and describe their characteristics and applications.

7. Describe the procedures used to prepare site for installation of landscape water features.

8. Describe the procedures and products used to maintain, troubleshoot and repair water features and low voltage landscape lighting.

9. Identify components of low voltage landscape lighting.

10. Identify types of low voltage landscape lighting and describe their characteristics and applications.

11. Describe the tools and procedures used to prepare site and install low voltage landscape lighting.
    i. wire strippers
    ii. voltmeters
    iii. ladders
    iv. trenching shovels

12. Describe voltage drop calculation, its application and procedure for use.

13. Describe the procedures used to estimate quantities of materials required to install low voltage landscape lighting.

Practical Requirements:

1. Install, maintain and repair low voltage landscape lighting.

2. Install, maintain and repair water features.

LT3000 Snow and Ice Control

Learning Outcomes:

- Demonstrate knowledge of snow and ice control and the procedures used.
- Demonstrate knowledge of the environmental impact of snow and ice control on environmental features.

Duration: 10 Hours

Pre-Requisites: LT1201

Objectives and Content:

1. Identify tools and equipment used for snow and ice control.
   i. vehicles with blades
   ii. walk-behind and tractor mounted blowers
   iii. spreaders
   iv. snow shovels
   v. loaders
   vi. graders
   vii. power brushes
   viii. backpack blowers

2. Describe procedures used to control snow and ice.

3. Identify products used for snow and ice control.

4. Identify sources used to gather weather information.

5. Identify hazards associated with snow and ice control practices and products.

6. Describe the impact of snow and ice control practices and products on plants and landscape features.

7. Describe implications of snow and ice control on environmental stewardship.

Practical Requirements:

1. Select and use vehicle with blade, walk behind snow blower, tractor mounted blower and truck mounted salt spreader.

2. Determine snow storage locations and removal requirements.

3. Attach, unattach and troubleshoot snowblower and spreader.

LT2191 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 to handle, apply, store and dispose of pest and disease management products and tools.
- Demonstrate knowledge of pest control products, formulations and application equipment.

Duration: 35 Hours

Pre-Requisites: Level 2

Objectives and Content:

1. Define terminology associated with pest and disease management.

2. Define characteristics of normal plant growth.

3. Identify signs and symptoms of plant stress.

4. Define the components of an Integrated Pest Management (IPM) program.
   i. identify causes of diseases
   ii. identify pathogens
   iii. identify biotic factors
   iv. identify abiotic factors

5. Describe the implications of IPM on the practice of environmental stewardship.

6. Identify methods used for pest and disease management, treatment and repair.
   i. regulatory
   ii. physical/mechanical (pruning)
   iii. cultural
   iv. biological
   v. chemical

7. Identify hazards and describe safe work practices pertaining to pest and disease management.

8. Describe 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
   iv. pesticide application records

9. Interpret codes and jurisdictional regulations pertaining to pest and disease management methods and products.
   i. environmental protection
   ii. personal protective equipment

10. Describe and identify the factors for selecting, applying and recording pest and disease management measures.
   i. site analysis
   ii. pest/disease populations
   iii. injury levels
   iv. action thresholds
   v. monitoring techniques

11. Identify specific tools and equipment relating to pest and disease management and describe their applications and procedures for use.

12. 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

13. Identify common types of diseases and disorders in relation to the landscape and describe their characteristics.
   i. biotic
   ii. abiotic

14. 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

15. 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

16. Describe the procedures associated with the handling, transportation, storage and disposal of pest and disease management products, infested or contaminated plant material/ soil and containers.

Practical Requirements:

1. Select and apply treatment methods according to thresholds and IPM protocols.

2. Calibrate equipment and practice equipment maintenance.

3. Practice application techniques.

LT3020 Environmental Stewardship

Learning Outcomes:

- Demonstrate knowledge of environmental stewardship principles.
- Demonstrate knowledge of landscaping practices that support environmental stewardship.

Duration: 15 Hours

Pre-Requisites: Level 2

Objectives and Content:

1. Define ecosystems.
   i. meadows
   ii. ponds
   iii. parks
   iv. urban landscape
   v. Bogs

2. Describe the function, purpose and structure of natural ecosystems.

3. Describe preservation, conservation and regeneration principles and applications related to plant life, habitat, water table and water quality.

4. Describe the impact of the environment and landscapes on psychosocial health.

5. Describe methods of increasing biodiversity and stormwater mitigation.

6. Identify environmental waste management best practices.
   i. reduce
   ii. reuse
   iii. recycle

7. Identify site protection.
   i. silt fencing
   ii. erosion control
   iii. amending native soil
   iv. let-it-lay
   v. adjusting mowing height

8. Identify products and practices for reducing harm and positively impacting the environment.

9. Describe practices for maximizing green space and permeable surfaces.

10. Identify native plants for landscape purposes.

Practical Requirements:

1. Select and maintain tools and equipment that minimize negative impact on environment and ecosystems.

2. Source local materials and equipment.

LT3010 Marketing and Sales

Learning Outcomes:

- Demonstrate knowledge of the procedures for controlling inventory.
- Demonstrate knowledge of sales techniques.
- Demonstrate knowledge of customer relations.
- Demonstrate knowledge of jurisdictional regulations.

Duration: 10 Hours

Pre-Requisites: Level 2

Objectives and Content:

1. Define terminology associated with controlling inventory.

2. Identify hazards and describe safe work practices pertaining to inventory control.

3. Interpret documentation relevant to inventory control.

4. Describe the procedures for controlling inventory.

5. Describe the procedures associated with sales.
   i. merchandising
   ii. invoicing
   iii. receiving payments
   iv. advertising

6. Identify marketing principles.
   i. creating internet presence
   ii. advertising

7. Identify components of contracts.

8. Explain the importance of advising clients about products and services.

9. Describe the processes associated with maintaining customer relations.
   i. qualifying customers
   ii. customer education
   iii. up-selling products and services
   iv. conflict resolution
   v. after service follow-up

10. Identify jurisdictional regulations (privacy and trade regulations) pertaining to customer record information.
    i. address
    ii. phone number
    iii. email address
    iv. product preferences

Practical Requirements:

1. Advise and educate clients on plants, products and services (role play).

2. Prepare and administer a contract.

LT1271 Interior Plantscapes

Learning Outcomes:

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

Duration: 30 Hours

Pre-Requisites: Level 2

Objectives and Content:

1. Define terminology associated with interior plantscaping.
2. Identify hazards and describe safe work practices pertaining to interior plantscaping.
3. Interpret codes and regulations pertaining to interior plantscaping.
4. Describe the implications of interior plantscaping on the practice of environmental stewardship.
5. Interpret, complete and maintain documentation pertaining to interior plantscaping.
6. Identify tools and equipment relating to interior plantscapes 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.
   i. leaves/needles
   ii. flowers/fruits/seeds
   iii. buds
   iv. bark
   v. growth habits
8. Describe the cultural requirements of plants (see chart below).
   i. moisture
   ii. light
   iii. soil type
   iv. hardiness

v. nutrients
vi. propagation
vii. salt tolerance
viii. growing media type

9. Identify the considerations for the selection of plants for interior uses.

10. Describe the procedures used to install, prune and maintain interior plants.

11. Identify pest and diseases that affect interior plantscapes and describe prevention and treatment methods.

Landscape Horticulturist Plant List by Family

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

Practical Requirements:

1. Identify interior plants.
2. Cultivate and groom interior plant materials.
3. Monitor interior plant health issues.
4. Identify pests and diseases.

LT1141 Landscape Structures

Learning Outcomes:

- Demonstrate knowledge of the procedures used to construct, maintain and repair landscape structures.

Duration: 30 Hours

Pre-Requisites: Level 2

Objectives and Content:

1. Define terminology associated with landscape structures and maintenance.

2. Identify hazards and describe safe work practices pertaining to installing landscape structures and maintenance.

3. Describe the implications of landscape structures on the practice of environmental stewardship.

4. Interpret codes, regulations and manufacturer's specifications pertaining to landscape structures and maintenance.

5. Interpret documentation pertaining to landscape structures and maintenance.
   i. plans and site layout
   ii. contract specifications
   iii. shipping documents

6. Identify tools and equipment, products and materials used to construct landscape structures and describe their applications and procedures for use.

7. Describe the procedures used to estimate and prepare for installation of landscape structures.

8. Describe the methods and procedures used to perform site layout.

9. Describe the procedures and products used to maintain and repair landscape structures.

Practical Requirements:

1. Install landscape wood features.

LT3030 Softscape Repair

Learning Outcomes:

- Demonstrate knowledge of procedures used to repair softscapes.

Duration: 5 Hours

Pre-Requisites: Level 2

Objectives and Content:

1. Identify hazards and describe safe work practices pertaining to repairing softscapes.

2. Identify specific tools and equipment related to repairing softscapes and describe their applications and procedures for use.

3. Describe the procedures used to repair softscapes.

Practical Requirements:

1. Identify practices to repair damaged softscape.

LEVEL 4

LT2201 Estimating

Learning Outcomes:

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

Duration: 15 Hours

Pre-Requisites: Level 3

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. Describe the procedures used to calculate factoring spoilage.

8. Identify and calculate job requirements.
   i. overhead costs
   ii. general conditions
   iii. profit margins

9. Demonstrate the function and process of determining ground elevations and slopes.
   i. surveyor's rod and chain
   ii. bench marks
   iii. spot elevations
   iv. back sights
   v. fore sights
   vi. slope calculations

10. Calculate basic quantities necessary for job performance.
   i. pesticide calculations (application areas, active ingredients, product quantities, application rates)
   ii. other basic applied calculations (seeding calculations, topdressing calculations, fertilizing calculations, mulching quantities, unit area quantities, unit volume quantities, plant material quantities, loss/shrinkage factors

Practical Requirements:

1. Prepare an estimate from a landscape plan.

2. Calculate the quantity of materials, equipment and labour required from given construction plans and specifications.

LT2211 Plant Identification III

Learning Outcomes:

- Demonstrate knowledge of additional plants, their characteristics and cultural requirements.
- Demonstrate knowledge of considerations in choosing plants for specific applications.

Duration: 15 Hours

Pre-Requisites: Level 3

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.

3. Describe the cultural requirements of plants.
   i. moisture
   ii. light
   iii. soil type
   iv. hardiness
   v. nutrients
   vi. pruning
   vii. cultivation
   viii. propagation
   ix. salt tolerance

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

Landscape Horticulturist Plant List by Family

	FAMILY	LATIN NAME	COMMON NAME	CHARACTER
1	ASTERACEAE	Rudbeckia hirta	Gloriosa Daisy	Annual
2	ASTERACEAE	Helianthus annuus	Sunflower	Annual
3	ASTERACEAE	Cosmos bipinnatus	Cosmos	Annual
4	ASTERACEAE	Dendranthema **x** morifolium	Garden Mum	Perennial
5	ASTERACEAE	Echinops bannaticus	Globe Thistle	
6	ASTERACEAE	Achillia millefolium	Common Yarrow	Perennial
7	ASTERACEAE	Artemesia schmidtiana	Silver Mound	Perennial
8	ASTERACEAE	Liatris spicata	Blazing Star	Perennial
9	BETULACEAE	Betula pendula	European White Birch	Tree / Shrub
10	BETULACEAE	Corylus cornuta	Beaked Hazelnut	Tree / Shrub
11	BRASSICACEAE	Arabis caucasica	Rock Cress	Annual
12	CAPRIFOLIACEAE	Sambucus racemosa	European Red Elder	Tree / Shrub
13	CARYOPHYLLACEAE	Cerastium tomentosum	Snow-in-Summer	Perennial
14	CORNACEAE	Cornus alba	White Dogwood	Tree / Shrub
15	CRASSULACEAE	Sempervivum tectorum	Hens and Chicks	Perennial
16	CUPRESSACEAE	Juniperus scopulorum	Rocky Mountain Juniper	Tree / Shrub
17	CUPRESSACEAE	Juniperus squamata	Squamata Juniper	Tree / Shrub
18	CUPRESSACEAE	Microbiota decussata	Siberian Cypress	Tree / Shrub
19	FABACEAE	Genista pilosa	Spreading Broom	Tree / Shrub
20	LAMIACEAE	Thymus pseudolanuginosus	Woolly Thyme	Perennial
21	OLEACEAE	Fraxinus pennsylvanica var. subintegerrima	Green Ash	Tree / Shrub
22	OLEACEAE	Syringa meyeri	Meyers Lilac	Tree / Shrub
23	PINACEAE	Larix laricina	Tamarack	Tree / Shrub
24	PINACEAE	Picea pungens	Colorado Spruce	Tree / Shrub

	FAMILY	LATIN NAME	COMMON NAME	CHARACTER
25	RANUNCULACEAE	Aconitum napellus	Monkshood	Perennial
26	RANUNCULACEAE	Aquilegia hybrida	Columbine	Perennial
27	ROSACEAE	Spiraea x vanhouttei	Bridal Wreath Spirea	Tree / Shrub
28	ROSACEAE	Alchemilla mollis	Lady's Mantle	Perennial
29	ROSACEAE	Physocarpus opulifolius	Common Ninebark	Tree / Shrub
30	SALICACEAE	Populus deltoides	Plains Cottonwood	Tree / Shrub

Practical Requirements:

1. Identify plants using the International Code of Nomenclature for algae, fungi, and plants.

2. Identify landscape plants for landscape installation according to site location and degree of sun and shade.

LT3040 Green Infrastructure

Learning Outcomes:

- Demonstrate knowledge of green infrastructure principles and practices.

Duration: 30 Hours

Pre-Requisites: Level 3

Objectives and Content:

1. Describe types of green infrastructure.
   i. living walls
   ii. green roofs
   iii. rain gardens
   iv. rainwater management
   v. stormwater management
   vi. green parking
   vii. permeable pavement
   viii. bioswales
   ix. urban forests

2. Describe types of blue and grey infrastructures.

3. Identify purpose and benefits of green infrastructures.
   i. biodiversity water conservation
   ii. rain / stormwater management
   iii. climate change mitigation
   iv. air purification
   v. reduced heat island effect
   vi. protecting natural resources

4. Identify benefits of plants.
   i. carbon sequestration
   ii. symbiotic relationships
   iii. pollution mitigation
   iv. cost savings

5. Identify xeriscape principles.

6. Identify value of environmental, economic and social impact of urban forests.

7. Define natural ecosystems' functions, purpose and structure.

8. Define ecosystem service benefits.

9. Identify jurisdictional regulations related to green infrastructure.

10. Describe green field and brown field reclamation.

11. Describe smart water technology.

12. Define site sustainability.

13. Explain landscape design, development process and aesthetics.

14. Identify surface and subsurface drainage systems and practices.
    i. roof-top gardens
    ii. catch basins
    iii. bioswales
    iv. bioretention ponds

15. Describe filtration systems.

16. Explain low impact development.

Practical Requirements:

1. Determine green infrastructure needs by inspecting site-specific environmental conditions.

2. Select green infrastructure technologies, methods and products.

LT3050 Green Roofs and Walls

Learning Outcomes:

- Demonstrate knowledge of process and procedures of the installation and repair of green roofs and walls.
- Demonstrate knowledge of types of green roofs and walls and types and functions of plants used on green roofs and walls.
- Demonstrate knowledge of growing media and walls used on green roofs.
- Demonstrate knowledge of components of green roofs and walls.
- Demonstrate knowledge of site safety.

Duration: 15 Hours

Pre-Requisites: Level 3

Objectives and Content:

1. Describe the process and procedures when installing green roofs and walls.

2. Identify the non-organic components of green roofs and walls.

3. Describe the characteristics of growing media used in green roofs and walls.

4. Describe the characteristics of plant material used in green roofs and walls.

5. Identify plants used on green roofs and walls and describe their functions.

6. Describe the components of green roofs and walls.
   i. vegetation
   ii. growing media
   iii. water retention mats
   iv. membrane
   v. drainage
   vi. structural support
   vii. irrigation systems

7. Identify hazards and describe fall protection procedures and safe work practices pertaining to repairing green roofs and walls.

8. Describe the differences between extensive and intensive green roofs.

9. Describe uses and functionality of different systems relating to green roofs and green walls.

10. Describe the concept of structural loads relating to green roofs and wall systems.

11. Identify specific tools and equipment related to repairing green roofs and walls and describe their applications and procedures for use.

Practical Requirements:

1. Design a green roof system and plan the installation.

LT3060 Rainwater and Stormwater Management Systems

Learning Outcomes:

- Demonstrate knowledge of rainwater and stormwater harvesting components and stormwater management systems.
- Demonstrate knowledge of retention systems.
- Demonstrate knowledge of the process and procedures for the installation of rainwater and stormwater management systems.
- Demonstrate knowledge of the operation and benefits of rainwater and stormwater management systems.
- Demonstrate knowledge of plant maintenance and procedures used to maintain rainwater and stormwater management systems.

Duration: 15 Hours

Pre-Requisites: Level 3

Objectives and Content:

1. Describe the components of rainwater and stormwater management systems.
   i. mesh
   ii. filters
   iii. basins
   iv. inlet channels
   v. outlet channels
   vi. pipes
   vii. cisterns
   viii. soil cells
   ix. plants
   x. water harvesting crates
   xi. growing media

2. Describe benefits of rainwater and stormwater management systems.

3. Interpret test results relating to water and soil quality.

4. Interpret codes and jurisdictional regulations relating to rainwater and stormwater management systems.

5. Identify signs of erosion.

6. Describe soil water relationship with respect to sedimentation.

7. Describe plant maintenance requirements in relation to their function within rainwater and stormwater management systems.

8. Describe the process and procedures used to install and maintain rainwater and stormwater management systems and their components.

9. Describe functions of rainwater harvesting systems.

10. Identify the rainwater and stormwater harvesting components.
    i. cisterns
    ii. pumps
    iii. hoses
    iv. valves
    v. pipes
    vi. aggregates
    vii. rain barrels
    viii. tanks
    ix. irrigation systems

11. Describe stormwater management systems.
    i. bioswales
    ii. bioretention ponds
    iii. engineered wetlands
    iv. rain gardens
    v. permeable pavement

12. Identify the components of retention systems.

Practical Requirements:

1. Design a stormwater management system.

LT3070 Erosion Control Material

Learning Outcomes:

- Demonstrate knowledge of erosion control material and procedures for installation and maintenance.

Duration: 10 Hours

Pre-Requisites: Level 3

Objectives and Content:

1. Identify erosion control material and their application.
   - i. roll-type materials
     - tarps
     - mats
     - blankets
   - ii. aggregates
   - iii. silt fences
   - iv. boulders
   - v. wattles

2. Describe the methods of erosion control.

3. Describe installation methods.

4. Describe the procedures used to estimate quantities of erosion control material required.

5. Describe procedures used for maintenance of erosion control material.

Practical Requirements:

1. Select and use erosion control materials and methods for a specific site.

LT3080 Biodiverse Plantings, Natural Areas and Enhancement

Learning Outcomes:

- Demonstrate knowledge of biodiversity, biodiverse plantings and natural areas.
- Demonstrate knowledge of the quality standard of plant material used for biodiverse plantings and natural areas.
- Demonstrate knowledge of procedures used to maintain biodiverse plantings and natural areas.
- Demonstrate knowledge of the practice of biodiversity.
- Demonstrate knowledge of including biodiversity within a landscape design and the development process.

Duration: 42 Hours

Pre-Requisites: Level 3

Objectives and Content:

1. Describe the function of biodiverse plantings and natural areas.

2. Describe the benefits of biodiverse plantings and natural areas.
   i. animal habitat
   ii. refugia for organisms
   iii. biodiversity
   iv. psychosocial health
   v. preservation of natural resources

3. Identify jurisdictional regulations pertaining to biodiversity, biodiverse plantings and natural areas.

4. Describe the procedures used to maintain biodiverse plantings and natural areas.

5. Define biodiversity.

6. Describe the value and purpose of biodiversity.

7. List the benefits of plants.
   i. climate change mitigation
   ii. carbon capturing
   iii. symbiotic relationships

8. Describe the value of environmental, economic and social impact of the tree canopy.

9. Explain the inter-relationships between species

10. Identify native species, plant varieties and organisms that ensure diversity within landscapes.

11. Identify the differences between invasive and native species.

12. Describe bio-diverse enhancement strategies.
    i. selecting plants that attract pollinators and wildlife
    ii. ensuring inter-relationships in nature
    iii. creating or maintaining wetlands
    iv. changing maintenance practices to preserve habitat by cleaning up in the spring
    v. creating habitat and structures
    vi. encouraging moss growth

13. Describe the purpose and procedure for including edible plants in landscapes.

14. Define a variety of habitats to support a range of species.

15. Describe pest and disease control methods that are compatible with a variety of organisms.

16. Explain the benefit of and risks of not including biodiversity within a landscape design and the development process.

Practical Requirements:

1. Develop a plan for a biodiverse planting of a local area.

LT3090 Mentoring

Learning Outcomes:

- Demonstrate knowledge of strategies for learning skills in the workplace.
- Demonstrate knowledge of strategies for teaching workplace skills.

Duration: 6 Hours

Pre-Requisites: Level 3

Objectives and Content:

1. Describe the importance of individual experience.

2. Describe the shared responsibilities for workplace learning.

3. Determine one's own learning preferences and explain how these relate to learning new skills.

4. Describe the importance of different types of skills in the workplace.

5. Describe the importance of essential skills in the workplace.
   i. reading
   ii. writing
   iii. document use
   iv. oral communication
   v. numeracy
   vi. thinking skills
   vii. working with others
   viii. digital technology
   ix. continuous learning

6. Identify different ways of learning.

7. Identify different learning needs and describe the strategies to meet these needs.
   i. learning disabilities
   ii. learning preferences
   iii. language proficiency

8. Identify strategies to assist in learning a skill.
   i. understanding basic principles of instruction
   ii. developing coaching skills
   iii. being mature and patient
   iv. providing feedback

9. Describe personal responsibilities and attitudes that contribute to on-the-job success.
   i. asking questions
   ii. working safely
   iii. accepting constructive feedback
   iv. time management and punctuality
   v. respect for authority
   vi. good stewardship and materials, tools and property
   vii. efficient work practices

10. Identify different roles played by a workplace mentor.

11. Describe teaching skills, their importance and methods of delivery.
   i. identifying the point of a lesson
   ii. linking the lesson
   iii. demonstrating the lesson
   iv. providing practice
   v. giving effective feedback
   vi. assessing skills and progress

12. Identify how to choose an effective time to present a lesson.

13. Identify the components of the skill (the context).

14. Describe a skills assessment.

15. Describe considerations in setting up opportunities for skill practice.

16. Explain how to adjust a lesson to different situations.

17. Identify teachable moments.

Practical Requirements:
None.

C. Conditions Governing Apprenticeship Training

1.0 General

The following general conditions apply to all apprenticeship training programs approved by the Provincial Apprenticeship and Certification Board (PACB) in accordance with the **Apprenticeship Training and Certification Act (1999)**. If an occupation requires additional conditions, these will be noted in the specific Plan of Training for the occupation. In no case should there be a conflict between these conditions and the additional requirements specified in a certain Plan of Training. All references to Memorandum of Understanding will also apply to Letter of Understanding (LOU) agreements.

2.0 Entrance Requirements

2.1 Entry into the occupation as an apprentice requires:

Indenturing into the occupation by an employer who agrees to provide the appropriate training and work experiences as outlined in the Plan of Training.

2.2 Notwithstanding the above, each candidate must have successfully completed a high school program or equivalent, and in addition may be required to have completed certain academic subjects as specified in a particular Plan of Training. Mature students, at the discretion of the Director of Apprenticeship and Trades Certification, may be registered. A mature student is defined as one who has reached the age of 19 and who can demonstrate the ability and the interest to complete the requirements for certification.

2.3 At the discretion of the Director of Apprenticeship and Trades Certification, credit toward the apprenticeship program may be awarded to an apprentice for previous work experience and/or training as validated through prior learning assessment.

2.4 An Application for Apprenticeship form must be duly completed along with a Memorandum of Understanding as applicable to be indentured into an Apprenticeship. The Memorandum of Understanding must contain signatures of an authorized employer representative, the apprentice and an official representing the Provincial Apprenticeship and Certification Board to be valid.

2.5 A new Memorandum of Understanding must be completed for each change in an employer during the apprenticeship term.

3.0 Probationary Period

The probationary period for each Memorandum of Understanding will be six months or 900 employment credit hours. Within that period the memorandum may be terminated by either party upon giving the other party and the PACB one week notice in writing.

4.0 Termination of a Memorandum of Understanding

After the probationary period referred to in Section 3.0, the Memorandum of Understanding may be terminated by the PACB by mutual consent of the parties involved, or cancelled by the PACB for proper and sufficient cause in the opinion of the PACB, such as that stated in Section14.

5.0 Apprenticeship Progression Schedule, Wage Rates and Advanced Training Criteria

Progression Schedule

Landscape Horticulturist - 5400 Hours			
Apprenticeship Level And Wages			
Level	Wage Rate	Requirements for Progression to Next Level	Next Level
1	60%	▪ Completion of Pre-Employment / Level 1 training ▪ Registration as an apprentice ▪ Pass Level 1 exam* ▪ Minimum 1800 hours of combined relevant work experience and training	2nd Year
2	75%	▪ Completion of Level 2 training ▪ Pass Level 2 exam* ▪ Minimum 3600 hours of combined relevant work experience and training	3rd Year
3	90%	▪ Completion of Level 3 training ▪ Pass Level 3 exam* ▪ Minimum 5400 hours of combined relevant work experience and training ▪ Sign-off of all workplace skills in apprentice logbook ▪ Pass certification exam	Journeyperson Certification

Wage Rates

- Rates are percentages of the prevailing journeyperson's wage rate in the place of employment of the apprentice.
- Rates must not be less than the wage rate established by the Labour Standards Act (1990), as now in force or as hereafter amended, or by other order, as amended from time to time replacing the first mentioned order.
- Rates must not be less than the wage rate established by any collective agreement, which may be in force at the apprentice's workplace.
- Employers are free to pay wage rates above the minimums specified.

Level Exams*

- This program may **not** currently contain level exams, in which case this requirement will be waived until such time as level exams are available.

Landscape Horticulturist - 5400 Hours		
Class Calls(After Apprenticeship Registration)		
Call Level	Requirements for Class Call	Hours awarded for In-School Training
Direct Entry Level 1	▪ Minimum of 1800 hours of relevant work experience ▪ Prior Learning Assessment (PLA) at designated college (if applicable)	To be determined by the number of courses completed after each class call
Level 2	▪ Minimum of 3000 hours of relevant work experience and training	240
Level 3	▪ Minimum of 4400 hours of relevant work experience and training	230
Level 4	▪ Minimum of 5300 hours of relevant work experience and training	148
Class Calls at Minimum Hours ▪ Class calls may not always occur at the minimum hours indicated. Some variation is permitted to allow for the availability of training resources and apprentices.		

6.0 Tools

Apprentices shall be required to obtain their own hand tools applicable for the designated occupation of registration or tools as specified by the PACB.

7.0 Periodic Examinations and Evaluation

7.1 Every apprentice shall submit to such occupational tests and examinations as the PACB shall direct. If after such occupational tests and examinations the apprentice is found to be making unsatisfactory progress, his/her apprenticeship level and rate of wage shall not be advanced as provided in Section 5 until his/her progress is satisfactory to the Director of Apprenticeship and Trades Certification and his/her date of completion shall be deferred accordingly. Persistent failure to pass required tests shall be a cause for revocation of his/her Memorandum of Understanding.

7.2 Upon receipt of reports of accelerated progress of the apprentice, the PACB may shorten the term of apprenticeship and advance the date of completion accordingly.

7.3 For each and every course, a formal assessment is required for which 70% is the pass mark. A mark of 70% must be attained in both the theory examination and the practical project assignment, where applicable as documented on an official transcript.

7.4 Course credits may be granted through the use of a PACB approved matrix which identifies course equivalencies between designated trades and between current and historical Plans of Training for the same trade.

8.0 Granting of Certificates of Apprenticeship

Upon the successful completion of apprenticeship, the PACB shall issue a Certificate of Apprenticeship.

9.0 Hours of Work

Any hours employed in the performance of duties related to the designated occupation will be credited towards the completion of the term of apprenticeship. Appropriate documentation of these hours must be provided.

10.0 Copies of the Registration for Apprenticeship

The Director of Apprenticeship and Trades Certification shall provide copies of the Registration for Apprenticeship form to all signatories to the document.

11.0 Ratio of Apprentices to Journeypersons

Under normal practice, the ratio of apprentices to journeypersons shall not exceed two apprentices to every one journeyperson employed. Other ratio arrangements would be determined and approved by the PACB.

12.0 Relationship to a Collective Bargaining Agreement

Where applicable in Section 5 of these conditions, Collective Agreements take precedence.

13.0 Amendments to a Plan of Apprenticeship Training

A Plan of Training may be amended at any time by the PACB.

14.0 Employment, Re-Employment and Training Requirements

14.1 The Plan of Training requires apprentices to regularly attend their place of employment.

14.2 The Plan of Training requires apprentices to attend training for that occupation as prescribed by the PACB.

14.3 Failure to comply with Sections 14.1 and/or 14.2 will result in cancellation of the Memorandum of Understanding. Apprentices may have their MOUs reinstated by the PACB but would be subject to a commitment to complete the entire program as outlined in the General Conditions of Apprenticeship. Permanent cancellation in the said occupation is the result of non-compliance.

14.4 Cancellation of the Memorandum of Understanding to challenge journeyperson examinations, if unsuccessful, would require an apprentice to serve a time penalty of two (2) years before reinstatement as an apprentice or qualifying to receive a class call to training as a registered Trade Qualifier. Cancellation must be mutually agreed upon by the employer and the apprentice.

14.5 An employer shall ensure that each apprentice is under the direct supervision of an approved journeyperson supervisor who is located at the same worksite as the apprentice, and that the apprentice is able to communicate with the journeyperson with respect to the task, activity or function that is being supervised.

14.6 Under the Plan of Training the employer is required to keep each apprentice employed as long as work is available, and if the apprentice is laid off due to lack of work, to give first opportunity to be hired before another is hired.

14.7 The employer will permit each apprentice to attend training programs as prescribed by the PACB.

14.8 Apprentices who cannot acquire all the workplace skills at their place of employment will have to be evaluated in a simulated work environment at a PACB authorized training institution and have sign-off done by instructors to meet the requirements for certification.

15.0 Appeals to Decisions Based on Conditions Governing Apprenticeship Training

Persons wishing to appeal any decisions based on the above conditions must do so in writing to the Minister of Immigration, Population Growth and Skills within 30 days of the decision.

D. Requirements for Red Seal Endorsement

1. Evidence the required work experiences outlined in this Plan of Training have been obtained. This evidence must be in a format clearly outlining the experiences and must be signed by an appropriate person or persons attesting that these experiences have been obtained to the level required.

2. Successful completion of all required courses in the program.

3. A combination of training from an approved training program and suitable work experience totaling 5400 hours.

   Or

   A total of 8100 hours of suitable work experience.

4. Completion of a National Red Seal examination, to be set at a place and time determined by the Apprenticeship and Trades Certification Division.

E. Roles and Responsibilities of Stakeholders in the Apprenticeship Process

The apprenticeship process involves a number of stakeholders playing significant roles in the training of apprentices. This section outlines these roles and the responsibilities resulting from them.

The Apprentice:

- completes all required technical training courses as approved by the PACB.
- finds appropriate employment.
- completes all required work experiences in combination with the required hours.
- ensures work experiences are well documented.
- approaches apprenticeship training with an attitude and commitment that fosters the qualities necessary for a successful career as a qualified journeyperson.
- obtains the required hand tools as specified by the PACB for each period of training of the apprenticeship program.

The Employer:

- provides high quality work experiences in an environment conducive to learning.
- remunerates apprentices as set out in the Plan of Training or Collective Agreements.
- provides feedback to training institutions, Apprenticeship and Trades Certification Division and apprentices in an effort to establish a process of continuous quality improvement.
- where appropriate, releases apprentices for the purpose of returning to a training institution to complete the necessary technical courses.
- ensures work experiences of the apprentice are documented.
- ensures a certified journeyperson is currently on staff in the same trade area as the apprentice and whose certification is recognized by the NL Department of Immigration, Skills and Labour.

The Training Institution:

- provides a high quality learning environment.
- provides the necessary student support services that will enhance an apprentice's ability to be successful.
- participates with other stakeholders in the continual updating of programs.

The Apprenticeship and Trades Certification Division:

- establishes and maintains program advisory committees under the direction of the PACB.
- promotes apprenticeship training as a viable career option to prospective apprentices and other appropriate persons involved, such as career guidance counsellors, teachers, parents, etc.
- establishes and maintains a protocol with training institutions, employers and other appropriate stakeholders to ensure the quality of apprenticeship training programs.
- ensures all apprentices are appropriately registered and records are maintained as required.
- schedules all necessary technical training periods for apprentices to complete requirements for certification.
- administers level, provincial and interprovincial examinations.

The Provincial Apprenticeship and Certification Board:

- sets policies to ensure the provisions of the **Apprenticeship and Certification Act (1999)** are implemented.
- ensures advisory and examination committees are established and maintained.
- accredits institutions to deliver apprenticeship training programs.
- designates occupations for apprenticeship training and/or certification.