SKILLEDTRADESBC

PROGRAM OUTLINE

Utility Arborist

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UTILITY ARBORIST

PROGRAM OUTLINE

APPROVED BY INDUSTRY

FEBRUARY 2012

Developed by
SkilledTradesBC
Province of British Columbia

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Section 1

INTRODUCTION

Utility Arborist

Foreword

This Program Outline is for use in the Utility Arborist apprenticeship training classes sponsored by SkilledTradesBC and will be used as a guide for Instructors in the formal classroom portions of apprenticeship training.

A Utility Arborist is a person who undertakes any work required to prune or clear vegetation in proximity (defined as a distance of three meters or less from a primary conductor with a voltage of 750 volts or higher) to energized electrical equipment, structures and conductors or who in the course of utility line clearing operations, prunes, falls or removes trees which could come into contact with energized power lines.

Since this is a practical trade, it is expected that demonstration and student participation will be integrated into all learning activities.

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

Safe working practices though not always specified in each of the competencies and learning tasks, is an implied part of the program and should be stressed throughout the apprenticeship.

This Program Outline includes a list of Utility Arborist Training Provider Standards for:

- Facility Requirements
- Tools and Equipment
- Reference Materials
- Instructor Requirements

SAFETY ADVISORY

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

Acknowledgements

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

- *Anne Kadwell*, CEO, HortEducationBC
- *Remo Maddalozzo*, Asplundh Canada
- *Pat Perry*, Davey Tree

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

- *Tom Bailey,* QM Consulting Group
- *Troy Hudson*, EITI
- *Mike Johnson*, Riteway Tree Service
- *Marty Lundy*, Asplundh Canada
- *Walter McLean,* Davey Tree Expert
- *John Monk,* BC Hydro

Industry Subject Matter Experts retained as outline reviewers:

- *Remo Maddalozzo*, Asplundh Canada
- *Pat Perry*, Davey Tree Experts of Canada

Facilitators:

- J. Jankola & Associates Consulting

SkilledTradesBC would like to acknowledge the dedication and hard work of all the industry representatives appointed to identify the training requirements of the Utility Arborist occupation.

How to Use this Document

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

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

Section 2

PROGRAM OVERVIEW

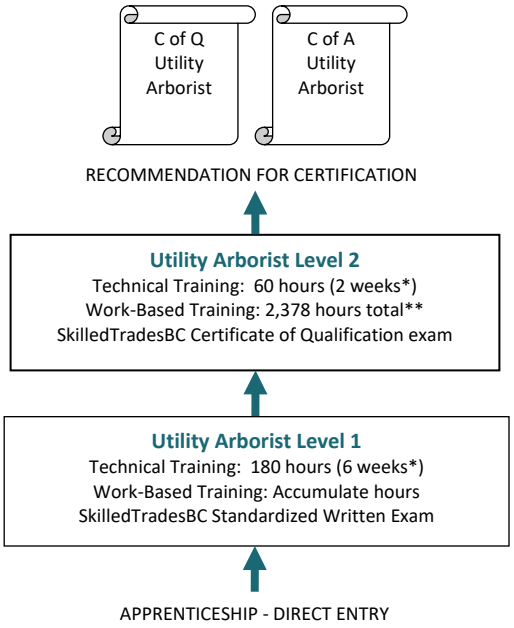
Utility Arborist

Program Credentialing Model

Apprenticeship Pathway

This graphic provides an overview of the Utility Arborist apprenticeship pathway.

C of Q = Certificate of Qualification
C of A = Certificate of Apprenticeship



**Suggested duration based on 30-hour week*

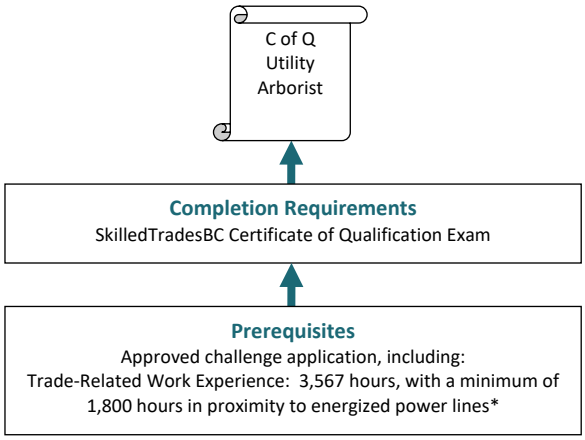
*** A minimum of 1,200 WBT hours must be in proximity to energized power lines; proximity is defined as a distance of three metres or less from a primary conductor with a voltage of 750 volts or greater*
NOTE: Employer must complete and submit Proximity Verification Form (form available on SkilledTradesBC website) with RFC

CROSS-PROGRAM CREDITS
Individuals who hold the credentials listed below are entitled to receive partial credit towards the completion requirements of this program:

None

Challenge Pathway

This graphic provides an overview of the Utility Arborist challenge pathway.



** Proximity is defined as a distance of three metres or less from a primary conductor with a voltage of 750 volts or greater*

NOTE: Only applicants with credentials from outside of British Columbia will be accepted to undertake the challenge process. Only certified Utility Arborists and Utility Arborist apprentices are permitted to perform tree pruning or falling work in proximity to energized power lines in British Columbia.

CREDIT FOR PRIOR LEARNING

Individuals who hold the credentials listed below are considered to have met or partially met the prerequisites for challenging this program

Tree Climber/Trimmer Certification issued by the Western Utility Arborist Association (WUAA)

Work Experience: 3,567 hours

Occupational Analysis Chart

UTILITY ARBORIST

Occupation Description: "Utility Arborist" means a person who undertakes any work required to prune or clear vegetation in proximity* to energized electrical equipment, structures, and conductors or who in the course of utility line clearing operations, prunes, falls, or removes trees which could come into contract with energized power lines.

**Proximity is defined as a distance of three meters or less from a primary conductor with a voltage of 750 volts or greater.*

REGULATIONS AND OTHER OCCUPATIONAL SKILLS **A**	Identify relevant legislation and regulations A1	Explain Musculoskeletal Injury (MSI) and Repetitive Strain Injury (RSI) A2	Identify worksite hazards and develop and implement safe work plan A3	Apply regulations to the jobsite A4	Describe workplace leadership and communication A5	
	1	1	1	2	2	
POWERED EQUIPMENT **B**	Demonstrate maintenance requirements for aerial lift with dump box and chipper B1	Describe critical components of an aerial lift truck B2	Demonstrate safe dump box operations B3	Describe safe aerial lift operations B4	Demonstrate basic aerial lift techniques/practices and setup near live lines B5	Demonstrate safe chipper use B6
	1	1	1	1	1	1
HAND TOOLS AND SMALL POWER TOOLS **C**	Use and maintain hand tools C1	Operate a variety of small power tools C2	Use and inspect ladders C3			
	1	1	1			
TREE WORK AND MANAGEMENT **D**	Identify common trees in British Columbia D1	Describe basic tree biology and its importance to good arboriculture practices D2	Prune trees to appropriate industry standards D3	Identify common stem, root and crown, and pests/diseases in British Columbia D4	Assess trees onsite D5	
	1	1	1 2	2	2	
FALLING AND BUCKING **E**	Demonstrate safe chainsaw use E1	Demonstrate the process of falling E2	Practice falling a tree E3	Manage falling hazards E4	Recognize hazardous weather conditions E5	Recognize dangerous falling practices E6
	1	1	1	1	1	1

	Identify special falling techniques E7	Plan for limbing and bucking E8			
	1	1			
RIGGING F	Demonstrate rigging concepts including selection and use of ropes F1	Select and use knots, hitches, slings, and hardware in rigging systems F2	Select and use appropriate rigging techniques F3	Perform cuts for various situations F4	
	1	1 2	2	2	
CLIMBING G	Select and inspect climbing gear G1	Conduct pre-climb assessments G2	Climb using various techniques G3	Conduct post-climb job and gear inspection G4	
	1	1	1 2	1	
EMERGENCY RESPONSE H	Identify First Aid certification requirements H1	Describe precautions and procedures to prevent and suppress fires H2	Implement spill response H3	Perform aerial bucket rescue H4	Perform aerial tree rescue H5
	1	1	1	1	1 2
JOB PLANNING AND RISK ASSESSMENT I	Conduct site inspections I1	Develop and communicate safe job plan I2	Conduct pre-job preparation I3	Ensure regulatory compliance I4	
	1 2	1 2	1 2	1 2	

POWERLINE AWARENESS J	Apply OH&S regulations Part 19 J1	Describe basic principles of electricity and terms J2	Describe basic powerline systems J3	Identify utility overhead structures and components J4	Identify sources of electrical hazards J5	Describe methods of abatement of electrical hazards J6
	1	1	1	1	1	1

Describe the requirements for limits to approach J7	Describe methodology for obtaining appropriate system protection J8
1	2

Training Topics and Suggested Time Allocation

Utility Arborist – Level 1

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
Line A	**REGULATIONS AND OTHER OCCUPATIONAL SKILLS**	**5%**	**95%**	**5%**	**100%**
A1	Identify relevant legislation and regulations		✓		
A2	Explain Musculoskeletal Injury (MSI) and Repetitive Strain Injury (RSI)		✓		
A3	Identify worksite hazards and develop and implement safe work plan		✓	✓	
Line B	**POWERED EQUIPMENT**	**12%**	**50%**	**50%**	**100%**
B1	Demonstrate maintenance requirements for aerial lift with dump box and chipper		✓	✓	
B2	Describe critical components of an aerial lift truck		✓	✓	
B3	Demonstrate safe dump box operations		✓	✓	
B4	Describe safe aerial lift operations		✓		
B5	Demonstrate basic aerial lift techniques/practices and setup near live lines		✓	✓	
B6	Demonstrate safe chipper use		✓	✓	
Line C	**HAND TOOLS AND SMALL POWER TOOLS**	**6%**	**50%**	**50%**	**100%**
C1	Use and maintain hand tools		✓	✓	
C2	Operate a variety of small power tools		✓	✓	
C3	Use and inspect ladders		✓	✓	
Line D	**TREE WORK AND MANAGEMENT**	**12%**	**100%**	**0%**	**100%**
D1	Identify common trees in British Columbia		✓		
D2	Describe basic tree biology and its importance to good arboriculture practices		✓		
D3	Prune trees to appropriate industry standards		✓		
Line E	**FALLING AND BUCKING**	**10%**	**40%**	**60%**	**100%**
E1	Demonstrate safe chainsaw use		✓	✓	
E2	Demonstrate the process of falling		✓	✓	
E3	Practice falling a tree		✓	✓	
E4	Manage falling hazards		✓		
E5	Recognize hazardous weather conditions		✓		
E6	Recognize dangerous falling practices		✓		
E7	Identify special falling techniques		✓		
E8	Plan for limbing and bucking		✓		

Line F	**RIGGING**	**10%**	**20%**	**80%**	**100%**
F1	Demonstrate rigging concepts including selection and use of ropes		✓	✓	
F2	Select and use knots, hitches, slings, and hardware in rigging systems		✓	✓	
Line G	**CLIMBING**	**15%**	**20%**	**80%**	**100%**
G1	Select and inspect climbing gear		✓	✓	
G2	Conduct pre-climb assessments		✓	✓	
G3	Climb using various techniques		✓	✓	
G4	Conduct post-climb job and gear inspection		✓	✓	
Line H	**EMERGENCY RESPONSE**	**5%**	**20%**	**80%**	**100%**
H1	Identify First Aid certification requirements		✓		
H2	Describe precautions and procedures to prevent and suppress fires		✓		
H3	Implement spill response		✓		
H4	Perform aerial bucket rescue		✓	✓	
H5	Perform aerial tree rescue		✓	✓	
Line I	**JOB PLANNING AND RISK ASSESSMENT**	**10%**	**100%**	**0%**	**100%**
I1	Conduct site inspections		✓		
I2	Develop and communicate safe job plan		✓		
I3	Conduct pre-job preparation		✓		
I4	Ensure regulatory compliance		✓		
Line J	**POWERLINE AWARENESS**	**15%**	**100%**	**0%**	**100%**
J1	Apply OH&S regulations Part 19		✓		
J2	Describe basic principles of electricity and terms		✓		
J3	Describe basic powerline systems		✓		
J4	Identify utility overhead structures and components		✓		
J5	Identify sources of electrical hazards		✓		
J6	Describe methods of abatement of electrical hazards		✓		
J7	Describe the requirements for limits to approach		✓		
	Total Percentage for Utility Arborist Level 1	**100%**			

Training Topics and Suggested Time Allocation

Utility Arborist – Level 2

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
Line A	**REGULATIONS AND OTHER OCCUPATIONAL SKILLS**	**10%**	**100%**	**0%**	**100%**
A4	Apply regulations to the jobsite		✓		
A5	Describe workplace leadership and communication		✓		
Line D	**TREE WORK AND MANAGEMENT**	**20%**	**50%**	**50%**	**100%**
D3	Prune trees to appropriate industry standards		✓	✓	
D4	Identify common stem, root and crown, and pests/diseases in British Columbia		✓		
D5	Assess trees onsite		✓		
Line F	**RIGGING**	**20%**	**20%**	**80%**	**100%**
F2	Select and use knots, hitches, slings, and hardware in rigging systems		✓	✓	
F3	Select and use appropriate rigging techniques		✓	✓	
F4	Perform cuts for various situations		✓	✓	
Line G	**CLIMBING**	**20%**	**20%**	**80%**	**100%**
G3	Climb using various techniques		✓	✓	
Line H	**EMERGENCY RESPONSE**	**5%**	**5%**	**95%**	**100%**
H5	Perform aerial tree rescue		✓	✓	
Line I	**JOB PLANNING AND RISK ASSESSMENT**	**20%**	**40%**	**60%**	**100%**
I1	Conduct site inspections		✓	✓	
I2	Develop and communicate safe job plan		✓	✓	
I3	Conduct pre-job preparation		✓	✓	
I4	Ensure regulatory compliance		✓	✓	
Line J	**POWERLINE AWARENESS**	**5%**	**100%**	**0%**	**100%**
J8	Describe methodology for obtaining appropriate system protection		✓		
	Total Percentage for Utility Arborist Level 2	**100%**			

Section 3

PROGRAM CONTENT

Utility Arborist

Level 1

Utility Arborist

Line (GAC): A REGULATIONS AND OTHER OCCUPATIONAL SKILLS

Competency: A1 Identify Relevant Legislation and Regulations

Objectives

To be competent in this area, the individual must be able to identify and apply regulations for all relevant legislation that impacts their onsite activities.

LEARNING TASKS	CONTENT
1. Identify applicable federal legislation and regulations	• Where to find the regulations and standards • Specific federal requirements that apply to Utility Arborist activities ○ Canadian Environmental Protection Act ○ Fisheries Act ○ Wildlife Act ○ Aboriginal Act ○ Species at Risk ○ Others
2. Identify applicable provincial legislation and regulations	• Where to find the regulations and standards • Specific provincial requirements that apply to Utility Arborist activities ○ Traffic Control Manual for Work on Roadways ○ British Columbia Workers Compensation Act ○ WorkSafeBC ○ OHS Regulations ○ Safe Work Practices for Utility Arborists ○ Ministry of Environment, Parks, Forestry ○ Heritage Act ○ BC Hydro Power and Authority Act ○ Others
3. Identify applicable local regulations	• Where to find the regulations • Specific local requirements that apply to Utility Arborist activities ○ Municipal regulations vary between municipalities, and can be found at the municipal or city hall

Line (GAC): A REGULATIONS AND OTHER OCCUPATIONAL SKILLS

Competency: A2 Explain Musculoskeletal Injury (MSI) and Repetitive Strain Injury (RSI)

Objectives

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

- Identify the signs, sypmtoms, and causes of MSI and RSI.
- Take the appropriate precautions to prevent MSI and RSI injuries from occurring while on the job.

LEARNING TASKS	CONTENT
1. Define MSI	• A condition where a part of musculoskeletal system is injured over time • A large group of conditions that result from traumatizing the body in either a minute or major way over a period of time; the buildup of trauma that causes the disorder • Conditions are often focused on a joint and affect the muscle and bone; however, other areas can be strained and their response to that trauma can be injury
2. Define RSI	• An injury to a part of the body that is caused by overusing or straining that body part • A large group of conditions that result from using the body in a way it is not designed for or capable of comfortably working • Conditions are often focused on a joint and usually affect the muscle, bone, tendon, or bursa of the joint; however, other anatomical features and areas can be stressed and their response to that strain can be injury
3. Identify signs and symptoms of MSI and RSI	• Signs and symptoms differ in type and severity from person to person, even though their work tasks may be similar • Signs and symptoms may take weeks, months, or years to develop • Signs of injury may be present only in later stages when irreversible damage has occurred • Signs include ○ Pain ○ Change in skin colour

LEARNING TASKS	CONTENT
	○ Numbness or tingling ○ Decreased range of motion ○ Decreased strength ○ Swelling ○ Fatigue
4. Identify causes of MSI and RSI	• Repeated small injuries to muscles, tendons, ligaments, nerves, blood vessels, and joints • Specific contributing factors present in work tasks and activities • Long unbroken periods of work • Ergonomics or the lack of it • Lack of information leads to neglect by the concerned individuals
5. Identify contributing factors to MSI and RSI	• Awkward postures • Repetitive motions • Vibrations • Forceful exertions • Pressure points
6. Identify preventive measures for MSI and RSI	• Ensure proper training has occurred • Know the hazards or factors in the job in regards to MSI and RSI • Knowledge of proper use of equipment and tools provided • Report MSI and RSI hazards to supervisors and request training to avoid MSI injuries • Be aware of posture and areas of tension in muscles and joints • Alternate work activities or take short breaks from repetitive or forceful tasks • Move and change position during work tasks • Be aware of the signs of MSI and RSI and report any symptoms to a supervisor • Consult medical professionals

Line (GAC): A REGULATIONS AND OTHER OCCUPATIONAL SKILLS

Competency: A3 Identify Worksite Hazards and Develop and Implement Safe Work Plan

Objectives

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

- Participate in identifying hazards to establish a safe work plan.
- Conduct both pre- and post-job inspections.

LEARNING TASKS	CONTENT
1. Identify job-site hazards and potential risks	• Electrical and utility service ○ Safety Practice Regulations (SPRs) ○ Power Systems Safety Practices (PSSP) • Gravitational ○ "Slip, trip, and fall" • Overhead ○ "Struck by" • Thermal ○ Heat and cold stress • Mechanical ○ Pinch point ○ "Struck against" ○ Vehicle • Public • Behavioural (fatigue, rushing, complacency, stress, substance abuse,frustration) • Chemical • Compressed gas • Environmental ○ Insects ○ Plants ○ Weather
2. Participate in tree assessment	• Fungal fruiting bodies • Decay • Structural defects • Cracks • Inclusions • Dead wood • Hangers • Root conditions • Others

LEARNING TASKS	CONTENT
4. Develop a written safe work plan	• Hierarchy of Controls ○ Elimination ○ Substitution ○ Contain risk at source ○ Remove employee from risk ○ Reduce exposure to risk by safe working systems/practices ○ Warning signals – Audible – Visual – e.g. “all clear” ○ Personal protective equipment (PPE) ○ Discipline/supervision • Site hazards • Safe work procedures for abatement • Applicable regulations
5. Implement the safe work plan	• PPE • Signs, cones, flagging tape, barricades • Tools and equipment relative to tasks
6. Participate in a post-job inspection	• Post-job hazards such as hangers • Property damage • Clean-up • Man check (head count)

Achievement Criteria

Performance — The learner will:
- Participate in identifying hazards to establish a safe work plan
- Conduct both pre- and post-job inspections

Conditions — The learner will be given a typical worksite situation, the necessary tools, and equipment to perform required tasks.

Criteria — The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:
- Wore appropriate PPE
- Participated in a pre-jobsite hazard inspection
- Developed a safe work plan
- Implemented a safe work plan
- Participated in a post-job inspection

Line (GAC): B POWERED EQUIPMENT

Competency: B1 Demonstrate Maintenance Requirements for Aerial Lift with Dump Box and Chipper

Objectives

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

- Identify and demonstrate maintenance requirements for aerial lifts with a dump box.
- Identify and demonstrate maintenance requirements for hydraulics.
- Identify and demonstrate maintenance requirements for chippers.

LEARNING TASKS	CONTENT
1. Discuss pre-trip safety and maintenance inspection procedure for trucks and equipment	• Daily inspection for regular maintenance on all equipment ○ Dry run ○ Speed check ○ Drift check • Pre-operation of all equipment • Dielectric boom and tool maintenance
2. Discuss importance of regular maintenance on trucks and other equipment	• Determining areas requiring lubrication or maintenance ○ Lubrication interval such as grease points ○ Indicators other than regular visual inspections • Maintenance for breakdown prevention and equipment care on: ○ Air ○ Oil ○ Hydrualic ○ Fuel filters ○ Cooling systems inspection • Inspect for wear indications before breakdowns • How to correctly grease • Inspection and changing of air and lubrication filters • Inspection methods for checking operating condition of: ○ Belts ○ Hoses ○ Radiator (inside and outside)
3. Discuss importance of regular maintenance on chippers	• Cutter blade changes on drum and disk chippers

LEARNING TASKS	CONTENT
	• Hydraulic hose changes • Lockout/tag out procedures

***Note**: Chipper blade change demonstration is for inspection criteria purposes only and not meant for student practice at work.*

Achievement Criteria

Performance	The learner will: • Demonstrate maintenance and daily inspection requirements for aerial lifts with a dump box • Demonstrate maintenance and daily inspection requirements for chippers
Conditions	The learner will be given the necessary tools and equipment to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Wore appropriate PPE • Performed daily inspection for regular maintenance on aerial lift, truck, and chipper • Performed operation of aerial lift, truck and chipper

Line (GAC): B POWERED EQUIPMENT

Competency: B2 Describe Critical Components of an Aerial Lift Truck

Objectives

To be competent in this area, the individual must be able to describe the critical components of an aerial lift truck.

LEARNING TASKS	CONTENT
1. Discuss the critical component test and the purpose for it being done	• Areas of testing on an aerial lift • Mandatory testing and how often it is to be carried out and documented • Welds, pins, rams, seal, and oil • Responsibility of the operator to continue daily inspections of the lift • Determining what can be visually inspected to prevent possible injuries or bring wear to the attention of repairing before excessive damage or injury occurs • Dry runs and full inspections of critical components before operation • Locating the test decal or papers for the last inspection of critical components
2. Discuss the dielectric testing of an aerial lift	• Regular maintenance of the epoxy-fiberglass sections of each boom • Location of the dielectric decal and the area of each boom that is tested • Maintenance such as: ○ Cleaning and waxing of the epoxy glass boom sections to improve dielectric integrity by beading water
3. Describe and demonstrate a drift test	• Requirements of the bucket on an aerial lift • Holding valves and cylinders • Definition of “drift” • How to do a drift test

Achievement Criteria

Performance	The learner will perform a drift test.
Conditions	The learner will be given the necessary tools and equipment to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Wore appropriate PPE • Performed drift test and boom surface maintenance

Line (GAC): B POWERED EQUIPMENT

Competency: B3 Demonstrate Safe Dump Box Operations

Objectives

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

- Demonstrate safe dump box and hydraulic operations.
- Discuss proper maintenance of dump box.

LEARNING TASKS	CONTENT
1. Describe the principles of the Power Take Offs (PTO) hydraulic pump for boom control and dump box	• Principles of how a hydraulic cylinder works and the strengths obtainable by oil flow ○ Zero energy state and procedures of how to achieve it • System component functions such as: ○ Holding valves ○ Control valves • Where system components are found on systems • Seals and leaks and the problems they can lead to from deterioration • Reservoir capacities • Filtration • How temperature extremes affect the hydraulic system • Location of each component on the truck that is part of the hydraulic system for the dump function and the boom lift assembly
2. Discuss and demonstrate proper maintenance	• Blocking a dump box to do servicing safely • Areas to inspect on hoses and where seals will leak on cylinders and valves • Hose changes and seal repairs on a trim-saw
3. Demonstrate safe operating procedures	• Dumping procedures • Clearing jams (stuck debris) • Dumping hydraulic failures • Pinch points • Blocking procedures • Others

Achievement Criteria

Performance	The learner will demonstrate safe dump box and hydraulic operations.
Conditions	The learner will be given the necessary tools and equipment to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Wore appropriate PPE • Lifted and blocked the dump box • Inspected, maintained, and operated aerial lift and dump box

Line (GAC): B POWERED EQUIPMENT

Competency: B4 Describe Safe Aerial Lift Operations

Objectives

To be competent in this area, the individual must be able to describe safe aerial lift operations.

LEARNING TASKS	CONTENT
1. Describe all operations of setup of a lift truck	• Preferred positioning to vegetation • Traffic control requirements (site set up) • Required ground levels and methods of setting down the outriggers-stablizers including the use of pads and wheel chock requirements • Hazards for lower boom swing such as: ○ Overhead wires ○ Vegetation ○ Obstructions ○ Traffic • Setting up lift truck stablizers and performing a dry run • Traffic control requirements for boom clearance • Chipper operator protection requirement
2. Describe a dry run	• Dry run and override control operations for the groundman and what he must be able to operate • Dry run including full movement of over-center booms and full rotation with the use of override controls
3. Describe safe aerial lift operations	• Correct method of unfolding the boom from the cradle • Folding down the boom in the correct sequence • Limitations of movement depending on the capabilities of the model of lift and cylinder travel • Manual rotation (depending on the model of the lift) • Emergency operations in the case of power and hydraulic failure • Possible methods of emergency lowering for each make of equipment

Line (GAC): B POWERED EQUIPMENT

Competency: B5 Demonstrate Basic Aerial Lift Techniques/Practices and Setup Near Live Lines

Objectives

To be competent in this area, the individual must be able to describe and demonstrate setup near live lines.

LEARNING TASKS	CONTENT
1. Describe basic aerial lift techniques near live lines	• Body harness requirements for operations of a lift truck • Maximum weight allowed for each model lift • Types of hydraulic controls most commonly found on lift trucks used for arboriculture • Correct way to use the controls for full movement and to “feather” the controls for fine movements • Limits of approach rules and the variance to travel only between primary conductor and neutral • Bucket and boom positioning to conductors • What obstacles must be watched for while elevating or descending such as: ○ Rotating into oncoming trucks ○ Damaging service wires ○ Others • Advantages of over-center booms and booms with higher reaches
2. Demonstrate basic aerial lift techniques near live wires	• Upper then lower boom operations to lift off cradle • Feathering controls • Correct method of travelling between primary and neutral then dropping down to work and maintain correct limits of approach • Over center boom travel compared to conventional boom travel ○ Over the center travel of the lower boom

Achievement Criteria

Performance	The learner will demonstrate safe aerial lift setup and operations.
Conditions	The learner will be given the necessary tools and equipment to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Wore appropriate PPE • Setup aerial unit • Performed traversing between primary and neutral • Feathered controls for smooth operation

Line (GAC): B POWERED EQUIPMENT

Competency: B6 Demonstrate Safe Chipper Use

Objectives

To be competent in this area, the individual must be able to use a chipper in a safe and efficient manner.

LEARNING TASKS	CONTENT
1. Identify and use a variety of safety features and devices	• Critical safety features and devices such as: ○ Discharge chute ○ Feed roller housing ○ Feed table ○ Guard chute ○ Fuel tank ○ Feed control bar ○ Winch ○ Clutch lever ○ Deadman switch • Lock out procedures
2. Operate brush chipper according to owner's manual	• Drum chipper • Disk chipper • Maintenance requirements
3. Use personal protective equipment (PPE)	• Appropriate PPE for working with chippers as per industry standards and/or WorkSafeBC regulations ○ Safety helmet ○ Eye protection ○ Face protection ○ Hearing protection ○ Non-cuffed work gloves ○ Safety boots with good grip and ankle support ○ Non-snag outer clothing appropriate to prevailing weather conditions ○ High-visibility clothing should be worn when workplace risk assessment identifies need

LEARNING TASKS	CONTENT
4. Safely feed wood debris into chipper	• Safe work procedures as they apply to chippers ○ Pre-start inspection ○ Work area selection and preparation ○ Operation ○ Emergency procedures ○ Fueling ○ Maintenance ○ Moving the machine
5. Establish safe worksite	• Safe work plan

Achievement Criteria

Performance	The learner will use a chipper in a safe and efficient manner.
Conditions	The learner will be given a chipper, the necessary equipment, and materials to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Wore the appropriate PPE for chipper operations • Attached and detached from the tow vehicle (e.g. parking) • Set up safe work area • Inspected equipment before operations, as per operator's manual • Demonstrated working knowledge of safety features during operations • Positioned chipper chute • Staged brush • Performed start-up operations • Demonstrated engaging and disengaging the clutch • Safely fed chipper • Maintained safe worksite • Performed shut-down operations • Prepared chipper for transport • Backed up chipper with assistance

Line (GAC): C HAND TOOLS AND SMALL POWER TOOLS

Competency: C1 Use and Maintain Hand Tools

Objectives

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

- Use and maintain a wide variety of hand tools. (Refer to pg. 103 for a complete list of hand tools.)
- Use hand tools on the ground and on ladders.

LEARNING TASKS	CONTENT
1. Identify hand tools to industry best practices	• Tools used in the trade such as: ○ Pruning shears ○ Loppers ○ Hand saws ○ Pole pruners ○ Hand pruners ○ Shovels ○ Axes ○ Mauls ○ Wedges ○ Mattocks ○ Rakes ○ Peevees/Cant hooks
2. Maintain hand tools to industry best practices	• General maintenace requirements of hand tools ○ Sharpening ○ Lubricating ○ Replacing an axe or maul handle ○ Drilling and pinning an axe head ○ Cleaning and storage procedures
3. Inspect hand tools before using	• Identifying wear and tear • Identify right tool for the job ○ Size and preferred weight of axes ○ Splitting mauls and splitting wedges, shape and material (e.g., falling, construction)
4. Sharpen hand tools	• Sharpening tools such as: ○ Axe ○ Maul ○ Saw ○ Pruning shear • Other equipment sharpening procedures

LEARNING TASKS	CONTENT
5. Use hand tools in a safe and effective manner	• Positioning and securement on ladders • Working on the ground

Achievement Criteria

Performance	The learner will: • Use hand tools both on the ground and on ladders • Maintain and service hand tools
Conditions	The learner will be given a variety of hand tools to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Wore appropriate PPE • Selected the correct hand tool for the job • Operated the hand tool with consideration of safety for self and others • Demonstrated tool sharpening techniques on given hand tools • Demonstrated correct maintenance and storage procedures

Line (GAC): C HAND TOOLS AND SMALL POWER TOOLS

Competency: C2 Operate a Variety of Small Power Tools

Objectives

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

- Safely use and maintain a wide variety of power tools – including insulated power tools. (Refer to pg. 103 for a complete list of power tools.)
- Use power tools and insulated power tools on the ground and on ladders.

LEARNING TASKS	CONTENT
1. Identify power tools and insulated power tools to industry best practices	• Tools used in the trade such as: ○ Pole pruners ○ Pole saws ○ Chainsaws ○ Hydraulic trim saw ○ Hydraulic tools with insulated handles and non-conductive hoses ○ Hedge trimmer ○ Power shears ○ Gas powered blower ○ Others
2. Maintain power tools and insulated power tools to manufactures' specifications	• General maintenance requirements of power tools and insulated tools ○ Dielectric testing and requirement standards ○ Necessity of test decals and stickers on tested tools ○ Damaged or poorly maintained tools and why they should be taken out of service ○ Maintenance intervals and frequency required ○ Sheeting action of water on poorly maintained insulated tools ○ Cleaning and waxing an insulated tool ○ Inspection of tools for out-of-service condition ○ Maintenance of pruner blade, head bolt, sheave, and fittings ○ Splicing three strand polypropylene rope and fitting it to a pruner ○ Saw blade and hook attachments for pruners ○ Hose changes, blade changes, and service requirements of a hydraulic trim saw ○ Fueling procedures ○ Cleaning and storage procedures

LEARNING TASKS	CONTENT
3. Inspect hand tools before using	• Identifying wear and tear • Identifying right tool for the job
4. Sharpen power tools and insulated tools	• Sharpening tools • Other equipment sharpening procedures
5. Use power tools and insulated tools in a safe and effective manner on the ground and on ladders	• Use hand tools in a safe and effective manner on the ground and on ladders

Achievement Criteria

Performance	The learner will safely use and maintain power tools and insulated power tools on the ground and on ladders.
Conditions	The learner will be given a variety of power tools and insulated tools to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Wore appropriate PPE • Selected the correct tool for the job • Operated the power tools and insulated tools with consideration of safety for self and others • Demonstrated correct tool sharpening, cleaning, and fueling techniques • Demonstrated correct maintenance and storage procedures

Line (GAC): C HAND TOOLS AND SMALL POWER TOOLS

Competency: C3 Use and Inspect Ladders

Objectives

To be competent in this area, the individual must be able to use ladders to accomplish a wide variety of tasks in a safe and effective manner.

LEARNING TASKS	CONTENT
1. Inspect, set up, and use a variety of ladders in a safe manner	• Ladders and their uses ○ Step ladder ○ Orchard ladder ○ Extension ladder (epoxy glass non-conductor ladder) • Safe ladder set-up in a variety of situations • Safe ladder use • Limits of approach
2. Inspect ladders prior to use	• Safety features • Problems
3. Maintain ladders to manufacturers' specifications	• Maintenance • Cleaning procedures • Storage procedures
4, Transport ladders on jobsite	• Safe ladder transportation and handling procedures

Achievement Criteria

Performance	The learner will use ladders to accomplish a wide variety of work tasks in a safe and effective manner.
Conditions	The learner will be given a variety of ladders to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Wore appropriate PPE • Performed a site inspection for safety hazards and terrain stability • Safely set up and positioned ladder • Set up and secured orchard ladder in position in uneven terrain • Set up an extension ladder (epoxy glass non-conductor ladder) • Ascended to the highest allowable work position and descended safely • Correctly transported a ladder by hand • Correctly loaded and secured a ladder for road transport

Line (GAC): D TREE WORK AND MANAGEMENT

Competency: D1 Identify Common Trees in British Columbia

Objectives

To be competent in this area, the individual must be able to identify basic common trees and their characteristics.

LEARNING TASKS	CONTENT
1. Demonstrate the principles of tree identification	• Classification of trees and how botanical names play an important role • Use of the dichotomous keys for identification purposes • Deciduous and coniferous treees and the foliage associated with them • Morphological characteristics of a variety of common trees such as: ○ Buds ○ Fruit ○ Cones ○ Leaf scar ○ Stems ○ Bark ○ Inflorences ○ Leaf arrangement and morphology ○ Growth habit • Senses such as visual, touch, taste, and smell can help identify trees
2. Identify basic native trees and their characteristics	• BC Conifers ○ Western Red Cedar ○ Douglas Fir ○ Western Yew ○ Lodgepole Pine ○ Western Hemlock • BC Native Hardwood ○ Red Alder ○ Black Cottonwood ○ Arbutus (Pacific Madrone) ○ Bigleaf Maple ○ Pacific Dogwood ○ Paper Birch • Exotics • Characteristics of native trees that make them identifiable • History of native trees and their life cycles • Commercial and aesthetic value of some

LEARNING TASKS	CONTENT
	native trees • Different regions of BC where tree species vary and why

Line (GAC): D TREE WORK AND MANAGEMENT

Competency: D2 Describe Basic Tree Biology and Its Importance to Good Arboriculture Practices

Objectives

To be competent in this area, the individual must be able to describe basic tree biology and how it relates to sound aboriculture practices and making informed decisions.

LEARNING TASKS	CONTENT
1. Describe the relation between structures and functions in a tree by discussing interaction of each within a plant	• Primary and secondary meristem growth • Stem anatomy • Auxins • Hormones
2. Explain photosynthesis, transpiration, and cell growth in tree parts	• Photosynthesis • Transpiration • Respiration • Cell division and growth
3. Describe the basic functions of layers of tissue and the role each contributes	• Dermal/bark tissue • Phloem • Xylem • Parenchyma • Sclerenchyma • Cambium
4. Describe roots and their function	• Root structure • Root function
5. Discuss correct cuts based on tree biology	• Branch collars • Wound wood formations • Species resistance to decay • Correct cuts and how important they have become to practice • Compartmentalization of Decay In Trees (CODIT) and problems arriving from stubs and excessive wounding

Line (GAC): D TREE WORK AND MANAGEMENT

Competency: D3 Prune Trees to Appropriate Industry Standards

Objectives

To be competent in this area, the individual must be able to describe safely using pruning tools to carry out pruning cuts and canopy raise trees.

LEARNING TASKS	CONTENT
1. Describe proper pruning cuts and principles	• Basic tree anatomy ○ Branch attachments ○ Included bark ○ Selecting scaffold branches ○ Excurrent form ○ Decurrent form • Pruning trees using a variety of techniques • ISA Utility Pruning Standards • Hazardous conditions around trees
2. Describe correct method of pruning limbs	• Most accepted methods of pruning conifer limbs and hedging • Procedures for thinning, deadwooding, and drop-crotching • Role directional pruning plays in utility tree maintenance
3. Describe utilizing appropriate tools safely and effectively	• Cutting tools selection • Hazard determination with respect to pruning
4. Describe selecting pruning strategy	• Pruning principles ○ Clearances ○ Thinning ○ Raising ○ Reduction

Line (GAC): E FALLING AND BUCKING

Competency: E1 Demonstrate Safe Chainsaw Use

Objectives

To be competent in this area, the individual must be able to demonstrate safe chainsaw use and maintenance according to industry standards and the authorities having jurisdiction.

LEARNING TASKS	CONTENT
1. Check saws for correct operating condition	• Inspection and repair of chainsaw components required for operation ○ Handles ○ Chain brake mechanism ○ Safety features • Importance of PPE
2. Explain and demonstrate handling criteria for control and balance	• Methods of handling to minimize effort and fatigue and maintain balance and full control • Approved starting methods • Correct use of chainsaw to prevent kickbacks and cuts - including boring and limbing to control kickbacks • Safe procedures for placement of cuts in relation to positioning while operating chainsaw
3. Explain and demonstrate sharpening methods for cutters, rakers, and bar service	• Sharpening methods and filing of cutting teeth, rakers, and chainbar • Symptoms of inadequate sharpening methods like chain condition
4. Explain the fueling and lubrication requirements for chainsaws	• Calculating fuel mixture ratios

Achievement Criteria

Performance	The learner will demonstrate safe chainsaw use and maintenance.
Conditions	The learner will be given the necessary materials, tools, and equipment to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:

- Demonstrated inspection and repair required on chainsaw components for operation including:
  - Handles
  - Chain brake mechanisms
  - Safety features
- Demonstrated sharpening methods and filing of:
  - Cutting teeth
  - Rakers
  - Chain bar
- Demonstrated methods of handling to minimize effort and fatigue, and to maintain balance and full control
- Demonstrated correct use of power saw to prevent kickbacks and cuts
- Included boring and limbing to control kickbacks
- Demonstrated safe procedures for placement of cuts in relation to positioning while operating a power saw
- Demonstrated correct use of power saw
- Demonstrated use of small power saws using both hands and explained acceptable criteria

Line (GAC): E FALLING AND BUCKING

Competency: E2 Demonstrate the Process of Falling

Objectives

To be competent in this area, the individual must be able to demonstrate the process of falling according to industry standards and the authorities having jurisdiction.

LEARNING TASKS	CONTENT
1. Describe the practice of falling trees following industry safe work practices	• Review WorkSafeBC Faller Training Standard video clips demonstrating the real time procedure for falling a tree • Reference and review the safe work procedures in the BC Faller Training Standard InfoFlips
2. Describe the concepts of site assessment	• Correct methods of hazardous tree and site assessment • Requirements for supervisions of hazardous area
3. Discuss preparing to fall the tree	• Placement of tools and equipment • Assess tree for hazards • Determine the high side of the tree • Assess the lean of the tree • Tree placement • Determine escape routes • Brush out around the tree escape routes • Tee with flared butt • Thick bark • Appropriate undercut ○ Humboldt ○ Conventional ○ Open face
4. Demonstrate an undercut and a backcut	• Correct/clean undercut • Incomplete undercut • Using chainsaw sight lines • Scribing • Demonstrating undercuts ○ Humboldt ○ Conventional ○ Open face

LEARNING TASKS	CONTENT
5. Demonstrate use of axes and wedges	• Axe types • Wedge types • Physics of wedging • PPE for wedging • Wedging a small diameter tree safe work procedures • Wedging a large diameter tree safe work procedures
6. Demonstrate positive directional control	• Applying rigging principles to achieve positive directional control • Directional control and holding wood • Small diameter tree safe work procedures • Large diameter tree safe work procedures
7. Explain alternative work methods	• Equipment used to minimize hazards effort and time ○ Throw line ○ Boom truck ○ Crane or heavy equipment • Methods of control to eliminate risks

Achievement Criteria

Performance	The learner will demonstrate the process of falling according to industry standards and the authorities having jurisdiction.
Conditions	The learner will be given the necessary materials, tools, and equipment to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Demonstrated correct methods of hazardous tree and site assessment • Demonstrated correct construction of approved felling cuts ○ Humboldt ○ Conventional ○ Open face • Demonstrated correct methods of applying wedges to the tree removal process • Demonstrated additional methods of control to eliminate risks

Line (GAC): E FALLING AND BUCKING

Competency: E3 Practice Falling a Tree

Objectives

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

- Develop and verbally communicate the Safe Work Plan, according to industry safe work practices and the authorities having jurisdiction.
- Demonstrate falling a tree in a forest setting, according to industry safe work practices and the authorities having jurisdiction.

LEARNING TASKS	CONTENT
1. Describe and/or demonstrate the practice of falling trees using industry safe work practices	• Reference and review the safe work procedures in the BC Faller Training Standard InfoFlips • Demonstrate whole tree falling

Achievement Criteria

Performance The learner will:

- Develop and verbally communicate the Safe Work Plan, according to industry safe work practices and the authorities having jurisdiction
- Demonstrate falling a tree in a forest setting, according to industry safe work practices and the authorities having jurisdiction

Conditions The learner will be given the necessary materials, equipment, and a scenario, to perform required tasks.

Criteria The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:

- Wore appropriate PPE
- Used appropriate tools and equipment
- Verbally explained the Safe Work Plan
- Demonstrated appropriate body positioning during saw use
- Selected appropriate felling cut
- Demonstrated appropriate use of felling aids
    - Axe
    - Wedges
    - Directional control
- Demonstrated confidence and control using saw
- Executed felling cuts properly
- Was cognizant of surroundings/use of escape route during falling
- Demonstrated achievement of desired placement of tree

Line (GAC): E FALLING AND BUCKING

Competency: E4 Manage Falling Hazards

Objectives

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

- Identify and explain solutions to eliminate or minimize hazards, according to industry standards and the authorities having jurisdiction.
- Reference the applicable OHS regulations.

LEARNING TASKS	CONTENT
1. Explain the correct methods of managing hazards	• Methods for managing hazards including: ○ Falling kickbacks ○ Steep slopes ○ Upslopes ○ Riparian falling ○ Heavy leaners ○ Limb-tied trees ○ Cutup tree ○ Hung-up/catapult trees ○ Jackpot ○ Mechanical damage
2. Discuss safe work procedures for the falling hazards as they are encountered during field practice	• Review accident bulletins to determine root causes • Importance of never becoming over-confident or complacent • Review BC Faller InfoFlips and DVDs

Line (GAC): E FALLING AND BUCKING

Competency: E5 Recognize Hazardous Weather Conditions

Objectives

To be competent in this area, the individual must be able to recognize and describe hazardous weather conditions according to industry standards and the authorities having jurisdiction.

LEARNING TASKS	CONTENT
1. Identify the hazards related to adverse weather conditions	• Hazards such as: ○ Fog ○ Wind ○ Lighting ○ Rain ○ Unstable terrain ○ Avalanche ○ Snow ○ Extreme temperatures • Solutions to eliminate or minimize hazard • Criteria whether to proceed or evacuate
2. Identify evacuation procedures	• OHS regulations

Line (GAC): E FALLING AND BUCKING

Competency: E6 Recognize Dangerous Falling Practices

Objectives

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

- Identify the hazards of unacceptable dangerous falling practices, according to industry standards and the authorities having jurisdiction.
- Reference the applicable OHS regulations.

LEARNING TASKS	CONTENT
1. Explain correct methods of falling cuts and dangers associated with dangerous falling practices	• Situations that contribute to unacceptable dangerous falling practices • Dangers created (barberchair) by incorrect or sloppy methods such as: ○ Dutchman ○ Sloping cuts ○ Backcut below undercut ○ Cut off holding wood • Applicable OHS regulations
2. Explain hazards created by brushing of standing timber and domino falling	• Review BC Faller Training Standard InfoFlips
3. Explain circumstances unique to falling difficulties	• Review accident bulletins to determine root causes • Importance of never becoming over-confident or complacent

Line (GAC): E FALLING AND BUCKING

Competency: E7 Identify Special Falling Techniques

Objectives

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

- Identify the hazards related to various special falling techniques, according to industry standards and the authorities having jurisdiction.
- Describe how to safely perform each technique, according to industry standards and the authorities having jurisdiction.
- Reference applicable OHS regulations.

LEARNING TASKS	CONTENT
1. Describe special falling techniques	• When special falling techniques should be used • Special falling techniques as they are encountered in field practice ○ Falling against the lean ○ Falling short, stubby trees ○ Jacking a tree over ○ Re-falling a cut-up tree

Line (GAC): E FALLING AND BUCKING

Competency: E8 Plan for Limbing and Bucking

Objectives

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

- Explain how the terrain and ground debris will affect the limbing and bucking process.
- Identify the hazards and safe work practices relating to different weather conditions, according to industry standards and the authorities having jurisdiction.
- Identify limbing hazards such as loaded limbs, ground debris, kickbacks, and tripping hazards, according to industry standards and the authorities having jurisdiction.
- Identify bucking hazards such as kickbacks, pivot points, slide, roll and chain reaction, blow down/throw down, and bind according to industry standards and the authorities having jurisdiction.
- Describe proper bucking procedures, according to industry standards and the authorities having jurisdiction.
- Describe proper limbing procedures, according to industry standards and the authorities having jurisdiction.

LEARNING TASKS	CONTENT
1. Describe bucking procedures	• Situations where terrain and ground debris could affect safe limbing and bucking • Hazards due to adverse weather conditions ○ Kickbacks ○ Pivot points ○ Slide ○ Roll and chain reaction ○ Blowdown/throw down ○ Bind • Safe bucking procedures such as: ○ Basic cut bottom bind ○ Small tree top and bottom bind ○ Large tree top and bottom bind
2. Describe limbing procedures	• Safe limbing procedures for bound or pinned loaded limbs and loaded limbs due to size and weight

Line (GAC): F RIGGING

Competency: F1 Demonstrate Rigging Concepts Including Selection and Use of Ropes

Objectives

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

- Describe rigging concepts to control tree parts when pruning or doing tree removal.
- Demonstrate the selection and use of ropes in rigging to control tree parts for pruning or tree removal.

LEARNING TASKS	CONTENT
1. Explain rigging and related concepts	• Purpose • Methods/limitations • Requirements • Terminology
2. Identify and select the appropriate rope for the job	• Various rope types and sizes ○ 3-strand ○ Hollow-braids ○ Double-braid ○ Kernmantle
3. Inspect for wear, care, and maintenance	• Care • Maintenance • Signs of wear
4. Attach rope and hardware	• Safe rope attachment to a variety of items
5. Establish safe working load limits (SWLL)	• Tensile strength and cycles to failure of rope characteristics ○ Strength ○ Stretch ○ Durability

Achievement Criteria

Performance	The learner will demonstrate the selection and use of ropes in rigging to control tree parts for pruning or tree removal.
Conditions	The learner will be given a rigging situation, materials, tools, and equipment to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Selected appropriate ropes for given situations • Inspected ropes for signs of wear and tear • Properly attached rope to rigging equipment • Demonstrated the storage, maintenance, and care of ropes

Line (GAC): F RIGGING

Competency: F2 Select and Use Knots, Hitches, Slings, and Hardware in Rigging Systems

Objectives

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

- Use a variety of knots, hitches, and slings to attach ropes to tree parts and other ropes.
- Use various types of hardware to assist in rigging systems.

LEARNING TASKS	CONTENT
1. Tie, dress, and set each of the specified knots	• Bowline • Bowline on a bight • Bowline with a bight • Running Bowline • Bowline away from you • Clove Hitch • Marl Hitch • Cow Hitch • Munter Hitch • Figure “8” • Taut Line Hitch • Blake Hitch • Sheet Bend • Double Sheet Bend • Double Fisherman • Prussic • Yosemite Bowline • Double Over hand Knot • Apline Butterfly • Additional/optional knots ○ Modified Double Fisherman ○ Clove Hitch with Half Hitches ○ Inline Clove Hitch on a Bowline loop ○ Girth Hitch ○ Scwabisch
2. Attachment of ropes and slings	• Knots and their uses • Hardware
3. Attachment of ropes and slings to tree parts	• Attachment of hardware to ropes using various knots

LEARNING TASKS	CONTENT
4. Use knots to attach rigging or ropes for lowering tree parts	• Knots and hardware for connecting links
5. Select appropriate hardware for the load	• Hardware devices used in rigging • Load specifications for hardware • Material strengths
6. Inspect hardware for wear	• Wear characteristics • Load limits and their impact on the life span of hardware
7. Attach hardware to other rigging including ropes	• Hardware attachment procedures to various rigging parts including ropes
8. Maintain hardware	• Maintenance and storage procedures
9. Demonstrate proper carabiner selection and loading	• Carabiner selection • Use of carabiners
10. Demonstrate the safe use of arborists blocks and pulleys	• Use of blocks and pulleys
11. Demonstrate the use of web slings for rigging	• Use of ropes slings ○ Loopies ○ Whoopies ○ Spider legs ○ One-eyed sling
12. Selected appropriate friction control device for the job	• Friction control devices • Functions • Limitations • Selection of correct devices for specific situations • Dynamic load vectors, shock loading, angles of incidence, force, mass, and impact • Bend ratios of rope
13. Inspect for wear, maintenance and care	• Signs of wear • Maintenance procedures
14. Attach friction control device	• Attachment procedures
15. Set up rigging system	• Incorporate ○ Port-a-wrap ○ Figure 8

LEARNING TASKS

CONTENT

- Munter hitch friction control devices
- Tree wraps
- Raising and lowering loads with a variety of friction control devices
- Tie-off load while using friction devices
- Use of pulleys for redirecting rigging ropes

Achievement Criteria

Performance — The learner will use a variety of knots, hitches, slings, and various hardware to attach ropes to tree parts and other ropes.

Conditions — The learner will be given a rigging situation, materials, tools, and equipment to perform required tasks.

Criteria — The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:

- Selected appropriate hardware and ropes using knots, slings, and spider legs
- Inspected ropes, slings, and hardware for signs of wear and tear
- Properly attached rope to rigging equipment
- Attached hardware to various rigging parts including ropes, slings, and spider legs
- Demonstrated the maintenance and storage procedures for hardware and equipment
- Demonstrated the use of friction control devices such as
  - Figure 8
  - Munter hitch
  - Tree wraps
  - Port-a-wraps

Line (GAC): G CLIMBING

Competency: G1 Select and Inspect Climbing Gear

Objectives

To be competent in this area, the individual must be able to demonstrate the ability to select, inspect, and maintain climbing ropes and climbing equipment for safety.

LEARNING TASKS	CONTENT
1. Select climbing ropes and climbing equipment	• Selection of proper equipment for task and for individual size requirements ○ Appropriate PPE ○ Climbing lines ○ Throw lines and throw bags ○ Saddles ○ Double autolocking carabiners ○ Approved lanyard and adjuster ○ Slings ○ Hand saw ○ First Aid kit ○ Climbing spurs ○ Friction saver • Selecting ropes ○ Ropes and their uses ○ Working load and stretch of various ropes ○ Inpection criteria when examining ropes ○ Maintenance • Selecting belts and saddles ○ Types of climbing belts and saddles ○ Inspection criteria when examining gear ○ Maintenance • Selecting other equipment ○ Functions of carabiners, micro-pulleys, ascenders/decsenders ○ Function of friction savers, throw lines, figure 8s ○ Inspection criteria when examining gear ○ Maintenance and storage requirements
2. Inspect and maintain climbing ropes and climbing equipment	• Areas of wear and what necessitates replacement • Correct method of sharpening the gaffs on spurs

Achievement Criteria

Performance — The learner will demonstrate the ability to select, inspect, and maintain climbing ropes and climbing gear for safety of the job tasks to be performed.

Conditions — The learner will be given a site situation and equipment to perform required tasks.

Criteria — The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:

- Identified wear and types of defects in climbing ropes and climbing equipment, including:
  - Appropriate PPE
  - Climbing lines
  - Throw lines and throw weights
  - Belts and saddles
  - Double auto locking carabiners
  - Approved lanyard and adjuster
  - Slings
  - Hand saw
  - First Aid kit
  - Climbing spurs
  - Split tails and micro pulley
  - Friction savers
- Selected appropriate ropes for the job
- Selected appropriate gear for the job
- Identified wear and defects in selected ropes and climbing gear

Line (GAC): G CLIMBING

Competency: G2 Conduct Pre-Climb Assessments

Objectives

To be competent in this area, the individual must be able to determine and communicate the conditions necessary to climb safely.

LEARNING TASKS	CONTENT
1. Assess the site	• Limits of approach • Road classification • Climbing, climbing tasks, gear, emergency • Response, risk mitigation • Identify obstacles, hazards, and targets • WorkSafeBC Regulations, company rules/policies, standards • Risk mitigation strategies
2. Assess the tree	• Tree identification • Structural damage • Biological and physiological signs and symptoms • Purpose and methodology of the climb • Identify obstacles, hazards, and targets • Tree risk assessment
3. Assess the weather	• Plan development for weather conditions
4. Assess PPE	• Determining the appropriate PPE for specific jobs
5. Conduct a job plan briefing	• Components of a job plan • Formulating and communicating job plan • Tailboard

Achievement Criteria

Performance	The learner will determine and communicate the conditions necessary to climb safely.
Conditions	The learner will be given a site situation, tools, and materials necessary to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Assess trees for potential risk • Assess the site for potential risk

- Develop a job plan that mitigates risk relative to identified hazards

Line (GAC): G CLIMBING

Competency: G3 Climb Using Various Techniques

Objectives

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

- Select and use the appropriate climbing techniques for the job.
- Demonstrate safe climbing techniques including body thrust and foot locking.

LEARNING TASKS	CONTENT
1. Climb trees using spurless and spur techniques	• Tie in points • Line installation • Climbing system advancement • Advance work positioning lanyard • Work positioning redirects • Choosing the best route up a tree • Ascending and descending a tree ○ Controlled movement and descent • Using spurless techniques ○ Hip thrust • Using spur technique • Attaching, sharpening, and maintaining spurs • Appropriate knots • Limb walking

Achievement Criteria

Performance The learner will:

- Select and use the appropriate climbing techniques for the job
- Demonstrate safe climbing techniques including body thrust

Conditions The learner will be given a site with a variety of trees, tools, and equipment necessary to perform the required tasks.

Criteria The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:

- Demonstrated safe climbing of trees using spur technique
- Correctly used tie points, rope advancement, and friction hitches
- Demonstrated the ability to redirect, control movement, and descend
- Demonstrated the ability to install lines, limb walk, and demonstrate safe work positioning
- Demonstrated the ability to attach, sharpen, and maintain spurs

Line (GAC): G CLIMBING

Competency: G4 Conduct Post-Climb Job and Gear Inspection

Objectives

To be competent in this area, the individual must be able to inspect the jobsite and equipment to ensure its safety for re-use.

LEARNING TASKS	CONTENT
1. Inspect jobsite after climb	• Post-job hazards such as hangers • Client concerns such as: ○ Property damage ○ Debris and clean-up • Post-job walk around to identify hazards • Client communication
2. Inspect equipment after climb	• Acceptable wear levels • Wear points
3. Store climbing equipment in an appropriate manner	• Correct equipment storage conditions • Wear and tear on all equipment components

Achievement Criteria

Performance	The learner will inspect the jobsite and equipment to ensure its safety for re-use.
Conditions	The learner will be given a post-climb situation, materials, and equipment necessary to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Identified types of post-job hazards • Identified acceptable equipment wear levels • Demonstrated correct gear storage • Demonstrated the ability to communicate effectively with the client

Line (GAC): H EMERGENCY RESPONSE

Competency: H1 Identify First Aid Certification Requirements

Objectives

To be competent in this area, the individual must be able to describe the requirements for Level 1 First Aid Certification for workers.

LEARNING TASKS	CONTENT
1. Describe definitions pertaining to Occupational First Aid certification requirements	• First Aid ○ In cases in which a person will need medical treatment, treatment for the purpose of preserving life, and minimizing the consequences of injury until medical treatment is obtained ○ Treatment of minor injuries that would otherwise receive no medical treatment or that do not need medical treatment • First Aid attendant ○ A person who holds a valid First Aid certificate
2. Explain the purpose of Occupational First Aid training	• Provide workers with prompt, easily accessible, and appropriate First Aid treatment and to keep a record of each treatment • Make employees more safety conscious and reduce the incidence of injuries at work • Provides protection, security, and prompt treatment in case of injury • Can save lives, reduce the severity of injuries, and promote speedy recovery
3. Examine a typical Occupational First Aid training program	• A typical one day course gives participants critical knowledge and the confidence to effectively manage an emergency without panic or confusion

LEARNING TASKS	CONTENT
4. Explain the focus of a typical Occupational First Aid training program	• The focus is on giving First Aid for common injuries that could occur. It gives participants the basic skills needed to reduce shock, contain injuries, and, in many cases, save lives. These skills include ○ Emergency Management, including C-Spine Control ○ Obstructed airways ○ Artificial respiration and CPR for adults ○ Major bleeding control ○ Records and reporting

Note: *Certification for Level 1 First Aid must be renewed every three years.*

Line (GAC): H EMERGENCY RESPONSE

Competency: H2 Describe Precautions and Procedures to Prevent and Suppress Fires

Objectives

To be competent in this area, the individual must be able to describe basic fire prevention and/or suppression on a worksite to a limited range of fires.

LEARNING TASKS	CONTENT
1. Identify fire prevention procedures on jobsites	• Basic fire science including impact of weather conditions on fire spread • Fire behaviour • Prevention procedures
2. Identify appropriate fire extinguishing equipment	• ABC fire extinguisher use • Shovel use • Backpack water tank
3. Explain procedures to extinguish fires	• Fire suppression techniques
4. Explain suppression techniques for small wild fires	• Use and limitations of basic firefighting equipment

Line (GAC): H EMERGENCY RESPONSE

Competency: H3 Implement Spill Response

Objectives

To be competent in this area, the individual must be able to demonstrate the ability to implement the appropriate response and reporting procedures as required by government regulations.

LEARNING TASKS	CONTENT
1. Identify hazardous products common to worksites	• Products such as: ○ Gas ○ Oil ○ Diesel fuel ○ Cleaning agents ○ Fertilizers ○ Pesticides • Workplace Hazardous Materials Information System (WHIMIS) and Material Safety Data Sheets (MSDS)
2. Identify reportable quantities and spill containment	• Transportation of Dangerous Goods (TDG) – schedule 2 • Spill kit
3. Describe reporting requirements	• BC Provincial Emergency Program

Line (GAC): H EMERGENCY RESPONSE

Competency: H4 Perform Aerial Bucket Rescue

Objectives

To be competent in this area, the individual must be able to demonstrate the ability to assist, from a ground position, with emergency evacuation procedures in a safe and effective manner.

LEARNING TASKS	CONTENT
1. Discuss rescues and their importance	• Different reasons for rescues • Types of rescues • All possible injuries that may require rescues • Electrical hazards and second victim scenarios • Suspension trauma
2. Recognize potential hazards to rescuer	• Operator control system on aerial man lifts • Electrical step and touch potentials
3. Assist in bucket rescue from a ground position	• Manual override systems • Assess injured person's condition
4. Perform bucket extraction activities from the ground	• Rescue techniques for bucket extraction
5. Practice emergency response plan	• Conditions and procedures for emergency assistance

Achievement Criteria

Performance	The learner will demonstrate the ability to assist, from a ground position, with emergency evacuation procedures in a safe and effective manner.
Conditions	The learner will be given a rigging scenario, tools, and equipment necessary to perform the required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:

- Assessed the situation for hazards such as
  - Electrical
  - Overhead
  - Ground
- Determined whether or not to call for emergency assistance and, if so, which ones
- Used ground controls on bucket truck to lower the boom
- Demonstrated extraction of the victim
- Assisted with:
  - Assessing and securing the site
  - Selecting and supplying appropriate tools and equipment
- Communicated patient status to Emergency Medical Services (EMS)

Line (GAC): H EMERGENCY RESPONSE

Competency: H5 Perform Aerial Tree Rescue

Objectives

To be competent in this area, the individual must be able to perform an aerial position emergency rescue in a safe and effective manner.

LEARNING TASKS	CONTENT
1. Describe checking for site and tree hazards	• The steps performed to ensure there is no danger to the rescuer before performing an attempt at rescue
2. Demonstrate rescue from a spar tree	• Single Rope Technique (SRT) rescue and double rope system • Bowlines • Rescue climbing kit • Descending on own rope (self-rescue technique)
3. Practice rescues with an unconscious victim and an injured victim who is conscious but cannot climb or rappel down	• Assess injured person's condition • Determine appropriate action
4. Practice emergency response	• Conditions and procedures for emergency assistance
5. Discuss rescue false-crotches	• Single-stem rescue (spar pole)

Achievement Criteria

Performance	The learner will perform an aerial position emergency rescue in a safe and effective manner.
Conditions	The learner will be given an aerial situation, tools, and equipment necessary to perform the required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Wore appropriate PPE • Executed the Emergency Rescue Platform (ERP) • Safely secured the work zone • Assessed the situation for hazards • Decided if calling for emergency assistance was required • Ascended to rescue • Assessed the injured person • Safely brought down the climber • Administered patient care until Emergency Medical Service (EMS) took over

Line (GAC): I JOB PLANNING AND RISK ASSESSMENT

Competency: I1 Conduct Site Inspections

Objectives

To be competent in this area, the individual must be able to describe and identify all the factors and associated risks influencing the safe execution of the job.

LEARNING TASKS	CONTENT
1. Describe identifying tree and site risks	• Assessment procedures for tree risks • Assessment procedures for site risks
2. Describe identifying methods and techniques for abatement	• Tree care methods and techniques
3. Describe identifying equipment needed	• Equipment capabilities and applications • Appropriate equipment for specific jobs
4. Describe identifying workers needed	• Assessment of staff competencies/qualifications • Verify job qualifications • Responsibility of supervisor
5. Describe identifying applicable regulations	• Applicable regulations and labour standards • Appropriate protection guarantee

Line (GAC): I JOB PLANNING AND RISK ASSESSMENT

Competency: I2 Develop and Communicate Safe Job Plan

Objectives

To be competent in this area, the individual must be able to describe developing a safe job plan and communicate it to workers and sub-contractors.

LEARNING TASKS	CONTENT
1. Describe selecting techniques to address risk	• Risk mitigation • Risk analysis
2. Describe developing procedures to plan and implement and evaluate job plan	• Appropriate methods and techniques for risk • Mitigation for specific site conditions • Risk exposure
3. Describe scheduling appropriate equipment	• Utility Arborist's equipment • Scheduling procedures
4. Describe documenting the plan	• Risk plan development and documentation
5. Describe communicating job plan to the crew	• Methods of conducting site meetings • Ability to perform risk analysis • Verbal and written communication techniques

Line (GAC): I JOB PLANNING AND RISK ASSESSMENT

Competency: I3 Conduct Pre-Job Preparation

Objectives

To be competent in this area, the individual must be able to describe selecting the appropriate resources to undertake a tree care assessment based on the job estimate.

LEARNING TASKS	CONTENT
1. Describe conducting a pre-trip inspection	• Pre-trip inspection procedures and decals check • Boom inspection procedures • WorkSafeBC regulations and company safety procedures • Logbooks and vehicle inspection checklists
2. Describe inspecting tools	• Original Equipment Manufacturer (OEM) manual review • Tool inspection procedures
3. Describe identifying resources required	• Tools and attachments for specific jobs
4. Describe acquiring needed resources	• Typical resources needed for tasks being performed

Line (GAC): I JOB PLANNING AND RISK ASSESSMENT

Competency: I4 Ensure Regulatory Compliance

Objectives

To be competent in this area, the individual must be able to describe ensuring that all activities on the jobsite comply with all standards and regulations.

LEARNING TASKS	CONTENT
1. Describe planning for compliance	• Application of safety compliance to job activities
2. Describe inspecting for compliance	• Application of environmental compliance to job activities
3. Describe conducting post-job review and follow-up	• Application of permitting and licensing compliance to job activities
4. Describe preparing reports as needed	• Liability issues/responsibilities • Record keeping requirements • WorkSafeBC accident and near-miss reporting procedures • Accident investigation plans • Preparedness and risk mitigation procedures • Emergency response, clean up, and emergency procedures • Assessment procedures for job practices to ensure compliance with procedure • Document practices • Communicate effectively

Line (GAC): J POWERLINE AWARENESS

Competency: J1 Apply OH&S Regulations Part 19

Objectives

To be competent in this area, the individual must be able to apply OH&S regulation Part 19 as it applies to Utility Arborists.

LEARNING TASKS	CONTENT
1. Describe OH&S regulations Part 19	• Power systems as they apply to Utility Arborists • WorkSafeBC website pertaining to Part 19 • Responsibility of arborists regarding updates

Line (GAC): J POWERLINE AWARENESS

Competency: J2 Describe Basic Principles of Electricity and Terms

Objectives

To be competent in this area, the individual must be able to describe basic principles of electricity and terms.

LEARNING TASKS	CONTENT
1. Describe principles of electricity	• Ohm's Law and the levels of electricity utility vegetation management will be performed in close proximity • Voltage and amperage and the amounts that can affect a person • Selection of clothing and its importance to utility tree workers • How electricity is generated and the difference in phases • How induction works and how it is utilized in transformers to change voltage for transport and supply • Affect on current travel by: ○ Weather ○ Humidity ○ Elevation ○ Shape of conductors ○ Time exposed ○ Distance to electricity
2. Describe the hazards of electrical contact	• Severity of electrical contact and chance of survival

Line (GAC): J POWERLINE AWARENESS

Competency: J3 Describe Basic Powerline Systems

Objectives

To be competent in this area, the individual must be able to describe basic powerline systems.

LEARNING TASKS	CONTENT
1. Describe the distribution of power from generation to customer	• Generation to substation transportation • Transmission to distribution to customers • Who works in substations, on powerline equipment, and the operation side of a utility power • How electricity is delivered to customers or other utilities and how the system is protected from problems • Dispatchers and their role in control centers • Hot sag (transmission) • Induction (transmission)
2. Describe the role vegetation management plays in the powerline system	• Where vegetation management plays a role in the operation continuity of the utility system • Utility's responsibilities and how vegetation can affect system reliability and costs

Line (GAC): J POWERLINE AWARENESS

Competency: J4 Identify Utility Overhead Structures and Components

Objectives

To be competent in this area, the individual must be able to identify utility overhead structures and components.

LEARNING TASKS	CONTENT
1. Describe the types of common conductors and sizes found on transmission or distribution systems	• How older conductors and their condition can affect vegetation management • Recognizing Aluminum Conductor Steel Reinforced (ACSR) from copper on conductors • Underground Residential Distributor (URD) • Hendricks conductors ○ Flat construction ○ Bundled construction
2. Describe the different types of structures and the corresponding insulators that give an indication of voltage levels	• Recognizing the relationship between voltage levels and number of insulators required
3. Explain the components and functions commonly found that Utility Arborists need to recognize and understand	• Transformers and primary bushings • Pole top and gang switches • Station and field re-closers • Sectionalizers • Fusible cut-out disconnects • Pot-heads, terminators, and pylasters • Kiosk and low-profile transformers • Under and overbuild structures • Splices • Secondary conductors and guy hardware • Communications ○ Telephone ○ Fiber optic ○ Cablevision • Commercial and residential services

Line (GAC): J POWERLINE AWARENESS

Competency: J5 Identify Sources of Electrical Hazards

Objectives

To be competent in this area, the individual must be able to identify sources of electrical hazards.

LEARNING TASKS	CONTENT
1. Describe electrical hazards	• Where high voltage is found on a utility system including the location of high voltage on components • Where voltage is found below 750 volts and why • Hazards from contact with low voltages and how this can happen • Degree of injury from indirect or direct contact with low or high voltages • Identifying Telus and BC Hydro pole installations ○ Guy wires
2. Describe other sources of electrical hazards	• Locations of potential electrical hazards from damaged systems not typically found energized such as: ○ Trees ○ Fences ○ Trees in proximity to metal fences ○ Down conductors ○ Induction ○ Backfeed ○ Others • Important rule of further injury prevention should a worker be in direct or indirect contact with an energized conductor and where or how it could occur

Line (GAC): J POWERLINE AWARENESS

Competency: J6 Describe Methods of Abatement of Electrical Hazards

Objectives

To be competent in this area, the individual must be able to describe methods of electrical abatement.

LEARNING TASKS	CONTENT
1. Describe how to remove vegetation within insulated tool limits of approach	• Removing vegetation up to the absolute limits of approach for Utility Arborist • Refer to SPR's
2. Describe emergency procedures	• Correct procedure to follow should a victim be in contact directly or indirectly with high voltage • How to get on a truck if the lift is in contact with high voltage • How to avoid injury while in the path of electrical current up a tree or on the ground • Refer to SPR's

Line (GAC): J POWERLINE AWARENESS

Competency: J7 Describe the Requirements for Limits of Approach

Objectives

To be competent in this area, the individual must be able to describe the requirements for limits of approach.

LEARNING TASKS	CONTENT
1. Describe limits of approach	• How Utility Arborists Limits of Approach (LOA) are different from line workers • How LOA criteria and measurements are calculated for different voltages • Required training to be allowed by Utility to work to these limits • Travel between the neutral and high voltages and the absolute Limit of Approach Utility Arborists are permitted to use for this purpose only • Travel between the neutral and voltages above 750 volts • Inadvertent movement, reach, extended reach, and LOA for tools and lifts

Level 2

Utility Arborist

Line (GAC): A REGULATIONS AND OTHER OCCUPATIONAL SKILLS

Competency: A4 Apply Regulations to the Jobsite

Objectives

To be competent in this area, the individual must be able to apply legislation and regulations to decision making on the jobsite.

LEARNING TASKS	CONTENT
1. Follow safety regulations	• For self • For others • Meeting safety compliances in job situations • WorkSafeBC accident and near miss reporting requirements • Emergency response, clean up, and emergency planning
2. Follow environmental regulations	• Typical environmental issues on jobsites • Meeting environmental compliances in job situations
3. Obtain permitting and licensing	• Application of regulations, standards, and procedures to the job situation

Line (GAC): A REGULATIONS AND OTHER OCCUPATIONAL SKILLS

Competency: A5 Describe Workplace Leadership and Communication

Objectives

To be competent in this area, the individual must be able to describe workplace leadership and communication to ensure site safety and efficient work practices.

LEARNING TASKS	CONTENT
1. Describe effective communication	• Communication cycle ○ Sender ○ Medium ○ Receiver ○ Feedback • Effectively communicating with: ○ Crew ○ Sub-trades ○ Clients ○ Neighbouring residents ○ Supervisors ○ Regulatory officials
2. Describe conflict resolution	• Understand conflict • Sources of conflict • Conflict management strategies
3. Describe supervisory role	• Typical week and daily activities • Delegate work activities and briefing of crews • Leadership strategies • Fair and progressive discipline as required by regulatory requirements (e.g., safety infractions) • Provide performance feedback to crew members • Provide reports as needed
4. Describe training strategies	• Training plans • Tailgate/taiboard training • New, young, transferred employees • Coaching and mentoring employees • Performance review and recommendations • Training opportunities

Line (GAC): D TREE WORK AND MANAGEMENT

Competency: D3 Prune Trees to Appropriate Industry Standards

Objectives

To be competent in this area, the individual must be able to safely prune a variety of trees using appropriate techniques and tools.

LEARNING TASKS	CONTENT
1. Safely and effectively utilize appropriate tools	• Review Level One D3 competency
2. Use proper pruning cuts and principles	• Review Level One D3 competency
3. Assess tree and site for hazards	• Hazard assessment in and around trees including: ○ Insects ○ Electrical ○ Objects ○ Terrain
4. Use approved pruning practices for specific outcomes	• Reduce the size of the crown ○ Crown reduction • Crown thin trees ○ Crown thinning • Crown raise trees ○ Crown raising • Shorten limbs ○ Headback or shorten limbs to a lateral • Structural prune trees ○ Structural pruning • Restoration pruning • Rejuvenating pruning • Hedge trimming ○ Hedge trimming techniques • Pollarding ○ Pollarding techniques

Achievement Criteria

Performance	The learner will prune a variety of trees using appropriate techniques and tools.
Conditions	The learner will be given an onsite situation, tools, and equipment necessary to perform required tasks.

Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:
	• Assessed a tree for hazards
	• Safely and correctly performed the following pruning techniques to the canopy
	  ○ Cleaning
	  ○ Thinning
	  ○ Raising
	  ○ Reducing
	  ○ Reduction

Line (GAC): D TREE WORK AND MANAGEMENT

Competency: D4 Identify Common Stem, Root and Crown, and Pests/Diseases in British Columbia

Objectives

To be competent in this area, the individual must be able to identify and diagnose common stem, root and crown, and pests/diseases in British Columbia.

LEARNING TASKS	CONTENT
1. Identify common root disease	• Armillaria • Laminated root rot
2. Identify common heart rots	• White butt rot • Hardwood trunk rot (Phellinus Annosus) • Butt rot
3. Identify common sap rot	• Silver leaf disease
4. Identify common canker diseases	• Phomopsis • Cytaspora • Nectria
5. Identify common boring insects of deciduous and conifer species	• Bronze birch borer • Cherry bark tortrix • Pine bark beetles
6. Identify common phytophthora symptoms	• Sudden oak death species • Cupressaceae species
7. Identify common disease symptoms	• Anthracnose • Wilt • Powdery mildew • Fire blight
8. Identify other common insects and their signs	• Aphids • Adelgids • Scales • Leaf miner • Tent caterpillars • Fall webworm • Douglas fir silver spotted tiger moth • Sawfly

Line (GAC): D TREE WORK AND MANAGEMENT

Competency: D5 Assess Trees Onsite

Objectives

To be competent in this area, the individual must be able to assess trees common abiotic tree disorders, including assessments of soils and tree structural conditions.

LEARNING TASKS	CONTENT
1. Identify common abiotic tree disorders	• Knowledge of common tree morphological characteristics • Conditions and susceptible species for drought, frost injury, basal, and trunk scars, sunscald and cedar flagging
2. Visually inspect soil texture and moisture conditions	• Compacted and saturated soil characteristics • Root shear (anchoring) • Soil grading and drainage • Impact on tree growth and health
3. Visually inspect trees for structural issues	• Common structural issues that are specific to specific tree species, inherent tree failure patterns infrastructure, and root interference • Recognition of root damage due to construction, irrigation installation trenching, or activities

Line (GAC): F RIGGING

Competency: F2 Select and Use Knots, Hitches, Slings, and Hardware in Rigging Systems

Objectives

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

- Use a variety of knots, hitches, and slings to attach ropes to tree parts and other ropes.
- Use various types of hardware to assist in rigging systems.

LEARNING TASKS	CONTENT
1. Select and use knots, hitches, slings and hardware in rigging systems	• Review Level One F2 competency ○ Tying, dressing, and setting knots ○ Attachment of ropes and slings ○ Attachment of ropes and slings to tree parts ○ Using knots to attach rigging or ropes for lowering tree parts ○ Selecting appropriate hardware for the load ○ Inspecting hardware for wear ○ Attaching hardware to other rigging including ropes ○ Maintaining hardware ○ Demonstrating proper carabiner selection and loading ○ Demonstrating the safe use of arborists blocks and pulleys ○ Demonstrating the use of web slings for rigging ○ Selecting appropriate friction control device for the job ○ Inspecting for wear, maintenance, and care ○ Attaching friction control device ○ Setting up rigging systems
2. Set up rigging system	• Incorporate Hobbs or GRCS

Achievement Criteria

Performance	The learner will use various types of hardware to assist in rigging systems.
Conditions	The learner will be given a rigging situation, materials, tools, and equipment to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:

- Developed a work plan
- Safely secured the work zone
- Communicated verbally and visually
- Selected appropriate friction control device
- Inspected devices and equipment for wear and tear
- Installed a friction control device
- Installed a mechanical advantage rope system for:
  - Tensioning lines
  - Pulling trees over
  - Lifting heavy loads
- Demonstrated the use of friction control devices such as:
  - Hobbs
  - GRCS
- Demonstrated safe worker position in relation to equipment location
- Communicated verbally and visually throughout the exercise
- Demonstrated the proper maintenance and storage procedures for hardware and equipment

Line (GAC): F RIGGING

Competency: F3 Select and Use Appropriate Rigging Techniques

Objectives

To be competent in this area, the individual must be able to use rigging techniques to remove large trees, or portions of trees, in confined locations or when surrounded by obstacles, with a low impact focus.

LEARNING TASKS	CONTENT
1. Design rigging systems in a safe manner	• Review Level One F1 and F2 competencies • Shock loading • Limitations of basic rigging systems
2. Use rigging systems in a safe manner	• Selecting ropes, knots and rigging hardware • Tag lines
3. Use butt-hitching appropriately	• Butt-hitching
4. Implement natural-crotch rigging	• Crotch rigging
5. Implement false-crotch rigging	• False crotch-rigging
6. Use butt-tied, tip-tied, and balanced rigging techniques in a safe and effective manner	• Application of rigging in practical situations

Achievement Criteria

Performance: The learner will use rigging techniques to remove large trees, or portions of trees, in confined locations or when surrounded by obstacles, with a low impact focus.

Conditions: The learner will be given a rigging situation, tools, and equipment necessary to perform the required tasks.

Criteria: The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:

- Performed a site assessment
- Secured a safe work zone
- Developed a rigging plan for a number of different situations
- Prepared for rigging activities
- Demonstrated butt-hitching
- Demonstrated the use of a drift line
- Demonstrated the use of a controlled speedline
- Performed butt-tied, tip-tied, and balanced rigging techniques
- Demonstrated the use of tagline for rigging
- Demonstrated natural and false crotch rigging techniques

- Lowered the object using specified rigging technique to the target point

Line (GAC): F RIGGING

Competency: F4 Perform Cuts for Various Situations

Objectives

To be competent in this area, the individual must be able to safely use various cutting techniques in aerial situations to remove tree parts.

LEARNING TASKS	CONTENT
1. Identify risk factors to be aware of	• Dangers of cutting above your head • Swing potential • Kickback • Load shifting • Falling hazards • Barber chair • Widow makers • Safe work positioning (e.g., not directly underneath the suspended load)
2. Climbing trees with power saws	• Safe ascent and descent • Rope safety • Safe use of chainsaw in aerial situations
3. Cut tree parts with a chainsaw while aloft	• Types of cuts ○ Jump cut ○ Snap cut (Bypass cut) ○ Hinge cut ○ Bore cut • Safe use of a variety of hand cutting tools in aerial situations • Dynamic load vectors, angles of incidence, force, mass, and impact • Application and limitations of cutting techniques

Achievement Criteria

Performance	The learner will safely use various cutting techniques in aerial situations to remove tree parts.
Conditions	The learner will be given an aerial situation, tools and equipment necessary to perform the required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria:

- Communicated a safety plan for limb removal
- Secured the work zone
- Communicated with hands and voice
- Climbed a tree with a chainsaw
- Demonstrated safe chainsaw use
- Safely executed a
    - Hinge cut
    - Drop cut
    - Jump cut
    - Snap cut

Line (GAC): G CLIMBING

Competency: G3 Climb Using Various Techniques

Objectives

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

- Select and use the appropriate climbing techniques for the job.
- Demonstrate safe climbing techniques including body thrust and foot locking.

LEARNING TASKS	CONTENT
1. Climb trees using spurless and spur techniques	• Review Level One G3 competency ○ Tie in points ○ Line installation ○ Climbing system advancement ○ Advance work positioning lanyard ○ Work positioning redirects ○ Choosing the best route up a tree ○ Ascending and descending a tree ○ Using spurless techniques ○ Using spur technique ○ Attaching, sharpening, and maintaining spurs ○ Appropriate knots ○ Limb walking • False crotches (e.g., friction savers)

Achievement Criteria

Performance	The learner will: • Select and use the appropriate climbing techniques for the job • Demonstrate safe climbing techniques including body thrust and foot locking
Conditions	The learner will be given a site with a variety of trees, tools, and equipment necessary to perform the required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Demonstrated safe climbing of trees using spurless technique

Line (GAC): H EMERGENCY RESPONSE

Competency: H5 Perform Aerial Tree Rescue

Objectives

To be competent in this area, the individual must be able to perform aerial position emergency rescue in a safe and effective manner.

LEARNING TASKS	CONTENT
1. Perform rescue in a natural canopy	• Single-man double taut line technique • Single-man friction belay • Two-man friction belay
2. Perform rescue utilizing false crotches	• Single-stem rescue (spar pole) with false crotch

Achievement Criteria

Performance	The learner will perform aerial position emergency rescue.
Conditions	The learner will be given a site with a variety of trees, tools, and equipment necessary to perform the required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Performed a rescue in a natural canopy • Performed a rescue utilizing a false crotch

Line (GAC): I JOB PLANNING AND RISK ASSESSMENT

Competency: I1 Conduct Site Inspections

Objectives

To be competent in this area, the individual must be able to identify and explain all the factors and associated risks influencing the safe execution of the job.

LEARNING TASKS	CONTENT
1. Identify tree and site risks	• Assessment procedures for tree risks • Assessment procedures for site risks
2. Identify appropriate methods and techniques for abatement	• Tree care methods and techniques
3. Identify equipment needed	• Equipment capabilities and applications • Appropriate equipment for specific jobs
4. Identify workers needed	• Assessment of staff competencies • Verify job qualifications
5. Identify applicable regulations	• Applicable regulations and labour standards

Achievement Criteria

Performance	The learner will identify and explain all the factors and associated risks influencing the safe execution of the job.
Conditions	The learner will be given an onsite situation, the tools, and equipment necessary to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Demonstrated the ability to identify a wide variety of risks and explained how to mitigate the risks

Line (GAC): I JOB PLANNING AND RISK ASSESSMENT

Competency: I2 Develop and Communicate Safe Job Plan

Objectives

To be competent in this area, the individual must be able to develop a safe job plan and communicate it to workers and sub-contractors.

LEARNING TASKS	CONTENT
1. Select techniques to address risk	• Risk mitigation • Risk analysis
2. Develop procedures to plan, implement, and evaluate job plan	• Appropriate methods and techniques for risk • Mitigation for specific site conditions • Risk exposure
3. Schedule appropriate equipment	• Utility Arborist's equipment • Scheduling procedures
4. Document the plan	• Risk plan development and documentation
5. Communicate job plan to the crew	• Methods of conducting site meetings • Ability to perform risk analysis • Verbal and written communication techniques

Achievement Criteria

Performance	The learner will develop a safe job plan and communicate it to workers and sub-contractors.
Conditions	The learner will be given an onsite situation, tools, and equipment necessary to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Developed and documented an appropriate risk management plan for the site • Communicated the plan to all affected parties

Line (GAC): I JOB PLANNING AND RISK ASSESSMENT

Competency: I3 Conduct Pre-Job Preparation

Objectives

To be competent in this area, the individual must be able to select the appropriate resources to undertake a tree care assessment based on the job estimate.

LEARNING TASKS	CONTENT
1. Conduct a pre-trip inspection	• Pre-trip inspection procedures and decals check • Boom inspection procedures • WorkSafeBC regulations and company safety procedures • Logbooks and vehicle inspection checklists
2. Inspect tools	• Equipment manufacturer (OEM) manual review • Tool inspection procedures
3. Identify resources required	• Tools and attachments for specific jobs
4. Acquire needed resources	• Typical resources needed for tasks being performed

Achievement Criteria

Performance	The learner will select the appropriate resources to undertake a tree care assessment.
Conditions	The learner will be given an onsite situation, tools, and equipment necessary to perform required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Carried out a pre-job inspection

Line (GAC): I JOB PLANNING AND RISK ASSESSMENT

Competency: I4 Ensure Regulatory Compliance

Objectives

To be competent in this area, the individual must be able to ensure that all activities on the jobsite comply with all standards and regulations.

LEARNING TASKS	CONTENT
1. Plan for compliance	• Application of safety compliance to job activities
2. Inspect for compliance	• Application of environmental compliance to job activities
3. Conduct post-job review and follow-up	• Application of permitting and licensing compliance to job activities
4. Prepare reports as needed	• Liability issues/responsibilities • Record keeping requirements • WorkSafeBC accident and near-miss reporting procedures • Accident investigation plans • Preparedness and risk mitigation procedures • Emergency response, clean up, and emergency procedures • Assessment procedures for job practices to ensure compliance with procedure • Document practices • Communicate effectively

Achievement Criteria

Performance	The learner will ensure that all activities on the jobsite comply with all standards and regulations.
Conditions	The learner will be given an onsite situation, tools, and equipment necessary to perform the required tasks.
Criteria	The learner will score a passing grade of 75% or better on a rating sheet according to the following criteria: • Planned for compliance • Inspected for compliance • Conducted a post-job review and follow-up

Line (GAC): J POWERLINE AWARENESS

Competency: J8 Describe Methodology for Obtaining Appropriate System Protection

Objectives

To be competent in this area, the individual must be able to describe the methodology of obtaining appropriate system protection.

LEARNING TASKS	CONTENT
1. Gather necessary details to correctly arrange an Assurance of No Reclose Permit (ANRP) with the appropriate Area Control Center	• ANRP and the requirement for tree work • Additional requirements to arrange an ANRP on transmission circuits • Work on vegetation under an authorized workers' self protection or clearance • Customer isolation and where it is applied • Responsibilities of the authorized permit holder and violations for misuse or inappropriate practices • How a conductor is grounded • How a pole top switch is manually operated • Correct entry made in a clearance holders logbook
2. Describe obtaining a Protection Extension Safety/ Protection Guarantee	• Local components and lock out for Independent Power Providers (IPP) • Protection Extension/Safety Protection Guarantee • Where a Utility Arborist may require its use • Arrangements that must be made • Required procedures

Section 4

TRAINING PROVIDER STANDARDS

Facility Requirements

Classroom Area

- Comfortable classroom space and training area for practical assignments capable of facilitating students (1 instructor for theory, 2 instructors for practical) 16
- Roughly 900 sq. ft. (30 x 30 standard size classroom)

Maintenance Area (temporary)

- Covered work area for tool maintenance (e.g., tarp or a portable tent)

Field Facilities

- Protected lunch area (e.g., tarp, tent, vehicle)
- Access to adequate washroom facilities

Instructor's Office Space

- Suitable space and office furniture necessary for instructor to prepare and deliver lessons

Other

- Large secure site for training, operations, demonstration, and practice including a parking lot for vehicles – minimum 5 acres wood lot

Additional Requirements for Specific Lines of Training

Line B – Powered Equipment

- Large secure site with mature trees conducive to lift truck practice

Line C – Hand Tools and Small Power Tools

- Access to site with varied plant materials and conditions

Line D – Tree Work and Management

- Access to large range of trees common to the area
- Site locations requiring various tree selections

Line E – Falling and Bucking

- Secure site for felling practice
- Access sections for bucking practice

Line F – Rigging

- Secure site with mature trees conducive to multiple removals, rigging, and cutting practice

Line G – Climbing

- Large secure site with mature trees conducive to climbing practices

Line H – Emergency Response

- Secure site for evacuation practice
- Variety of trees appropriate to demonstrate aerial rescue

Line I – Job Planning and Risk Assessment

- Large secure site with mature trees conducive to job planning and risk

Line J – Powerline Awareness

- Powerline hardware components and related locations

Tools and Equipment

***Note**: Where applicable, equipment may be rented for instructional purposes.*

Shop Equipment

Motorized Equipment

- Chipper (WorkSafeBC compliant)
- Over-center truck-mounted aerial lift and single-axle dump truck (which may be the same unit)

Shop (Facility) Tools

Standard Hand and Small Power Tools

- Climbing chainsaws
- Mid-size bucking chainsaws
- Full-wrap handle chainsaws
- Chainsaw tools
- Saw lanyards
- Wedges
- Falling axes
- Sounding mallet
- Barricades
- Gas power pole saw
- Hand pruner
- Pole pruners
- Pole saws (or attachments)
- Gaff gauge

Specialty Tools – Rigging and Climbing Gear

- 10-ft loopies (1/2 in or 5/8 in)
- 12-ft loopies (1/2 in or 5/8 in)
- Spider legs
- Prusik loops
- Eye-and-eye split tails
- One-eye slings (2 x 18 ft, 2 x 12 ft)
- Single-eye split tails
- 3/4-ton Arborist rigging blocks
- 10-ton Arborist rigging blocks
- Pulleys
- CMI pulleys
- Micro pulleys
- Steel double autolocking carabiners
- Mechanical advantage kit

- Port-a-wraps (large steel)
- Hobbs or Good Rigging Control System (GRCS) rigging device
- Adjustable friction saver
- 36-inch steel ring friction saver
- Personal First Aid kit with pressure bandage

Student Tools (supplied by student)

Required

- WorkSafeBC approved hard hat or helmet with 4-point chin strap
- WorkSafeBC hearing protection (muffs or plugs)
- WorkSafeBC approved safety glasses
- WorkSafeBC approved (3600 fpm) chainsaw pants or chaps
- WorkSafeBC approved boots with ankle support
- Leather gloves for rigging
- Gloves for climbing
- Hi-viz apparel
- Hand saw
- Approved climbing belt and saddle
- Approved lanyard and adjuster
- Tree climbing spurs
- Personal First Aid kit with pressure bandage
- 2 – double auto-locking carabiners 23 kN
- Climbing rope 150’ x 1/2” 6200 lbs tensile
- Micro pulley with utility carabiner
- Rope clip

Recommended

- Eye-and-eye split tail
- Single-eye split

Reference Materials

Required Reference Materials

- American National Standard for Arboricultural Operations – Pruning Standard, ANSI A-300 – 2001
- BC Faller Training Standard, WorkSafeBC
- BC Faller Training Standard – DVD's Discs 1, 2 and 3, WorkSafeBC
- *Climbing Procedures and Fall Restraint*, Western Utility Arborist Association
- Electrical Awareness Power Point, E.I.T.I.
- *InfoFlips – BC Faller Training Standard*, WorkSafeBC
- *Power System Safety Protection (PSSP*), BC Hydro
- *Native Trees of B.C., Ministry of Forests*, Government of BC
- *Safe Work Practices for Utility Arborists (Tree care work near power lines),* WorkSafeBC (2005)
- *Safety Practice Regulations,* BC Hydro

Recommended Resources

- Arboriculture Canada Training

http://www.arborcanada.com/

- Audio/Visual Resources
  - *Aerial Rescues*, National Arborist Association
  - *Brush Chipper Operations and Safety Training*, Vermeer Manufacturing Company, 2000
  - *The Path of Least Resistance*, WorkSafeBC
- BC Faller Training Standard, *InfoFlips*
  - Part one
    http://www.worksafebc.com/publications/health_and_safety/by_topic/assets/pdf/bc_faller_training_standard_1.pdf
  - Part Two
    http://www.worksafebc.com/publications/health_and_safety/by_topic/assets/pdf/bc_faller_training_standard_2.pdf
- BC Forest Safety Council
  http://www.bcforestsafe.org/training/faller_certification/resources.html
- BC Hydro

http://www.bchydro.com/safety/

- BC Ministry of Environment

http://www.gov.bc.ca/env/

- BC One Call

http://www.bconecall.bc.ca

- BC Provincial Emergency Program

http://www.pep.bc.ca/index.html

- British Columbia Outdoor Wilderness Guide – The Trees of British Columbia
  http://bcadventure.com/adventure/wilderness/forest/

- British Columbia Workers Compensation Act

http://www.bclaws.ca/Recon/document/freeside/--%20w%20--/workers%20compensation%20act%20rsbc%201996%20c.%20492/00_act/96492_00.htm

- Canadian Environmental Protection Act

http://www.ec.gc.ca/alef-ewe/default.asp?lang=En&n=2140D763-1

- Commercial Vehicle Safety and Enforcement (CVSE)
  http://www.th.gov.bc.ca/cvse/
- E-Flora – Electronic Atlas of Plants of British Columbia

http://www.geog.ubc.ca/biodiversity/eflora/E-FloraTreesofBritishColumbia.html

- Environment Canada, Acts, Regulations and Agreements

http://www.ec.gc.ca/default.asp?lang=En&n=48d356c1-1

- Fisheries Act

http://laws.justice.gc.ca/en/F-14/index.html

- Insurance Corporation of BC

http://www.icbc.com

- Kwantlen University College School of Horticulture Plant identification Database, www.kwantlen.ca/horticulture/
  https://appserver1.kwantlen.ca/apps/plantid/plantid.nsf/search
- Ministry of Forest and Range – Tree Book: Learning the Trees of British Columbia
  http://www.for.gov.bc.ca/hfd/library/documents/treebook/
- Ministry of Transportation and Infrastructure, *Traffic Control Manual for Work on Roadways*
  http://www.th.gov.bc.ca/publications/eng_publications/TCM/Traffic_Control_Manual.htm
- OHS Standards
  http://www2.worksafebc.com/Publications/OHSRegulation/Home.asp
- Product Instruction Guide – Miller by Sperian
  http://www.millerfallprotection.com/pdfs/ProdInspecGuide.pdf
- Provincial Regulations
  http://www.bclaws.ca/
- Spill Reporting Amendments
  http://www.env.gov.bc.ca/epd/codes/spill-reporting/index.htm
- TDG
  http://www.tc.gc.ca/eng/tdg/clear-schedule2-81.htm
- Traffic Control Manual for Work on Roadways
  http://www.th.gov.bc.ca/publications/eng_publications/TCM/Traffic_Control_Manual.htm
- Tree Care Industry Association (TCIA)
  http://www.treecareindustry.org/index.aspx
- Wildlife Act
  http://laws.justice.gc.ca/en/W-9/
- WorkSafeBC
  http://www.worksafebc.com
- WorkSafeBC First Aid Certification
  http://www2.worksafebc.com/topics/firstaid/home.asp
- WorkSafeBC Guidelines Part 19 Electrical Safety
  http://www2.worksafebc.com/publications/OHSRegulation/Part19.asp
  http://www2.worksafebc.com/Publications/OHSRegulation/Part19.asp?ReportID=18571
- WorkSafeBC Guidelines Part 26, Forestry Operations and Similar Activities (including arboriculture)
  http://www2.worksafebc.com/Publications/OHSRegulation/GuidelinePart26.asp
- WorkSafeBC OHS Guidelines

http://www2.worksafebc.com/publications/OHSRegulation/Home.asp

- WorkSafeBC OHS Guidelines, Limits of Approach Part 19
  http://www2.worksafebc.com/publications/OHSRegulation/GuidelinePart19.asp#SectionNumber:G19.9
- WorksSafeBC, *Safe Work Practices for Certified Utility Arborists*
  http://worksafebc.com/publications/health_and_safety/by_topic/assets/pdf/cert_utility_arborist.pdf
- WorkSafeBC, *Working Safely Around Electricity*
  http://www.worksafebc.com/publications/health_and_safety/by_topic/assets/pdf/electricity.pdf

Suggested Texts

- *A New Tree Biology Dictionary*, Alex L. Shigo, Shigo and Trees, Associates, 1986
- *An Illustrated Guide to Pruning*, 2nd edition, Edward F. Gilman, Delmar, 2002
- *Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines*, 4th edition, Harris, Clark and Matheny, Prentice Hall, 2004
- *Arborist Equipment: A Guide to the Tools and Equipment of Tree Maintenance and Removal*. Blair, Donald F. 2nd Ed. ISA Publication
- *Arborists' Certification Study Guide*, ISA Publication
- *Arborists' Knots for Climbing and Rigging*, ISA Publication, 2006
- *Basic Training for Tree Climbers*, ISA Publication
- *Chain Saw Safety and Field Maintenance*, Kevin K. Eckert, ISA
- *Common Tree Diseases of British Columbia,* Eric Allen, Duncan Morrison and Gordon Wallis, Natural Resources Canada, Canadian Forest Service, 1996
- *Evaluating Tree Defects*, Field Guide, Ed Hayes, 2nd edition
- *Hardy Trees and Shrubs: An Illustrated Encyclopedia*, Dirr, Michael, Timber Press, 2009
- *Manual of Woody Landscape Plants*, 9th edition, Michael A. Dirr, Stipes Publishing Co., 2009
- *Native Trees of BC*, Halter, Reese & NJ Turner, Crown Publication, 2003
- *Taylor's Guide to Trees*, Houghton Mifflin, 1988
- *The Tree Climbers Knots*, Lingens, D., Schlauverlag, Stockelsdorf, 2006.
- *Tree Climber's Guide*. Lilly, S. 3rd Ed. ISA Publication
- *Trees in Canada*, John Farrar, Fitzhenry & Whiteside Publishing, 1995
- *Western Trees,* George A. Petrides / Olivia Petrides, Houghton Mifflin, 1992

NOTE:

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

Instructor Requirements

Occupation Qualification

The instructor must possess:

- Utility Arborist – Certificate of Qualification
- Certified ISA Tree Worker/Climber Specialist
- Assessor training by one of three methods:
  - SkilledTradesBC assessor training
  - Forestry Safety Council assessor training or equivalent
  - Any assessor training that is deemed to be equivalent by the WUAA qualifying committee

Work Experience

- A minimum of 5 years experience working in the industry as a journeyperson Utility Arborist
- A minimum of 5 years experience working as an Aerial lift truck operator, with proven safe work record and a Class 5 Driver's License.

Instructional Experience and Education

It is preferred that the instructor also possesses one of the following:

- Instructor or Trainer Certificate (minimum 30 hour course)
- Provincial Instructor's Diploma (preferred credential)
- Bachelors or Master's degree in Education