SKILLEDTRADES BC

PROGRAM OUTLINE

Recreation Vehicle Service Technician

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SKILLED TRADES BC

RECREATION VEHICLE SERVICE TECHNICIAN
PROGRAM OUTLINE

APPROVED BY INDUSTRY

MAY 2022

BASED ON

RSOS 2021

Developed by
SkilledTradesBC
Province of British Columbia

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Section 1

INTRODUCTION

Recreation Vehicle Service Technician

Foreword

This Recreation Vehicle Service Technician Program Outline is intended as a guide for instructors, apprentices, and employers of apprentices as well as for the use of industry organizations, regulatory bodies, and provincial and federal governments. It reflects updated standards based on the 2021 Red Seal Occupational Standard (RSOS) and was developed by British Columbia industry and instructor subject matter experts. This Program Outline will form the basis for further updating of the British Columbia Recreation Vehicle Service Technician Program by SkilledTradesBC.

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

This Program Outline includes a list of recommended reference textbooks that are available to support the learning objectives and the minimum shop requirements needed to support instruction.

Competencies are to be evaluated through written exams and practical assessments. A passing grade is achieved by getting an overall mark of 70%. See the Assessment Guidelines for more details.

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

The performance spelled out in the Achievement Criteria is a suggested performance and is not meant to stifle flexibility of delivery. Training providers are welcome to substitute other practical performances that measure similar skills and attainment of the competency. Multiple performances may also be used to replace individual performances where appropriate.

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

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

- Jon Itterman — Instructor, Okanagan College
- Kari Jeffcot — Warranty/Service Writer, Arbutus RV (Sidney)

Industry Subject Matter Experts retained as outline reviewers:

- Jon Itterman — Instructor, Okanagan College
- Kari Jeffcot — Warranty/Service Writer, Arbutus RV (Sidney)
- Victor Flint — Instructor, Okanagan College, Owner Operator, Family First RV
- Byron Scott — Owner Operator, Courtenay RV Specialists
- Shawn Arcand — Red Seal Recreation Vehicle Service Technician, Mike Rosman RV Sales
- Jamie Heit — Red Seal Recreation Vehicle Service Technician, Meridian RV

SkilledTradesBC would like to acknowledge the dedication and hard work of all the industry representatives appointed to identify the training requirements of the Recreation Vehicle Service Technician 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	Communicates program length and structure, and all pathways to completion	Illustrates the length and structure of the program	Illustrates the length and structure of the program, and pathway to completion	Illustrates the challenger pathway to Certificate of Qualification
OAC	Communicates the competencies that industry has defined as representing the scope of the occupation	Displays the competencies that an apprentice is expected to demonstrate in order to achieve certification	Displays the competencies apprentices will achieve as a result of program completion	Displays the competencies challengers 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	Shows 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	Shows 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	Shows the relative weightings of various competencies of the occupation on which assessment is based
Program Content	Defines the objectives, learning tasks, high level content that must be covered for each competency, as well as defining observable, measurable achievement criteria for objectives with a practical component	Identifies detailed program content and performance expectations for competencies with a practical component; may be used as a checklist prior to signing a recommendation for certification (RFC) for an apprentice	Provides detailed information on program content and performance expectations for demonstrating competency	Allows individual to check program content areas against their own knowledge and performance expectations against their own skill levels
Assessment Guidelines	Shows the general areas of competency covered in each level of technical training, the theory and practical grading weight, and the calculation method for final percentage marks	Shows the general areas of competency covered in the technical training, the grading weight for each GAC, and the percentage of that time spent on theory versus practical application	Shows the general areas of competency covered in each level of technical training, the theory and practical grading weight, and the calculation method for final percentage marks	Shows the relative weightings of various general areas of competency within the occupation on which assessment is based

Section	Training Providers	Employers/ Sponsors	Apprentices	Challengers
Training Provider Standards	Defines the facility requirements, tools and equipment, reference materials (if any) and instructor requirements for the program	Identifies the tools and equipment an apprentice is expected to have access to; 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
Appendix – Glossary of Acronyms			Defines program specific acronyms	

Section 2

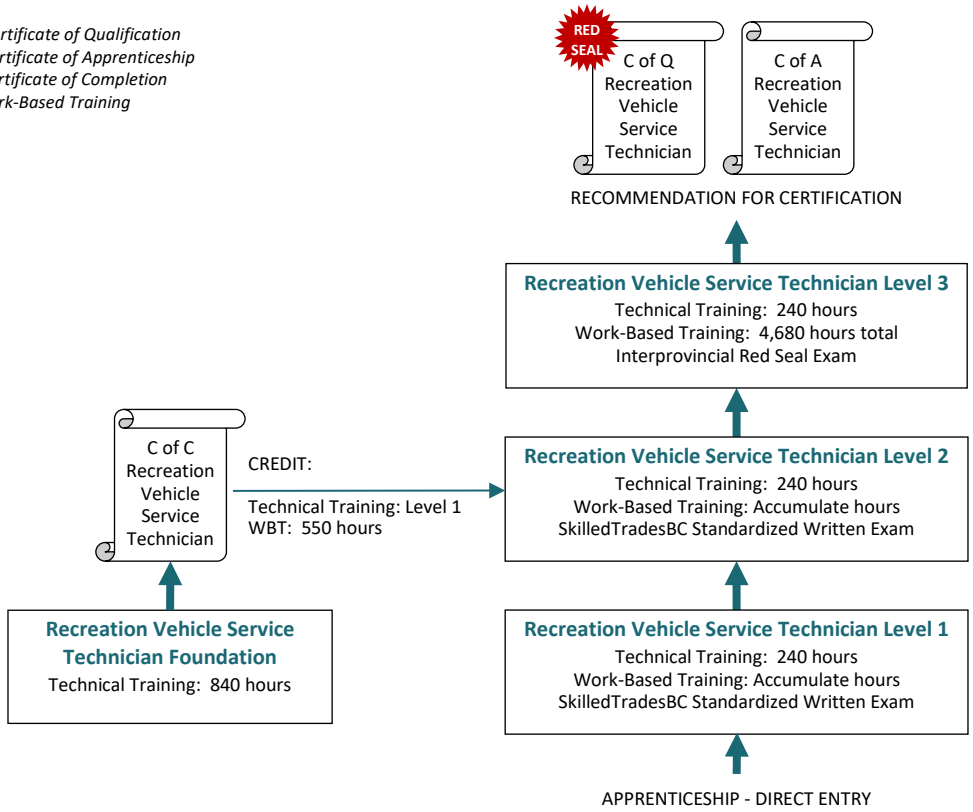
PROGRAM OVERVIEW

Recreation Vehicle Service Technician

Program Credentialing Model

Recreation Vehicle Service Technician

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



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

None

Occupational Analysis Chart

RECREATION VEHICLE SERVICE TECHNICIAN

Occupation Description: Recreation vehicles (RV) are vehicles designed as temporary living quarters for recreational, camping, travel, or seasonal use. RVs may be motorized (motorhomes) or towable (travel trailers, folding camping trailers, truck campers, and park models). RVs do not include off-road vehicles. RV service technicians work on systems and components of recreation vehicles, including electrical components, plumbing, propane gas components, appliances, exterior and interior components, structural frames, and towing systems. They diagnose, repair, replace, install, adjust, test, maintain and modify these components and systems. They may also perform maintenance and repairs on trailer frames and running gear. They must be knowledgeable about each system's function and the interaction among various systems. However, it is important to note that they do not work on the motor or drive train components of motorized RVs. RV service technicians are typically employed at RV dealerships, independent RV repair shops, RV manufacturers and may also be self-employed. They may work at indoor shops and outdoors at RV sites. Safety is important due to risks and hazards such as: working at heights, with electricity, with explosive and volatile materials, in the outdoor environment, and under vehicles.

PERFORM SAFETY-RELATED ACTIVITIES **A**	Use personal protective equipment (PPE) and safety equipment A1	1					Maintain safe work environment A2	1				
USE TOOLS AND EQUIPMENT **B**	Use tools and equipment B1	1					Use lifting, moving, and access equipment B2	1				
PERFORM COMMON WORK PRACTICES AND PROCEDURES **C**	Use documents C1	1	2	3			Perform pre-delivery inspections (PDI) C2	1				
USE COMMUNICATION AND MENTORING TECHNIQUES **D**	Use communication techniques D1	1					Use mentoring techniques D2			3		

Program Overview

SERVICE POTABLE WATER SYSTEMS **E**	Maintain potable water systems E1					Install potable water systems E2					Diagnose potable water systems E3					Repair potable water systems E4					
	1					1					1					1					
SERVICE WASTEWATER SYSTEMS **F**	Maintain wastewater systems F1					Install wastewater systems F2					Diagnose wastewater systems F3					Repair wastewater systems F4					
	1					1					1					1					
SERVICE AC ELECTRICAL SYSTEMS **G**	Apply AC electrical theory G1					Maintain AC electrical systems G2					Install AC electrical systems G3					Diagnose AC electrical systems G4					Repair AC electrical systems G5				
	1					1	2	3				2	3				2					2	3		
SERVICE DC ELECTRICAL SYSTEMS **H**	Apply DC electrical theory H1					Maintain DC electrical systems H2					Install DC electrical systems H3					Diagnose DC electrical systems H4					Repair DC electrical systems H5				
	1					1	2	3				2	3			1						2	3		
SERVICE GENERATORS **I**	Maintain generators I1					Install generators I2					Diagnose generators I3										
			3					3					3								
SERVICE PHOTOVOLTAIC SYSTEMS **J**	Maintain photovoltaic systems J1					Install photovoltaic systems J2					Diagnose photovoltaic systems J3					Repair photovoltaic systems J4					
	1							3					3					3			

SERVICE LPG SYSTEMS K	Maintain LPG systems K1	Install LPG systems K2	Diagnose LPG systems (high pressure) K3	Diagnose LPG systems (low pressure) K4	Repair LPG systems K5
	1 2	2	2	2	2
SERVICE WATER HEATERS L	Maintain water heaters L1	Install water heaters L2	Diagnose water heaters L3	Repair water heaters L4	
	1 2	2	2	2	
SERVICE FURNACES M	Maintain furnaces M1	Install furnaces M2	Diagnose furnaces M3	Repair furnaces M4	
	1 2 3	2 3	2 3	2 3	
SERVICE COOKTOPS AND RANGES N	Maintain cooktops and ranges N1	Install cooktops and ranges N2	Diagnose cooktops and ranges N3	Repair cooktops and ranges N4	
	1 2	2	2	2	
SERVICE REFIGERATORS AND ICE MAKERS O	Maintain refrigerators and ice makers O1	Install refrigerators and ice makers O2	Diagnose refrigerators and ice makers O3	Repair refrigerators and ice makers O4	
	1 2 3	2 3	2 3	2 3	
SERVICE AIR CONDITIONERS AND HEAT PUMPS P	Maintain air conditioners and heat pumps P1	Install air conditioners and heat pumps P2	Diagnose air conditioners and heat pumps P3	Repair air conditioners and heat pumps P4	
	1 3	3	2 3	3	

SERVICE CONSUMER PRODUCTS Q	Install consumer products Q1				
	1		3		
	Replace consumer products Q2				
	1		3		
SERVICE INTERIOR COMPONENTS R	Maintain interior components R1	Install interior components R2	Diagnose interior components R3	Repair interior components R4	
	2	2	2	2	
SERVICE EXTERIOR COMPONENTS S	Maintain exterior components S1	Install exterior components S2	Diagnose exterior components S3	Repair exterior components S4	
	2	2	2	2 3	
SERVICE FRAMES AND RUNNING GEAR T	Maintain frames and running gear T1	Diagnose frames and running gear T2	Repair frames and running gear T3		
	1	1 3	1 3		
SERVICE LEVELLING SYSTEMS U	Maintain levelling systems U1	Install levelling systems U2	Diagnose levelling systems U3	Repair levelling systems U4	
	1	3	1 3	3	
SERVICE SLIDE-OUT SYSTEMS V	Maintain slide-out systems V1	Diagnose slide-out systems V2	Repair slide-out systems V3		
	1	1 3	3		

SERVICE LIFTING SYSTEMS **W**	Maintain lifting systems W1	Diagnose lifting systems W2	Repair lifting systems W3		
	1	1 3	3		
SERVICE TOW VEHICLE SYSTEMS **X**	Maintain tow vehicle systems X1	Install tow vehicle systems X2	Diagnose tow vehicle systems X3	Repair tow vehicle systems X4	
	1	1 2	1	1 2	
SERVICE TOWED VEHICLE SYSTEMS **Y**	Maintain towed vehicle systems Y1	Install towed vehicle systems Y2	Diagnose towed vehicle systems Y3	Repair towed vehicle systems Y4	
	1	3	3	3	

Training Topics and Suggested Time Allocation

RECREATION VEHICLE SERVICE TECHNICIAN – LEVEL 1

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
Line A	**PERFORM SAFETY-RELATED ACTIVITIES**	**8%**	**50%**	**50%**	**100%**
A1	Use personal protective equipment (PPE) and safety equipment		✓	✓	
A2	Maintain safe work environment		✓	✓	
Line B	**USE TOOLS AND EQUIPMENT**	**8%**	**20%**	**80%**	**100%**
B1	Use tools and equipment		✓	✓	
B2	Use lifting, moving, and access equipment		✓	✓	
Line C	**PERFORM COMMON WORK PRACTICES AND PROCEDURES**	**12%**	**75%**	**25%**	**100%**
C1	Use documents		✓	✓	
C2	Perform pre-delivery inspections (PDI)		✓	✓	
Line D	**USE COMMUNICATION AND MENTORING TECHNIQUES**	**1%**	**50%**	**50%**	**100%**
D1	Use communication techniques		✓	✓	
Line E	**SERVICE POTABLE WATER SYSTEMS**	**5%**	**50%**	**50%**	**100%**
E1	Maintain potable water systems		✓	✓	
E2	Install potable water systems		✓	✓	
E3	Diagnose potable water systems		✓	✓	
E4	Repair potable water systems		✓	✓	
Line F	**SERVICE WASTEWATER SYSTEMS**	**5%**	**50%**	**50%**	**100%**
F1	Maintain wastewater systems		✓	✓	
F2	Install wastewater systems		✓	✓	
F3	Diagnose wastewater systems		✓	✓	
F4	Repair wastewater systems		✓	✓	
Line G	**SERVICE AC ELECTRICAL SYSTEMS**	**5%**	**50%**	**50%**	**100%**
G1	Apply AC electrical theory		✓		
G2	Maintain AC electrical systems		✓	✓	
Line H	**SERVICE DC ELECTRICAL SYSTEMS**	**11%**	**50%**	**50%**	**100%**
H1	Apply DC electrical theory		✓		
H2	Maintain DC electrical systems		✓	✓	
H4	Diagnose DC electrical systems		✓		
Line J	**SERVICE PHOTOVOLTAIC SYSTEMS**	**1%**	**50%**	**50%**	**100%**
J1	Maintain photovoltaic systems		✓	✓	

		% of Time	% of Time Allocated to: Theory	Practical	Total
Line K	**SERVICE LPG SYSTEMS**	**12%**	**50%**	**50%**	**100%**
K1	Maintain LPG systems		✓	✓	
Line L	**SERVICE WATER HEATERS**	**3%**	**50%**	**50%**	**100%**
L1	Maintain water heaters		✓	✓	
Line M	**SERVICE FURNACES**	**3%**	**50%**	**50%**	**100%**
M1	Maintain furnaces		✓	✓	
Line N	**SERVICE COOKTOPS AND RANGES**	**3%**	**50%**	**50%**	**100%**
N1	Maintain cooktops and ranges		✓	✓	
Line O	**SERVICE REFRIGERATORS AND ICE MAKERS**	**3%**	**50%**	**50%**	**100%**
O1	Maintain refrigerators and ice makers		✓	✓	
Line P	**SERVICE AIR CONDITIONERS AND HEAT PUMPS**	**1%**	**75%**	**25%**	**100%**
P1	Maintain air conditioners and heat pumps		✓	✓	
Line Q	**SERVICE CONSUMER PRODUCTS**	**1%**	**50%**	**50%**	**100%**
Q1	Install consumer products		✓	✓	
Q2	Replace consumer products		✓	✓	
Line T	**SERVICE FRAMES AND RUNNING GEAR**	**9%**	**50%**	**50%**	**100%**
T1	Maintain frames and running gear		✓	✓	
T2	Diagnose frames and running gear			✓	
T3	Repair frames and running gear			✓	
Line U	**SERVICE LEVELLING SYSTEMS**	**1%**	**50%**	**50%**	**100%**
U1	Maintain levelling systems		✓	✓	
U3	Diagnose levelling systems		✓	✓	
Line V	**SERVICE SLIDE-OUT SYSTEMS**	**1%**	**50%**	**50%**	**100%**
V1	Maintain slide-out systems		✓	✓	
V2	Diagnose slide-out systems		✓		
Line W	**SERVICE LIFTING SYSTEMS**	**1%**	**50%**	**50%**	**100%**
W1	Maintain lifting systems		✓	✓	
W2	Diagnose lifting systems		✓		
Line X	**SERVICE TOW VEHICLE SYSTEMS**	**5%**	**50%**	**50%**	**100%**
X1	Maintain tow vehicle systems		✓		
X2	Install tow vehicle systems		✓	✓	
X3	Diagnose tow vehicle systems			✓	

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
X4	Repair tow vehicle systems		✓	✓	
Line Y	**SERVICE TOWED VEHICLE SYSTEMS**	**1%**	**75%**	**25%**	**100%**
Y1	Maintain towed vehicle systems		✓	✓	
	Total Percentage for Recreation Vehicle Service Technician Level 1	**100%**			

Training Topics and Suggested Time Allocation

RECREATION VEHICLE SERVICE TECHNICIAN – LEVEL 2

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
Line C	**PERFORM COMMON WORK PRACTICES AND PROCEDURES**	**3%**	**50%**	**50%**	**100%**
C1	Use documents		✓	✓	
Line G	**SERVICE AC ELECTRICAL SYSTEMS**	**15%**	**75%**	**25%**	**100%**
G2	Maintain AC electrical systems		✓	✓	
G3	Install AC electrical systems		✓	✓	
G4	Diagnose AC electrical systems		✓	✓	
G5	Repair AC electrical systems		✓	✓	
Line H	**SERVICE DC ELECTRICAL SYSTEMS**	**5%**	**50%**	**50%**	**100%**
H2	Maintain DC electrical systems		✓	✓	
H3	Install DC electrical systems		✓		
H5	Repair DC electrical systems		✓		
Line K	**SERVICE LPG SYSTEMS**	**25%**	**50%**	**50%**	**100%**
K1	Maintain LPG systems		✓	✓	
K2	Install LPG systems		✓	✓	
K3	Diagnose LPG systems (high pressure)			✓	
K4	Diagnose LPG systems (low pressure)			✓	
K5	Repair LPG systems		✓	✓	
Line L	**SERVICE WATER HEATERS**	**5%**	**50%**	**50%**	**100%**
L1	Maintain water heaters		✓	✓	
L2	Install water heaters		✓	✓	
L3	Diagnose water heaters		✓	✓	
L4	Repair water heaters		✓	✓	
Line M	**SERVICE FURNACES**	**5%**	**50%**	**50%**	**100%**
M1	Maintain furnaces		✓	✓	
M2	Install furnaces		✓	✓	
M3	Diagnose furnaces		✓	✓	
M4	Repair furnaces		✓	✓	
Line N	**SERVICE COOKTOPS AND RANGES**	**2.5%**	**50%**	**50%**	**100%**
N1	Maintain cooktops and ranges		✓	✓	
N2	Install cooktops and ranges		✓	✓	
N3	Diagnose cooktops and ranges		✓	✓	

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
N4	Repair cooktops and ranges		✓	✓	
Line O	**SERVICE REFRIGERATORS AND ICE MAKERS**	**5%**	**50%**	**50%**	**100%**
O1	Maintain refrigerators and ice makers		✓	✓	
O2	Install refrigerators and ice makers		✓	✓	
O3	Diagnose refrigerators and ice makers		✓	✓	
O4	Repair refrigerators and ice makers		✓	✓	
Line P	**SERVICE AIR CONDITIONERS AND HEAT PUMPS**	**2.5%**	**50%**	**50%**	**100%**
P3	Diagnose air conditioners and heat pumps		✓	✓	
Line R	**SERVICE INTERIOR COMPONENTS**	**10%**	**50%**	**50%**	**100%**
R1	Maintain interior components		✓	✓	
R2	Install interior components		✓	✓	
R3	Diagnose interior components		✓	✓	
R4	Repair interior components		✓	✓	
Line S	**SERVICE EXTERIOR COMPONENTS**	**20%**	**50%**	**50%**	**100%**
S1	Maintain exterior components		✓	✓	
S2	Install exterior components		✓	✓	
S3	Diagnose exterior components		✓	✓	
S4	Repair exterior components		✓	✓	
Line X	**SERVICE TOW VEHICLE SYSTEMS**	**2%**	**50%**	**50%**	**100%**
X2	Install tow vehicle systems		✓	✓	
X4	Repair tow vehicle systems		✓	✓	
	Total Percentage for Recreation Vehicle Service Technician Level 2	**100%**			

Training Topics and Suggested Time Allocation

RECREATION VEHICLE SERVICE TECHNICIAN – LEVEL 3

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
Line C	**PERFORM COMMON WORK PRACTICES AND PROCEDURES**	**10%**	**50%**	**50%**	**100%**
C1	Use documents		✓	✓	
Line D	**USE COMMUNICATION AND MENTORING TECHNIQUES**	**2%**	**100%**	**0%**	**100%**
D2	Use mentoring techniques		✓		
Line G	**SERVICE AC ELECTRICAL SYSTEMS**	**10%**	**50%**	**50%**	**100%**
G2	Maintain AC electrical systems		✓	✓	
G3	Install AC electrical systems		✓		
G5	Repair AC electrical systems		✓		
Line H	**SERVICE DC ELECTRICAL SYSTEMS**	**10%**	**50%**	**50%**	**100%**
H2	Maintain DC electrical systems		✓	✓	
H3	Install DC electrical systems		✓		
H5	Repair DC electrical systems		✓	✓	
Line I	**SERVICE GENERATORS**	**12%**	**50%**	**50%**	**100%**
I1	Maintain generators		✓	✓	
I2	Install generators		✓		
I3	Diagnose generators		✓	✓	
Line J	**SERVICE PHOTOVOLTAIC SYSTEMS**	**5%**	**50%**	**50%**	**100%**
J2	Install photovoltaic systems		✓	✓	
J3	Diagnose photovoltaic systems		✓	✓	
J4	Repair photovoltaic systems		✓		
Line M	**SERVICE FURNACES**	**5%**	**50%**	**50%**	**100%**
M1	Maintain furnaces		✓	✓	
M2	Install furnaces		✓		
M3	Diagnose furnaces		✓	✓	
M4	Repair furnaces		✓	✓	
Line O	**SERVICE REFRIGERATORS AND ICE MAKERS**	**5%**	**100%**	**0%**	**100%**
O1	Maintain refrigerators and ice makers		✓		
O2	Install refrigerators and ice makers		✓		
O3	Diagnose refrigerators and ice makers		✓		

			% of Time Allocated to:		
		% of Time	Theory	Practical	Total
O4	Repair refrigerators and ice makers		✓		
Line P	**SERVICE AIR CONDITIONERS AND HEAT PUMPS**	**5%**	**50%**	**50%**	**100%**
P1	Maintain air conditioners and heat pumps		✓	✓	
P2	Install air conditioners and heat pumps		✓	✓	
P3	Diagnose air conditioners and heat pumps		✓	✓	
P4	Repair air conditioners and heat pumps		✓		
Line Q	**SERVICE CONSUMER PRODUCTS**	**3%**	**100%**	**0%**	**100%**
Q1	Install consumer products		✓		
Q2	Replace consumer products		✓		
LINE S	**SERVICE EXTERIOR COMPONENTS**	**12%**	**50%**	**50%**	**100%**
S4	Repair exterior components		✓	✓	
Line T	**SERVICE FRAMES AND RUNNING GEARS**	**5%**	**50%**	**50%**	**100%**
T2	Diagnose frames and running gear		✓	✓	
T3	Repair frames and running gear		✓	✓	
Line U	**SERVICE LEVELLING SYSTEMS**	**5%**	**50%**	**50%**	**100%**
U2	Install levelling systems		✓		
U3	Diagnose levelling systems			✓	
U4	Repair levelling systems		✓	✓	
Line V	**SERVICE SLIDE-OUT SYSTEMS**	**4%**	**50%**	**50%**	**100%**
V2	Diagnose slide-out systems		✓	✓	
V3	Repair slide-out systems		✓	✓	
Line W	**SERVICE LIFTING SYSTEMS**	**4%**	**50%**	**50%**	**100%**
W2	Diagnose lifting systems		✓	✓	
W3	Repair lifting systems		✓		
Line Y	**SERVICE TOWED VEHICLE SYSTEMS**	**3%**	**100%**	**0%**	**100%**
Y2	Install towed vehicle systems		✓		
Y3	Diagnose towed vehicle systems		✓		
Y4	Repair towed vehicle systems		✓		
	Total Percentage for Recreation Vehicle Service Technician Level 3	**100%**			

Section 3

PROGRAM CONTENT

Recreation Vehicle Service Technician

Level 1

Recreation Vehicle Service Technician

Line (GAC): A PERFORM SAFETY-RELATED ACTIVITIES

Competency: A1 Use personal protective equipment (PPE) and safety equipment

Objectives

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

- Describe flammable and toxic material
- Describe safety procedures and equipment
- Use PPE

LEARNING TASKS	CONTENT

1. Describe flammable and toxic materials	• Types
	  ○ Fuels
	  ○ Diesel
	  ○ Gasoline
	  ○ Propane
	  ○ Lubricants
	  ○ Aerosols
	  ○ Cleaners
	  ○ Adhesives
	  ○ Combustible materials
	• Spontaneous combustion
	• Handling
	• Storage

2. Describe fire safety	• Conditions to support fire
	• Combustion triangle
	• Classes of fires
	  ○ A - combustibles
	  ○ B - liquids
	  ○ C - electrical
	  ○ D - metals
	• Symbols and colours
	• Types of fire extinguishers

3. Describe ventilation systems	• Ventilation systems
	  ○ Dust collection
	  ○ Exhaust collection
	  ○ Air exchange
	• Ventilation system application
	  ○ Work site conditions

LEARNING TASKS	CONTENT
	○ Multiple people working ○ Outside/inside ○ Time of year
4. Describe PPE	• Personal apparel ○ Clothing ○ Hair and beards ○ Jewellery • Personal protection ○ Head ○ Hands ○ Lungs ○ Eyes ○ Face ○ Ears ○ Feet • Fall protection equipment

Line (GAC): A PERFORM SAFETY-RELATED ACTIVITIES

Competency: A2 Maintain safe work environment

Objectives

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

- Describe safety regulations
- Demonstrate safe work practices

LEARNING TASKS	CONTENT
1. Describe WorkSafeBC and Occupational Health and Safety (OHS) regulations	• Rights and responsibilities • Young and New Worker education • Right to refuse work • Reporting accidents • Investigations • Substance use • Hazardous materials

2. Describe Globally Harmonized System of Classification (GHS) (formerly Workplace Hazardous Materials Information System (WHMIS))	• WHMIS
	  ○ Right to know
	  ○ Worker education
	  ○ Product identification
	• Roles and responsibilities
	  ○ Employers
	  ○ Suppliers
	  ○ Workers
	• Labelling
	  ○ Symbols
	• Safety Data Sheets (SDS)
	  ○ Hazards
	  ○ Handling
	  ○ Ingredients
	  ○ Storage

3. Demonstrate safe work practices	• Housekeeping • Horseplay • Impairment • Respect for others' safety • Situational awareness • Fall protection and fall arrest • Lifting • Spills

Line (GAC): B USE TOOLS AND EQUIPMENT

Competency: B1 Use tools and equipment

Objectives

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

- Use tools and equipment
- Use oxy-fuel cutting equipment

LEARNING TASKS	CONTENT

1. Describe hand tools, hand-held power tools, shop equipment, oxy-fuel equipment	• Safety
	• Types
	• Handling
	• Maintenance
	  ○ Inspection
	  ○ Lubrication
	  ○ Adjustment
	  ○ Storage

2. Use hand tools, hand-held power tools, shop equipment, oxy-fuel equipment	• Safety
	• Types
	• Handling
	• Maintenance
	  ○ Inspection
	  ○ Lubrication
	  ○ Adjustment
	  ○ Storage

Achievement Criteria

Performance	The learner will use tools to fabricate a U-tube manometer.
Conditions	The learner will be given • Marking rubric • Tools • Materials • Specifications
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Line (GAC): B USE TOOLS AND EQUIPMENT

Competency: B2 Use lifting, moving, and access equipment

Objectives

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

- Describe lifting, moving, and access equipment

LEARNING TASKS	CONTENT

1. Describe lifting equipment	• Safety
	• Weight limits
	• Certifications
	• Types
	  ○ Jacks
	  ○ Hoists
	• Operation
	• Maintenance

2. Use lifting equipment	• Safety
	• Weight limits
	• Certifications
	• Types
	  ○ Jacks
	  ○ Hoists
	• Operation
	• Maintenance

3. Describe support systems	• Safety • Weight limits • Certifications • Types ○ Stands • Operation • Maintenance
4. Use support systems	• Safety • Weight limits • Certifications • Types ○ Stands • Operation

LEARNING TASKS	CONTENT

5. Describe moving equipment	• Maintenance
	• Safety
	• Weight limits
	• Certifications
	• Regulations
	• Types
	  ○ Powered movers
	  ▪ Forklifts
	  ○ Dollies
	• Operation
	• Maintenance

6. Use moving equipment	• Safety
	• Weight limits
	• Certifications
	• Regulations
	• Types
	  ○ Powered movers
	  ▪ Forklifts
	  ○ Dollies
	• Operation
	• Maintenance

7. Describe access equipment	• Safety
	• Weight limits
	• Certifications
	• Types
	  ○ Ladders
	  ○ Scaffolding
	• Selection
	• Use
	• Maintenance

8. Use access equipment	• Safety
	• Weight limits
	• Certifications
	• Types
	  ○ Ladders
	  ○ Scaffolding
	• Selection
	• Use
	• Maintenance

Line (GAC): C PERFORM COMMON WORK PRACTICES AND PROCEDURES

Competency: C1 Use documents

Objectives

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

- Describe shop business practices
- Describe shop management systems
- Interpret recalls and service bulletins

LEARNING TASKS	CONTENT

1. Describe shop business practices	• Time management
	  ○ Flat rate
	  ○ Hourly
	  ○ Productivity

2. Describe shop management systems	• Invoice • Parts order • Service information • Time management • Diagnostic
3. Interpret recalls and service bulletins	• Manufacturer • National Transportation Safety Board (NTSB) • Documentation

Line (GAC): C PERFORM COMMON WORK PRACTICES AND PROCEDURES

Competency: C2 Perform pre-delivery inspections (PDI)

Objectives

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

- Perform pre-delivery insepctions (PDI)

LEARNING TASKS	CONTENT

1. Describe PDI	• PDI sheets
	  ○ Propane systems
	  ○ Appliances
	  ○ Electrical systems
	  ○ Plumbing systems
	  ○ Chassis
	  ○ Body
	  ○ Generator
	  ○ All safety equipment

2. Perform PDI	• Complete PDI sheet
	• Deficiencies
	  ○ Record
	  ○ Report
	  ○ Pre-authorization for repair
	• Documentation

Line (GAC): D USE COMMUNICATION AND MENTORING TECHNIQUES

Competency: D1 Use communication techniques

Objectives

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

- Use communication techniques
- Describe internal and external communication techniques

LEARNING TASKS	CONTENT

1. Demonstrate two-way communication	• Verbal and written instructions
	• Record keeping
	  ○ Service/work orders
	  ○ Technical reports
	• Parts requisition

2. Use active listening	• Attention • Open-ended questions • Clarification
3. Use digital communication technologies	• Hand-held devices

4. Describe two-way communication	• Internal facing
	  ○ Management
	  ○ Service writer
	  ○ Foreman
	  ○ Journeyperson/mentor
	  ○ Co-workers
	• External facing
	  ○ Customers
	  ○ Vendors
	  ○ Insurance adjustors
	  ○ Inspectors

5. Describe respectful communication	• Conflict resolution
	  ○ External
	  ○ Internal
	• Harrassment
	  ○ Bullying
	  ○ Sexual

6. Describe customer courtesy and personal conduct	• Customer value

LEARNING TASKS	CONTENT
	• Business etiquette • Cleanliness • Appearance
7. Describe customer needs and expectations	• Cleanliness • Completion time • Competent work

Line (GAC): E SERVICE POTABLE WATER SYSTEMS

Competency: E1 Maintain potable water systems

Objectives

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

- Maintain potable water systems

LEARNING TASKS	CONTENT

1. Describe potable water systems	• Codes
	• Types
	  ○ Demand
	  ○ City
	  ○ Manual
	• Components
	  ○ Lines
	  ○ Low pressure vinyl hose
	  ○ Polyvinyl chloride (PVC)
	  ○ Polyethylene (Pex)
	  ○ Polybutylene (PB)
	  ○ High pressure vinyl hose
	  ○ Check valves
	  ○ Pumps
	  ○ Filters
	  ○ Tanks
	  ○ Accumulator tanks
	  ○ Fittings
	  ○ Fixtures
	• Tank filler systems
	• Tank drainage systems
	• Water level monitor systems

2. Describe the maintenance of potable water systems	• Tanks
	  ○ Clean
	  ○ Sanitize
	  ○ Winterize/summerize
	  ▪ Anti-freeze
	  ▪ Air
	• Lines
	  ○ Clean
	  ○ Sanitize
	  ○ Winterize/summerize
	  ▪ Anti-freeze

LEARNING TASKS	CONTENT
	▪ Air • Filters ○ Winterize/summerize ▪ Anti-freeze ▪ Air ○ Remove ○ Replace • Pumps ○ Winterize/summerize ▪ Anti-freeze ▪ Air ○ Operation
3. Maintain potable water systems	• Tanks ○ Clean ○ Sanitize ○ Winterize/summerize ▪ Anti-freeze ▪ Air • Lines ○ Clean ○ Sanitize ○ Winterize/summerize ▪ Anti-freeze ▪ Air • Filters ○ Winterize/summerize ▪ Anti-freeze ▪ Air ○ Remove ○ Replace • Pumps ○ Winterize/summerize ▪ Anti-freeze ▪ Air • Operation

Line (GAC): E SERVICE POTABLE WATER SYSTEMS

Competency: E2 Install potable water systems

Objectives

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

- Install potable water systems

LEARNING TASKS	CONTENT

1. Describe the installation of potable water systems	• Safety
	• Codes
	• Tools and equipment
	• Access installation area
	• Procedure
	  ○ Components
	  ○ Tank filler systems
	  ○ Tank drainage systems
	• Verification of operation
	  ○ Water leak test
	  ○ Flow performance test
	• Documentation

2. Install potable water systems	• Safety
	• Codes
	• Tools and equipment
	• Access installation area
	• Procedure
	  ○ Components
	  ○ Tank filler systems
	  ○ Tank drainage systems
	• Verification of operation
	  ○ Water leak test
	  ○ Flow performance test
	• Documentation

Line (GAC): E SERVICE POTABLE WATER SYSTEMS

Competency: E3 Diagnose potable water systems

Objectives

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

- Diagnose potable water systems

LEARNING TASKS	CONTENT
1. Describe diagnosing potable water systems	• Safety • Codes • Tools and equipment • Inspect for faults • Water leak test • Pump activation • Connection verification • Service determination • Documentation
2. Diagnose potable water systems	• Safety • Codes • Tools and equipment • Inspect for faults • Water leak test • Pump activation • Connection verification • Service determination • Documentation

Line (GAC): E SERVICE POTABLE WATER SYSTEMS

Competency: E4 Repair potable water systems

Objectives

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

- Repair potable water systems

LEARNING TASKS	CONTENT
1. Describe repairing potable water systems	• Safety • Codes • Tools and equipment • Repair area access • System components • Water leak test • Documentation
2. Repair potable water systems	• Safety • Codes • Tools and equipment • Repair area access • System components • Water leak test • Documentation

Line (GAC): F SERVICE WASTEWATER SYSTEMS

Competency: F1 Maintain wastewater systems

Objectives

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

- Maintain wastewater systems

LEARNING TASKS	CONTENT

1. Describe recreation vehicle (RV) wastewater systems	• Safety
	• Codes
	• Types
	  ○ Gray
	  ○ Black
	• Components
	  ○ Tanks
	  ○ Piping
	  ○ Termination valves
	  ○ Toilets
	  ○ Sink/shower drains
	  ○ Macerators
	• Tank flush valves

2. Describe maintaining wastewater systems	• Safety
	• Codes
	• Tanks
	  ○ Clean
	  ○ Treatment
	  ○ Flush
	  ○ Winterize/summerize
	• Piping
	  ○ Clean
	  ○ Flush
	  ○ Winterize/summerize
	• Components
	  ○ Clean
	  ○ Lubricate
	  ○ Winterize/summerize

3. Maintain wastewater systems	• Safety • Codes • Tanks

LEARNING TASKS	CONTENT
	○ Clean ○ Treatment ○ Flush ○ Winterize/summerize • Piping ○ Clean ○ Flush ○ Winterize/summerize • Components ○ Clean ○ Lubricate • Winterize/summerize

Line (GAC): F SERVICE WASTEWATER SYSTEMS

Competency: F2 Install wastewater systems

Objectives

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

- Install wastewater systems

LEARNING TASKS	CONTENT
1. Describe the installation of wastewater systems	• Safety • Codes • Location • Tools and equipment • Installation strategy • Installation access area • Area adjustment • Wastewater system components installation • Operation verifcation ○ Water leak test • Documentation
2. Install wastewater systems	• Safety • Codes • Location • Tools and equipment • Installation strategy • Installation access area • Area adjustment • Wastewater system components installation • Operation verifcation ○ Water leak test • Documentation

Line (GAC): F SERVICE WASTEWATER SYSTEMS

Competency: F3 Diagnose wastewater systems

Objectives

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

- Diagnose wastewater systems

LEARNING TASKS	CONTENT
1. Describe the diagnosis of wastewater systems	• Safety • Codes • Tools and equipment • Inspection for faults • Connection verification • Verification of operation • Determine cause of fault • Service determination • Documentation
2. Diagnose wastewater systems	• Safety • Codes • Tools and equipment • Inspection for faults • Connection verification • Verification of operation • Determine cause of fault • Service determination • Documentation

Line (GAC): F SERVICE WASTEWATER SYSTEMS

Competency: F4 Repair wastewater systems

Objectives

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

- Repair wastewater systems

LEARNING TASKS	CONTENT
1. Describe the repair of wastewater systems	• Safety • Codes • Tools and equipment • Access repair area • Defective component replacement • Water leak test • Documentation
2. Repair wastewater systems	• Safety • Codes • Tools and equipment • Access repair area • Defective component replacement • Water leak test • Documentation

Line (GAC): G SERVICE AC ELECTRICAL SYSTEMS

Competency: G1 Apply AC electrical theory

Objectives

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

- Apply Alternating current (AC) electrical theory

LEARNING TASKS	CONTENT

1. Describe basic electrical theory	• Safety
	• Codes
	• Electron theory
	• Sources of electrical energy
	• AC
	• Properties
	  ○ Conductors
	  ○ Insulators
	  ○ Semi-conductors
	• Current
	• Voltage
	• Resistance
	• Power
	• Relationship
	  ○ Current
	  ○ Voltage
	  ○ Resistance
	  ○ Electrical power
	• Electricity production
	  ○ Magnetic

2. Describe basic electrical circuits	• Safety
	• Codes
	• Types
	  ○ Closed
	  ○ Open
	  ○ Short
	  ○ Dead
	  ○ Live
	  ○ Load
	  ○ Source
	  ○ Series
	  ○ Parallel

LEARNING TASKS	CONTENT
	○ Series/parallel circuits
3. Describe wire sizing and circuit protection devices	• Safety • Codes • Types of wire and cable • Wire size identification ○ American Wire Gauge (AWG) ○ Ampacity • Voltage ratings • Types of circuit protection and sizing ○ Ampacity ○ Voltage ratings
4. Describe wire connections	• Safety • Codes • Types ○ Solderless ○ Self-sealing ○ Soldered ○ Bonding lugs • Characteristics of solder and fluxes • Insulating methods ○ Tape ○ Heat shrink

Line (GAC): G SERVICE AC ELECTRICAL SYSTEMS

Competency: G2 Maintain AC electrical systems

Objectives

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

- Maintain AC electrical systems

LEARNING TASKS	CONTENT

1. Describe AC electrical systems	• Safety
	• Codes
	• Energy sources
	  ○ Shore power
	  ○ Generators
	  ○ Frequency
	  ○ Inverters
	• 120VAC interior lights
	• 120VAC connection and receptacles
	• 120VAC circuits
	• 120VAC converter
	• Ground fault circuit interruptor (GFCI) system
	• Hotskin test
	• Polarity test

2. Verify operation of AC electrical systems	• Safety
	• Codes
	• Tools and equipment
	• Energy sources
	  ○ Shore power
	  ○ Generators
	  ○ Inverters
	• 120VAC interior lights
	• 120VAC connection and receptacles
	• 120VAC circuits
	• 120VAC converter
	• GFCI system
	• Hotskin test
	• Polarity test

3. Describe the maintenance of AC electrical systems	• Safety

LEARNING TASKS	CONTENT
	• Codes • Tools and equipment • Shore power cords inspection • Inverters • Problem isolation • Documentation
4. Maintain AC electrical systems	• Safety • Codes • Tools and equipment • Shore power cords inspection • Inverters • Problem isolation • Troubleshoot • Documentation

Line (GAC): H SERVICE DC ELECTRICAL SYSTEMS

Competency: H1 Apply DC electrical theory

Objectives

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

- Describe Direct current (DC) electrical theory

LEARNING TASKS	CONTENT

1. Describe basic electrical theory	• Safety
	• Codes
	• Electron theory
	• Sources of electrical energy
	• DC
	• Properties of conductors, insulators, and semi-conductors
	• Current, voltage, resistance, and power
	• Relationship between current, voltage, resistance, and electrical power
	• Electricity production
	  ○ Friction
	  ○ Pressure
	  ○ Heat
	  ○ Light
	  ○ Chemical

2. Describe basic electrical circuits	• Safety
	• Codes
	• Types
	  ○ Closed
	  ○ Open
	  ○ Short
	  ○ Dead
	  ○ Live
	  ○ Load
	  ○ Series
	  ○ Parallel
	  ○ Series/parallel

3. Describe wire sizing and circuit protection devices	• Safety • Codes • Types of wire and cable

LEARNING TASKS	CONTENT

	• Wire size identification
	  ○ AWG
	  ○ Ampacity
	• Voltage ratings
	• Types of circuit protection and sizing
	  ○ Ampacity
	• Voltage ratings

4. Describe wire connections	• Safety
	• Codes
	• Types
	  ○ Solderless
	  ○ Self-sealing
	  ○ Soldered
	  ○ Bonding lugs
	• Characteristics of solder and fluxes
	• Insulating methods
	  ○ Tape
	• Heat shrink

Line (GAC): H SERVICE DC ELECTRICAL SYSTEMS

Competency: H2 Maintain DC electrical systems

Objectives

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

- Describe DC electrical systems
- Service and install batteries
- Operate RV logic control systems

LEARNING TASKS	CONTENT

1. Describe DC electrical systems	• Safety
	• Codes
	• Energy sources
	  ○ Batteries
	  ○ Solar
	  ○ Converters
	• 12VDC interior lights
	• 12VDC plug and receptacles
	• 12VDC circuits
	• Polarity test
	• Tools

2. Describe batteries	• Types of batteries
	  ○ Dry
	  ○ Flooded
	  ○ Absorbed glass matt (AGM)
	  ○ Gel
	  ○ Lithium
	• Construction
	• Ratings
	• Disconnects
	• Connections
	  ○ Series
	  ○ Parrallel
	  ○ Grounds
	• Charge procedures
	  ○ Water levels
	• Test procedures

LEARNING TASKS	CONTENT
3. Describe installing battery systems	• Mounting • Venting • Connecting • Disconnecting • Verification of operation

4. Describe maintaining battery systems	• Procedures
	  ○ Water level
	  ○ Load test
	  ○ Connections
	• Tools
	  ○ Hydrometer
	  ○ Voltmeter
	  ○ Ammeter
	  ○ Refractometer
	  ○ Load tester

5. Describe troubleshooting battery systems	• Tests
	  ○ Voltage
	  ○ Amperage
	  ○ Polarity
	  ○ Connections

6. Service battery systems	• Procedures
	  ○ Water level
	  ○ Load test
	  ○ Connections
	• Tools
	  ○ Hydrometer
	  ○ Voltmeter
	  ○ Ammeter
	  ○ Refractometer
	  ○ Load tester
	• Tests
	  ○ Voltage
	  ○ Amperage
	  ○ Polarity
	  ○ Connections

7. Install battery systems	• Mounting • Venting

LEARNING TASKS	CONTENT
	• Connecting • Disconnecting • Verification of operation

8. Describe the verification of operation of DC electrical systems	• Tools and equipment
	• Energy sources
	  ○ Batteries
	  ○ Solar
	  ○ Converter
	• 12VDC interior lights
	• 12VDC plug and receptacles
	• 12VDC circuits
	• Polarity

9. Describe the operation of RV logic control systems	• Network fundamentals
	• Modules
	  ○ Load Modules/Load Centers
	  ○ Logic Modules
	  ○ Input Modules
	  ○ Tank Monitors
	  ○ Bluetooth Modules
	• Interfaces
	  ○ Switch Panels/Tactile Panels
	  ○ Liquid Crystal Display (LCD) Touch Screens
	  ○ Rocker Switches
	  ○ Wireless Switches
	• Wiring and Connections
	  ○ Single wire
	  ○ Twisted pair
	  ○ Fiber optic
	  ○ RV-C Network Cable
	  ○ CAT 5
	• Network
	  ○ RS232
	  ○ J1939
	• Operation
	• Faults

10. Describe the operation of multiplexing systems	• Multiplexing fundamentals
	  ○ Switch inputs
	  ○ Control Modules

LEARNING TASKS	CONTENT
	○ Body Control Module (BCM) ○ Outputs • Faults
11. Operate RV logic control systems and multiplexing systems	• Network fundamentals • Modules ○ Load Modules/Load Centers ○ Logic Modules ○ Input Modules ○ Tank Monitors ○ Bluetooth Modules • Interfaces ○ Switch Panels/Tactile Panels ○ Liquid Crystal Display (LCD) Touch Screens ○ Rocker Switches ○ Wireless Switches • Wiring and Connections ○ Single wire ○ Twisted pair ○ Fiber optic ○ RV-C Network Cable ○ CAT 5 • Network ○ RS232 ○ J1939 • Operation • Multiplexing fundamentals ○ Switch inputs ○ Control Modules ○ Body Control Module (BCM) ○ Outputs • Faults

Line (GAC): H SERVICE DC ELECTRICAL SYSTEMS

Competency: H4 Diagnose DC electrical systems

Objectives

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

- Diagnose DC electrical systems

LEARNING TASKS	CONTENT

1. Describe diagnosing DC electrical systems	• Safety
	• Codes
	• Tools and equipment
	• Energy sources
	  ○ Batteries
	  ○ Solar
	  ○ Converter
	• 12VDC interior lights
	• 12VDC plug and receptacles
	• 12VDC circuits
	• Polarity
	• Documentation

2. Diagnose DC electrical systems	• Safety
	• Codes
	• Tools and equipment
	• Energy sources
	  ○ Batteries
	  ○ Solar
	  ○ Converter
	• 12VDC interior lights
	• 12VDC plug and receptacles
	• 12VDC circuits
	• Polarity
	• Documentation

Line (GAC): J SERVICE PHOTOVOLTAIC SYSTEMS

Competency: J1 Maintain photovoltaic systems

Objectives

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

- Maintain photovoltaic systems

LEARNING TASKS	CONTENT

1. Describe photovoltaic systems	• Panels
	  ○ Cells
	  ○ Modules
	  ○ Arrays
	• Solar electric principles
	• Charge controllers
	  ○ Simple one or two stage
	  ○ Maximum power point tracking (MPPT)
	  ○ Pulse width modulation (PWM)
	• Wiring and connections
	• Diodes

2. Describe maintaining photovoltaic systems	• Safety • Tools and equipment • Manufacturers' specifications • Inspection • Cleaning • Verification of operation • Documentation
3. Maintain photovoltaic systems	• Safety • Tools and equipment • Manufacturers' specifications • Inspection • Cleaning • Verification of operation • Documentation

Line (GAC): K SERVICE LPG SYSTEM

Competency: K1 Maintain LPG systems

Objectives

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

- Describe safety procedures for LPG
- Inspect and fill LPG cylinder and tank
- Fabricate with copper tubing

LEARNING TASKS	CONTENT

1. Describe the properties of Liquefied Petroleum Gas (LPG)	• Safety
	• Codes
	• Types
	  ○ Butane
	  ○ Propane
	• Chemical formulas
	• Temperatures
	• Pressure
	• Contaminants
	• Specific gravity
	• Availability
	• Energy value
	• Limits of flammability
	• Products of combustion
	• LPGs as they appear to the five human senses

2. Describe safety procedures	• Codes
	• Certifications
	  ○ Transportation of dangerous goods
	  ○ LPG re-fuelling
	• PPE
	• Site regulations
	  ○ Ventilation
	  ○ Distance from ignition
	  ○ Storage

3. Describe LPG cylinder and tank inspection and filling	• Safety • Codes • Regulations • Transport Canada (TC)

LEARNING TASKS	CONTENT

	• Department of Transport (DOT)
	• Cylinders
	  ○ Types and components
	  ○ Inspection
	  ○ Purging
	  ○ Filling
	• American Society of Mechanical Engineers (ASME)
	• Tanks
	  ○ Types and components
	  ○ Inspection
	  ○ Purging
	  ○ Filling

4. Inspect and fill LPG cylinder and tank	• Safety
	• Codes
	• Regulations
	• Transport Canada (TC)
	• Department of Transport (DOT)
	• Cylinders
	  ○ Types and components
	  ○ Inspection
	  ○ Purging
	  ○ Filling
	• American Society of Mechanical Engineers (ASME)
	• Tanks
	  ○ Types and components
	  ○ Inspection
	  ○ Purging
	  ○ Filling

5. Fabricate with copper tube	• Cut • Ream • Flare • Bend

Achievement Criteria

Performance	The learner will use hand tools to fabricate a 70% valve.
Conditions	The learner will be given • Marking rubric • Tools • Materials • Specifications
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Line (GAC): L SERVICE WATER HEATERS

Competency: L1 Maintain water heaters

Objectives

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

- Verify operation of water heaters

LEARNING TASKS	CONTENT

1. Describe water heaters	• Types
	  ○ Gas
	  ○ Electric
	  ○ Motor aid
	  ○ Hydronic
	  ○ On demand
	• Supply systems
	  ○ AC
	  ○ DC
	  ○ LPG
	  ○ Water
	  ○ Motor aid

2. Maintain water heaters	• Winterize/summerize
	• Sanitize
	• Flush
	• Clean
	  ○ Burner
	  ○ Intake
	  ○ Exhaust

3. Verify operation of water heaters	• Safety • Codes • Manufacturers' specifications

Line (GAC): M SERVICE FURNACES

Competency: M1 Maintain furnaces

Objectives

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

- Verify operation of furnaces

LEARNING TASKS	CONTENT

1. Describe furnaces	• Types
	  ○ Forced combustion
	  ○ Hydronic
	  ○ Catalytic
	• Operations
	  ○ Diesel
	  ○ Propane
	  ○ 12VDC
	  ○ 120VAC

2. Maintain furnaces	• Safety • Codes • Manufacturers' specfications • Cleaning
3. Verifiy operation of furnaces	• Safety • Codes • Manufacturers' specifications

Line (GAC): N SERVICE COOKTOPS AND RANGES

Competency: N1 Maintain cooktops and ranges

Objectives

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

- Maintain cooktops and ranges
- Verify operation of cooktops and ranges

LEARNING TASKS	CONTENT

1. Describe cooktops and ranges	• Types
	  ○ Propane
	  ○ Electric
	• Operations
	  ○ Propane
	  ○ 12VDC
	  ○ 120VAC

2. Maintain cooktops and ranges	• Safety • Codes • Manufacturers' specifications • Cleaning
3. Verify operation of cooktops and ranges	• Safety • Codes • Manufacturers' specifications

Line (GAC): O SERVICE REFRIGERATORS AND ICE MAKERS

Competency: O1 Maintain refrigerators and ice makers

Objectives

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

- Maintain refrigerators and ice makers
- Verify operation of refrigerators and ice makers

LEARNING TASKS	CONTENT

1. Describe refrigerators and ice makers	• Refrigerator types
	  ○ Absorption
	  ○ Compressor
	• Ice maker types
	  ○ Factory installed (in-freezer)
	  ○ Stand alone
	• Operations
	  ○ Propane
	  ○ 12VDC
	  ○ 120VAC

2. Maintain refrigerators and ice makers	• Safety • Codes • Manufacturers' specifications • Winterize/summerize • Cleaning

3. Verify operation of refrigerators and ice makers	• Codes
	• Safety
	• Tools and equipment
	• Operation
	  ○ Power supply
	  ○ Water supply
	  ○ Ventilation

Line (GAC): P SERVICE AIR CONDITIONERS AND HEAT PUMPS

Competency: P1 Maintain air conditioners and heat pumps

Objectives

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

- Maintain operation of air conditioners and heat pumps
- Verify operation of air conditioners and heat pumps

LEARNING TASKS	CONTENT

1. Describe air conditioners and heat pumps	• Types
	  ○ Roof mount air conditioning (A/C) and heat pumps
	  ○ Basement A/C and heat pumps
	  ○ Wall mount A/C
	• Operations
	  ○ 120VAC
	  ○ Cleaning

2. Maintain air conditioners and heat pumps	• Safety • Codes • Manufacturers' specifications • Cleaning
3. Verify operation of air conditioners and heat pumps	• Codes • Safety • Manufacturers' specifications

Line (GAC): Q SERVICE CONSUMER PRODUCTS

Competency: Q1 Install consumer products

Objectives

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

- Install consumer products

LEARNING TASKS	CONTENT

1. Describe the installation of consumer products	• Codes
	• Safety
	• Manufacturers' installaion instructions
	• Vacuum systems
	• Fireplaces
	• Detectors
	  ○ Smoke
	  ○ LPG
	  ○ Carbon monoxide (CO)
	• Media equipment
	  ○ Radio antenna
	  ○ TV antennas
	  ○ Sattelite
	  ○ GPS
	  ○ Wi-Fi booster
	  ○ Observation systems
	  ○ Sound systems
	• Microwaves/convection ovens
	• Dishwashers
	• Washer/dryer
	• Portable freezers
	• Portable coolers
	• Portable refrigerators

2. Install consumer products	• Safety
	• Code
	• Detectors
	  ○ Smoke
	  ○ LPG
	  ○ Carbon monoxide (CO)

Line (GAC): Q SERVICE CONSUMER PRODUCTS

Competency: Q2 Replace consumer products

Objectives

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

- Replace consumer products

LEARNING TASKS	CONTENT

1. Describe the replacement of consumer products	• Codes
	• Safety
	• Manufacturers' specifications
	• Vacuum systems
	• Fireplaces
	• Detectors
	  ○ Smoke
	  ○ LPG
	  ○ CO
	• Media equipment
	  ○ Radio antenna
	  ○ TV antennas
	  ○ Sattelite
	  ○ GPS
	  ○ Observation systems
	  ○ Sound systems
	• Microwaves/convection ovens
	• Dishwashers
	• Washer/dryer
	• Portable freezers
	• Portable coolers
	• Portable refrigerators

2. Replace consumer products	• Safety
	• Codes
	• Detectors
	  ○ Smoke
	  ○ LPG
	  ○ CO

Line (GAC): T SERVICE FRAMES AND RUNNING GEAR

Competency: T1 Maintain frames and running gear

Objectives

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

- Describe chassis and mechanical components
- Maintain chassis and mechanical components

LEARNING TASKS	CONTENT

1. Describe towable frames	• Travel trailer
	  ○ Levelling systems
	  ○ Tongue jacks
	  ○ Couplers
	• Fifth wheel
	  ○ Levelling systems
	  ○ Stabilizing jacks
	  ○ Landing gear
	  ○ King pin
	• Goose neck

2. Describe towable axles	• Codes
	• Manufacturers' specifications
	• Towable axle systems
	  ○ Spring and shackle
	  ○ Under slung
	  ○ Over slung
	  ○ Single axle
	  ○ Multi axle
	  ○ Shocks
	  ○ Torsion tube
	• Spindles
	• Weight ratings
	• Order forms
	• Measurements
	• Remove & Replace
	• Torque specifications
	• Scheduled maintenance intervals

3. Describe wheels	• Codes • Types ○ Steel

LEARNING TASKS	CONTENT
	○ Aluminum ○ Magnesium • Bolt pattern • Rating • Sizing • Torque specifications • Weight ratings • Scheduled maintenance intervals
4. Describe tires	• Codes • Types • Construction • Load rating • Sizing • Inflation • Scheduled maintenance intervals
5. Describe electric braking systems	• Sequence of operation • Remove & Replace • Scheduled maintenance intervals • Backing plates • Shoes ○ Friction • Magnets ○ Testing • Adjuster • Drums ○ Measuring • Breakaway systems • Battery
6. Describe hydraulic surge braking systems	• Hydraulic theory (Pascal's law) • Types of friction • Sequence of operation • Remove & Replace • Bleeding fluid • Adjustment • Scheduled maintenance interval • Surge coupler ○ Reverse lock out

LEARNING TASKS	CONTENT
	○ Weight ratings • Master cylinder • Backing plates • Wheel cylinders • Shoes • Drums ○ Measuring • Breakaway systems • Brake lines • Adjuster
7. Describe electric over hydraulic braking systems	• Hydraulic theory (Pascal's law) • Types of friction • Sequence of operation • Remove & Replace • Scheduled maintenance interval • Operation ○ Controllers ○ Actuators (servos) • Pads • Discs ○ Measuring • Calipers • Breakaway systems • Brake lines
8. Describe hubs and drums	• Wheel bearings and races • Grease seals • Bearing buddy system • Tools for bearing, race, and seal service • Scheduled maintenance intervals • Repack ○ Assembly procedures • Replace ○ Assembly procedures ○ Bearings ○ Race
9. Maintain chassis and mechanical components	• Safety • Codes

LEARNING TASKS

CONTENT

- Tools and equipment
- Manufacturers' specifications
- Documentation

Achievement Criteria

Performance	The learner will maintain chassis and mechanical components.
Conditions	The learner will be given • Tools and equipment • Supplies • Documentation
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Line (GAC): T SERVICE FRAMES AND RUNNING GEAR

Competency: T2 Diagnose frames and running gear

Objectives

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

- Diagnose towable chassis and mechanical components

LEARNING TASKS	CONTENT
1. Diagnose frames	• Inspection • Troubleshooting

2. Diagnose axles	• Alignment
	  ○ Camber
	  ○ Caster
	  ○ Toe in/out
	• Troubleshooting
	  ○ Axle and wheel alignment procedures
	• Undercarriage inspection
	  ○ Springs
	  ○ Shackles
	  ○ Hangers
	  ○ Spring bolts
	  ○ U-bolts
	  ○ Bushings
	  ○ Equalizers
	  ○ Shocks

3. Diagnose wheels	• Inspection
4. Diagnose tires	• Inspection • Wear patterns
5. Diagnose braking systems	• Inspection • Operation • Troubleshooting

6. Diagnose hubs and drums	• Inspection
	  ○ Hubs and drums
	  ○ Wheel bearings and races
	  ○ Seals
	• Troubleshooting
	• Criteria for replacement

Line (GAC): T SERVICE FRAMES AND RUNNING GEAR

Competency: T3 Repair frames and running gear

Objectives

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

- Repair towable chassis and mechanical components

LEARNING TASKS	CONTENT

1. Repair axles	• Alignment
	  ○ Camber
	  ○ Caster
	  ○ Toe in/out
	• Undercarriage components
	  ○ Springs
	  ○ Shackles
	  ○ Hangers
	  ○ Spring bolts
	  ○ U-bolts
	  ○ Bushings
	  ○ Equalizers
	  ○ Shocks

2. Repair braking systems	• Components
	  ○ Controllers
	  ○ Brake assemblies
	  ○ Wiring
	  ○ Brake-away switch

3. Repair hubs and drums	• Components
	  ○ Hubs and drums
	  ○ Wheel bearings and races
	  ○ Seals

Line (GAC): U SERVICE LEVELLING SYSTEMS

Competency: U1 Maintain levelling systems

Objectives

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

- Maintain levelling systems

LEARNING TASKS	CONTENT

1. Describe levelling systems	• Types
	  ○ Mechanical
	  ○ Electric
	  ○ Hydraulic
	• Mechanical components
	  ○ Stabilizers
	  ○ Blocking
	• Electric components
	  ○ Motors
	  ○ Gears
	  ○ Controls
	• Hydraulic components
	  ○ Cylinders
	  ○ Springs
	  ○ Controls

2. Describe maintaining levelling systems	• Codes • Safety • Tools and equipment • Manufacturers' specifications • Inspection • Clean • Lubrication • Adjustments • Springs • Verification of operation • Documentation
3. Maintain levelling systems	• Codes • Safety • Tools and equipment • Manufacturers' specifications

LEARNING TASKS	CONTENT
	• Inspection • Clean • Lubrication • Adjustments • Springs • Verification of operation • Documentation

Line (GAC): U SERVICE LEVELLING SYSTEMS

Competency: U3 Diagnose levelling systems

Objectives

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

- Operate levelling systems
- Describe the diagnosis of levelling systems

LEARNING TASKS	CONTENT

1. Describe the operation of levelling systems	• Types
	  ○ Mechanical
	  ○ Electric
	  ○ Hydraulic
	• Mechanical components
	  ○ Stabilizers
	  ○ Blocking
	• Electric components
	  ○ Motors
	  ○ Gears
	  ○ Controls
	• Hydraulic components
	  ○ Cylinders
	  ○ Springs
	  ○ Controls

2. Operate levelling systems	• Types
	  ○ Mechanical
	  ○ Electric
	  ○ Hydraulic
	• Mechanical components
	  ○ Stabilizers
	  ○ Blocking
	• Electric components
	  ○ Motors
	  ○ Gears
	  ○ Controls
	• Hydraulic components
	  ○ Cylinders
	  ○ Springs
	  ○ Controls

3. Describe the diagnosis of levelling systems	• Safety

LEARNING TASKS	CONTENT
	• Codes • Tools and equipment • Manufacturers' specifications • Documentation

Line (GAC): V SERVICE SLIDE-OUT SYSTEMS

Competency: V1 Maintain slide-out systems

Objectives

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

- Operate slide-out systems
- Describe maintaining slide-out systems

LEARNING TASKS	CONTENT

1. Describe slide-out systems	• Types
	  ○ Flush floor
	  ○ Raised floor
	  ○ In-Wall
	• Power source
	  ○ Electric
	  ○ Hydraulic
	  ○ Manual
	• Hydraulic components
	  ○ Cylinders
	  ○ Cables
	  ○ Chains
	  ○ Gears
	  ○ Controls
	• Electric components
	  ○ Motors
	  ○ Cables
	  ○ Chains
	  ○ Gears
	  ○ Controls
	  ○ In-Wall systems
	• Room
	  ○ Rollers
	  ○ Guides
	  ○ Seals
	  ○ Weight ratings
	  ○ Travel locks

2. Describe operation of slide-out systems	• Types
	  ○ Flush floor
	  ○ Raised floor
	  ○ In-Wall
	• Power source

LEARNING TASKS	CONTENT
	○ Electric ○ Hydraulic ○ Manual • Hydraulic components ○ Cylinders ○ Cables ○ Chains ○ Gears ○ Controls • Electric components ○ Motors ○ Cables ○ Chains ○ Gears ○ Controls ○ In-Wall systems • Room ○ Rollers ○ Guides ○ Seals ○ Weight ratings ○ Travel locks
3. Operate slide-out systems	• Types ○ Flush floor ○ Raised floor ○ In-Wall • Power source ○ Electric ○ Hydraulic ○ Manual • Hydraulic components ○ Cylinders ○ Cables ○ Chains ○ Gears ○ Controls • Electric components ○ Motors ○ Cables ○ Chains ○ Gears ○ Controls

LEARNING TASKS	CONTENT
	○ In-Wall systems • Room ○ Rollers ○ Guides ○ Seals ○ Weight ratings ○ Travel locks
4. Describe maintaining slide-out systems	• Code • Safety • Manufacturers' specifications • Tools and equipment • Inspection • Cleaning • Lubrication and conditioning of seals • Adjustments • Verification of operation • Documentation

Line (GAC): V SERVICE SLIDE-OUT SYSTEMS

Competency: V2 Diagnose slide-out systems

Objectives

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

- Describe diagnosis of slide-out systems

LEARNING TASKS	CONTENT
1. Describe diagnosis of slide-out systems	• Safety • Codes • Tools and equipment • Manufacturers' specifications • Documentation

Line (GAC): W SERVICE LIFTING SYSTEMS

Competency: W1 Maintain lifting systems

Objectives

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

- Describe maintaining lift systems
- Describe folding camping trailers

LEARNING TASKS	CONTENT

1. Describe lifting systems	• Type
	  ○ Manual
	  ○ Electric
	  ○ Hydraulic
	• Components
	  ○ Cables
	  ○ Springs
	  ○ Rams
	  ○ Gears
	  ○ Pulleys
	  ○ Tubes
	  ○ Rollers
	  ○ Hydraulic fluids

2. Describe folding camping trailers	• Types
	  ○ Hard wall
	  ○ Soft wall
	• Components
	  ○ Lift systems
	  ○ Roof systems
	  ○ Wall systems
	  ○ Slide-outs
	• Accessories

3. Describe the operation of lifting systems	• Codes
	• Safety
	• Type
	  ○ Manual
	  ○ Electric
	  ○ Hydraulic
	• Components
	  ○ Cables

LEARNING TASKS	CONTENT
	○ Springs ○ Rams ○ Hydraulic fluids ○ Gears ○ Pulleys ○ Tubes ○ Rollers • Verification of operation • Documentation
4. Describe the operation of folding camping trailers	• Codes • Safety • Types ○ Hard wall ○ Soft wall • Components ○ Lift systems ○ Roof systems ○ Wall systems ○ Slide-outs ○ Accessories • Verification of operation • Documentation
5. Operate lifting systems and folding camping trailers	• Lifting Systems • Type ○ Manual ○ Electric ○ Hydraulic • Components ○ Cables ○ Springs ○ Rams ○ Gears ○ Pulleys ○ Tubes ○ Rollers ○ Hydraulic fluids • Folding camping trailers • Types ○ Hard wall ○ Soft wall

LEARNING TASKS	CONTENT

	• Components
	  ○ Lift systems
	  ○ Roof systems
	  ○ Wall systems
	  ○ Slide-outs
	• Accessories

6. Describe maintenance of lift systems	• Codes • Safety • Manufacturers' specifications • Tools and equipment • Access • Inspection • Clean • Adjustments • Lubrication • Verification of operation • Documentation

Line (GAC): W SERVICE LIFTING SYSTEMS

Competency: W2 Diagnose lifting systems

Objectives

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

- Describe the diagnosis of lifting systems
- Describe the diagnosis of folding camping trailers

LEARNING TASKS	CONTENT
1. Describe the diagnosis of lifting systems	• Safety • Codes • Tools and equipment • Manufacturers' specifications • Documentation
2. Describe the diagnosis of folding camping trailers	• Safety • Codes • Tools and equipment • Manufacturers' specifications • Documentation

Line (GAC): X SERVICE TOW VEHICLE SYSTEMS

Competency: X1 Maintain tow vehicle systems

Objectives

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

- Describe tow vehicle systems
- Describe maintaining tow vehicle systems
- Describe maintaining camper tie down systems
- Describe maintaining truck camper jacks

LEARNING TASKS	CONTENT
1. Describe tow vehicles components	• Codes • Gross Vehicle Weight Rating (GVWR) • Transmission coolers • Hitching • Braking • Lighting
2. Describe receivers	• Classes • Installation

3. Describe hitches	• Classes
	• Types
	  ○ Weight carrying
	  ○ Weight distributing
	  ○ Fifth wheels
	  ○ Gooseneck
	• Hitch balls
	• Hitch pins
	• Lubricants
	• Installation

4. Describe sway control	• Types
	  ○ Active
	  ○ Passive
	  ○ Electronic
	• Installation

5. Describe wiring systems	• Types of wiring systems ○ Towables

LEARNING TASKS	CONTENT
	○ Slide in pick-up campers • Types of wiring plugs ○ 4-pin ○ 6-pin ○ 7-pin • Schematics • Types of adapters • Color codes • Installation
6. Describe maintenance of towing systems	• Safety • Tools and equipment • Cleaning • Inspection • Adjustment • Lubrication • Documentation
7. Describe maintaining camper tie down systems	• Safety • Types ○ Frame mount ○ Bed mount • Regulations ○ Federal ○ Provincial ○ GVWR • Manufacturers' specifications ○ Insepction ○ Cleaning ○ Adjusting ○ Lubricating • Tools and equipment • Components ○ Frame mount ○ Bed mount ○ Turnbuckles ○ Chains ○ Straps • Verification of operation • Documentation

LEARNING TASKS

8. Describe maintaining truck camper jacks

CONTENT

- Safety
- Types
  - Hydraulic
  - Mechanical
  - Electric
  - Cable (yard) jacks
- Regulations
  - Federal
  - Provincial
  - GVWR
- Tools and equipment
- Manufacturers' instructions
  - Mounting points
  - Brackets
- Components
  - Fluid level
  - Seals
  - Valves
  - Pumps
  - Motor
  - Switches
- Verification of operation
- Documentation

Line (GAC): X SERVICE TOW VEHICLE SYSTEMS

Competency: X2 Install tow vehicle systems

Objectives

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

- Install tow vehicle wiring
- Install camper tie down systems

LEARNING TASKS	CONTENT

1. Describe installing receivers	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Frame drilling
	  ○ Torque specifications
	  ○ Adjustments
	  ○ Lubrication
	• Verifcation of operation
	• Documentation

2. Install receivers	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Frame drilling
	  ○ Torque specifications
	  ○ Adjustments
	  ○ Lubrication
	• Verifcation of operation
	• Documentation

3. Describe installing fifth wheel hitches and goosenecks	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial

LEARNING TASKS	CONTENT
	○ GVWR • Tools and equipment • Manufacturers' instructions ○ Frame drilling ○ Torque specifications ○ Adjustments ○ Lubrication • Verification of operation • Documentation
4. Install fifth wheel hitches and goosenecks	• Safety • Regulations ○ Federal ○ Provincial ○ GVWR • Tools and equipment • Manufacturers' instructions ○ Frame drilling ○ Torque specifications ○ Adjustments ○ Lubrication • Verification of operation • Documentation
5. Describe installing towable hitches	• Safety • Regulations ○ Federal ○ Provincial ○ GVWR • Selection of hitch ○ Weight carrying ○ Weight distributing • Tools and equipment • Manufacturers' instructions ○ Frame drilling ○ Torque specifications ○ Adjustments ○ Lubrication ○ Hitch pins ○ Hitch balls • Verification of operation • Documentation

LEARNING TASKS	CONTENT

6. Install towable hitches	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Selection of hitch
	  ○ Weight carrying
	  ○ Weight distributing
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Frame drilling
	  ○ Torque specifications
	  ○ Adjustments
	  ○ Lubrication
	  ○ Hitch pins
	  ○ Hitch balls
	• Verification of operation
	• Documentation

7. Describe installing sway control	• Safety
	• Selection of sway control
	  ○ Active
	  ○ Passive
	  ○ Electronic
	• Tools and equipment
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Manufacturers' instructions
	  ○ Frame drilling
	  ○ Torque specifications
	  ○ Adjustment
	• Verification of operation
	• Documentation

8. Install sway control	• Safety
	• Selection of sway control
	  ○ Active
	  ○ Passive

LEARNING TASKS	CONTENT
	○ Electronic • Tools and equipment • Regulations ○ Federal ○ Provincial ○ GVWR • Manufacturers' instructions ○ Frame drilling ○ Torque specifications ○ Adjustment • Verification of operation • Documentation
9. Describe installing wiring systems	• Safety • Selection of wiring systems ○ Factory installed ○ Plug and play ○ Technician installed • Tools and equipment • Regulations ○ Federal ○ Provincial • Manufacturers' instructions • Verification of operation • Documentation
10. Install wiring systems	• Safety • Selection of wiring systems ○ Factory installed ○ Plug and play ○ Technician installed • Tools and equipment • Regulations ○ Federal ○ Provincial • Manufacturers' instructions • Verification of operation • Documentation
11. Describe installing brake control systems	• Safety • Selection of brake controls

LEARNING TASKS	CONTENT
	○ Inertia brake controllers ○ Wireless brake controllers ○ Timed brake actuators • Tools and equipment • Regulations ○ Federal ○ Provincial • Manufacturers' instructions • Verification of operations • Documentation
12. Install brake control systems	• Safety • Selection of brake controls ○ Inertia brake controllers ○ Wireless brake controllers ○ Timed brake actuators • Tools and equipment • Regulations ○ Federal ○ Provincial • Manufacturers' instructions • Verification of operations • Documentation

Achievement Criteria

Performance — The learner will build a towable light tester, including
- 7-pin
- 4-pin

Conditions — The learner will be given
- 4-pin plugs
- 7-pin plugs
- Wires
- Schematics

Criteria — The learner will be evaluated on
- Safety
- Time management
- Detail

Line (GAC): X SERVICE TOW VEHICLE SYSTEMS

Competency: X3 Diagnose tow vehicle systems

Objectives

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

- Diagnose tow vehicle systems
- Diagnose camper tie down systems
- Diagnose truck camper jacks

LEARNING TASKS	CONTENT

1. Inspect tow vehicle systems	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	• Mounting
	  ○ Manufacturers' specifications
	• Condition
	  ○ Wear
	  ○ Corrosion
	• Documentation

2. Diagnose fifth wheel hitches and goose necks	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	• Mounting
	  ○ Manufacturers' specifications
	• Condition
	  ○ Wear
	  ○ Corrosion
	• Operation
	• Adjustments
	• Documentation

3. Diagnose towable hitches	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	• Mounting
	  ○ Manufacturers' specifications

LEARNING TASKS	CONTENT

	• Condition
	  ○ Wear
	  ○ Corrosion
	• Operation
	• Adjustments
	• Documentation

4. Diagnose sway control	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	• Mounting
	  ○ Manufacturers' specifications
	• Condition
	  ○ Wear
	  ○ Corrosion
	• Operation
	• Adjustments
	• Documentation

5. Diagnose wiring systems	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	• Mounting
	  ○ Manufacturers' specifications
	• Condition
	  ○ Wear
	  ○ Corrosion
	• Operation
	• Documentation

6. Diagnose brake control systems	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	• Mounting
	  ○ Manufacturers' specifications
	• Operation
	• Documentation

LEARNING TASKS	CONTENT

7. Diagnose camper tie down systems	• Safety
	• Types
	  ○ Frame mount
	  ○ Bed mount
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Manufacturers' instructions
	  ○ Inspection
	• Tools and equipment
	• Components
	  ○ Frame mount
	  ○ Turnbuckles
	  ○ Chains
	  ○ Straps
	• Verification of operation
	• Documentation

8. Diagnose truck camper jacks	• Safety
	• Types
	  ○ Hydraulic
	  ○ Mechanical
	  ○ Electric
	  ○ Cable (yard) jacks
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Mounting points
	  ○ Brackets
	• Components
	  ○ Fluid level
	  ○ Seals
	  ○ Valves
	  ○ Pumps
	  ○ Motor
	  ○ Switches
	• Verification of operation
	• Documentation

Line (GAC): X SERVICE TOW VEHICLE SYSTEMS

Competency: X4 Repair tow vehicle systems

Objectives

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

- Repair tow vehicle systems

LEARNING TASKS	CONTENT

1. Describe repairing tow vehicle systems	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	• Remove and replace
	• Verification of operation
	• Documentation

2. Describe repairing hitches	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	• Remove and replace
	• Adjustments
	• Lubrication
	• Verification of operation
	• Documentation

3. Describe repairing sway control	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	• Remove and replace
	• Cleaning
	• Adjustment
	• Verification of operation
	• Documentation

4. Describe repairing wiring systems	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial

LEARNING TASKS	CONTENT
	• Remove and replace • Cleaning • Adjustment • Verification of operation • Documentation

5. Describe repairing camper tie down systems	• Safety
	• Types
	  ○ Frame mount
	  ○ Bed mount
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Manufacturers' specifications
	  ○ Adjusting
	• Tools and equipment
	• Components
	  ○ Frame mount
	  ○ Turnbuckles
	  ○ Chains
	  ○ Straps
	• Verification of operation
	• Documentation

6. Describe repairing truck camper jacks	• Safety
	• Types
	  ○ Hydraulic
	  ○ Mechanical
	  ○ Electric
	  ○ Cable (yard) jacks
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Tools and equipment
	• Manufacturers' specifications
	  ○ Mounting points
	  ○ Brackets
	• Components
	  ○ Fluid level

LEARNING TASKS	CONTENT
	○ Seals ○ Valves ○ Pumps ○ Motor ○ Switches • Verification of operation • Documentation
7. Repair tow vehicle systems	• Types ○ Hitches ○ Sway control ○ Wiring systems ○ Camper tie down systems ○ Truck camper jacks • Verification of operation • Documentation

Line (GAC): Y SERVICE TOWED VEHICLE SYSTEMS

Competency: Y1 Maintain towed vehicle systems

Objectives

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

- Maintain towed vehicle systems

LEARNING TASKS	CONTENT

1. Describe towed vehicle systems	• Safety
	• Types
	  ○ Tow bars
	  ○ Tow dollies
	  ○ Trailers
	  ○ Flat towing
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR

2. Describe towed vehicle wiring	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Components
	  ○ Braking
	  ○ Lighting

3. Describe maintaining towed vehicle systems	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Tools and equipment
	• Manufacturers' specifications
	  ○ Clean
	  ○ Inspection
	  ○ Lubrication
	  ○ Adjustment
	• Verification of operation
	• Documentation

4. Maintain towed vehicle systems	• Safety

LEARNING TASKS	CONTENT

	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Tools and equipment
	• Manufacturers' specifications
	  ○ Clean
	  ○ Inspection
	  ○ Lubrication
	  ○ Adjustment
	• Verification of operation
	• Documentation

Level 2

Recreation Vehicle Service Technician

Line (GAC): C PERFORM COMMON WORK PRACTICES AND PROCEDURES

Competency: C1 Use documents

Objectives

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

- Use manufacturers' appliance service manuals

LEARNING TASKS	CONTENT
1. Describe manufacturers' appliance service manuals	• Sequence of operation • Wiring diagrams • Diagnostic • Troubleshooting
2. Use manufacturers' appliance service manuals	• Sequence of operation • Wiring diagrams • Diagnostic • Troubleshooting

Line (GAC): G SERVICE AC ELECTRICAL SYSTEMS

Competency: G2 Maintain AC electrical systems

Objectives

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

- Maintain 120VAC electrical systems and converters

LEARNING TASKS	CONTENT
1. Describe 120VAC wiring systems	• Safety • Codes • Operation • Ampacity • Panels • Breakers • Wiring • Loads • GFCI • Receptacles • Switches ○ 2 way selector • Schematics • Shore power

2. Describe converters	• Types
	  ○ Linear
	  ○ Ferroresonant
	  ○ Switch mode
	• Ratings
	  ○ Input
	  ○ Output
	• Applications
	  ○ Deck mount
	• Built in

3. Describe maintaining 120VAC wiring systems and converters	• Safety
	• Codes
	• Tools and equipment
	• Types
	  ○ Linear
	  ○ Ferroresonant

LEARNING TASKS	CONTENT
	○ Switch mode • Inspection ○ Wiring ○ Circuitry ○ Connections ○ Power cords • Contaminant removal • Verifcation of operation • Documentation
4. Maintain 120VAC wiring systems and converters	• Safety • Codes • Tools and equipment • Types ○ Linear ○ Ferroresonant ○ Switch mode • Inspection ○ Wiring ○ Circuitry ○ Connections ○ Power cords • Contaminant removal • Verifcation of operation • Documentation

Line (GAC): G SERVICE AC ELETCRICAL SYSTEMS

Competency: G3 Install AC electrical systems

Objectives

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

- Install 120VAC wiring systems and converters

LEARNING TASKS	CONTENT

1. Describe installing 120VAC wiring systems and converters	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' instructions
	• Selection
	  ○ Wire size
	  ○ Panel size
	  ○ Breaker size
	  ○ Procedures
	• Verification of operation
	• Documentation

2. Install 120VAC wiring systems and converters	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' instructions
	• Selection
	  ○ Wire size
	  ○ Panel size
	  ○ Breaker size
	  ○ Procedures
	• Verification of operation
	• Documentation

Line (GAC): G SERVICE AC ELECTRICAL SYSTEMS

Competency: G4 Diagnose AC electrical systems

Objectives

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

- Diagnose AC electrical systems

LEARNING TASKS	CONTENT

1. Verification of operation of AC electrical systems	• Safety
	• Tools and equipment
	• Codes
	• Energy sources
	  ○ Shore power
	  ○ Generators
	  ○ Inverters
	• 120VAC interior lights
	• 120VAC plug and receptacles
	• 120VAC circuits
	• 120VAC converter
	• GFCI system
	• Hotskin test
	• Polarity test

2. Describe diagnosing 120VAC wiring systems and converters	• Safety
	• Codes
	• Tools and equipment
	• Troubleshooting procedures
	  ○ Polarity
	  ○ Continuity
	• Mounting
	• Connections
	• Circuit loads
	• Verification of operation
	• Documentation

3. Diagnose 120VAC wiring systems and converters	• Safety • Codes • Tools and equipment • Troubleshooting procedures ○ Polarity

LEARNING TASKS	CONTENT
	○ Continuity • Mounting • Connections • Circuit loads • Verification of operation • Documentation

Line (GAC): G SERVICE AC ELECTRICAL SYSTEMS

Competency: G5 Repair AC electrical systems

Objectives

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

- Describe repairing AC electrical systems
- Repair converters

LEARNING TASKS	CONTENT
1. Describe repairing 120VAC wiring systems and converters	• Safety • Codes • Tools and equipment • Manufacturers' specifications • Identification of repair • Remove and replace • Verifcation of operation • Documentation
2. Repair converters	• Safety • Codes • Tools and equipment • Manufacturers' specifications • Identification of repair • Remove and replace • Verifcation of operation • Documentation

Line (GAC): H SERVICE DC ELECTRICAL SYSTEMS

Competency: H2 Maintain DC electrical systems

Objectives

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

- Maintain of 12VDC wiring systems

LEARNING TASKS	CONTENT
1. Describe the maintenance of RV logic systems	• Safety • Tools and equipment • Clean and inspect system components and connections • Verification of operation • Documentation
2. Maintain RV logic systems	• Safety • Tools and equipment • Clean and inspect system components and connections • Verification of operation • Documentation

Line (GAC): H SERVICE DC ELECTRICAL SYSTEMS

Competency: H3 Install DC electrical systems

Objectives

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

- Describe installing monitor panels
- Describe installing collision avoidance systems

LEARNING TASKS	CONTENT

1. Describe installing monitoring panels	• Safety
	• Codes
	• Tools and equipment
	• Types
	  ○ Brand specific
	• Manufacturers' instructions
	  ○ Wiring routing
	  ○ Wire containment system
	  ○ Tank sensor mounting systems
	• Verification of operation
	• Documentation

2. Describe installing collision avoidance systems	• Safety • Codes • Tools and equipment • Manufacturers' instructions • Mounting • Sealing • Wiring routing • Verification of operation • Documentation

Line (GAC): H SERVICE DC ELECTRICAL SYSTEMS

Competency: H5 Repair DC electrical systems

Objectives

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

- Describe repairing monitoring panels
- Describe repairing collision avoidance systems

LEARNING TASKS	CONTENT

1. Describe repairing monitoring panels	• Safety
	• Tools and equipment
	• Types
	  ○ Brand specific
	• Operation
	• Wiring and connections
	• Resistors
	• Troubleshooting
	• Manufacturers' specifications
	  ○ Inspection
	  ○ Cleaning
	  ○ Remove and replace
	• Verification of operation
	• Documentation

2. Repair monitoring panels	• Safety
	• Tools and equipment
	• Types
	  ○ Brand specific
	• Operation
	• Wiring and connections
	• Resistors
	• Troubleshooting
	• Manufacturers' specifications
	  ○ Inspection
	  ○ Cleaning
	  ○ Remove and replace
	• Verification of operation
	• Documentation

3. Describe repairing collision avoidance systems	• Safety

LEARNING TASKS	CONTENT
	• Codes • Tools and equipment • Manufacturers' specifications • Troubleshooting • Removal • Replacement • Verification of operation • Documentation

Line (GAC): K SERVICE LPG SYSTEMS

Competency: K1 Maintain LPG systems

Objectives

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

- Describe maintaining of LPG systems
- Maintain LPG systems

LEARNING TASKS	CONTENT

1. Describe regulations	• Codes
	• Required technician certification
	• Documentation
	  ○ Checklist
	  ○ Provincial re-certification

2. Describe propane system components	• Cylinders
	• Tank
	• Regulator
	  ○ Orifice
	  ○ Vents
	• Hoses
	• Manifolds
	• Lines
	• Couplers
	• Quick connect fittings
	• Connections
	  ○ Threaded
	  ○ Sealants
	  ○ Crimped
	  ○ Compression
	  ○ Flared

3. Describe diagnostic tools	• Manometer
	  ○ U-tube
	  ○ Bourdon tube
	  ○ Electronic
	• 70% valve
	• Orifice size
	• Leak detectors
	  ○ Liquid

LEARNING TASKS	CONTENT
4. Maintain LPG systems	○ Electronic • Inspection • Adjustments ○ Working pressure • Tests ○ Lock up test ○ Timed pressure drop test • Verification of operation • Recordkeeping

Achievement Criteria

Performance	The learner will perform an LPG system service.
Conditions	The learner will be given • Documentation • Tools and equipment
Criteria	The learner will be evaluated on • Safety • Time Management • Detail

Line (GAC): K SERVICE LPG SYSTEMS

Competency: K2 Install LPG systems

Objectives

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

- Describe the design and installation of LPG systems
- Perform black pipe cutting, reaming, and threading
- Perform copper pipe cutting, reaming, and flaring

LEARNING TASKS	CONTENT

1. Describe designing an LPG system	• Codes
	• Pipe sizing
	  ○ Number of appliances
	  ○ Btu/h of appliances
	  ○ Propane system codes
	• Length of propane piping/tubing

2. Describe installation of LPG systems	• Safety
	• Codes
	• Select tools and equipment
	  ○ Black pipe
	  ▪ Cutting
	  ▪ Reamer
	  ▪ Threading
	  ▪ Lubricant
	  ▪ Joining
	  ▪ Sealants
	  ○ Copper
	  ▪ Tubing cutter
	  ▪ Reamer
	  ▪ Flaring tool
	• Perform tests
	• Verification of operation
	• Documentation

3. Install LPG systems	• Safety
	• Codes
	• Select tools and equipment
	  ○ Black pipe
	  ▪ Cutting

LEARNING TASKS	CONTENT
	▪ Reamer ▪ Threading ▪ Lubricant ▪ Joining ▪ Sealants ○ Copper ▪ Tubing cutter ▪ Reamer ▪ Flaring tool • Perform tests • Verification of operation • Documentation

Achievement Criteria

Performance	The learner will perform black pipe cutting and threading.
Conditions	The learner will be given • Marking rubric • Materials • Tools
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Line (GAC): K SERVICE LPG SYSTEMS

Competency: K3 Diagnose LPG systems (high pressure)

Objectives

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

- Diagnose LPG systems (high pressure)

LEARNING TASKS	CONTENT

1. Diagnose LPG systems (high pressure)	• Safety
	• Codes
	• Inspection
	  ○ Containers
	  ○ Mounting
	  ○ Hoses
	  ○ Connections
	• External factors affecting pressure
	• Documentation

Line (GAC): K SERVICE LPG SYSTEMS

Competency: K4 Diagnose LPG systems (low pressure)

Objectives

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

- Diagnose LPG systems (low pressure)

LEARNING TASKS

1. Diagnose LPG systems (low pressure)

CONTENT

- Safety
- Codes
- Inspection
  - Regulators
  - Hoses
  - Protective coverings
  - Fasteners
- Test procedures
  - Working pressure
  - Lock up
  - Timed pressure drop test
- External factors affecting pressure
- Documentation

Line (GAC): K SERVICE LPG SYSTEMS

Competency: K5 Repair LPG systems

Objectives

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

- Describe repairing LPG systems

LEARNING TASKS	CONTENT
1. Describe repairing LPG systems	• Safety • Codes • Tools and equipment • Repair area access • Defective component replacement • Timed pressure drop test • Verification of operation • Documentation
2. Repair LPG systems	• Safety • Codes • Tools and equipment • Repair area access • Defective component replacement • Timed pressure drop test • Verification of operation • Documentation

Line (GAC): L SERVICE WATER HEATERS

Competency: L1 Maintain water heaters

Objectives

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

- Maintain water heaters

LEARNING TASKS	CONTENT

1. Describe maintaining water heaters	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	• Types
	  ○ Gas
	  ○ Electric
	  ○ Motor aid
	  ○ Hydronic
	  ○ On demand
	• Supply systems
	  ○ AC
	  ○ DC
	  ○ LPG
	  ○ Water
	  ○ Motor aid
	• Inspection
	• Adjustments
	• Cleaning
	• Verification of operation
	• Documentation

2. Maintain water heaters	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	• Types
	  ○ Gas
	  ○ Electric
	  ○ Motor aid
	  ○ Hydronic
	  ○ On demand
	• Supply systems

LEARNING TASKS	CONTENT
	○ AC ○ DC ○ LPG ○ Water ○ Motor aid • Inspection • Adjustments • Cleaning • Verification of operation • Documentation

Line (GAC): L SERVICE WATER HEATERS

Competency: L2 Install water heaters

Objectives

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

- Install and remove water heaters

LEARNING TASKS	CONTENT
1. Describe the installation and removal of water heaters	• Safety • Codes • Tools and equipment • Manufacturers' instructions • Sealing • Fastening • Ventilation • Verification of operation • Documentation
2. Install and remove water heaters	• Safety • Codes • Tools and equipment • Manufacturers' instructions • Sealing • Fastening • Ventilation • Verification of operation • Documentation

Line (GAC): L SERVICE WATER HEATERS

Competency: L3 Diagnose water heaters

Objectives

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

- Describe diagnosing of water heaters

LEARNING TASKS	CONTENT

1. Describe diagnosing of water heaters	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	• Inspection
	  ○ Safety components
	  ○ Tank
	  ○ Gas
	  ○ Electrical
	  ○ Water fittings
	  ○ Hardware
	• Power and gas measurement
	• Valve operation
	• Verify by-pass, mixing, and check verification
	• Perform tests
	• Documentation

2. Diagnose water heaters	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	• Inspection
	  ○ Safety components
	  ○ Tank
	  ○ Gas
	  ○ Electrical
	  ○ Water fittings
	  ○ Hardware
	• Power and gas measurement
	• Valve operation
	• Verify by-pass, mixing, and check verification
	• Perform tests
	• Documentation

Line (GAC): L SERVICE WATER HEATERS

Competency: L4 Repair water heaters

Objectives

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

- Describe repairing water heaters

LEARNING TASKS	CONTENT

1. Describe repairing water heaters	• Codes
	• Safety
	• Tools and equipment
	• Manufacturers' specifications
	• Components verification
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	• Adjustments
	• Verification of operation
	• Documentation

2. Repair water heaters	• Codes
	• Safety
	• Tools and equipment
	• Manufacturers' specifications
	• Components verification
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	• Adjustments
	• Verification of operation
	• Documentation

Line (GAC): M SERVICE FURNACES

Competency: M1 Maintain furnaces

Objectives

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

- Maintain furnaces

LEARNING TASKS	CONTENT

1. Describe maintenance of furnaces	• Codes
	• Safety
	• Tools and equipment
	• Manufacturers' specifications
	• Types
	  ○ Forced combustion
	  ○ Hydronic
	  ○ Catalytic
	• Components
	  ○ Gas
	  ○ Electrical
	  ○ Hardware
	• Inspection
	• Adjustments
	• Cleaning
	• Verification of operation
	• Documentation

2. Maintain furnaces	• Codes
	• Safety
	• Tools and equipment
	• Manufacturers' specifications
	• Types
	  ○ Forced combustion
	  ○ Hydronic
	  ○ Catalytic
	• Components
	  ○ Gas
	  ○ Electrical
	  ○ Hardware
	• Inspection
	• Adjustments
	• Cleaning
	• Verification of operation
	• Documentation

Line (GAC): M SERVICE FURNACES

Competency: M2 Install furnaces

Objectives

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

- Install and remove furnaces

LEARNING TASKS	CONTENT

1. Describe the installation and removal of furnaces	• Codes
	• Safety
	• Tools and equipment
	• Location
	  ○ Clearance to combustables
	• Manufacturers' instructions
	  ○ Sealing
	  ○ Fastening
	  ○ Ventilation
	  ○ Ducting
	• Verification of operation
	• Documentation

2. Install and remove furnaces	• Codes
	• Safety
	• Tools and equipment
	• Location
	  ○ Clearance to combustables
	• Manufacturers' instructions
	  ○ Sealing
	  ○ Fastening
	  ○ Ventilation
	  ○ Ducting
	• Verification of operation
	• Documentation

Line (GAC): M SERVICE FURNACES

Competency: M3 Diagnose furnaces

Objectives

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

- Diagnose furnaces

LEARNING TASKS	CONTENT

1. Describe diagnosing furnaces	• Codes
	• Safety
	• Manufacturers' specifications
	• Inspection
	  ○ Heat exchanger
	  ○ Gas
	  ○ Electrical
	  ○ Hardware
	  ○ Venting
	  ○ Ducting
	• Documentation

2. Diagnose furnaces	• Codes
	• Safety
	• Manufacturers' specifications
	• Inspection
	  ○ Heat exchanger
	  ○ Gas
	  ○ Electrical
	  ○ Hardware
	  ○ Venting
	  ○ Ducting
	• Documentation

Line (GAC): M SERVICE FURNACES

Competency: M4 Repair furnaces

Objectives

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

- Describe repairing furnaces

LEARNING TASKS	CONTENT

1. Describe repairing furnaces	• Codes
	• Safety
	• Tools and equipment
	• Manufacturers' documentation
	• Components
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	• Verification of operation
	• Documentation

2. Repair furnaces	• Codes
	• Safety
	• Tools and equipment
	• Manufacturers' documentation
	• Components
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	• Verification of operation
	• Documentation

Line (GAC): N SERVICE COOKTOPS AND RANGES

Competency: N1 Maintain cooktops and ranges

Objectives

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

- Maintain cooktops and ranges

LEARNING TASKS	CONTENT

1. Describe maintaining cooktops and ranges	• Codes
	• Safety
	• Manufacturers' specifications
	• Types
	  ○ Propane
	  ○ Electric
	• Operations
	  ○ Propane
	  ○ 12VDC
	  ○ 120VAC
	• Inspection
	• Adjustments
	• Cleaning
	• Verification of operation
	• Documentation

2. Maintain cooktops and ranges	• Codes
	• Safety
	• Manufacturers' specifications
	• Types
	  ○ Propane
	  ○ Electric
	• Operations
	  ○ Propane
	  ○ 12VDC
	  ○ 120VAC
	• Inspection
	• Adjustments
	• Cleaning
	• Verification of operation
	• Documentation

Line (GAC): N SERVICE COOKTOPS AND RANGES

Competency: N2 Install cooktops and ranges

Objectives

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

- Install and remove cooktops and ranges

LEARNING TASKS	CONTENT
1. Describe the installation and removal of cooktops and ranges	• Codes • Safety • Location ○ Clearance to combustables • Select tools and equipment • Manufacturers' instructions • Verification of operation • Documentation
2. Install and remove cooktops and ranges	• Codes • Safety • Location ○ Clearance to combustables • Select tools and equipment • Manufacturers' instructions • Verification of operation • Documentation

Line (GAC): N SERVICE COOKTOPS AND RANGES

Competency: N3 Diagnose cooktops and ranges

Objectives

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

- Diagnose cooktops and ranges

LEARNING TASKS	CONTENT

1. Describe diagnosing cooktops and ranges	• Codes
	• Safety
	• Manufacturers' documentation
	• Select tools and equipment
	• Inspection
	  ○ Mounting
	  ○ Gas
	  ○ Electrical
	  ○ Hardware
	  ○ Venting
	• Verification of operation
	• Documentation

2. Diagose cooktops and ranges	• Codes
	• Safety
	• Manufacturers' documentation
	• Select tools and equipment
	• Inspection
	  ○ Mounting
	  ○ Gas
	  ○ Electrical
	  ○ Hardware
	  ○ Venting
	• Verification of operation
	• Documentation

Line (GAC): N SERVICE COOKTOPS AND RANGES

Competency: N4 Repair cooktops and ranges

Objectives

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

- Repair cooktops and ranges

LEARNING TASKS	CONTENT
1. Describe repairing cooktops and ranges	• Codes • Safety • Tools and equipment • Manufacturers' specifications • Removal • Inspection • Cleaning • Replacement • Verification of operation • Documentation
2. Repair cooktops and ranges	• Codes • Safety • Tools and equipment • Manufacturers' specifications • Removal • Inspection • Cleaning • Replacement • Verification of operation • Documentation

Line (GAC): O SERVICE REFRIGERATORS AND ICE MAKERS

Competency: O1 Maintain refrigerators and ice makers

Objectives

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

- Maintain refrigerators and ice makers

LEARNING TASKS	CONTENT

1. Describe refrigerators and ice makers	• Codes
	• Safety
	• Refrigerator types
	  ○ Absorption
	  ○ Compressor
	• Ice maker types
	  ○ Factory installed (in-freezer)
	  ○ Stand alone
	• Components
	  ○ Cooling unit
	  ○ Gas
	  ○ Electrical
	  ○ Cabinet
	  ○ Door latches
	  ○ Seals
	  ○ Drain
	  ○ Ice maker assembly

2. Describe the maintenance of refrigerators and ice makers	• Safety • Codes • Tools and equipment • Manufacturers' specifications • Inspection • Adjustments • Cleaning • Verification of operation • Documentation
3. Maintain refrigerators and ice makers	• Safety • Codes • Tools and equipment • Manufacturers' specifications

LEARNING TASKS	CONTENT
	• Inspection • Adjustments • Cleaning • Verification of operation • Documentation

Line (GAC): O SERVICE REFRIGERATORS AND ICE MAKERS

Competency: O2 Install refrigerators and ice makers

Objectives

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

- Install and remove refrigerators and ice makers

LEARNING TASKS	CONTENT

1. Describe the installation and removal of refrigerators and ice makers	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Sealing
	  ○ Fastening
	  ○ Clearance
	  ○ Ventilation
	  ○ Water lines
	• Verification of operation
	• Documentation

2. Install and remove refrigerators and ice makers	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Sealing
	  ○ Fastening
	  ○ Clearance
	  ○ Ventilation
	  ○ Water lines
	• Verification of operation
	• Documentation

Line (GAC): O SERVICE REFRIGERATORS AND ICE MAKERS

Competency: O3 Diagnose refrigerators and ice makers

Objectives

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

- Diagnose refrigerators and ice makers

LEARNING TASKS	CONTENT

1. Describe diagnosing refrigerators and ice makers	• Codes
	• Safety
	• Manufacturers' specifications
	• Tools and equipment
	• Inspection
	  ○ Cooling unit
	  ○ Gas
	  ○ Electrical
	  ○ Water supply
	  ○ Cabinet
	  ○ Venting
	  ○ Ice maker assembly
	• Documentation

2. Diagnose refrigerators and ice makers	• Codes
	• Safety
	• Manufacturers' specifications
	• Tools and equipment
	• Inspection
	  ○ Cooling unit
	  ○ Gas
	  ○ Electrical
	  ○ Water supply
	  ○ Cabinet
	  ○ Venting
	  ○ Ice maker assembly
	• Documentation

Line (GAC): O SERVICE REFRIGERATORS AND ICE MAKERS

Competency: O4 Repair refrigerators and ice makers

Objectives

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

- Repair refrigerators and ice makers

LEARNING TASKS	CONTENT

1. Describe repairing refrigerators and ice makers	• Codes
	• Safety
	• Manufacturers' specifications
	• Tools and equipment
	• Components
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	• Verification of operation
	• Documentation

2. Repair refrigerators and ice makers	• Codes
	• Safety
	• Manufacturers' specifications
	• Tools and equipment
	• Components
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	• Verification of operation
	• Documentation

Line (GAC): P SERVICE AIR CONDITIONERS AND HEAT PUMPS

Competency: P3 Diagnose air conditioners and heat pumps

Objectives

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

- Describe air conditioner components
- Diagnose air conditioners and heat pumps

LEARNING TASKS	CONTENT
1. Describe air conditioner components	• Safety • Codes • Manufacturers' specifications • Evaporator • Condenser • Compressor • Orifice/expansion valve • Accumulator • Controls • Seals

2. Describe diagnosing air conditioners and heat pumps	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Inspection
	• Troubleshooting electrical system
	  ○ Wiring diagrams
	  ○ Calculation of electrical load ratings
	  ○ Ohm's law
	• Delta T verification
	• Documentation

Line (GAC): R SERVICE INTERIOR COMPONENTS

Competency: R1 Maintain interior components

Objectives

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

- Describe interior construction and components
- Maintain interior components

LEARNING TASKS	CONTENT

1. Describe interior construction	• Cabinets
	  ○ Stile and panel
	  ○ Face frame
	• Countertops
	  ○ Corian
	  ○ Laminate
	  ○ Plastic

2. Describe interior components	• Panelling
	• Mouldings
	• Doors
	• Ceiling
	• Walls
	• Flooring
	  ○ Carpet
	  ○ Hardwood
	  ○ Linoleum
	  ○ Ceramic tile
	• Hardware
	  ○ Hinges
	  ○ Catches
	  ○ Props
	  ○ Knobs
	  ○ Drawer guides
	• Fasteners
	  ○ Screws
	  ○ Nails
	  ○ Staples
	  ○ Hollow wall
	• Interior soft trim
	  ○ Upholstery
	  ○ Valances

LEARNING TASKS	CONTENT
	○ Blinds • Furniture • Bed lifts • Sink covers • Shower surrounds • Shower doors
3. Describe maintaining interior components	• Safety • Codes • Tools and equipment • Inspection • Adjustments • Lubricants • Sealants • Cleaning • Aesthetic details • Documentation
4. Maintain interior components	• Safety • Codes • Tools and equipment • Inspection • Adjustments • Lubricants • Sealants • Cleaning • Aesthetic details • Documentation

Line (GAC): R SERVICE INTERIOR COMPONENTS

Competency: R2 Install interior components

Objectives

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

- Describe installing interior construction and components
- Build cabinets and countertops

LEARNING TASKS	CONTENT

1. Describe building and installing components of interior construction	• Cabinets
	  ○ Stile and panel
	  ○ Face frame
	• Countertops
	  ○ Corian
	  ○ Laminate
	  ○ Plastic
	• Panelling
	• Mouldings
	• Doors
	• Ceiling
	• Walls
	• Flooring
	  ○ Carpet
	  ○ Hardwood
	  ○ Linoleum
	  ○ Ceramic tile
	• Hardware
	  ○ Hinges
	  ○ Catches
	  ○ Props
	  ○ Knobs
	  ○ Drawer guides
	• Fasteners
	  ○ Screws
	  ○ Nails
	  ○ Staples
	  ○ Hollow wall
	• Interior soft trim
	  ○ Upholstery
	  ○ Valances
	  ○ Blinds

LEARNING TASKS	CONTENT
	• Furniture • Bed lifts • Sink covers • Shower surrounds • Shower doors

2. Describe installing interior components	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Fastening
	  ○ Filling
	  ○ Sealing
	• Aesthetic details
	• Verification of operation
	• Documentation

3. Build cabinets and countertops	• Safety • Tools and equipment • Material selection • Blueprint reading • Documentation

Achievement Criteria

Performance	The learner will build a cabinet with countertop.
Conditions	The learner will be given • Marking rubric • Materials • Tools and equipment • Blueprints
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Line (GAC): R SERVICE INTERIOR COMPONENTS

Competency: R3 Diagnose interior components

Objectives

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

- Describe diagnosing interior components

LEARNING TASKS	CONTENT

1. Describe diagnosing interior components	• Safety
	• Codes
	• Tools and equipment
	• Inspection
	  ○ Sealants
	  ○ Fasteners
	  ○ Condition
	• Criteria for replacement
	• Replacement procedures
	• Documentation

2. Diagnose interior components	• Safety
	• Codes
	• Tools and equipment
	• Inspection
	  ○ Sealants
	  ○ Fasteners
	  ○ Condition
	• Criteria for replacement
	• Replacement procedures
	• Documentation

Line (GAC): R SERVICE INTERIOR COMPONENTS

Competency: R4 Repair interior components

Objectives

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

- Describe repairing interior construction
- Describe repairing interior components

LEARNING TASKS	CONTENT

1. Describe repairing interior construction	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	• Repair procedures
	• Building materials
	  ○ Fibreglass
	  ○ Composites
	  ○ Wood
	  ○ Plastics
	• Components
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	  ○ Reassembly
	  ○ Sealing
	• Aesthetic details
	• Repair verification
	• Documentation

2. Repair interior components	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	• Repair procedures
	• Building materials
	  ○ Fibreglass
	  ○ Composites
	  ○ Wood
	  ○ Plastics

LEARNING TASKS	CONTENT

	• Components
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	  ○ Reassembly
	  ○ Sealing
	• Aesthetic details
	• Repair verification
	• Documentation

3. Describe repairing interior components	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	• Repair procedures
	• Materials
	  ○ Hard goods
	  ▪ Fibreglass
	  ▪ Composites
	  ▪ Wood
	  ▪ Plastics
	  ○ Soft goods
	  ▪ Fabric
	  ▪ Leather
	  ▪ Foam
	  ▪ Screens
	• Components
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	  ○ Reassembly
	  ○ Sealing
	• Aesthetic details
	• Verification of operation
	• Documentation

4. Repair interior components	• Safety • Codes • Tools and equipment

LEARNING TASKS

CONTENT

- Manufacturers' specifications
- Repair procedures
- Materials
  - Hard goods
    - Fibreglass
    - Composites
    - Wood
    - Plastics
  - Soft goods
    - Fabric
    - Leather
    - Foam
    - Screens
- Components
  - Removal
  - Inspection
  - Cleaning
  - Replacement
  - Reassembly
  - Sealing
- Aesthetic details
- Verification of operation
- Documentation

Line (GAC): S SERVICE EXTERIOR COMPONENTS

Competency: S1 Maintain exterior components

Objectives

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

- Describe exterior construction
- Maintain exterior components

LEARNING TASKS	CONTENT

1. Describe exterior construction	• Laminated
	  ○ Wood frame
	  ○ Metal frame
	• Stick and tin (loose hung)
	• Hung wall
	• Moulded fibreglass
	• Aircraft
	• Urethane
	• Insulation

2. Describe siding	• Profiled aluminum • Filon • Formed aluminum • Moulded fibreglass

3. Describe roofing	• Laminated
	• Trussed
	  ○ Wood
	  ○ Aluminum
	• Coverings
	  ○ Ethylene Propylene Diene Monomer (EPDM)
	  ○ Thermoplastic polyolefin (TPO)
	  ○ Aluminum
	• Fibreglass

4. Describe floor systems	• Laminated
	• Trussed
	  ○ Wood
	  ○ Aluminum
	• Urethane

5. Describe exterior components	• Windows

LEARNING TASKS	CONTENT

	• Baggage doors
	• Entrance doors
	• Ladders
	• Roof racks
	• Vents
	  ○ Roof
	  ○ Fridge
	  ○ Stove
	  ○ Furnace
	  ○ Plumbing
	  ○ Washer/dryer
	• Skylights
	• Awnings
	• Slide toppers
	• Add-a-rooms
	• Grab handles
	• Storage hatches
	• Catches
	• Fender skirts
	• Rock guards
	• Clearance/tail lights
	• Mouldings
	• Vinyl inserts
	• Slide-outs

6. Maintain exterior components	• Safety • Codes • Tools and equipment • Manufacturers' specifications • Inspection • Fasteners • Cleaning • Sealants • Lubricants • Slide seals • Verification of operation • Documentation

Line (GAC): S SERVICE EXTERIOR COMPONENTS

Competency: S2 Install exterior components

Objectives

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

- Describe installing exterior components
- Build walls

LEARNING TASKS	CONTENT

1. Describe building and installing components of exterior construction	• Safety
	• Codes
	• Manufacturers' instructions
	• Tools and equipment
	• Material selection
	• Blueprint reading
	• Components
	  ○ Walls
	  ○ Siding
	  ○ Roofing
	  ○ Floor systems
	• Documentation

2. Describe installing exterior components	• Safety • Codes • Tools and equipment • Manufacturers' instructions • Fastening • Sealing • Verification of operation • Documentation
3. Install exterior components	• Safety • Codes • Tools and equipment • Manufacturers' instructions • Fastening • Sealing • Verification of operation • Documentation

Achievement Criteria

Performance	The learner will build walls: • Stick and tin wall • Laminated
Conditions	The learner will be given • Tools and equipment • Materials • Blueprints
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Line (GAC): S SERVICE EXTERIOR COMPONENTS

Competency: S3 Diagnose exterior components

Objectives

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

- Describe diagnosing exterior components

LEARNING TASKS	CONTENT

1. Describe diagnosing exterior components	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Inspection
	  ○ Sealants
	  ○ Fasteners
	  ○ Condition
	• Criteria for replacement
	• Documentation

2. Diagnose exterior components	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Inspection
	  ○ Sealants
	  ○ Fasteners
	  ○ Condition
	• Criteria for replacement
	• Documentation

Line (GAC): S SERVICE EXTERIOR COMPONENTS

Competency: S4 Repair exterior components

Objectives

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

- Repair exterior construction
- Repair exterior components
- Service steps

LEARNING TASKS	CONTENT
1. Describe repairing exterior construction	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Removal • Clean • Inspection • Fabrication • Replacement • Reassembly • Repair verification • Documentation
2. Repair exterior construction	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Removal • Clean • Inspection • Fabrication • Replacement • Reassembly • Repair verification • Documentation
3. Describe repairing exterior components	• Safety • Codes • Manufacturers' specifications

LEARNING TASKS	CONTENT
	• Tools and equipment • Removal • Cleaning • Inspection • Fabrication • Replacement • Reassembly • Verification of operation • Documentation
4. Repair exterior components	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Removal • Cleaning • Inspection • Fabrication • Replacement • Reassembly • Verification of operation • Documentation

5. Describe entrance steps	• Types
	  ○ Electric
	  ○ Manual
	• Components
	  ○ Steps
	  ○ Motors
	  ○ Controllers
	  ○ Actuators
	  ○ Gear box

6. Describe servicing entrance steps	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Access • Cleaning • Inspection

LEARNING TASKS	CONTENT

	• Adjustments
	• Lubrication
	• Repair procedures
	  ○ Remove
	  ○ Replace
	• Verification of operation
	• Documentation

7. Service entrace steps	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Access
	• Cleaning
	• Inspection
	• Adjustments
	• Lubrication
	• Repair procedures
	  ○ Remove
	  ○ Replace
	• Verification of operation
	• Documentation

Line (GAC): X SERVICE TOW VEHICLE SYSTEMS

Competency: X2 Install tow vehicle systems

Objectives

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

- Describe installing truck camper jacks
- Load and unload camper

LEARNING TASKS	CONTENT

1. Describe installing camper tie down systems	• Safety
	• Types
	  ○ Frame mount
	  ○ Bed mount
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Manufacturers' instructions
	• Tools and equipment
	• Components
	  ○ Frame mount
	  ○ Turnbuckles
	  ○ Chains
	  ○ Straps
	• Verification of operation
	• Documentation

2. Describe installing truck camper jacks	• Safety
	• Types
	  ○ Hydraulic
	  ○ Mechanical
	  ○ Electric
	  ○ Cable (yard) jacks
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Mounting points
	  ○ Brackets

LEARNING TASKS	CONTENT
	• Verification of operation • Documentation
3. Describe camper loading and unloading procedures	• Safety • Wind • Ground • Ground pads • Storage support
4. Load and unload campers	• Safety • Wind • Ground • Ground pads • Storage support

Line (GAC): X SERVICE TOW VEHICLE SYSTEMS

Competency: X4 Repair tow vehicle systems

Objectives

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

- Repair truck camper jacks

LEARNING TASKS	CONTENT

1. Describe repairing truck camper jacks	• Safety
	• Types
	  ○ Hydraulic
	  ○ Mechanical
	  ○ Electric
	  ○ Cable (yard) jacks
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Tools and equipment
	• Manufacturers' specifications
	  ○ Mounting points
	  ○ Brackets
	• Components
	  ○ Fluid level
	  ○ Seals
	  ○ Valves
	  ○ Pumps
	  ○ Motor
	  ○ Switches
	• Verification of operation
	• Documentation

2. Repair truck camper jacks	• Safety
	• Types
	  ○ Hydraulic
	  ○ Mechanical
	  ○ Electric
	  ○ Cable (yard) jacks
	• Regulations
	  ○ Federal
	  ○ Provincial

LEARNING TASKS	CONTENT
	○ GVWR • Tools and equipment • Manufacturers' specifications ○ Mounting points ○ Brackets • Components ○ Fluid level ○ Seals ○ Valves ○ Pumps ○ Motor ○ Switches • Verification of operation • Documentation

Level 3

Recreation Vehicle Service Technician

Line (GAC): C PERFORM COMMON WORK PRACTICES AND PROCEDURES

Competency: C1 Use documents

Objectives

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

- Complete estimating procedures

LEARNING TASKS	CONTENT

1. Describe estimates	• Types
	  ○ Customer
	  ○ Insurance
	  ○ Warranty
	• Information required
	• Approvals
	• Consultations
	  ○ Vendors
	  ○ Sublet

2. Describe estimating procedures	• Inspection
	• Technical information
	  ○ Flat rate manuals
	  ○ Parts manuals
	  ○ Blueprints
	  ○ Schematics
	• Documentation
	  ○ Condition
	  ○ Pictures
	  ○ Forms
	• Time management
	  ○ Shop scheduling
	  ○ Parts availibility

3. Describe communicating estimates	• Recording estimate • Managing customer expectations ○ Explaining the scope of work

4. Complete estimating procedures	• Types
	  ○ Customer
	  ○ Insurance
	  ○ Warranty
	• Information required

LEARNING TASKS

CONTENT

- Approvals
- Consultations
  - Vendors
  - Sublet
- Inspection
- Technical information
  - Flat rate manuals
  - Parts manuals
  - Blueprints
  - Schematics
- Documentation
  - Condition
  - Pictures
  - Forms
- Time management
  - Shop scheduling
  - Parts availibility

Achievement Criteria

Performance	The learner will complete a repair estimate using an industry recognized Flat Rate manual.
Conditions	The learner will be given • A vehicle needing repair (or a description/photos of a vehicle needing repair) • Access to a flat rate manual
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Line (GAC): D USE COMMUNICATION AND MENTORING TECHNIQUES

Competency: D2 Use mentoring techniques

Objectives

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

- Describe mentoring techniques

LEARNING TASKS	CONTENT
1. Describe the role of a mentor	• Valuing apprentice • Identifying goals • Encouraging • Managing risk • Providing feedback • Developing capabilities • Maintaining confidentiality
2. Describe mentoring skills and attributes	• Inspiration • Listen actively/Active listening • Building trust • Encouragement • Preparedness • Approachability • Objectiveness • Fairness • Compassion
3. Describe workplace diversity and inclusion	• Fair recruiting and hiring practices • Acceptance • Accommodations • Anti-harassment/anti-bullying policies

Line (GAC): G SERVICE AC ELECTRICAL SYSTEMS

Competency: G2 Maintain AC electrical systems

Objectives

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

- Maintain inverters, and transfer switches

LEARNING TASKS	CONTENT

1. Describe inverters	• Safety
	• Codes
	• Principles of operation
	• Types
	  ○ Pure sine wave
	  ○ Modified sine wave
	  ○ Inverter chargers
	• Ratings
	• Capacities
	• Servicing
	• Troubleshooting
	• Installation
	• Manufacturers' specifications

2. Maintain inverters	• Safety
	• Codes
	• Principles of operation
	• Types
	  ○ Pure sine wave
	  ○ Modified sine wave
	  ○ Inverter chargers
	• Ratings
	• Capacities
	• Servicing
	• Troubleshooting
	• Installation
	• Manufacturers' specifications

3. Describe transfer switches	• Safety • Codes • Types ○ Manual

LEARNING TASKS	CONTENT
	○ Automatic • Ratings • Capacities • Operation • Servicing • Troubleshooting • Installation • Manufacturers' specifications
4. Maintain transfer switches	• Safety • Codes • Types ○ Manual ○ Automatic • Ratings • Capacities • Operation • Servicing • Troubleshooting • Installation • Manufacturers' specifications

Line (GAC): G SERVICE AC ELECTRICAL SYSTEMS

Competency: G3 Install AC electrical systems

Objectives

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

- Describe installing 120VAC wiring systems

LEARNING TASKS	CONTENT

1. Describe installing 120VAC wiring systems	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' instructions
	• Components
	  ○ Surge protectors
	  ○ Transfer switches
	  ○ Energy management systems
	• Wiring containment
	• Verification of operation
	• Documentation

Line (GAC): G SERVICE AC ELECTRICAL SYSTEMS

Competency: G5 Repair AC electrical systems

Objectives

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

- Describe repairing 120VAC wiring systems

LEARNING TASKS	CONTENT

1. Describe repairing 120VAC wiring systems	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	• Components
	  ○ Surge protectors
	  ○ Transfer switches
	  ○ Energy management systems
	• Wiring containment system
	• Identification of repair
	• Removal and replacement
	• Verification of operation
	• Documentation

Line (GAC): H SERVICE DC ELECTRICAL SYSTEMS

Competency: H2 Maintain DC electrical systems

Objectives

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

- Describe collision avoidance systems
- Describe the maintenance of collision avoidance systems
- Maintain monitoring panels

LEARNING TASKS	CONTENT

1. Describe the maintenance of monitoring panels	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	  ○ Cleaning
	  ○ Calibration
	• Verification of operation
	• Documentation

2. Maintain monitoring panels	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	  ○ Cleaning
	  ○ Calibration
	• Verification of operation
	• Documentation

3. Describe collision avoidance systems	• Types
	  ○ Back up
	  ○ Side view
	• Operation
	• Wiring and connections
	• Verification of operation

4. Describe the maintenance of collision avoidance systems	• Safety • Codes • Tools and equipment • Manufacturers' specifications • Cleaning • Calibration • Verification of operation • Documentation

Line (GAC): H SERVICE DC ELECTRICAL SYSTEMS

Competency: H3 Install DC electrical systems

Objectives

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

- Describe installing RV logic control systems

LEARNING TASKS	CONTENT

1. Describe the installation of RV logic control systems	• Safety
	• Tools and equipment
	• Network fundamentals
	• Modules
	  ○ Load Modules/Load Centers
	  ○ Logic Modules
	  ○ Input Modules
	  ○ Tank Monitors
	  ○ Bluetooth Modules
	• Interfaces
	  ○ Switch Panels/Tactile Panels
	  ○ LCD Touch Screens
	  ○ Rocker Switches
	  ○ Wireless Switches
	• Wiring and Connections
	  ○ Single wire
	  ○ Twisted pair
	  ○ Fiber optic
	  ○ RV-C Network Cable
	  ○ CAT 5
	• Network
	  ○ RS232
	  ○ J1939
	• Verification of operation
	• Documentation

2. Describe the installation of multiplexing systems	• Safety
	• Tools and equipment
	• Multiplexing fundamentals
	  ○ Switch inputs
	  ○ Control Modules
	  ○ BCM
	  ○ Outputs
	• Verification of operation
	• Documentation

Line (GAC): H SERVICE DC ELECTRICAL SYSTEMS

Competency: H5 Repair DC electrical systems

Objectives

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

- Repair RV logic control systems

LEARNING TASKS	CONTENT

1. Describe the repairing of RV logic control systems	• Safety
	• Tools and equipment
	• Network fundamentals
	• Modules
	  ○ Load Modules/Load Centers
	  ○ Logic Modules
	  ○ Input Modules
	  ○ Tank Monitors
	  ○ Bluetooth Modules
	• Interfaces
	  ○ Switch Panels/Tactile Panels
	  ○ LCD Touch Screens
	  ○ Rocker Switches
	  ○ Wireless Switches
	• Wiring and Connections
	  ○ Single wire
	  ○ Twisted pair
	  ○ Fiber optic
	  ○ RV-C Network Cable
	  ○ CAT 5
	• Network
	  ○ RS232
	  ○ J1939
	• Verification of operation
	• Documentation

2. Repair RV logic control systems	• Safety
	• Tools and equipment
	• Network fundamentals
	• Modules
	  ○ Load Modules/Load Centers
	  ○ Logic Modules
	  ○ Input Modules
	  ○ Tank Monitors

LEARNING TASKS	CONTENT
	○ Bluetooth Modules • Interfaces ○ Switch Panels/Tactile Panels ○ LCD Touch Screens ○ Rocker Switches ○ Wireless Switches • Wiring and Connections ○ Single wire ○ Twisted pair ○ Fiber optic ○ RV-C Network Cable ○ CAT 5 • Network ○ RS232 ○ J1939 • Verification of operation • Documentation
3. Describe the repairing of multiplexing systems	• Safety • Tools and equipment • Multiplexing fundamentals ○ Switch inputs ○ Control Modules ○ BCM ○ Outputs • Verification of operation • Documentation
4. Repair multiplexing systems	• Safety • Tools and equipment • Multiplexing fundamentals ○ Switch inputs ○ Control Modules ○ BCM ○ Outputs • Verification of operation • Documentation

Line (GAC): I SERVICE GENERATORS

Competency: I1 Maintain generators

Objectives

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

- Describe generators
- Maintain generators

LEARNING TASKS	CONTENT

1. Describe generators	• Codes
	• Safety
	• Manufacturers' specifications
	• Mounting
	• Types
	  ○ Portable
	  ○ Built in
	• Operation
	  ○ Engine
	  ○ Alternator
	• Cooling
	  ○ Liquid
	  ○ Air
	• Fuel delivery systems
	  ○ Gas
	  ○ Propane
	  ○ Diesel
	• Electrical
	  ○ AC
	  ○ DC

2. Describe maintaining generators	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' maintenance schedule
	• Manufacturers' specifications
	  ○ Mounting hardware
	  ○ Air flow
	  ○ Engine
	  ○ Alternator
	  ○ Fuel delivery
	  ○ Electrical

LEARNING TASKS	CONTENT
	○ Fluid ○ Filters ○ Spark plugs • Adjustments • Verification of operation ○ Output • Documentation
3. Maintain generators	• Safety • Codes • Tools and equipment • Manufacturers' maintenance schedule • Manufacturers' specifications ○ Mounting hardware ○ Air flow ○ Engine ○ Alternator ○ Fuel delivery ○ Electrical ○ Fluid ○ Filters ○ Spark plugs • Adjustments • Verification of operation ○ Output • Documentation

Line (GAC): I SERVICE GENERATORS

Competency: I2 Install generators

Objectives

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

- Describe installing generators

LEARNING TASKS

1. Describe installing generators

CONTENT

- Safety
  - Weight
  - Ventilation
  - Fire hazards
  - Clearances
  - Wiring
  - Exhaust
- Codes
- Calculating customer capacity requirements
- Selecting unit
  - Output
  - Fuel type
  - Fuel source
- Manufacturers' instructions
- Verification of operations
- Documentation

Line (GAC): I SERVICE GENERATORS

Competency: I3 Diagnose generators

Objectives

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

- Describe diagnosing generators

LEARNING TASKS	CONTENT

1. Describe diagnosing generators	• Safety
	• Codes
	• Tools and equipment
	  ○ Load banks
	  ○ Break out tools
	  ○ Multimeter
	• Manufacturers' service manuals
	• Inspection
	• Wiring diagrams
	• Troubleshooting
	  ○ Installation
	  ○ Electrical
	  ▪ DC input
	  ▪ AC output
	  ○ Engine
	  ○ Fuel delivery
	• Documentation

2. Diagnose generators	• Safety
	• Codes
	• Tools and equipment
	  ○ Load banks
	  ○ Break out tools
	  ○ Multimeter
	• Manufacturers' service manuals
	• Inspection
	• Wiring diagrams
	• Troubleshooting
	  ○ Installation
	  ○ Electrical
	  ▪ DC input
	  ▪ AC output
	  ○ Engine
	  ○ Fuel delivery
	• Documentation

Line (GAC): J SERVICE PHOTOVOLTAIC SYSTEMS

Competency: J2 Install photovoltaic systems

Objectives

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

- Install photovoltaic systems

LEARNING TASKS	CONTENT

1. Describe installing photovoltaic systems	• Safety
	• Tools and equipment
	• Panels
	  ○ Cells
	  ○ Modules
	  ○ Arrays
	• Solar electric principles
	• Charge controllers
	  ○ Simple one or two stage
	  ○ MPPT
	  ○ PWM
	• Wiring and connections
	• Diodes
	• Manufacturers' instructions
	  ○ Roof location
	  ○ Mounting hardware
	  ○ Controller location
	  ○ Wire routing
	  ○ Factory prewire
	  ○ Battery connections
	• Verification of operation
	• Documentation

2. Install photovoltaic systems	• Safety
	• Tools and equipment
	• Panels
	  ○ Cells
	  ○ Modules
	  ○ Arrays
	• Solar electric principles
	• Charge controllers
	  ○ Simple one or two stage
	  ○ MPPT
	  ○ PWM

LEARNING TASKS	CONTENT

	• Wiring and connections
	• Diodes
	• Manufacturers' instructions
	  ○ Roof location
	  ○ Mounting hardware
	  ○ Controller location
	  ○ Wire routing
	  ○ Factory prewire
	  ○ Battery connections
	• Verification of operation
	• Documentation

Line (GAC): J SERVICE PHOTOVOLTAIC SYSTEMS

Competency: J3 Diagnose photovoltaic systems

Objectives

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

- Diagnose photovoltaic systems

LEARNING TASKS	CONTENT

1. Describe diagnosing photovoltaic systems	• Safety
	• Tools and equipment
	• Manufacturers' specifications
	• Troubleshooting
	  ○ Location
	  ○ Cleanliness
	  ○ Wiring
	  ○ Controller
	• Verification of operation
	• Documentation

2. Diagnose photovoltaic systems	• Safety
	• Tools and equipment
	• Manufacturers' specifications
	• Troubleshooting
	  ○ Location
	  ○ Cleanliness
	  ○ Wiring
	  ○ Controller
	• Verification of operation
	• Documentation

Line (GAC): J SERVICE PHOTOVOLTAIC SYSTEMS

Competency: J4 Repair photovoltaic systems

Objectives

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

- Describe repairing photovoltaic systems

LEARNING TASKS	CONTENT

1. Describe repairing photovoltaic systems	• Safety
	• Tools and equipment
	• Manufacturers' specifications
	  ○ Removing
	  ○ Replacing
	  ○ Cleaning
	• Verification of operation
	• Documentation

Line (GAC): M SERVICE FURNACES

Competency: M1 Maintain furnaces

Objectives

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

- Maintain hydronic heating systems

LEARNING TASKS	CONTENT

1. Describe hydronic heating systems	• Safety
	• Codes
	• Components
	  ○ Diesel
	  ○ Gas
	  ○ Electrical
	  ○ Hardware
	• Specialty tools

2. Describe maintaining hydronic heating systems	• Safety • Code • Manufacturers' specifications • Inspection • Adjustments • Cleaning • Verification of operation
3. Maintain hydronic heating systems	• Safety • Code • Manufacturers' specifications • Inspection • Adjustments • Cleaning • Verification of operation

Line (GAC): M SERVICE FURNACES

Competency: M2 Install furnaces

Objectives

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

- Describe the installation and removal of hydronic heating systems

LEARNING TASKS	CONTENT

1. Describe the installation and removal of hydronic heating systems	• Codes
	• Safety
	• Location
	  ○ Clearance to combustibles
	• Manufacturers' instructions
	  ○ Sealing
	  ○ Fastening
	  ○ Ventilation
	  ○ Ducting
	  ○ Piping
	• Select tools and equipment
	• Verification of operation
	• Documentation

Line (GAC): M SERVICE FURNACES

Competency: M3 Diagnose furnaces

Objectives

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

- Diagnose hydronic heating systems

LEARNING TASKS	CONTENT

1. Describe diagnosing hydronic heating systems	• Safety
	• Code
	• Manufacturers' specifications
	• Inspection
	  ○ Diesel
	  ○ Gas
	  ○ Electrical
	  ○ Heat exchanger
	  ○ Venting
	  ○ Ducting
	  ○ Coolant
	  ○ Circulation pumps
	  ○ Fans
	• Documentation

2. Diagnose hydronic heating systems	• Safety
	• Code
	• Manufacturers' specifications
	• Inspection
	  ○ Diesel
	  ○ Gas
	  ○ Electrical
	  ○ Heat exchanger
	  ○ Venting
	  ○ Ducting
	  ○ Coolant
	  ○ Circulation pumps
	  ○ Fans
	• Documentation

Line (GAC): M SERVICE FURNACES

Competency: M4 Repair furnaces

Objectives

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

- Repair hydronic heating systems

LEARNING TASKS	CONTENT

1. Describe repairing hydronic heating systems	• Safety
	• Codes
	• Manufacturers' specifications
	• Components
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	• Verification of operation
	• Documentation

2. Repair hydronic heating systems	• Safety
	• Codes
	• Manufacturers' specifications
	• Components
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	• Verification of operation
	• Documentation

Line (GAC): O SERVICE REFRIGERATORS AND ICE MAKERS

Competency: O1 Maintain refrigerators and ice makers

Objectives

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

- Describe the maintenance of compressor refrigerators and stand-alone ice makers

LEARNING TASKS	CONTENT

1. Describe compressor refrigerator and stand-alone ice maker components	• Safety
	• Codes
	• Components
	  ○ Evaporator
	  ○ Condenser
	  ○ Compressor
	  ○ Orifice/expansion valve
	  ○ Accumulator
	  ○ Controls

2. Describe maintaining compressor refrigeration and stand-alone ice makers	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	• Access
	• Inspection
	• Clean components
	• Wiring diagrams
	• Ventilation
	  ○ Ducting
	  ○ Separation
	  ○ Comb fins
	  ○ Water supply
	• Verification of operation
	• Documentation

Line (GAC): O SERVICE REFRIGERATORS AND ICE MAKERS

Competency: O2 Install refrigerators and ice makers

Objectives

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

- Describe the installation and removal of compressor refrigerators and stand-alone ice makers

LEARNING TASKS	CONTENT

1. Describe the installation and removal of compressor refrigerators and stand-alone ice makers	• Codes
	• Safety
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Sealing
	  ○ Fastening
	  ○ Clearance
	  ○ Ventilation
	• Verification of operation
	• Documentation

Line (GAC): O SERVICE REFRIGERATORS AND ICE MAKERS

Competency: O3 Diagnose refrigerators and ice makers

Objectives

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

- Describe diagnosing compressor refrigerators and stand-alone ice makers

LEARNING TASKS	CONTENT

1. Describe diagnosing compressor refrigerators and stand-alone ice makers	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' specifications
	  ○ Access
	  ○ Inspection
	  ○ Clean components
	• Wiring diagrams
	• Ventailation
	  ○ Ducting
	  ○ Separation
	  ○ Comb fins
	• Verification of operation
	• Documentation

Line (GAC): O SERVICE REFRIGERATORS AND ICE MAKERS

Competency: O4 Repair refrigerators and ice makers

Objectives

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

- Describe repairing compressor refrigerators and stand-alone ice makers

LEARNING TASKS	CONTENT
1. Describe repairing compressor refrigerators and stand-alone ice makers	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Removal • Inspection • Cleaning • Replacement • Verification of operation • Documentation

Line (GAC): P SERVICE AIR CONDITIONERS AND HEAT PUMPS

Competency: P1 Maintain air conditioners and heat pumps

Objectives

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

- Describe components of air conditioners and heat pumps
- Maintain air conditioners and heat pumps

LEARNING TASKS	CONTENT
1. Describe air conditioner components	• Safety • Codes • Manufacturers' specifications • Evaporator • Condenser • Compressor • Orifice/expansion valve • Accumulator • Controls • Seals
2. Describe heat pump components	• Safety • Codes • Manufacturers' specifications • Inside coil • Outside coil • Compressor • Orifice/expansion valve • Reversing valve • Accumulator • Controls • Seals
3. Describe maintaining air conditioners and heat pumps	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Access • Inspection

LEARNING TASKS	CONTENT

	• Clean components
	• Wiring diagrams
	• Air flow verification
	  ○ Ducting
	  ○ Separation
	  ○ Comb fins
	• Verification of operation
	• Documentation

4. Maintain air conditioners and heat pumps	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Access
	• Inspection
	• Clean components
	• Wiring diagrams
	• Air flow verification
	  ○ Ducting
	  ○ Separation
	  ○ Comb fins
	• Verification of operation
	• Documentation

Achievement Criteria

Performance	The learner will confirm A/C performance.
Conditions	The learner will be given • Tools and equipment • Materials • Marking rubric
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Line (GAC): P SERVICE AIR CONDITIONERS AND HEAT PUMPS

Competency: P2 Install air conditioners and heat pumps

Objectives

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

- Install and remove air conditioners and heat pumps

LEARNING TASKS	CONTENT

1. Describe the installation and removal of air conditioners and heat pumps	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Sealing
	  ○ Fastening
	  ○ Ventilation
	  ○ Ducting
	  ○ Electrical connections
	• Verification of operation
	• Documentation

2. Install and remove air conditioners and heat pumps	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Sealing
	  ○ Fastening
	  ○ Ventilation
	  ○ Ducting
	  ○ Electrical connections
	• Verification of operation
	• Documentation

Line (GAC): P SERVICE AIR CONDITIONERS AND HEAT PUMPS

Competency: P3 Diagnose air conditioners and heat pumps

Objectives

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

- Diagnose air conditioners and heat pumps

LEARNING TASKS	CONTENT

1. Describe diagnosing air conditioners and heat pumps	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Inspection
	• Troubleshoot electrical system
	  ○ Wiring diagrams
	  ○ Calculation of electrical load ratings
	  ○ Ohm's law
	• Delta T verification
	• Documentation

2. Diagnose air conditoners and heat pumps	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Inspection
	• Troubleshoot electrical system
	  ○ Wiring diagrams
	  ○ Calculation of electrical load ratings
	  ○ Ohm's law
	• Delta T verification
	• Documentation

Line (GAC): P SERVICE AIR CONDITIONERS AND HEAT PUMPS

Competency: P4 Repair air conditioners and heat pumps

Objectives

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

- Describe repairing air conditioners and heat pumps

LEARNING TASKS	CONTENT

1. Describe repairing air conditioners and heat pumps	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Procedures
	• Components
	  ○ Removal
	  ○ Inspection
	  ○ Cleaning
	  ○ Replacement
	• Verification of operation
	• Documentation

Line (GAC): Q SERVICE CONSUMER PRODUCTS

Competency: Q1 Install consumer products

Objectives

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

- Describe installing consumer products

LEARNING TASKS	CONTENT

1. Describe installing consumer products	• Safety
	• Codes
	• Tools and equipment
	• Manufacturers' instructions
	  ○ Placement
	  ○ Securing
	  ○ Leak proofing
	  ○ Weatherproofing
	  ○ Wiring
	• Verification of operation
	• Documentation

Line (GAC): Q SERVICE CONSUMER PRODUCTS

Competency: Q2 Replace consumer products

Objectives

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

- Describe replacing consumer products

LEARNING TASKS	CONTENT
1. Describe replacing consumer products	• Codes • Safety • Manufacturers' specifications • Tools and equipment • Inspection • Replacement • Verification of operation • Documentation

Line (GAC): S SERVICE EXTERIOR COMPONENTS

Competency: S4 Repair exterior components

Objectives

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

- Repair composite panels
- Perform plastic welding

LEARNING TASKS	CONTENT

1. Describe repairing composite panels	• Types of materials
	  ○ Fibreglass
	  ○ Fibre-reinforced Plastic (FRP)
	• Types of damage
	  ○ Cosmetic
	  ○ Superficial
	  ○ Radical
	• Codes
	• Safety
	• Tools and equipment
	• Manufacturers' specifications
	• Methods
	• Materials
	• Procedures
	• Verification
	• Decals and graphics
	• Documentation

2. Repair composite panels	• Types of materials
	  ○ Fibreglass
	  ○ Fibre-reinforced Plastic (FRP)
	• Types of damage
	  ○ Cosmetic
	  ○ Superficial
	  ○ Radical
	• Codes
	• Safety
	• Tools and equipment
	• Manufacturers' specifications
	• Methods
	• Materials

LEARNING TASKS	CONTENT
	• Procedures • Verification • Decals and graphics • Documentation

3. Describe plastic welding	• Codes
	• Safety
	• Tools and equipment
	• Identifying plastics
	  ○ International Organization of Standardization (ISO) codes
	  ○ Sanding test
	  ○ Melt test
	  ○ Float test
	  ○ Repair manuals
	• Plastic welding
	  ○ Airless
	  ○ Hot air
	  ○ Joint fit up
	• Welding procedures
	• Procedure verification
	• Documentation

4. Perform plastic welding	• Codes
	• Safety
	• Tools and equipment
	• Identifying plastics
	  ○ International Organization of Standardization (ISO) codes
	  ○ Sanding test
	  ○ Melt test
	  ○ Float test
	  ○ Repair manuals
	• Plastic welding
	  ○ Airless
	  ○ Hot air
	  ○ Joint fit up
	• Welding procedures
	• Procedure verification
	• Documentation

Achievement Criteria 1

Performance	The learner will perform repairs to composite panels.
Conditions	The learner will be given • Tools and equipment • Materials • Marking rubric
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Achievement Criteria 2

Performance	The learner will perform plastic welding.
Conditions	The learner will be given • Tools and equipment • Materials • Marking rubric
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Line (GAC): T SERVICE FRAMES AND RUNNING GEAR

Competency: T2 Diagnose frames and running gear

Objectives

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

- Diagnose chassis and mechanical components

LEARNING TASKS	CONTENT

1. Describe diagnosing chassis and mechanical components	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Components
	  ○ Fasteners
	  ○ Couplers
	  ○ Bumpers
	  ○ Rust and corrosion
	  ○ Alignment
	• Inspection
	• Troubleshooting
	• Verification of operation
	• Documentation

2. Diagnose chassis and mechanical components	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Components
	  ○ Fasteners
	  ○ Couplers
	  ○ Bumpers
	  ○ Rust and corrosion
	  ○ Alignment
	• Inspection
	• Troubleshooting
	• Verification of operation
	• Documentation

Line (GAC): T SERVICE FRAMES AND RUNNING GEAR

Competency: T3 Repair frames and running gear

Objectives

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

- Repair chassis and mechanical components

LEARNING TASKS	CONTENT
1. Describe repairing chassis and mechanical components	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Cleaning • Adjustment • Removal • Replacement • Verification of operation • Documentation
2. Repair chassis and mechanical components	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Cleaning • Adjustment • Removal • Replacement • Verification of operation • Documentation

Achievement Criteria

Performance	The learner will repair chassis and mechanical components.
Conditions	The learner will be given • Tools and equipment • Supplies • Documentation
Criteria	The learner will be evaluated on • Safety • Time management • Detail

Line (GAC): U SERVICE LEVELLING SYSTEMS

Competency: U2 Install levelling systems

Objectives

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

- Describe installing levelling systems

LEARNING TASKS

1. Describe installing levelling systems

CONTENT

- Safety
- Codes
- Manufacturers' instructions
- Tools and equipment
- Types
  - Mechanical
  - Electric
  - Hydraulic
- Mechanical components
  - Stabilizers
  - Blocking
- Electric components
  - Motors
  - Gears
  - Controls
- Hydraulic components
  - Cylinders
  - Springs
- Controls
- Verification of operation
- Documentation

Line (GAC): U SERVICE LEVELLING SYSTEMS

Competency: U3 Diagnose levelling systems

Objectives

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

- Diagnose levelling systems

LEARNING TASKS	CONTENT
1. Diagnose levelling systems	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Inspection • Troubleshooting • Cleaning • Lubrication • Verification of operation • Documentation

Line (GAC): U SERVICE LEVELLING SYSTEMS

Competency: U4 Repair levelling systems

Objectives

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

- Describe repairing levelling systems

LEARNING TASKS	CONTENT
1. Describe repairing levelling systems	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Removal/replacement ○ Components • Cleaning • Adjustment • Aesthetic details • Verification of operation • Documentation
2. Repair levelling systems	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Removal/replacement ○ Components • Cleaning • Adjustment • Aesthetic details • Verification of operation • Documentation

Line (GAC): V SERVICE SLIDE-OUT SYSTEMS

Competency: V2 Diagnose slide-out systems

Objectives

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

- Diagnose slide-out systems

LEARNING TASKS

1. Describe diagnosing slide-out systems

CONTENT

- Safety
- Codes
- Manufacturers' specifications
- Tools and equipment
- Types
  - Flush floor
  - Raised floor
  - In-Wall
- Power source
  - Electric
  - Hydraulic
  - Manual
- Hydraulic components
  - Cylinders
  - Cables
  - Chains
  - Gears
  - Controls
- Electric components
  - Motors
  - Cables
  - Chains
  - Gears
  - Controls
  - In-Wall systems
- Room
  - Rollers
  - Guides
  - Seals
  - Weight ratings
  - Travel locks
- Inspection
- Cleaning

LEARNING TASKS	CONTENT
	• Verification of operation • Documentation

2. Diagnose slide-out systems	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Types
	  ○ Flush floor
	  ○ Raised floor
	  ○ In-Wall
	• Power source
	  ○ Electric
	  ○ Hydraulic
	  ○ Manual
	• Hydraulic components
	  ○ Cylinders
	  ○ Cables
	  ○ Chains
	  ○ Gears
	  ○ Controls
	• Electric components
	  ○ Motors
	  ○ Cables
	  ○ Chains
	  ○ Gears
	  ○ Controls
	  ○ In-Wall systems
	• Room
	  ○ Rollers
	  ○ Guides
	  ○ Seals
	  ○ Weight ratings
	  ○ Travel locks
	• Inspection
	• Cleaning
	• Verification of operation
	• Documentation

Line (GAC): V SERVICE SLIDE-OUT SYSTEMS

Competency: V3 Repair slide-out systems

Objectives

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

- Describe repairing slide-out systems

LEARNING TASKS	CONTENT

1. Describe repairing slide-out systems	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Removal/replacement
	  ○ Components
	  ▪ Gas
	  ▪ Electrical
	  ▪ Plumbing
	  ▪ Seals
	  ▪ Trims
	  ○ Room
	• Adjustment
	• Cleaning
	• Aesthetic details
	• Verification of operation
	• Documentation

2. Repair slide-out systems	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Removal/replacement
	  ○ Components
	  ▪ Gas
	  ▪ Electrical
	  ▪ Plumbing
	  ▪ Seals
	  ▪ Trims
	  ○ Room
	• Adjustment
	• Cleaning
	• Aesthetic details
	• Verification of operation
	• Documentation

Line (GAC): W SERVICE LIFTING SYSTEMS

Competency: W2 Diagnose lifting systems

Objectives

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

- Diagnose lift systems
- Diagnose folding camping trailers

LEARNING TASKS	CONTENT

1. Describe the diagnosis of lift systems	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Type
	  ○ Manual
	  ○ Electric
	  ○ Hydraulic
	• Components
	  ○ Cables
	  ○ Springs
	  ○ Rams
	  ○ Hydraulic fluids
	  ○ Gears
	  ○ Pulleys
	  ○ Tubes
	  ○ Rollers
	• Access
	• Troubleshooting
	• Inspection
	• Documentation

2. Diagnose lift systems	• Safety
	• Codes
	• Manufacturers' specifications
	• Tools and equipment
	• Type
	  ○ Manual
	  ○ Electric
	  ○ Hydraulic
	• Components
	  ○ Cables

LEARNING TASKS	CONTENT
	○ Springs ○ Rams ○ Hydraulic fluids ○ Gears ○ Pulleys ○ Tubes ○ Rollers • Access • Troubleshooting • Inspection • Documentation
3. Describe the diagnosis of folding camping trailers	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Types ○ Hard wall ○ Soft wall • Components ○ Lift systems ○ Roof systems ○ Wall systems ○ Slide-outs ○ Accessories • Access • Troubleshooting • Inspection • Documentation
4. Diagnose folding camping trailers	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Types ○ Hard wall ○ Soft wall • Components ○ Lift systems ○ Roof systems ○ Wall systems

LEARNING TASKS	CONTENT
	○ Slide-outs ○ Accessories • Access • Troubleshooting • Inspection • Documentation

Line (GAC): W SERVICE LIFTING SYSTEMS

Competency: W3 Repair lifting systems

Objectives

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

- Describe repairing lift systems
- Describe repairing folding camping trailers

LEARNING TASKS	CONTENT
1. Describe repairing lift systems	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Access • Inspection • Removal/replacement • Verification of operation • Documentation
2. Describe repairing folding camping trailers	• Safety • Codes • Manufacturers' specifications • Tools and equipment • Access • Inspection • Removal/replacement • Verification of operation • Documentation

Line (GAC): Y SERVICE TOWED VEHICLE SYSTEMS

Competency: Y2 Install towed vehicle systems

Objectives

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

- Describe installing towed vehicle systems

LEARNING TASKS

1. Describe installing towed vehicle systems

CONTENT

- Safety
- Types
  - Tow bars
    - Base plates
  - Tow dollies
  - Trailers
  - Flat towing
    - Aids for flat towing
      - External transmission pump
      - Hub disconnect
- Regulations
  - Federal
  - Provincial
  - GVWR
- Tools and equipment
- Manufacturers' instructions
  - Lubricating
  - Adjusting
- Verification of operation
- Documentation

Line (GAC): Y SERVICE TOWED VEHICLE SYSTEMS

Competency: Y3 Diagnose towed vehicle systems

Objectives

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

- Describe diagnosing towed vehicle systems

LEARNING TASKS	CONTENT

1. Describe diagnosing towed vehicle systems	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Tools and equipment
	• Manufacturers' specifications
	  ○ Inspection
	• Verification of operation
	• Documentation

Line (GAC): Y SERVICE TOWED VEHICLE SYSTEMS

Competency: Y4 Repair towed vehicle systems

Objectives

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

- Describe repairing towed vehicle systems

LEARNING TASKS	CONTENT

1. Describe repairing towed vehicle systems	• Safety
	• Regulations
	  ○ Federal
	  ○ Provincial
	  ○ GVWR
	• Tools and equipment
	• Manufacturers' specifications
	  ○ Removal/replacement
	• Verification of operation
	• Documentation

Section 4

ASSESSMENT GUIDELINES

Assessment Guidelines – Level 1

Level 1 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:	RECREATION VEHICLE SERVICE TECHNICIAN LEVEL 1		
LINE	**SUBJECT COMPETENCIES**	**THEORY WEIGHTING**	**PRACTICAL WEIGHTING**
A	PERFORM SAFETY-RELATED ACTIVITIES	8%	0%
B	USE TOOLS AND EQUIPMENT	8%	25%
C	PERFORM COMMON WORK PRACTICES AND PROCEDURES	10%	0%
D	USE COMMUNICATION AND MENTORING TECHNIQUES	2%	0%
E	SERVICE POTABLE WATER SYSTEMS	6%	0%
F	SERVICE WASTEWATER SYSTEMS	6%	0%
G	SERVICE AC ELECTRICAL SYSTEMS	5%	0%
H	SERVICE DC ELECTRICAL SYSTEMS	10%	0%
J	SERVICE PHOTOVOLTAIC SYSTEMS	1%	0%
K	SERVICE LPG SYSTEMS	10%	25%
L	SERVICE WATER HEATERS	2%	0%
M	SERVICE FURNACES	2%	0%
N	SERVICE COOKTOPS AND RANGES	2%	0%
O	SERVICE REFRIGERATORS AND ICE MAKERS	2%	0%
P	SERVICE AIR CONDITIONERS AND HEAT PUMPS	1%	0%
Q	SERVICE CONSUMER PRODUCTS	2%	0%
T	SERVICE FRAMES AND RUNNING GEAR	10%	25%
U	SERVICE LEVELLING SYSTEMS	2%	0%
V	SERVICE SLIDE-OUT SYSTEMS	2%	0%
W	SERVICE LIFTING SYSTEMS	2%	0%

X	SERVICE TOW VEHICLE SYSTEMS	6%	25%
Y	SERVICE TOWED VEHICLE SYSTEMS	1%	0%
	Total	100%	100%
In-school theory/practical subject competency weighting		50%	50%
Final in-school percentage score		IN-SCHOOL %	

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

Assessment Guidelines – Level 2

Level 2 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:	RECREATION VEHICLE SERVICE TECHNICIAN LEVEL 2		
LINE	**SUBJECT COMPETENCIES**	**THEORY WEIGHTING**	**PRACTICAL WEIGHTING**
C	PERFORM COMMON WORK PRACTICES AND PROCEDURES	5%	0%
G	SERVICE AC ELECTRICAL SYSTEMS	5%	0%
H	SERVICE DC ELECTRICAL SYSTEMS	5%	0%
K	SERVICE LPG SYSTEMS	20%	40%
L	SERVICE WATER HEATERS	5%	0%
M	SERVICE FURNACES	5%	0%
N	SERVICE COOKTOPS AND RANGES	5%	0%
O	SERVICE REFRIGERATORS AND ICE MAKERS	5%	0%
P	SERVICE AIR CONDITIONERS AND HEAT PUMPS	5%	0%
R	SERVICE INTERIOR COMPONENTS	15%	20%
S	SERVICE EXTERIOR COMPONENTS	20%	40%
X	SERVICE TOW VEHICLE SYSTEMS	5%	0%
	Total	100%	100%
In-school theory/practical subject competency weighting		50%	50%
Final in-school percentage score		IN-SCHOOL %	

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

Assessment Guidelines – Level 3

Level 3 Grading Sheet: Subject Competency and Weightings

PROGRAM: IN-SCHOOL TRAINING:	RECREATION VEHICLE SERVICE TECHNICIAN LEVEL 3		
LINE	**SUBJECT COMPETENCIES**	**THEORY WEIGHTING**	**PRACTICAL WEIGHTING**
C	PERFORM COMMON WORK PRACTICES AND PROCEDURES	5%	15%
D	USE COMMUNICATION AND MENTORING TECHNIQUES	5%	0%
G	SERVICE AC ELECTRICAL SYSTEMS	8%	0%
H	SERVICE DC ELECTRCIAL SYSTEMS	5%	0%
I	SERVICE GENERATORS	10%	0%
J	SERVICE PHOTOVOLTAIC SYSTEMS	8%	0%
M	SERVICE FURNACES	5%	0%
O	SERVICE REFRIGERATORS AND ICE MAKERS	5%	0%
P	SERVICE AIR CONDITIONERS AND HEAT PUMPS	5%	25%
Q	SERVICE CONSUMER PRODUCTS	3%	0%
S	SERVICE EXTERIOR COMPONENTS	7%	35%
T	SERVICE FRAMES AND RUNNING GEAR	5%	25%
U	SERVICE LEVELLING SYSTEMS	8%	0%
V	SERVICE SLIDE-OUT SYSTEMS	8%	0%
W	SERVICE LIFTING SYSTEMS	8%	0%
Y	SERVICE TOWED VEHICLE SYSTEMS	5%	0%
	Total	100%	100%
In-school theory/practical subject competency weighting		50%	50%
Final in-school percentage score Apprentices must achieve a minimum 70% as the final in-school percentage score to be eligible to write the Interprovincial Red Seal Exam.		IN-SCHOOL %	

All apprentices who complete Level 3 of the Recreation Vehicle Service Technician program with a FINAL level mark of 70% or greater will write the Interprovincial Red Seal examination as their final assessment.

SkilledTradesBC will enter the apprentices Recreation Vehicle Service Technician Red Seal Interprovincial examination mark in SkilledTradesBC Portal. A minimum mark of 70% on the examination is required for a pass.

Section 5

TRAINING PROVIDER STANDARDS

Facility Requirements

Classroom Area

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

Shop Area

- Ceiling shall be a minimum height of 16' or as varied by good engineering practices and code
- Length and width of shop must be adequate to accommodate multiple RVs with multiple slideouts
- Appropriate lifting devises used in industry
- Suitable demonstration area
- Lighting appropriate for good vision in ambient light
- Compliance with all local and national fire code and occupational safety requirements
- Must meet Municipal and Provincial bylaws in regards to wastewater management and environmental laws
- Adequate lifting devises to student ratio

Lab Requirements

N/A

Student Facilities

Eating area as per WorkSafeBC regulations
Washroom facilities as per WorkSafeBC regulations
Personal storage lockers

Instructor's Office Space

N/A

Other

N/A

Tools and Equipment

Shop Equipment

Required

- Air compressor and components
- Band saw
- Battery charger
- Battery load tester
- Brake
- Creepers
- Drill press
- Floor jacks
- Grinders, bench, and angle
- Jack stands
- Parts cleaner
- Shop vaccuum
- Sliding compound mitre saw
- Table saw

Recommended

N/A

Shop (Facility) Tools

Standard Tools

- A/C tester
- Adjustable crescent wrenches, 8", 10"
- Air blow gun
- Air flow meters
- Air impact driver, 1/2"
- Air buck riveting guns
- Air shears
- Ammeter
- Aviation snip set, left, right, straight
- Battery carrying straps
- Battery pliers
- Battery post cleaner
- Bearing and race installing tool
- Body clip removal tools
- Brake tools
- Chalk line
- Chisel set, wood and metal
- Circuit board tester
- Cordless screwdriver/drill
- Framing square
- Hex key sets, allen wrench set, standard & metric
- Hole saw kit
- Hose clamp pliers
- Hydrometer
- Jigsaw
- Key hole saw
- Kregs cabinet jig
- Laminate trimmers and bits
- Levels, 2’ and 4’
- Manometer
- Multimeter (DVOM and analogue)
- Paint equipment
- Pipe wrench, 10"
- Plastic welding equipment
- Portable circular saw
- Portable sanders
- Pressure gauge
- Punch set

- Fibreglass repair tools
- Flashlight
- Rubber mallet
- Seal removing tool
- Set torx screwdriver set
- Single and double cut files, 10"
- Spin weld tool and equipment
- Deep socket sets, imperial and metric, 1/4”, 3/8”, 1/2” drive
- Torque wrench, standard and metric, 1/2", 0-150 ft./lb.
- Reciprocating saw
- Refractometer
- Rivet guns
- Routers and bits
- Tubing cutter flaring tool kit
- Tubing bender
- Vise-grips (Locking pliers)
- Wire brushes
- Wrenches (flare nut), 3/8" -7/8"
- Standard socket sets, imperial and metric, 1/4”, 3/8”, 1/2” drive

Specialty Tools

N/A

Student Equipment (supplied by school)

Required

- 12V DC test light
- Ball-peen hammer
- Channel locks
- Circuit tester, polarity and GFCI
- Claw hammer, 16 oz.
- Combination square
- Combination wrench set
- Crimping tools
- Diagonal cutters
- Flat tip screw driver set
- Hack saw with replacement blades
- Needle-nose pliers
- Nut driver set, 3/16” to 1/2”, metric
- Phillips screw driver set
- Putty knives
- Robertson screw driver set
- Scratch awl
- Slip joint pliers
- Tape measure, 1"-25'
- Utility knife
- Wire strippers
- Wonder bar

Recommended

N/A

Student Tools (supplied by student)

Required

None

Recommended

None

Reference Materials

Required Reference Materials

Local materials developed by training providers

- RV Service Textbook Set (Level 1 and 2)
  https://www.rvda.ca/content.asp?contentid=160

Recommended Resources

- National Highway Traffic Safety Administration https://www.nhtsa.gov/ (for recall notices)

Suggested Texts

- N/A

Instructor Requirements

Occupation Qualification

The instructor must possess:

- BC Recreational Vehicle Service Technician Certificate of Qualification with Red Seal Endorsement, or
- Certificate of Qualification from another Canadian jurisdiction with Red Seal Endorsement

Work Experience

- A minimum of 5 years experience working in the industry as a journeyperson
- Diverse industry experience, including that which would cover all competencies in this program

Instructional Experience and Education

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

- Instructor's Certificate
- Instructor's Diploma
- Bachelor's or Master's Degree in Education

Appendices

Appendix A
Acronyms

A/C	Air conditioning
AC	Alternating current
AGM	Absorbed glass matt
ASME	American Society of Mechanical Engineers
AWG	American wire gauge
BCM	Body control module
CO	Carbon monoxide
DC	Direct current
DOT	Department of Transportation
EPDM	Ethylene Propylene Diene Monomer
FRP	Fibre reinforced plastic
GFCI	Ground fault circuit interrupter
GHS	Globally Harmonized System of Classification
GPS	Global positioning system
GVWR	Gross vehicle weight rating
ISO	International Organization for Standardization
LCD	Liquid crystal display
LPG	Liquefied petroleum gas
MPPT	Maximum power point tracking
NTSB	National Transportation Safety Board
OHS	Occupational Health and Safety
PB	Polybutylene
PDI	Pre-delivery inspection
Pex	Polyethylene
PPE	Personal protective equipment
PVC	Polyvinyl chloride
PWM	Pulse width modulation
RV	Recreation vehicle
SDS	Safety Data Sheets
TC	Transport Canada
TPO	Thermoplastic polyolefin
VAC	Volts of alternating current
VDC	Volts of direct current
WHMIS	Workplace Hazardous Materials Information System

Appendix B
Summary of Achievement Criteria

Achievement Criteria are included for those competencies that require a practical assessment. The intent of including Achievement Criteria in the Program Outline is to ensure consistency in training across the many training institutions in British Columbia. Their purpose is to reinforce the theory and to provide a mechanism for evaluation of the learner's ability to apply the theory to practice. It is important that these performances be observable and measurable and that they reflect the skills spelled out in the competency. The conditions under which these performances will be observed and measured must be clear to the learner as well as the criteria by which the learner will be evaluated. The learner must also be given the evaluation criteria.

The performance spelled out in the Achievement Criteria is a suggested performance and is not meant to stifle flexibility of delivery. Training providers are welcome to substitute other practical performances that measure similar skills and attainment of the competency. Multiple performances may also be used to replace individual performances where appropriate.

The following tables summarize the practical assessments for each level. **For details, please refer to the Achievement Criteria following the particular competency in the Program Content section.**

RECREATION VEHICLE SERVICE TECHNICIAN – LEVEL 1 SUMMARY OF ACHIEVEMENT CRITERIA	
SUBJECT COMPETENCY	**ACHIEVEMENT CRITERIA TASK**
B1 Use tools and equipment	The learner will use tools to fabricate a U-tube manometer
K1 Maintain LPG systems	The learner will use hand tools to fabricate a 70% valve
T1 Maintain frames and running gear	The learner will maintain chassis and mechanical components
X2 Install tow vehicle systems	The learner will build a towable light tester, including • 7-pin • 4-pin

RECREATION VEHICLE SERVICE TECHNICIAN – LEVEL 2 SUMMARY OF ACHIEVEMENT CRITERIA	
SUBJECT COMPETENCY	**ACHIEVEMENT CRITERIA TASK**
K1 Maintain LPG systems	The learner will perform an LPG system service
K2 Install LPG systems	The learner will perform black pipe cutting and threading
R2 Install interior components	The learner will build a cabinet with countertop
S2 Install exterior components	The learner will build walls: • Stick and tin walls • Laminated

RECREATION VEHICLE SERVICE TECHNICIAN – LEVEL 3 SUMMARY OF ACHIEVEMENT CRITERIA	
SUBJECT COMPETENCY	**ACHIEVEMENT CRITERIA TASK**
C1 Use documents	The learner will complete a repair estimate using an industry recognized Flat Rate manual
P1 Maintain air conditioners and heat pumps	The learner will confirm A/C performance
S4 Repair exterior components	**1.** The learner will perform repairs to composite panels
	2. The learner will perform plastic welding
T3 Repair frames and running gear	The learner will repair chassis and mechanical components

Appendix C
Previous Contributors

Industry Subject Matter Experts retained to assist in the development of the Program Outline (2008):

- Al Cohoe
- Jim Ingram
- Lloyd Stamm — Automotive Training Standards Organization
- Keven Cundmore — Automotive Training Standards Organization

Industry Subject Matter Experts retained to assist in the development of the Program Outline (2018):

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