



Automotive Service Technician Course Outline

2024

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TRAINING PROFILE CHART

This Training Profile Chart represents Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) apprenticeship technical training at the topic level.

Level One (Harmonized)	Transcript Code	Hours
Automotive Shop Fundamentals	SHOP 123	30
Body Components and Service Inspection	ATBD 120	12
Braking Systems	BRAK 122 – Theory	30
	BRAK 123 – Shop	30
Driveline Systems	DRTR 122	30
Electrical System and Components	ELCT 120 – Theory	30
	ELCT 121 – Shop	18
Engine Systems	ENGN 124	30
Steering, Suspension and Control Systems	STER 120	30
		240

Level Two (Harmonized)	Transcript Code	Hours
Braking and Stability Control Systems	BRAK 205 – Theory/Shop	18
Engine Systems	ENGN 208 – Theory	30
	ENGN 209 – Shop	48
Steering, Suspension and Control Systems	STER 200 – Theory	18
	STER 201 – Shop	24
Starting, Charging, Lighting and Wipers	ELCT 200 – Theory	20
	ELCT 201 – Shop	22
Transmission and Final Drive Systems	TRNM 206 – Theory	30
	TRNM 207 – Shop	30
		240

Level Three (Harmonized)	Transcript Code	Hours
Electrical Accessories and Options	ELCT 300	30
Gasoline Engine Performance	FUEL 300 – Theory	45
	FUEL 301 – Shop	45
Ignition Systems	IGNS 300 – Theory/Shop	30
Transfer Cases and Manual Transmissions	TRNM 304 – Theory	30
	TRNM 305 – Shop	30
Vehicle Networking Systems	CNET 300 – Theory/Shop	30
		240

Level Four (Harmonized)	Transcript Code	Hours
Automatic transmissions and Automated AWD/4WD Systems	TRNM 402 – Theory	30
	TRNM 403 – Shop	42
Diesel Engine Support Systems	FUEL 406 – Theory	18
	FUEL 407 – Shop	30
Entertainment Systems, Instrumentation and Information Displays	INST 403 – Theory/Shop	24
HVAC and Comfort Control Systems	HVAC 402 – Theory/Shop	30
Hybrid and Electric Vehicles (EV)	TECH 402 – Theory	18
Mentoring Techniques	MENT 400 – Theory	30
Restraint Systems	ATMC 400 – Theory/Shop	18
		240

TECHNICAL TRAINING COURSE CONTENT

This chart outlines the model for Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) technical training sequencing. For the harmonized level of training, a cross reference to the Red Seal Occupational Standard (RSOS) apprenticeship technical training sequencing, at the learning outcome level, is provided.

The Red Seal Automotive Service Technician Curriculum Outline, which provides additional detail of the Harmonized technical training, can be found at www.red-seal.ca

Level One	8 weeks	240 hours
Automotive Shop Fundamentals		30 hours
<ul style="list-style-type: none">• describe occupation related safety procedures• describe safe handling of refrigerants• describe restraint systems safety precautions• describe hybrid and electric vehicle safety• describe occupation related tools and equipment• describe road test procedures• demonstrate knowledge of trade documents• demonstrate knowledge of trade documents• apply trade documents to vehicle repair• prepare trade documents		
Brake Systems – Theory		30 hours
<ul style="list-style-type: none">• describe the operation, diagnosis and repair procedures for brake system operation• describe brake system hydraulic component evaluation and replacement• describe the evaluation and repair of drum brake, disc brake and park brake assemblies• describe power assist brake system operation and evaluation		
Brake Systems – Shop		30 hours
<ul style="list-style-type: none">• demonstrate brake system hydraulic component evaluation and replacement• demonstrate brake system flushing and bleeding procedures• demonstrate the evaluation and repair of drum brake, disc brake and park brake assemblies (oxy-fuel safety, setup and shutdown)• diagnose power assist brake system operation (hybrid brake safety)• diagnose brake system operation• apply trade documents to vehicle repair• prepare trade documents		
Body Components and Service Inspection		12 hours
<ul style="list-style-type: none">• describe adjustment of doors, lids and moveable glass• describe diagnosis and repair of body leaks and noises• describe basic service inspections		
Driveline Systems		30 hours
<ul style="list-style-type: none">• describe operation, diagnosis and repair of driveshafts and axles• repair drive shafts and axles• describe operation, diagnosis and repair procedures for wheels and tires• describe operation, diagnosis and repair of wheel bearings and seals		

- repair wheels and tires
- service wheel bearings and seals
- perform the evaluation and repair of tire pressure monitor systems

Electrical Systems and Components – Theory

30 hours

- describe types of electrical circuits
- construct electrical circuits
- use electrical test equipment
- describe battery operation, diagnosis and repair
- describe schematics and flowcharts
- describe conductors and insulators
- describe solid state components
- describe the operation, diagnosis and repair of computer control systems

Electrical Systems and Components – Shop

18 hours

- repair conductors and connectors
- construct electrical circuits
- use electrical test equipment
- diagnose batteries

Engine Systems

30 hours

- describe the operation of engine types
- describe the operation and diagnosis of engine cooling and lubrication systems
- describe the operation and diagnosis of engine induction and exhaust systems
- test engine cooling and lubrication system
- inspect induction and exhaust systems

Steering, Suspension and Control Systems

30 hours

- describe the operation and diagnosis of suspension systems
- describe the operation and diagnosis of steering systems
- perform the evaluation of suspension systems
- perform the evaluation of steering systems

Level Two

8 weeks

240 hours

Braking and Stability Control Systems

18 hours

- describe the operation, diagnoses and repair of anti-lock, traction and stability control systems
 - perform the evaluation and repair of anti-lock brake, traction and stability control systems
-

Engine Systems – Theory

30 hours

- describe the operation, diagnosis and construction of cylinder head and block assembly
- describe the types and use of automotive engine measuring tools
- describe the engine assembly procedures
- describe the diagnosis and repair of an engine
- describe engine replacement procedures
- describe the diagnoses and repair of induction and exhaust systems
- describe the diagnoses and repair of lubrication and cooling systems

Engine Systems – Shop

48 hours

- perform the evaluation and repair of cylinder head and block assemblies
 - use precision measuring tools
 - assemble engine
 - diagnose engine faults
 - replace engine
 - perform the evaluation and repair of induction and exhaust systems
 - perform the evaluation and repair of engine lubrication and cooling systems
-

Starting, Charging, Lighting and Wipers – Theory

20 hours

- describe the operation, diagnoses and repair of starting systems
- describe the operation, diagnoses and repair of charging systems
- describe the operation, diagnoses and repair of wiper systems
- describe the operation, diagnoses and repair of lighting systems

Starting, Charging, Lighting and Wipers – Shop

22 hours

- perform the evaluation and repair of a starting system
 - replace a starter
 - perform the evaluation and repair of a charging system
 - replace a generator
 - perform the evaluation and repair of lighting systems
 - perform the evaluation and repair of wiper systems
-

Steering, Suspension and Control Systems – Theory

18 hours

- describe the diagnoses and repair of steering systems
- describe the diagnoses and repair of suspension systems
- describe the principles of wheel alignment

Steering, Suspension and Control Systems – Shop

24 hours

- perform the diagnoses and repair of steering systems
 - perform the diagnoses and repair of suspension systems
 - perform wheel alignment procedures
-

Transmission and Final Drive Systems – Theory**30 Hours**

- describe the operation, diagnoses and repair of differential assemblies
- describe the evaluation and repair of clutch assemblies
- describe transmission, transaxle, transfer case removal and installation procedures
- describe maintenance procedure for transmission, transaxle, transfer case, differential and engine

Transmission and Final Drive Systems – Shop**30 Hours**

- perform the evaluation and repair of differential systems
- perform the evaluation and repair of clutch assemblies
- replace manual transmission and automatic transmissions
- perform maintenance procedures on differential assemblies, transfer case, automatic transmission and engine

Level Three

8 weeks

240 hours

Electrical Accessories and Options

30 hours

- describe the operation, diagnoses and repair of electrical accessories
 - describe the operation, diagnoses and repair of electrical options
 - perform the evaluation and repair of electrical accessories
 - perform the evaluation and repair of electrical options
-

Gasoline Engine Performance – Theory

45 hours

- describe vehicle emission legislation
- describe types of engine management systems
- describe the operation, diagnoses and repair of electronic fuel injection (EFI) systems
- describe the operation, diagnoses and repair of On Board Diagnostics (OBD) engine management systems
- describe the operation, diagnoses and repair of emission systems
- describe maintenance procedures for fuel delivery, emission and injection systems
- describe diagnostic tools for on-board diagnostic (OBD) systems
- describe the operation, diagnoses and repair of alternative fuel systems
- describe the operation, diagnoses and repair of turbochargers and superchargers

Gasoline Engine Performance – Shop

45 hours

- perform the diagnoses and repair of engine management systems
 - perform the diagnoses and repair of electronic fuel injection (EFI) systems
 - perform the diagnoses and repair of emission systems
 - perform maintenance procedures on fuel delivery, emission and injection systems
 - perform the diagnoses and repair of alternative fuel systems
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Ignition Systems

30 hours

- describe the operation, diagnoses and repair of ignition systems
 - describe the use of ignition system testing equipment
 - perform the diagnoses and repair of ignition systems
 - use ignition system testing equipment
-

Transfer Cases and Manual Transmissions – Theory

30 hours

- describe the operation, diagnoses and repair of manual transmissions and transaxles
- describe the operation, diagnoses and repair of transfer cases
- describe All Wheel Drive (AWD) and Four Wheel Drive (4WD) systems

Transfer Cases and Manual Transmissions – Shop

30 hours

- perform the evaluation and repair of manual transmissions and transaxles
 - perform the evaluation and repair of transfer cases
 - perform the evaluation and repair of All Wheel Drive and Four Wheel Drive systems
-

Vehicle Networking Systems

30 hours

- describe the diagnostic code types and formats
- describe the various types of networks
- utilize diagnostic code protocols and actions to identify open, short and ground faults
- describe the various types, operation and the interrelationship of modules
- perform computer programming procedure

Level Four**8 weeks****240 hours**

Automatic Transmissions and Automated AWD/4WD Systems – Theory**30 hours**

- describe operation, diagnoses and repair of automatic transmissions
- describe alternate types of transmissions
- describe operation, diagnoses and repair of Intelligent/computer controlled AWD/4WD systems

Automatic Transmissions and Automated AWD/4WD Systems – Shop**42 hours**

- perform the evaluation and repair of automatic transmissions
 - perform the evaluation and repair of Intelligent/computer controlled AWD/4WD systems
-

Diesel Engine Support Systems – Theory**18 hours**

- describe operation, diagnoses and repair of the diesel fuel injection systems
- describe operation, diagnoses and repair of the turbo charged systems
- describe the operation, diagnoses and repair of the supercharged systems

Diesel Engine Support Systems – Shop**30 hours**

- perform the evaluation and repair of diesel fuel injection systems
 - perform the evaluation and repair of turbo charged systems
 - perform the evaluation and repair of supercharged systems
-

Entertainment Systems, Instrumentation and Information Displays**24 hours**

- describe the operation, diagnoses and repair of entertainment systems
 - describe the operation, diagnoses and repair of instrumentation and information displays
 - perform the evaluation and repair of entertainment systems
 - perform the evaluation and repair of instrumentation and information displays
-

HVAC and Comfort Control Systems**30 hours**

- explain physical properties of gases, liquids and solids
 - describe operation, diagnoses and repair of heating system
 - describe operation, diagnoses and repair of air conditioning systems and components
 - describe operation, diagnoses and repair of air conditioning control systems
 - perform the evaluation and repair of the heating systems
 - perform the evaluation and repair of the air conditioning systems and components
 - perform the evaluation and repair of the air conditioning control systems
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Hybrid and Electric Vehicles (EV) – Theory**18 hours**

- describe hybrid vehicles
- describe electric vehicles
- explain hybrid electrical vehicle operation
- describe hybrid electrical vehicle service procedures
- describe hybrid electric vehicle brakes systems

Mentoring Techniques – Theory**30 hours**

- research trends and innovations in the automotive industry
- present research findings
- identify and explain strategies for learning skills in the workplace
- demonstrate strategies for learning skills in the workplace
- identify and explain strategies for teaching workplace skills
- demonstrate strategies for teaching workplace skills

Restraint Systems**18 hours**

- describe occupant restraint systems
- repair occupant restraint systems

AUTOMOTIVE SERVICE TECHNICIAN TASK MATRIX CHART

This chart outlines the major work activities, tasks and sub-tasks from the 2016 Automotive Service Technician Red Seal Occupational Standard (RSOS). Each sub-task details the corresponding essential skill and level of training (apprenticeship year) where the content is delivered in training.

* Sub Tasks with numbers in the boxes is where the content will be delivered in training.

A – Performs common occupational skills

6%

A-1 Performs safety-related functions	1.01 Maintains safe work environment 1	1.02 Uses personal protective equipment (PPE) and safety equipment 1		
A-2 Uses tools, equipment and documentation	2.01 Uses tools and equipment 1 (2, 3, 4 In-Context)	2.02 Uses fasteners, tubing, hoses and fittings 1 (2, 3, 4 In-Context)	2.03 Uses hoisting and lifting equipment 1 (2, 3, 4 In-Context)	2.04 Uses technical information 1 (2, 3, 4 In-Context)
A-3 Uses communication and mentoring techniques	3.01 Uses communication techniques 1 (2, 3, 4 In-Context)	3.02 Uses mentoring techniques 4		

B – Diagnoses and repairs engine and engine support systems

19%

B-4 Diagnoses engine systems	4.01 Diagnoses cooling systems 2	4.02 Diagnoses lubricating systems 2	4.03 Diagnoses engine assembly 2	4.04 Diagnoses accessory drive systems 2
B-5 Repairs engine systems	5.01 Repairs cooling systems 2	5.02 Repairs lubricating systems 2	5.03 Repairs engine assembly 2	5.04 Repairs accessory drive systems 2
B-6 Diagnoses gasoline engine support systems	6.01 Diagnoses gasoline fuel delivery and injection systems 3	6.02 Diagnoses gasoline ignition systems 3	6.03 Diagnoses gasoline intake/exhaust systems 3	6.04 Diagnoses gasoline emission control systems 3
B-7 Repairs gasoline engine support systems	7.01 Repairs gasoline fuel delivery and injection systems 3	7.02 Repairs gasoline ignition systems 3	7.03 Repairs gasoline intake/exhaust systems 3	7.04 Repairs gasoline emission control systems 3
B-8 Diagnoses diesel engine support systems	8.01 Diagnoses diesel fuel delivery and injection systems 4	8.02 Diagnoses diesel intake/exhaust systems 4	8.03 Diagnoses diesel emission control systems 4	
B-9 Repairs diesel engine support systems	9.01 Repairs diesel fuel delivery and injection systems 4	9.02 Repairs diesel intake/exhaust systems 4	9.03 Repairs diesel emission control systems 4	

C – Diagnoses and repairs vehicle module communications systems

9%

C-10 Diagnoses vehicle networking systems	10.01 Reads diagnostic trouble codes (DTCs)	10.02 Monitors data	10.03 Interprets tests results	10.04 Tests system circuitry and components
	3 (1, 2, 4 In-Context)	3 (1, 2, 4 In-Context)	3 (1, 2, 4 In-Context)	3 (1, 2, 4 In-Context)
	11.01 Updates components software	11.02 Replaces components	11.03 Verifies vehicle module communications system repair	
	3 (1, 2, 4 In-Context)	3 (1, 2, 4 In-Context)	3 (1, 2, 4 In-Context)	

D – Diagnoses and repairs driveline systems

15%

D-12 Diagnoses driveline systems	12.01 Diagnoses drive shafts and axles	12.02 Diagnoses manual transmissions/transaxles	12.03 Diagnoses automatic transmissions/transaxles	12.04 Diagnoses clutches	12.05 Diagnoses transfer cases
	1	2	4	2	3
	12.06 Diagnoses final drive assemblies				
	2				
D-13 Repairs driveline systems	13.01 Repairs drive shafts and axles	13.02 Repairs manual transmissions/transaxles	13.03 Repairs automatic transmissions/transaxles	13.04 Repairs clutches	13.05 Repairs transfer cases
	1	2	4	2	3
	13.06 Repairs final drive assemblies				
	2				

E – Diagnoses and repairs electrical and comfort control systems

17%

E-14 Diagnoses electrical systems and components	14.01 Diagnoses basic wiring and electrical systems 1	14.02 Diagnoses starting/charging systems and batteries 1, 2	14.03 Diagnoses lighting and wiper systems 2	14.04 Diagnoses entertainment systems 4	14.05 Diagnoses electrical options 3
	14.06 Diagnoses instrumentation and information displays 4	14.07 Diagnoses electrical accessories 2, 3			
E-15 Repairs electrical systems and components	15.01 Repairs basic wiring and electrical systems 1	15.02 Repairs starting/charging systems and batteries 1, 2	15.03 Repairs lighting and wiper systems 2	15.04 Repairs entertainment systems 4	15.05 Repairs electrical options 3
	15.06 Repairs instrumentation and information displays 4	15.07 Installs electrical accessories 3	15.08 Repairs electrical accessories 2		
E-16 Diagnoses heating, ventilation and air conditioning (HVAC) and comfort control systems	16.01 Diagnoses air flow control systems 4	16.02 Diagnoses refrigerant systems 4	16.03 Diagnoses heating systems 4		
E-17 Repairs heating, ventilation and air conditioning (HVAC) and comfort control systems	17.01 Repairs air flow control systems 4	17.02 Repairs refrigerant systems 1, 4	17.03 Repairs heating systems 4		

F – Diagnoses and repairs steering and suspension, braking, control systems, tires, hubs and wheel bearings

21%

F-18 Diagnoses steering and suspension, braking, control systems, tires, wheels, hubs and wheel bearings	18.01 Diagnoses steering, suspension and control systems 1, 2	18.02 Diagnoses braking and control systems 1, 2	18.03 Diagnoses tires, wheels, hubs and wheel bearings 1
F-19 Repairs steering and suspension, braking, control systems, tires, wheels, hubs and wheel bearings	19.01 Repairs steering, suspension and control systems 1, 2	19.02 Repairs braking and control systems 1, 2	19.03 Repairs tires, wheels, hubs and wheel bearings 1

G – Diagnoses and repairs restraint systems, body components, accessories and trim

8%

G-20 Diagnoses restraint systems, body components, accessories and trim	20.01 Diagnoses restraint systems 1, 4	20.02 Diagnoses wind noises, rattles and water leaks 1 (2, 3, 4 In-Context)	20.03 Diagnoses interior and exterior components, accessories and trim 1 (2, 3, 4 In-Context)	20.04 Diagnoses latches, locks and movable glass 1 (2, 3, 4 In-Context)
G-21 Repairs restraint systems, body components, accessories and trim	21.01 Repairs restraint systems 4	21.02 Repairs wind noises, rattles and water leaks 1 (2, 3, 4 In-Context)	21.03 Repairs interior and exterior components, accessories and trim 1 (2, 3, 4 In-Context)	21.04 Repairs latches, locks and movable glass 1 (2, 3, 4 In-Context)

H – Diagnoses and repairs hybrid and electric vehicles (EV)

5%

H-22 Diagnoses hybrid and electric vehicles (EV)	22.01 Implements specific safety protocols for hybrid and electric vehicles (EV) 1, 4	22.02 Diagnoses hybrid and electric vehicle (EV) systems 4
H-23 Repairs hybrid and electric vehicles (EV)	23.01 Repairs hybrid vehicle systems 4	23.02 Repairs electric vehicle (EV) systems 4

**The Automotive Service Technician Red Seal Occupational Standard (RSOS), describing the “full scope” of the trade, can be found at www.red-seal.ca*

For more detailed information on course content, please refer to the Automotive Service Technician Guide to Course Content at www.saskapprenticeship.ca.